ANALYZING AMAZON SALES DATA

AGENDA

- Problem Statement
- Techniques Implemented
- Dashboard Showcase
- Key Insights
- Recommendations

PROBLEM STATEMENT

Sales management has gained importance to meet increasing competition and the need for improved methods of distribution to reduce costs and to increase profits. Sales management today is the most important function in a commercial and business enterprise. Do ETL: Extract-Transform-Load some Amazon datasets and find the sales trend for me. Find other key metrics and factors and show the meaningful relationships between attributes. Do your research and come up with your findings

TECHNIQUES IMPLEMENTED

IN DATA-MODELLING

- **Data Profiling -** to analyze data quality and completeness using Power Query's profiling tool.
- **Data Cleaning –**
  1. Order date & Ship date formatting by utilizing power query's splitting & merging option corrected data type from text to date and changed style from mm/dd/yyyy to dd/mm/yyyy.
- **Created Hierarchy –** to include Regions and Countries for detailed geographic analysis and enhanced visualization.
- **Utilized Top N filtering technique –** to highlight key metrics like
  1. Top/bottom grossing product/regions.
  2. Most/least sold product category.
  3. Most/least profitable region.
- **DAX Formulas & Measures –**
  DAX Formulas used – SUM, DISTINCTCOUNT, DIVIDE.
  Measures Created – Profit Margin and Total Countries.

IN DATA-VISUALIZATION

- **Slicers**: Employed slicers to analyze data across different layers and dimensions.
- **Drill-through Options**: Enabled drill-through capabilities on each page for detailed, context-specific insights.
- **Custom Tooltips:** Implemented custom tooltips to provide deeper insights and context directly within the data visualizations.
- **Menu Button**: Added a menu button for streamlined navigation between report pages.
- **Clear Filter Button**: Implemented a bookmark-based clear filter button to remove all applied filters and reset drill-throughs.
- **Navigation Arrows**: Included navigation arrows at the bottom for easy back-and-forth movement between report pages.

DASHBOARD SHOWCASE

SALES OVERVIEW

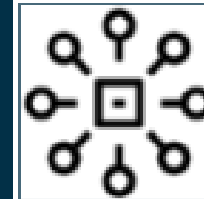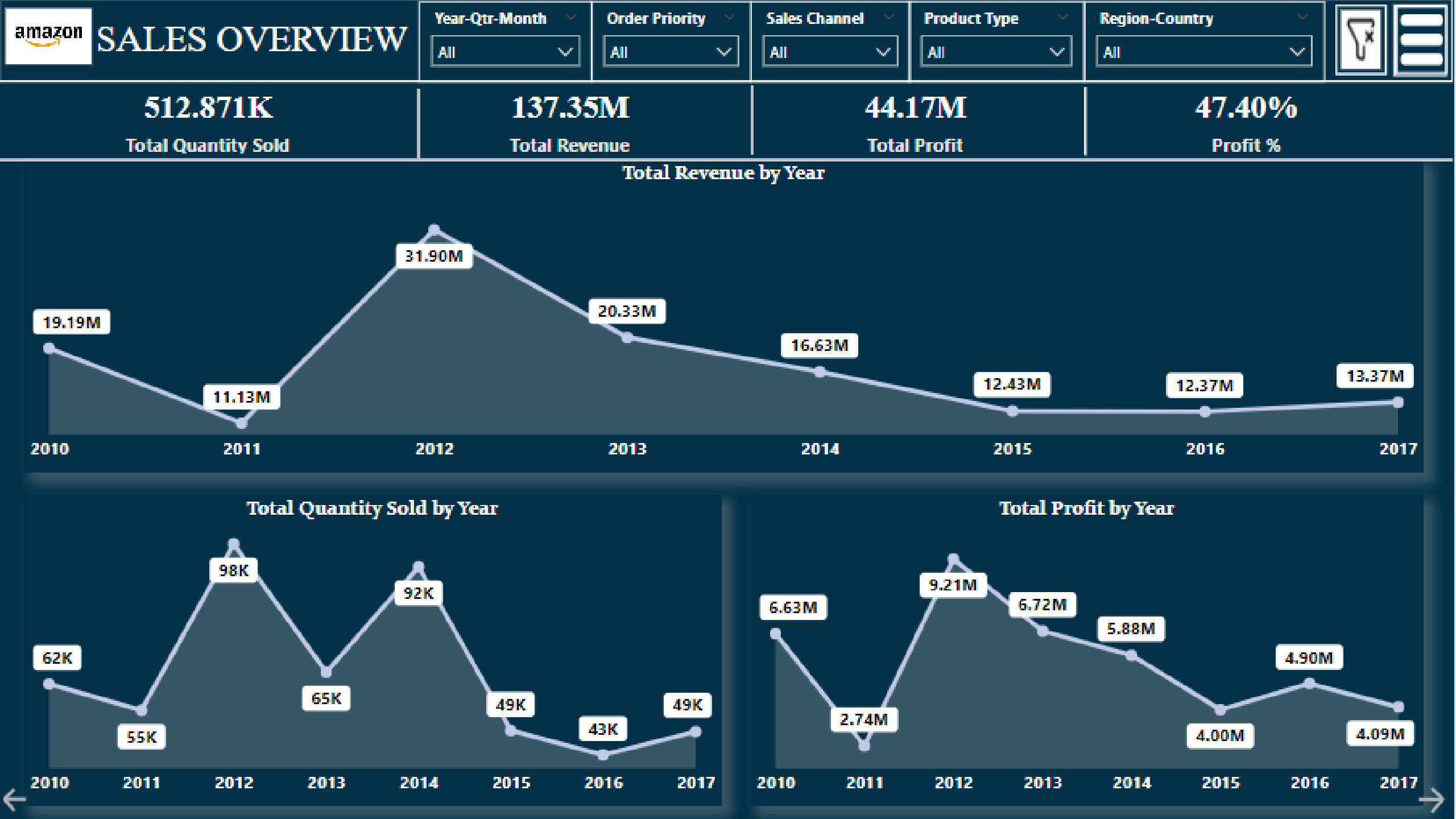| 512.871K	137.35M	44.17M	47.40%
Total Quantity Sold	Total Revenue	Total Profit	Profit %

Total Revenue by Year

- 2010: 19.19M
- 2011: 11.13M
- 2012: 31.90M
- 2013: 20.33M
- 2014: 16.63M
- 2015: 12.43M
- 2016: 12.37M
- 2017: 13.37M

Total Quantity Sold by Year

- 2010: 62K
- 2011: 55K
- 2012: 98K
- 2013: 65K
- 2014: 92K
- 2015: 49K
- 2016: 43K
- 2017: 49K

Total Profit by Year

- 2010: 6.63M
- 2011: 2.74M
- 2012: 9.21M
- 2013: 6.72M
- 2014: 5.88M
- 2015: 4.00M
- 2016: 4.90M
- 2017: 4.09M

PRODUCT ANALYSIS

Year-Qtr-Month	Order Priority	Sales Channel	Region-Country
All	All	All	All

Cosmetics	Meat	Cosmetics	Fruits
Most Sold Product Type by Qty	Least Sold Product Type by Qty	Top Grossing Product Type	Least Grossing Product Type

Quantity Sold by Product Type

Product Type	Quantity
Cosmetics	83.72K
Clothes	71.26K
Beverages	56.71K
Fruits	50.00K
Personal Care	48.71K
Office Supplies	46.97K
Household	44.73K
Baby Food	40.55K
Cereal	25.88K
Vegetables	20.05K
Snacks	13.64K
Meat	10.68K

Revenue & Profit by Product Type

Product Type	Total Revenue	Total Profit	Profit Margin
Clothes	7.79M	5.23M	204.91%
Cereal	5.32M	2.29M	75.65%
Vegetables	3.09M	1.27M	69.43%
Cosmetics	36.60M	14.56M	66.03%
Baby Food	10.35M	3.89M	60.13%
Snacks	2.08M	0.75M	56.59%
Beverages	2.69M	0.89M	49.26%
Personal Care	3.98M	1.22M	44.22%
Fruits	0.47M	0.12M	34.83%
Household	29.89M	7.41M	32.98%
Office Supplies	30.59M	5.93M	24.05%
Meat	4.50M	0.61M	15.68%

Revenue % of Product Category by Sales Channel

● Offline ● Online

Product Type	Offline	Online
Cosmetics	49.87%	50.13%
Office Supplies	44.28%	55.72%
Household	99.37%	
Baby Food	59.44%	40.56%
Clothes	57.35%	42.65%
Cereal		85.47%
Meat	100.00%	
Personal Care	82.84%	
Vegetables	26.02%	73.98%
Beverages	73.34%	26.66%
Snacks		100.00%
Fruits	27.81%	72.19%

REGION ANALYSIS

Sub-Saharan Africa
Top Grossing Region

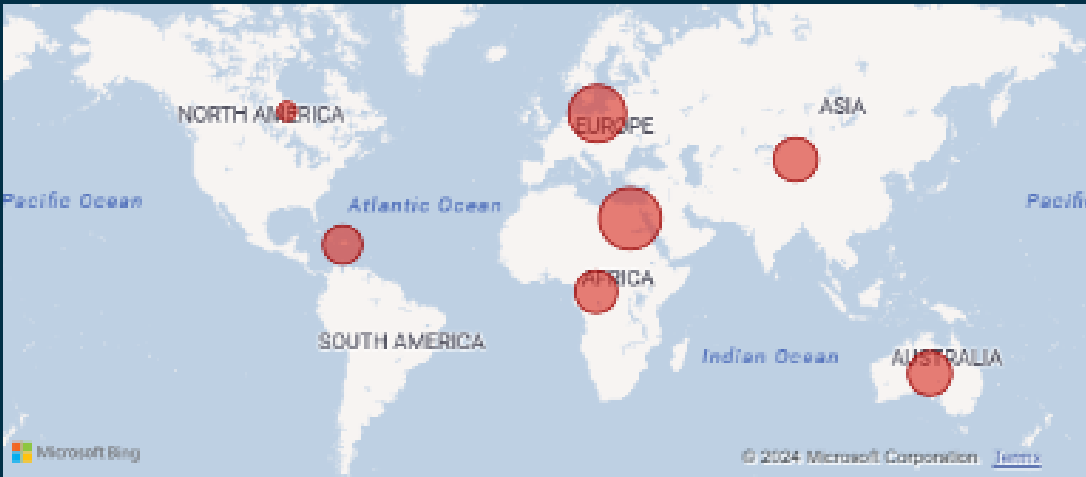**North America**
Least Grossing Region

Middle East and North Africa
Most Profitable Region
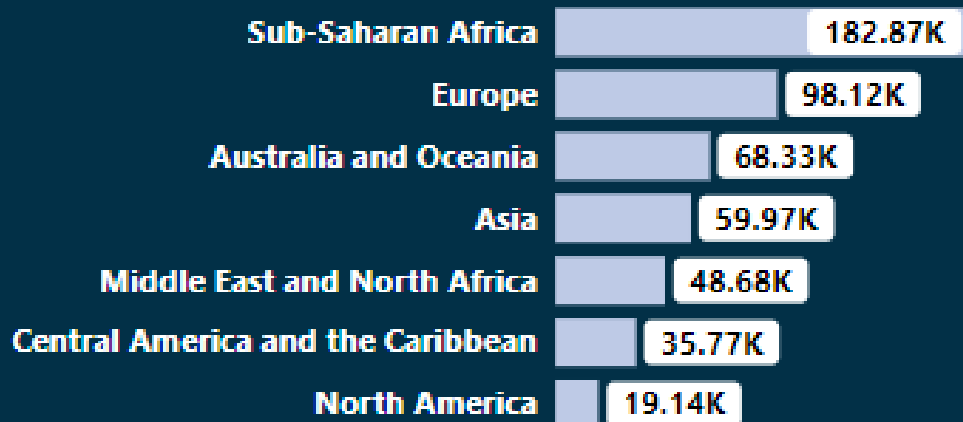
North America
Least Profitable Region

Market Overview
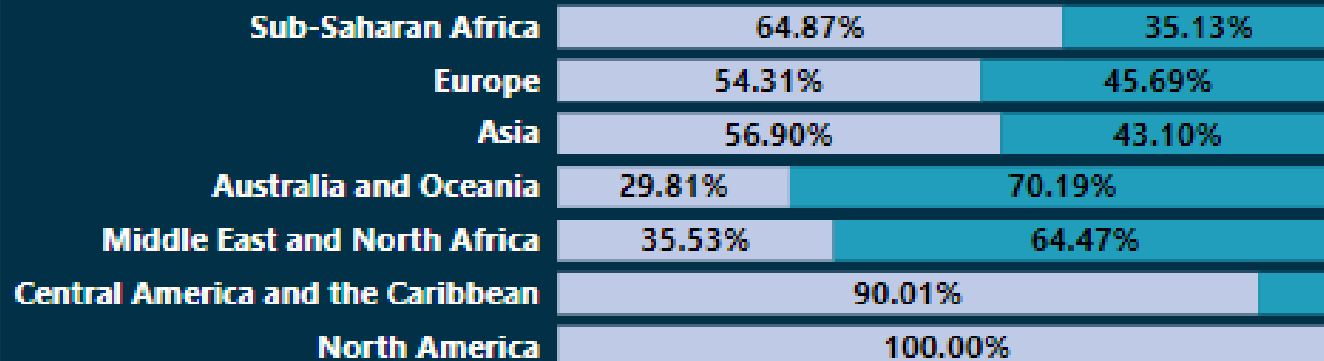

Total Revenue & Profit by Region-Country

Region	Total Revenue	Total Profit	Profit Margin
Middle East and North Africa	14.05M	5.76M	69.48%
Australia and Oceania	14.09M	4.72M	50.39%
Europe	33.37M	11.08M	49.73%
Central America and the Caribbean	9.17M	2.85M	45.02%
Sub-Saharan Africa	39.67M	12.18M	44.32%
Asia	21.35M	6.11M	40.13%
North America	5.64M	1.46M	34.83%

Quantity Sold by Region

Region	Quantity
Sub-Saharan Africa	182.87K
Europe	98.12K
Australia and Oceania	68.33K
Asia	59.97K
Middle East and North Africa	48.68K
Central America and the Caribbean	35.77K
North America	19.14K

Revenue % of Region-Country by Sales Channel

● Offline ● Online

Region	Offline	Online
Sub-Saharan Africa	64.87%	35.13%
Europe	54.31%	45.69%
Asia	56.90%	43.10%
Australia and Oceania	29.81%	70.19%
Middle East and North Africa	35.53%	64.47%
Central America and the Caribbean	90.01%	
North America	100.00%	

SALES CHANNEL & ORDER PRIORITY ANALYSIS

Year-Qtr-Month: All

Product Type: All

Region-Country: All

Total Quantity Sold by Sales Channel

Online 236.09K (46%)

Offline 276.78K (54%)

Total Revenue by Sales Channel

Online 58.25M (42%)

Offline 79.09M (58%)

Total Profit by Sales Channel

Online 19.25M (44%)

Offline 24.92M (56%)
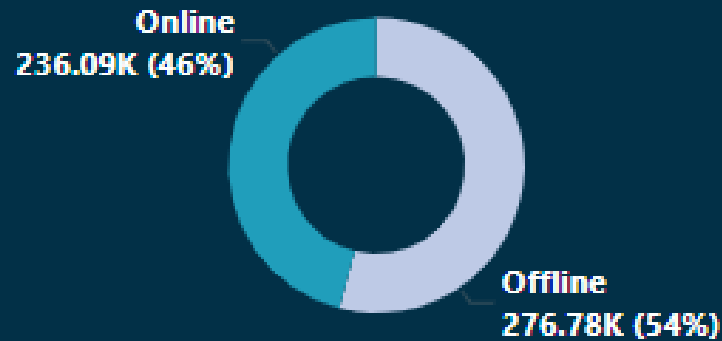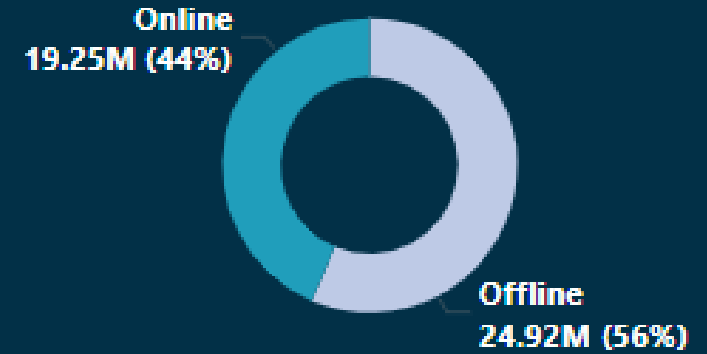
Total Quantity Sold by Order Priority

C 116.95K (23%)

M 94.83K (18%)

L 146.88K (29%)

H 154.21K (30%)
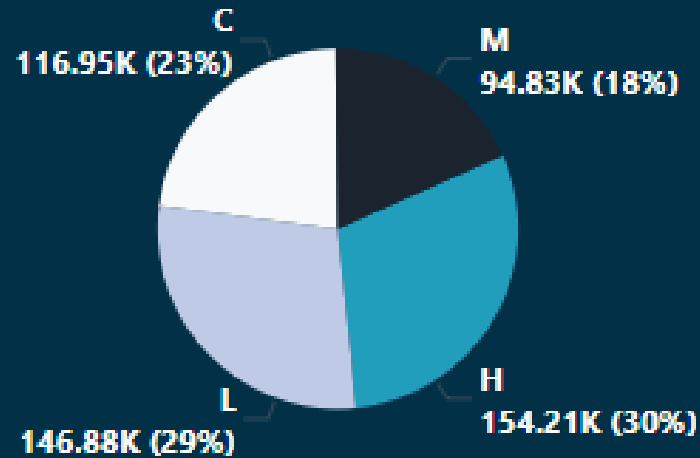
Total Revenue by Order Priority

M 33.12M (24%)

C 18.86M (14%)

L 36.63M (27%)

H 48.75M (35%)
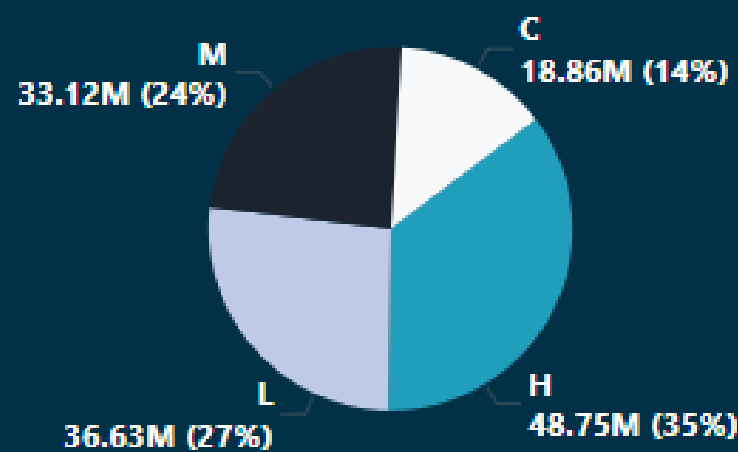
Total Profit by Order Priority

M 9.67M (22%)

C 6.75M (15%)

L 10.86M (25%)

H 16.89M (38%)
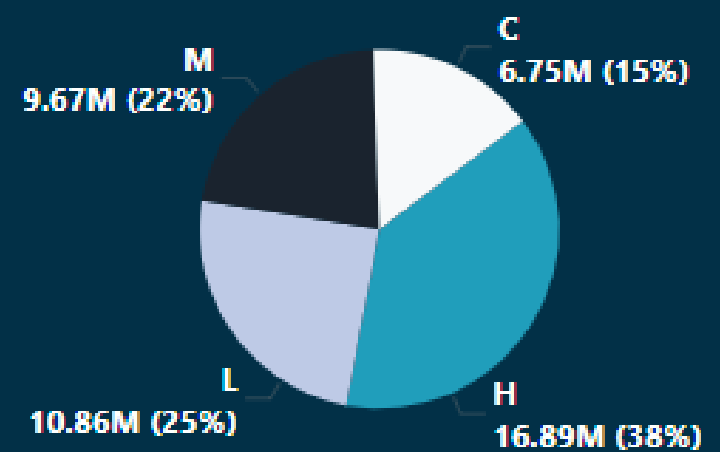
KEY INSIGHTS

OVERVIEW

12	07	76
TOTAL PRODUCT CATEGORY	TOTAL REGIONS	TOTAL COUNTRIES

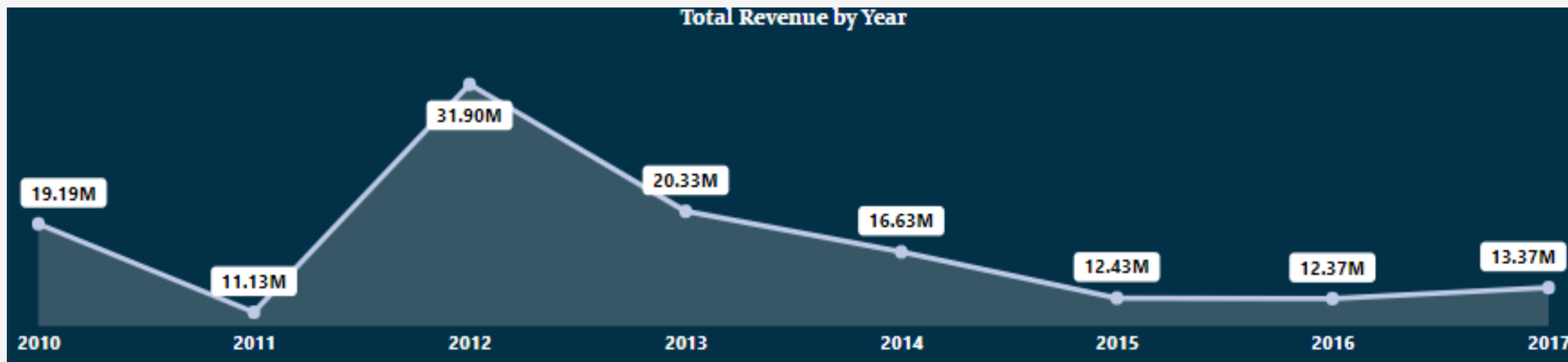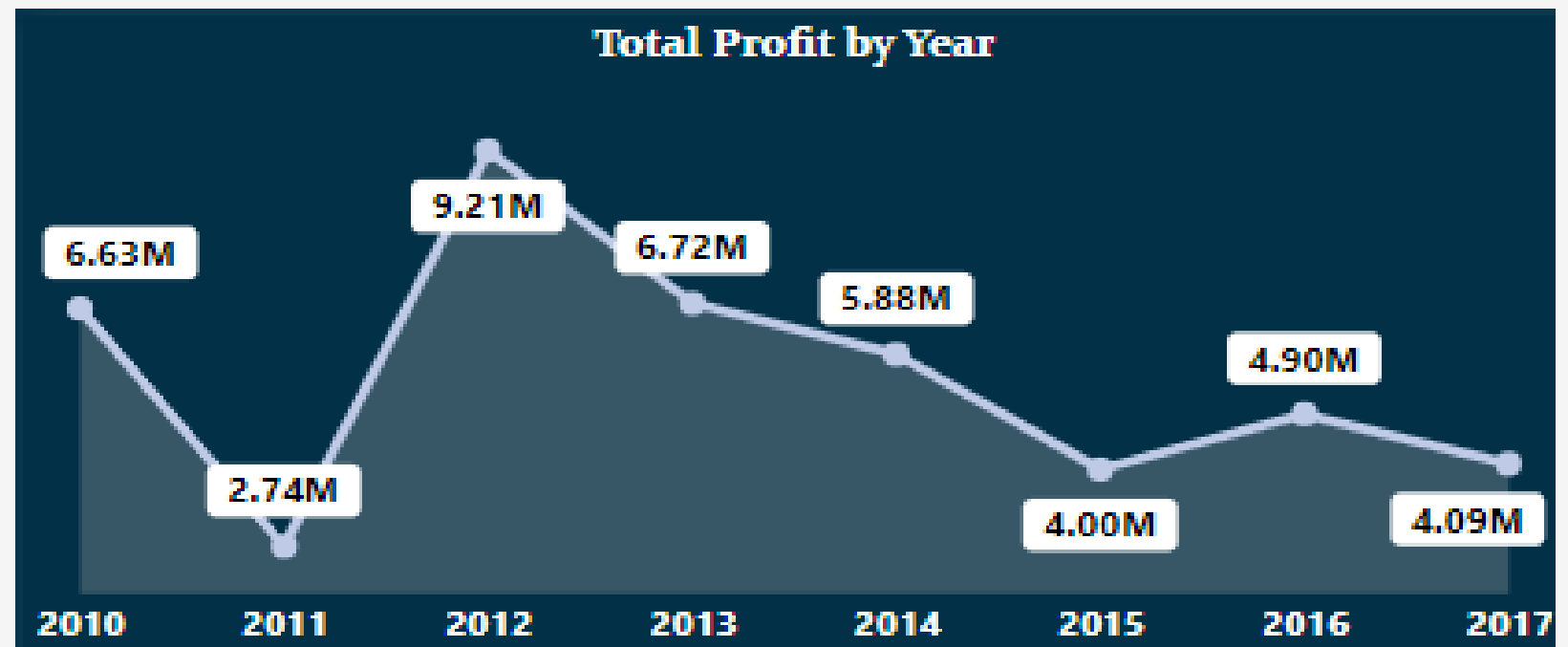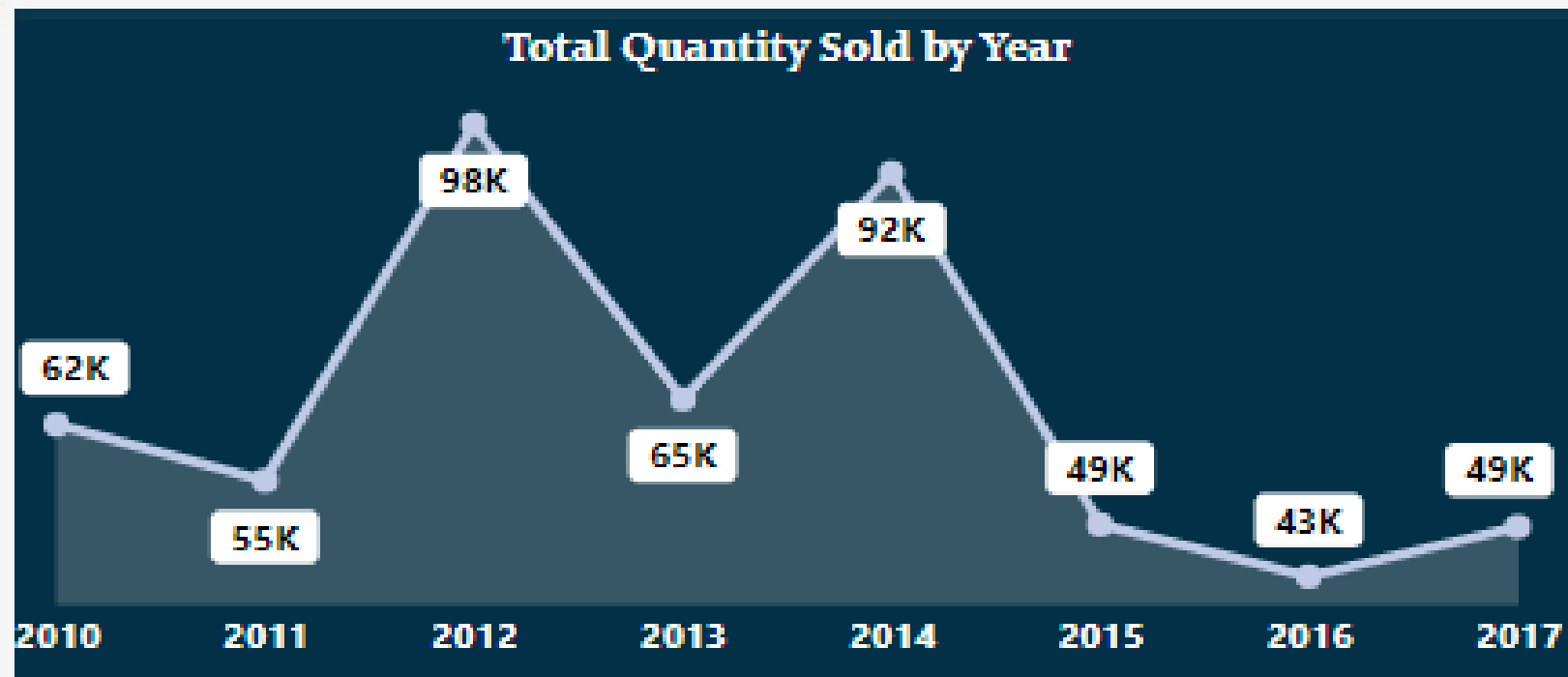| 512.87K	137.35M	44.17M
TOTAL QUANTITY SOLD	TOTAL REVENUE	TOTAL PROFIT

47.40%

PROFIT PERCENTAGE

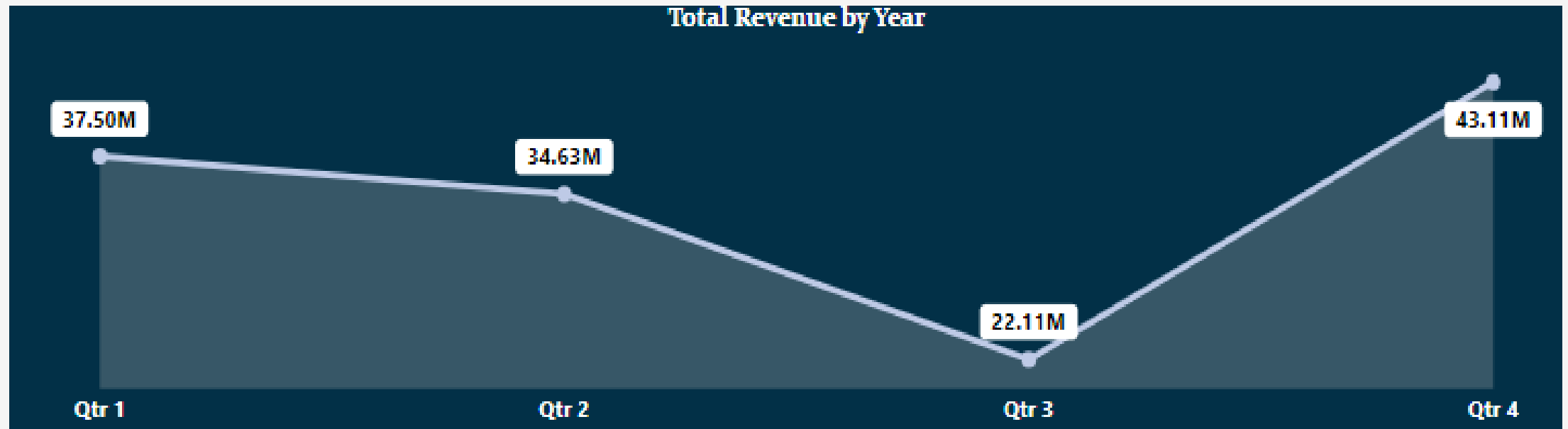# INSIGHTS BASED ON SALES OVER TIME

YEAR WISE TREND

- Highest revenue is generated in the year 2012(31.90M), this year highest number of products (98K) are sold too, and the maximum profit (9.21M) is also generated.
- In 2014 92K products were sold, which is 2nd highest, and 65K in 2013 but the revenue and profit generated in 2013 is more than that in 2014. It could be because in 2013 more high-value products were ordered and in 2014 more low-value products were ordered.
- After 2012 the revenue has declined continuously, with only a very slight increase in 2017, could be due to increased competition.
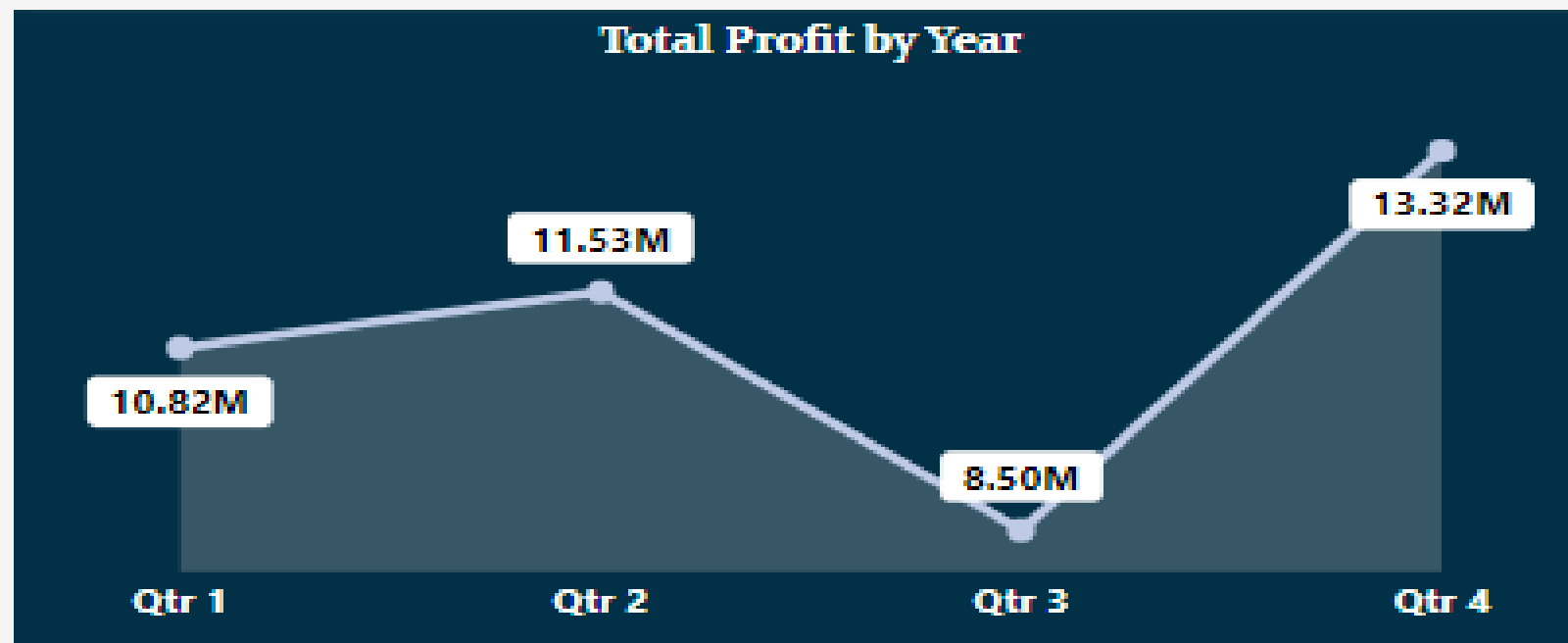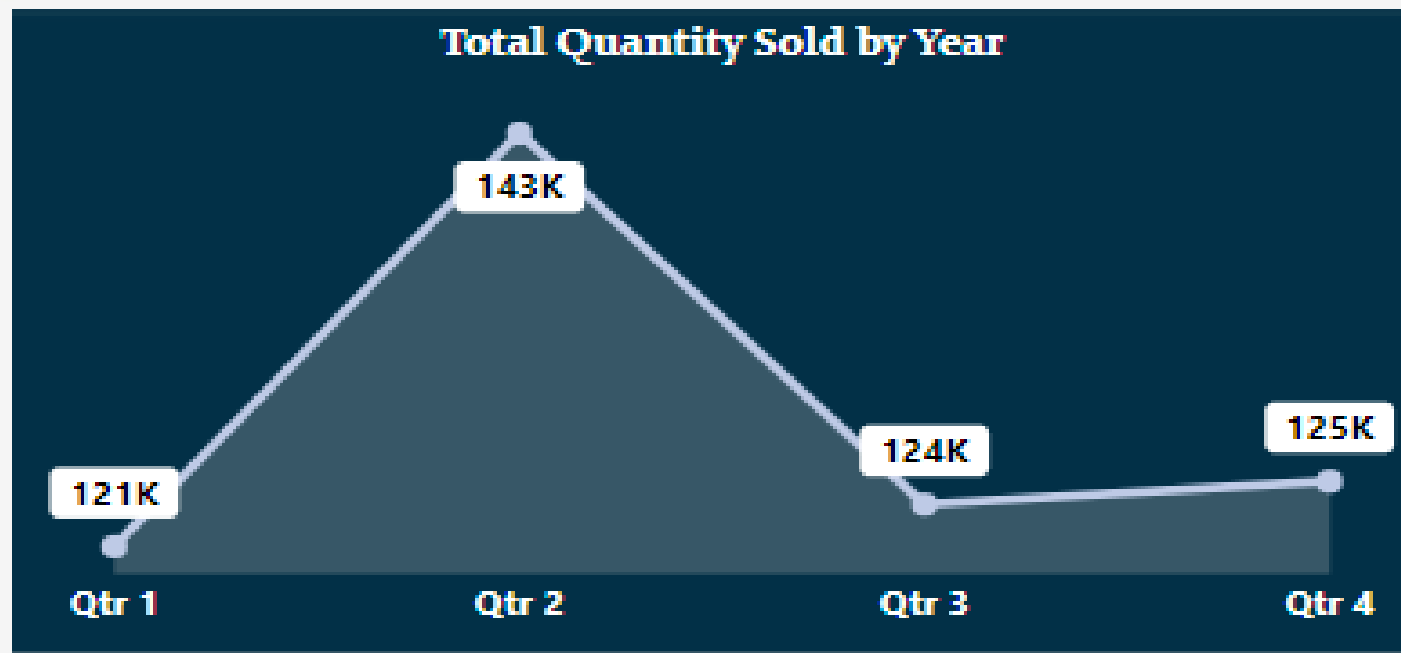
Total Revenue by Year

19.19M · 11.13M · 31.90M · 20.33M · 16.63M · 12.43M · 12.37M · 13.37M

2010   2011   2012   2013   2014   2015   2016   2017

Total Quantity Sold by Year

2010	2011	2012	2013	2014	2015	2016	2017
62K	55K	98K	65K	92K	49K	43K	49K

Total Profit by Year

2010	2011	2012	2013	2014	2015	2016	2017
6.63M	2.74M	9.21M	6.72M	5.88M	4.00M	4.90M	4.09M

QUARTER WISE TREND

- The highest revenue is generated in Quarter 4 (43.11M) followed by Quarter 1 (37.50M). Also, the highest profit is generated in Quarter 4 (13.32M) but the number of products sold in Quarter 4 (125K) & 1(121K) is much less compared to the highest in Quarter 2 (143K).
- Quarters 4 & 1 being festival season generated high profit despite selling less quantity because of the purchase of high-value products.

Total Revenue by Year

37.50M	34.63M	22.11M	43.11M
Qtr 1	Qtr 2	Qtr 3	Qtr 4

Total Quantity Sold by Year

	Qtr 1	Qtr 2	Qtr 3	Qtr 4
	121K	143K	124K	125K

Total Profit by Year

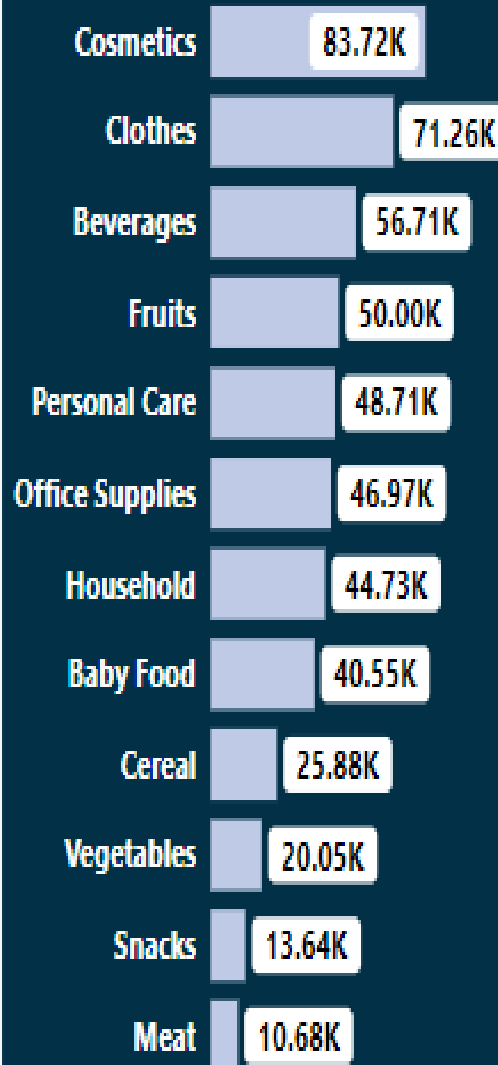|	Qtr 1	Qtr 2	Qtr 3	Qtr 4
	10.82M	11.53M	8.50M	13.32M

INSIGHTS BASED ON PRODUCT CATEGORY

- **Cosmetics - most sold** product category by quantity, also it generates **the highest revenue(36.60M) & profit(14.56M)**, but **profit margin is only 66.03%.**
- **Clothes - 2ⁿᵈ most sold** category by quantity, **generates moderate revenue & profit** of 7.79M & 5.23M respectively but has the **highest profit margin of 204.9%.**
- **Meat** is the **least sold** item by quantity, generates **moderate revenue** of 4.50M but has the **lowest profit margin of 15.68%.**
- **Fruits generates Least Revenue (0.47M) & Profit(0.12M) .**
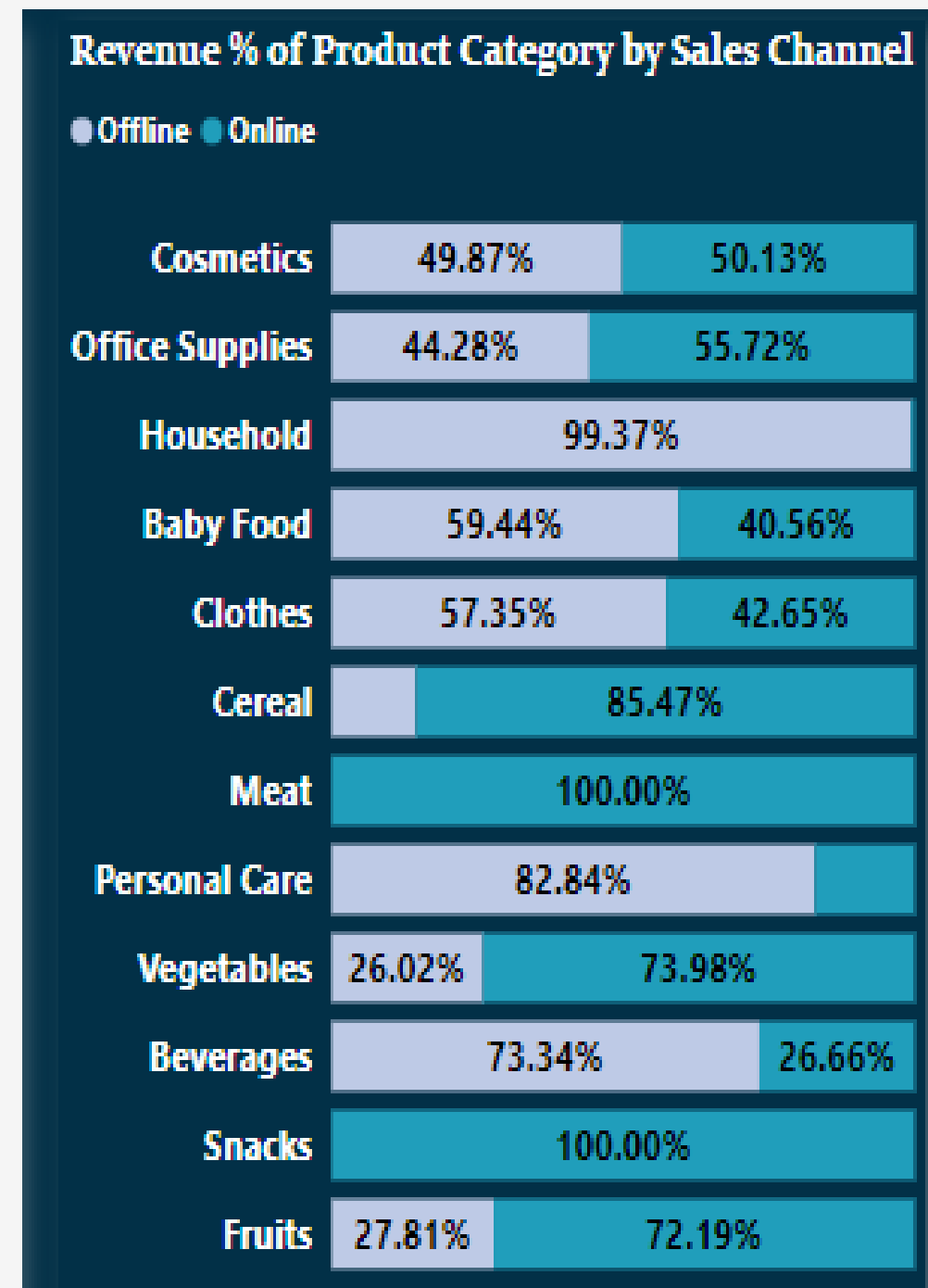
Quantity Sold by Product Type

Product Type	Quantity
Cosmetics	83.72K
Clothes	71.26K
Beverages	56.71K
Fruits	50.00K
Personal Care	48.71K
Office Supplies	46.97K
Household	44.73K
Baby Food	40.55K
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Revenue & Profit by Product Type

Product Type	Total Revenue	Total Profit	Profit Margin
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Beverages	2.69M	0.89M	49.26%
Personal Care	3.98M	1.22M	44.22%
Fruits	0.47M	0.12M	34.83%
Household	29.89M	7.41M	32.98%
Office Supplies	30.59M	5.93M	24.05%
Meat	4.50M	0.61M	15.68%

PRODUCT CATEGORY'S REVENUE SHARE BY SALES CHANNEL

- Increasing Sales via Online Channels of the following categories **- Household, Clothes, Personal Care, Baby Foods & Beverages**, will further boost revenue since the online channel has the reachability and convenience of placing orders at any time from anywhere.
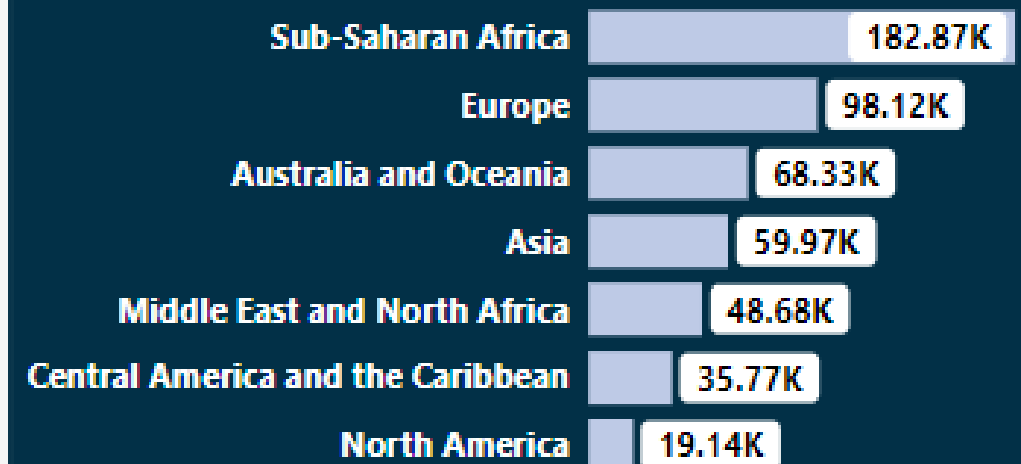
Revenue % of Product Category by Sales Channel

● Offline ● Online

Product Category	Offline	Online
Cosmetics	49.87%	50.13%
Office Supplies	44.28%	55.72%
Household	99.37%	
Baby Food	59.44%	40.56%
Clothes	57.35%	42.65%
Cereal		85.47%
Meat		100.00%
Personal Care	82.84%	
Vegetables	26.02%	73.98%
Beverages	73.34%	26.66%
Snacks		100.00%
Fruits	27.81%	72.19%

INSIGHTS BASED ON REGION

- **Middle East and North Africa** region has **highest profit margin(69.48%)** on selling products.
- **North America has least profit margins** (34.83%), also **least products sold** by quantity (19.14K)& generates **least revenue (5.64M) and profit(1.46M)** too.
- **Sub-Saharan Africa** region has **highest products sold** by quantity(182.87K), generating **highest revenue(39.67M) & profit(12.18M).**Profit Margin of 44.32%
- **Europe is 2nd highest** in terms of product quantity sold, revenue & profit generated . Profit Margin is 49.73%

Total Revenue & Profit by Region-Country

Region	Total Revenue	Total Profit	Profit Margin
Middle East and North Africa	14.05M	5.76M	69.48%
Australia and Oceania	14.09M	4.72M	50.39%
Europe	33.37M	11.08M	49.73%
Central America and the Caribbean	9.17M	2.85M	45.02%
Sub-Saharan Africa	39.67M	12.18M	44.32%
Asia	21.35M	6.11M	40.13%
North America	5.64M	1.46M	34.83%

Quantity Sold by Region

Region	Quantity
Sub-Saharan Africa	182.87K
Europe	98.12K
Australia and Oceania	68.33K
Asia	59.97K
Middle East and North Africa	48.68K
Central America and the Caribbean	35.77K
North America	19.14K

- The reason for poor performance in North America and lower profit margin in Europe despite good performance could be –
  - Due to the highly competitive market.
  - Stringent regulations, high tariffs, and compliance costs.
  - High operational cost, labor cost, transportation & manufacturing costs.

The absence of the above factors is the reason for high profit margins in the Middle East and North African region.
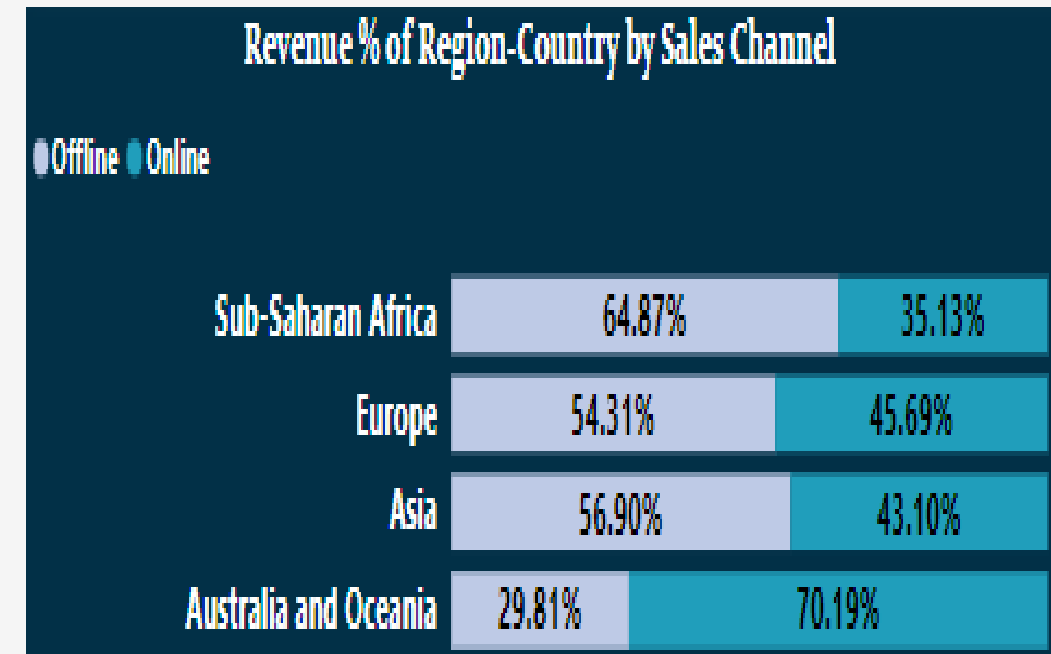
- The reason for lower profit margins in the Sub-Saharan Africa region despite good performance could be -
  - Lower purchasing power due to which prices need to be reduced to remain competitive.
  - Supply chain inefficiencies.
  - High operational cost due to poor infrastructure

# REVENUE % & PROFIT MARGIN OF SALES CHANNELS BY REGION

By comparing profit margins among different sales channels in different regions we can develop a strategy to channelize our resources accordingly to further boost profits.

- **Sub-Saharan Africa:** Slightly higher profit margin in **Online Sales Channel (46.29%)** than Offline Sales Channel(43.28%).
- **Europe:** Higher profit margin in **online sales channel (56.57%)** than offline sales channel (44.43%).
- **Asia:** Higher profit margin in **offline sales channel (41.86%)** than online sales channel (37.92%).
- **Australia and Oceania:** Higher profit margin in **offline sales channel (81.46%)** than online sales channel (40.19%).

Revenue % of Region-Country by Sales Channel

● Offline ● Online

Region	Offline	Online
Sub-Saharan Africa	64.87%	35.13%
Europe	54.31%	45.69%
Asia	56.90%	43.10%
Australia and Oceania	29.81%	70.19%

- **Middle East and North Africa:** Higher profit margin in **offline sales channel (76.81%)** than online sales channel (65.70%).
- **Central America and the Caribbean:** Higher profit margin in **online sales channel (68.07%)** than offline sales channel (44.85%).
- **North America:** 34.83% profit margin in offline sales channels and **no sales occurred via online** sales channels.
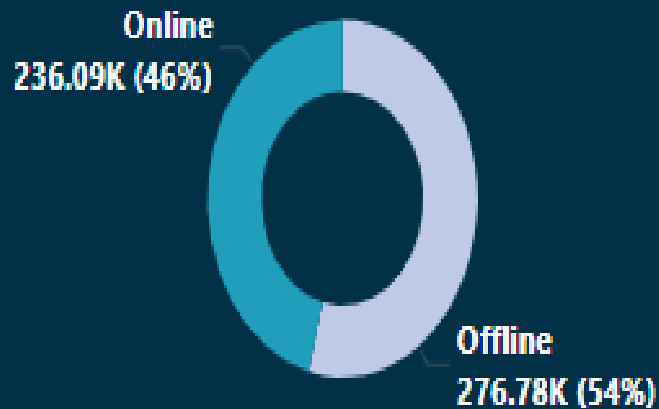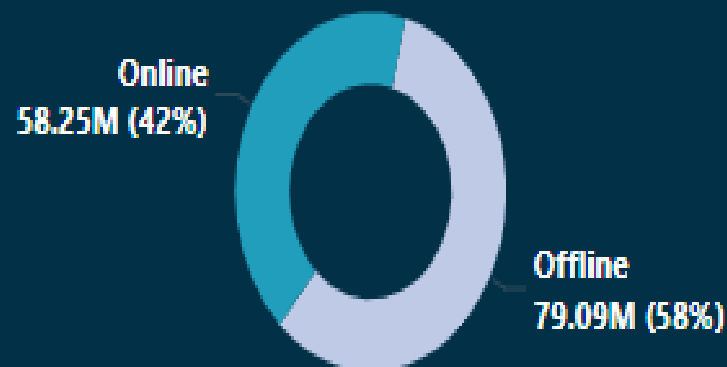

Middle East and North Africa	35.53%	64.47%
Central America and the Caribbean	90.01%	
North America	100.00%	
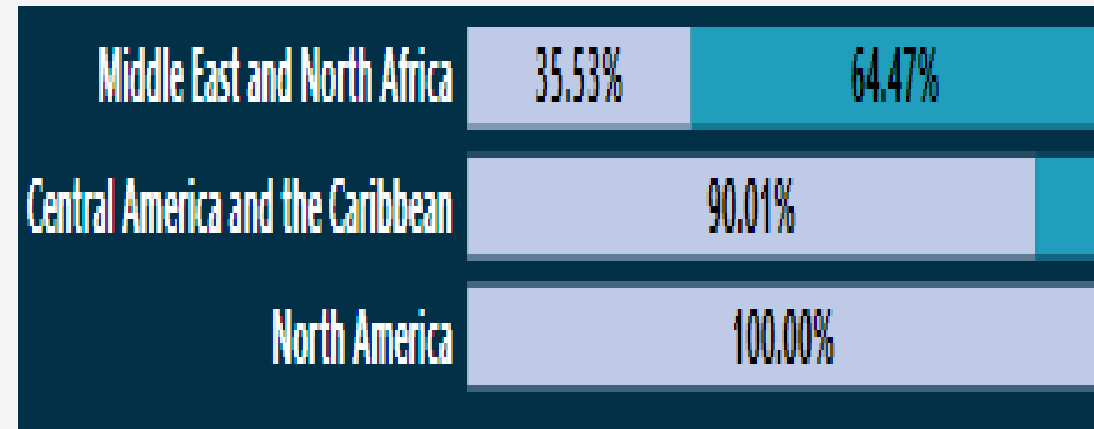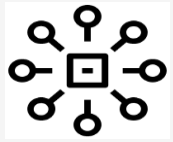
INSIGHTS BASED ON SALES CHANNELS

- More products were sold via offline sales channels, could be because people can purchase instantly and have more trust due to physically assessing it while purchasing.
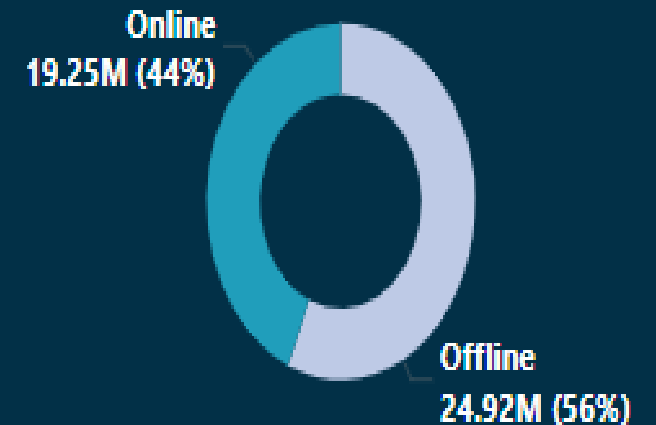- Also more revenue and profit are generated from offline sales channels..

Total Quantity Sold by Sales Channel
Online 236.09K (46%)
Offline 276.78K (54%)

Total Revenue by Sales Channel
Online 58.25M (42%)
Offline 79.09M (58%)
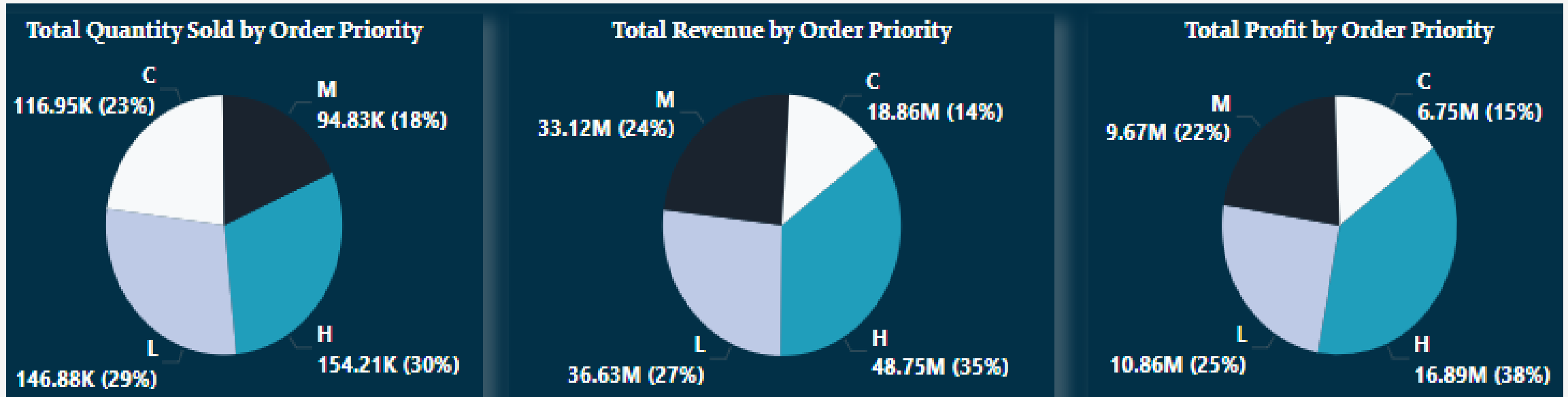
Total Profit by Sales Channel
Online 19.25M (44%)
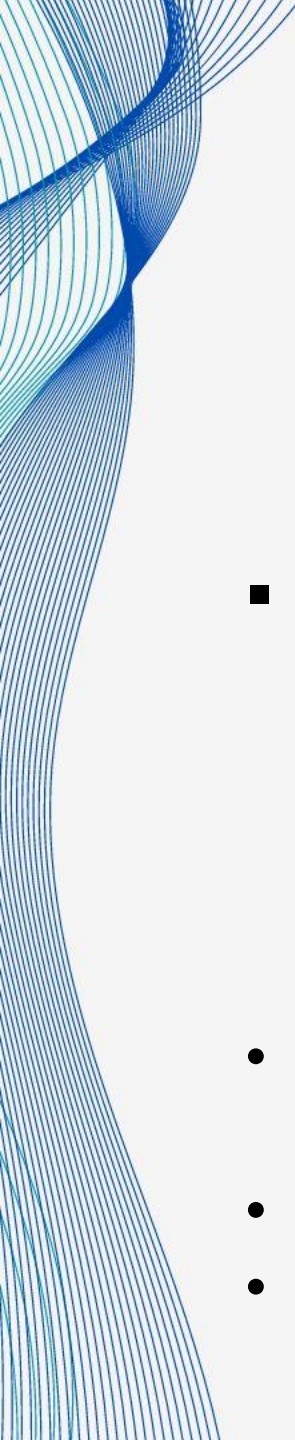Offline 24.92M (56%)

INSIGHTS BASED ON ORDER PRIORITY

- H (High) priority orders generate more revenue & profits, followed by M(Medium) , then L(Low) and least by C(Critical) priority orders.
- Also more orders are placed under H priority, followed by L then C and M priority.

RECOMMENDATIONS

- Leverage festival seasons for increased profits by offering sales and special offers on high-profit margin products.
- Develop localized strategy for different regions –
   - for regions with more offline sales channel revenue but lower profit margins than online sales channels:
      1. Focus on staff training to leverage physical interactivity for upselling and cross-selling products.
      2. Promote exclusive in-store offers on high-profit margin products.
      3. Optimize overhead cost.
      4. Promote online sales channels through effective digital marketing.
   - for regions with more online sales channel revenue but lower profit margins than offline sales channels:
      1. Optimize the delivery supply chain.
      2. Promote subscription offers.
      3. Promote exclusive online purchase offers on high-profit margin products.
      4. Try to minimize the return rate.
      5. Involve in local community events and advertisements to attract customers to offline stores.

- reassess North America strategy:
    1. Promote online sales channels aggressively and efficiently.
    2. Diversify and innovate products sold to leverage the high purchasing power capacity.
    3. Renegotiate with the vendors, improve supply chain efficiency, and focus on gaining customer loyalty to stand out in a highly competitive market.

- Provide personalized customer experience –
  - In Offline sales channels: tailored offerings, local aesthetics & exclusive local offers.
  - In Online sales channels: Region and occasion-based offers, changing aesthetics based on occasion, customer support availability in the local language too, and personalized recommendations.

- Develop a strategy to ensure customer loyalty and retention of high-priority order customers.
- Optimize order priority allocation.
- Improve supply chain for L(low) and M(medium) order priority .

THANK-YOU!