



**Provide Insights to Management
in Consumer Goods Domain**

SQL Ad-Hoc Analysis for AtliQ Hardwares

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Background & Problem Statement

📌 Background

- AtliQ Hardwares, a leading computer hardware company in India, has expanded into several international markets. However, the management lacks timely and accurate insights to support fast, data-driven decision-making.

📌 Problem Statement

- To improve strategic decisions, the analytics director launched a SQL challenge to extract insights from real business data.

Project Objective & Task Overview

📌 Objective

- To generate clear, decision-ready insights that support leadership in understanding trends, performance, and business opportunities.

📌 Task Overview

As part of the SQL challenge, I:

- Analyzed datasets using SQL
- Answered 10 ad-hoc business requests
- Created visualizations
- Provided concise insights for top management

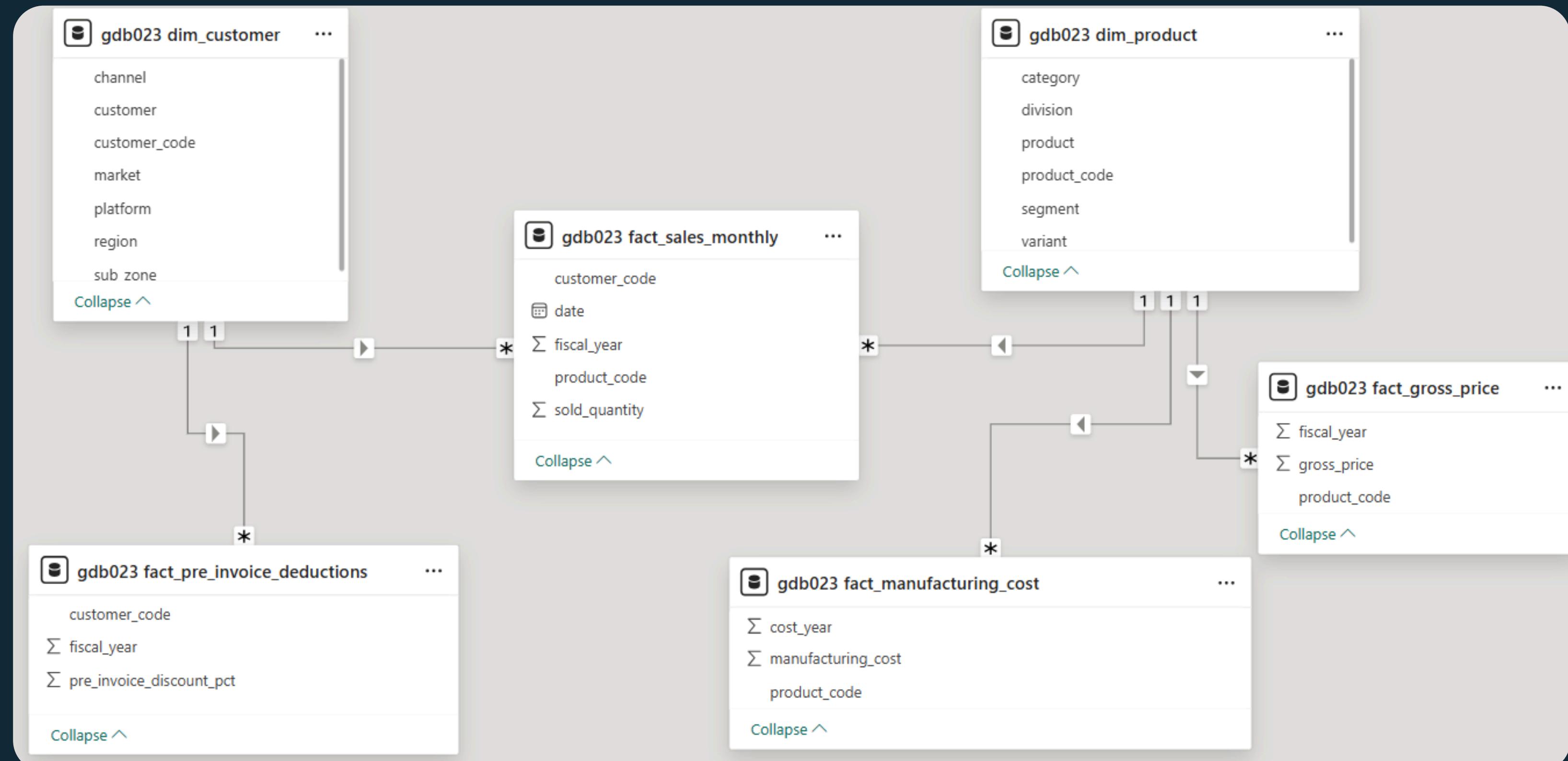
Dataset Overview

The analysis uses data from the AtliQ Hardware Database (gdb023) for FY2020 and FY2021, with a ***fiscal year from September to August***, covering six tables on sales, products, and customers.

Tables Used:

1. dim_customer – Customer-related data
2. dim_product – Product details like (product, division, segment, category)
3. fact_gross_price – Gross price information for each product
4. fact_manufacturing_cost – Cost incurred in each product manufacturing
5. fact_pre_invoice_deductions – Pre-invoice discount deductions information for each product
6. fact_sales_monthly – Monthly product sales data

Data Model – AtliQ Hardware Database



- The data model connects dimension tables with fact tables using primary and foreign key relationships.

SQL Queries & Business Insights

Request 1: Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

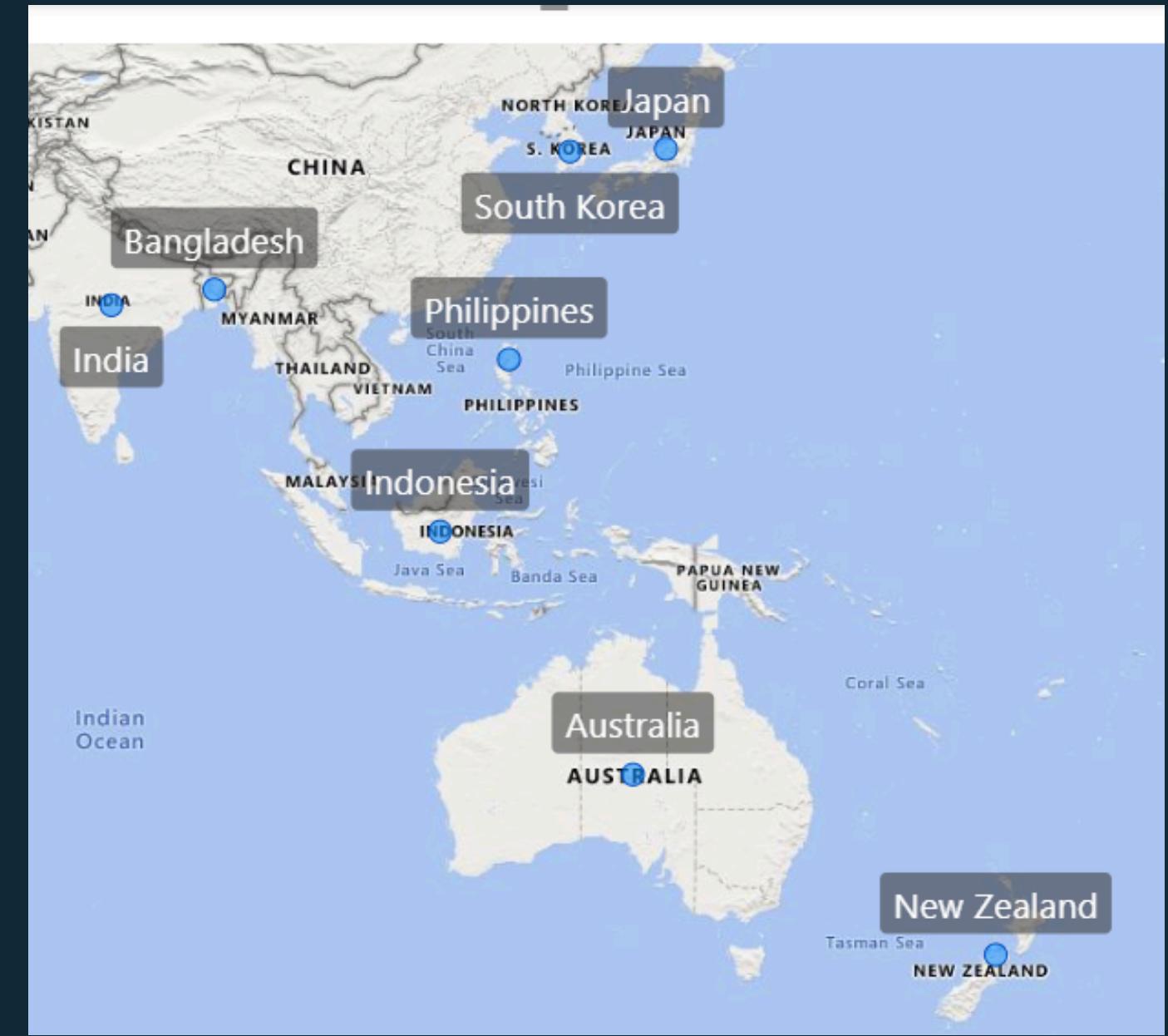
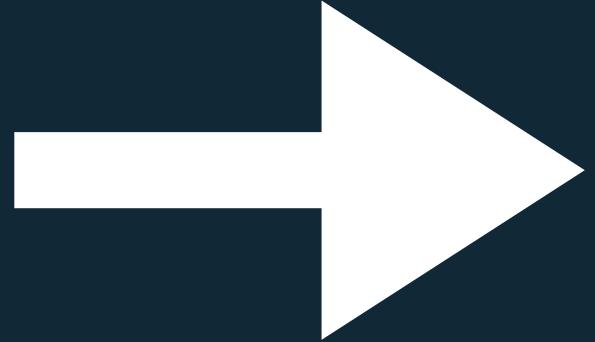
SQL Query:

```
SELECT DISTINCT market  
FROM dim_customer  
WHERE customer = 'Atliq Exclusive'  
AND region = 'APAC';
```

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Conversion of Output to Visual

market
India
Indonesia
Japan
Philippines
South Korea
Australia
Newzealand
Bangladesh



Insights:

Atliq Exclusive operates in 8 out of 16 global markets in the APAC region, showing its strongest presence there, suggesting Atliq Hardware should focus on this customer to strengthen its market position.

Request 2: What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields: unique_products_2020, unique_products_2021 and percentage_chg

SQL Query:

```
WITH products_2020 AS(
  SELECT COUNT(DISTINCT product_code) AS unique_products_2020
  FROM fact_sales_monthly
  WHERE fiscal_year = 2020),
products_2021 AS(
  SELECT COUNT(DISTINCT product_code) AS unique_products_2021
  FROM fact_sales_monthly
  WHERE fiscal_year = 2021)
SELECT unique_products_2020, unique_products_2021,
ROUND((unique_products_2021-unique_products_2020)*100/unique_products_2020,2)
AS percentage_chg
FROM products_2020
CROSS JOIN products_2021;
```

Conversion of Output to Visual



Insights:

A significant *36.33% increase* in new products from 2020 to 2021, indicating that AtliQ Hardware is actively expanding its product portfolio to meet evolving customer needs, strengthen market presence, and stay competitive in the industry.

Request 3: Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields: segment, product_count

SQL Query:

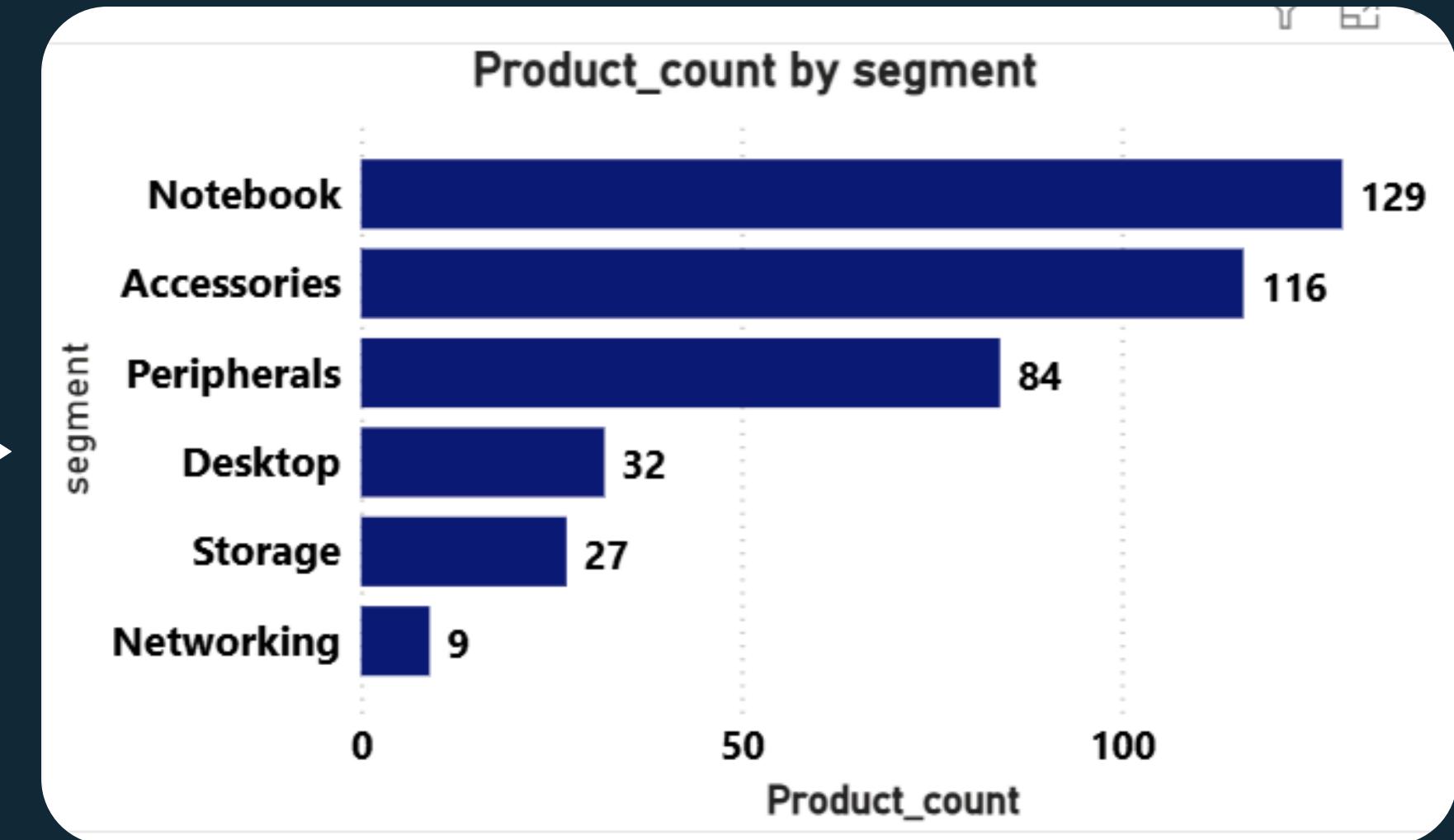
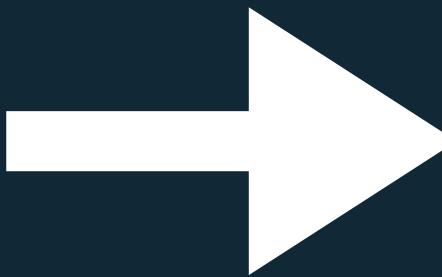
```
SELECT segment, COUNT(product_code) AS product_count  
FROM dim_product  
GROUP BY segment  
ORDER BY product_count DESC;
```

segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9

- Not used DISTINCT keyword for product_code because product_code is primary key here in dim_product table

Conversion of Output to Visual

segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9



Insights:

Notebook and Accessories have the most products, showing AtliQ focuses on personal computing and related items. Networking and Storage have the fewest products, indicating potential to grow in these segments.

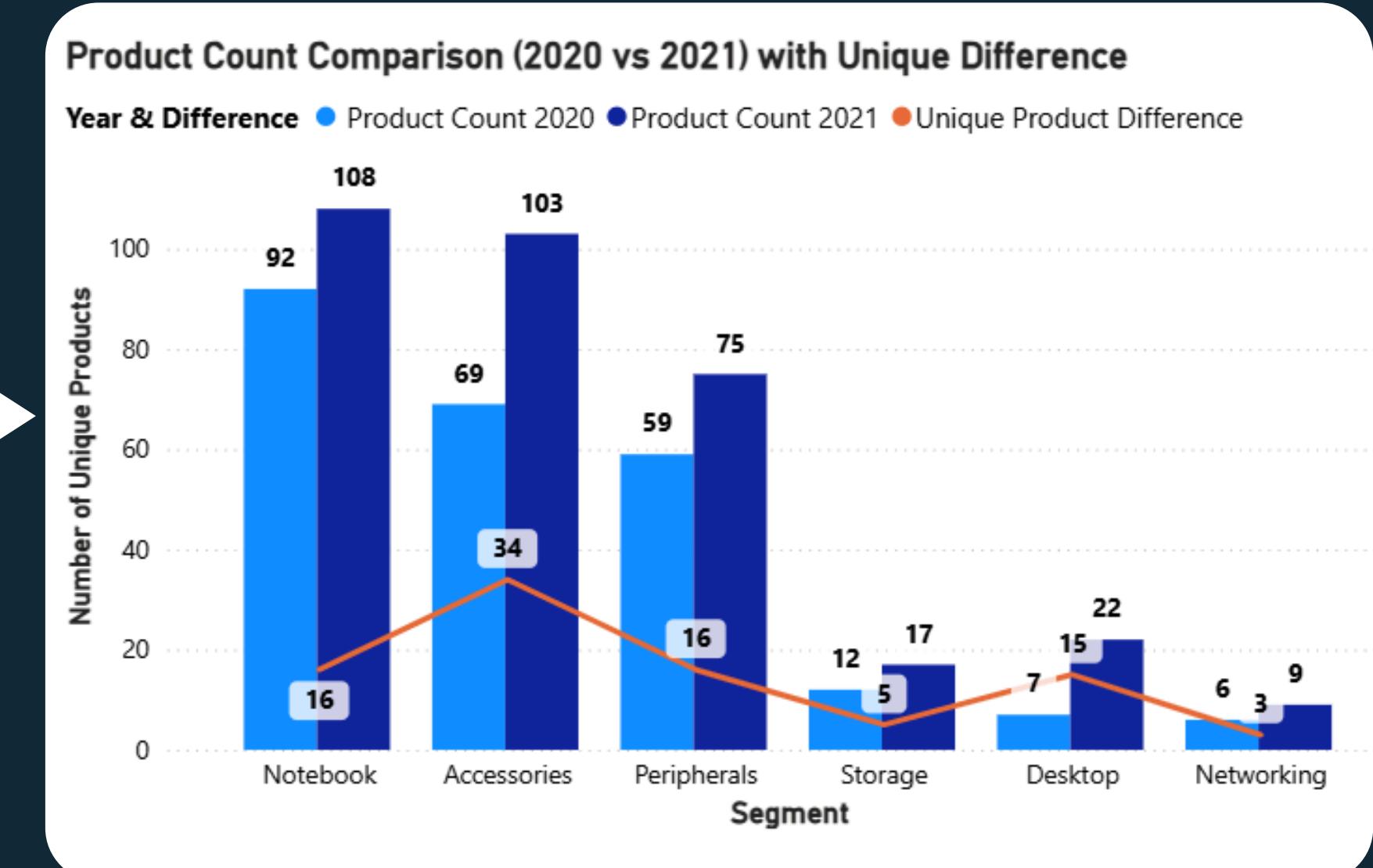
Request 4: Which segment had the most increase in unique products in 2021 vs 2020? The final output contains these fields:segment, product_count_2020, product_count_2021 and difference

SQL Query:

```
WITH unique_products_2020 AS(
  SELECT p.segment, COUNT(DISTINCT p.product_code) AS product_count_2020
  FROM dim_product p
  JOIN fact_sales_monthly s
  ON p.product_code = s.product_code
  WHERE s.fiscal_year =2020
  GROUP BY segment),
unique_products_2021 AS(
  SELECT p.segment, COUNT(DISTINCT p.product_code) AS product_count_2021
  FROM dim_product p
  JOIN fact_sales_monthly s
  ON p.product_code = s.product_code
  WHERE s.fiscal_year =2021
  GROUP BY segment)
SELECT U21.segment, U20.product_count_2020, U21.product_count_2021,
(U21.product_count_2021 - U20.product_count_2020) AS unique_product_diff_21_20
FROM unique_products_2020 U20
JOIN unique_products_2021 U21
ON U20.segment = U21.segment
ORDER BY unique_product_diff_21_20 DESC;
```

Conversion of Output to Visual

segment	product_count_2020	product_count_2021	unique_product_diff_21_20
Accessories	69	103	34
Notebook	92	108	16
Peripherals	59	75	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3



Insights: Accessories added the highest number of products in 2021 (+34), while Desktop saw the fastest growth rate (~214%).

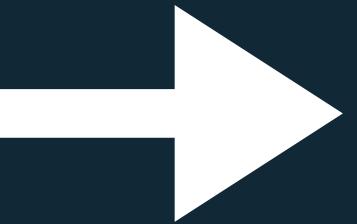
Request 5: Get the products that have the highest and lowest manufacturing costs. The final output should contain these fields:product_code, product and manufacturing_cost.

SQL Query :

```
SELECT
    p.product_code,
    p.product,
    c.manufacturing_cost AS max_min_manufacturing_cost
FROM dim_product p
JOIN fact_manufacturing_cost c
ON p.product_code = c.product_code
WHERE c.manufacturing_cost IN (
    (SELECT MAX(manufacturing_cost) FROM fact_manufacturing_cost),
    (SELECT MIN(manufacturing_cost) FROM fact_manufacturing_cost)
)
ORDER BY max_min_manufacturing_cost DESC;
```

Conversion of Output to Visual

product_code	product	max_min_manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	240.5364
A2118150101	AQ Master wired x1 Ms	0.8920



Insights: Manufacturing costs range from \$0.89 (AQ Master wired x1 Ms) to \$240.54 (AQ HOME Allin1 Gen 2), highlighting significant cost variation across products and opportunities for pricing and cost optimization.

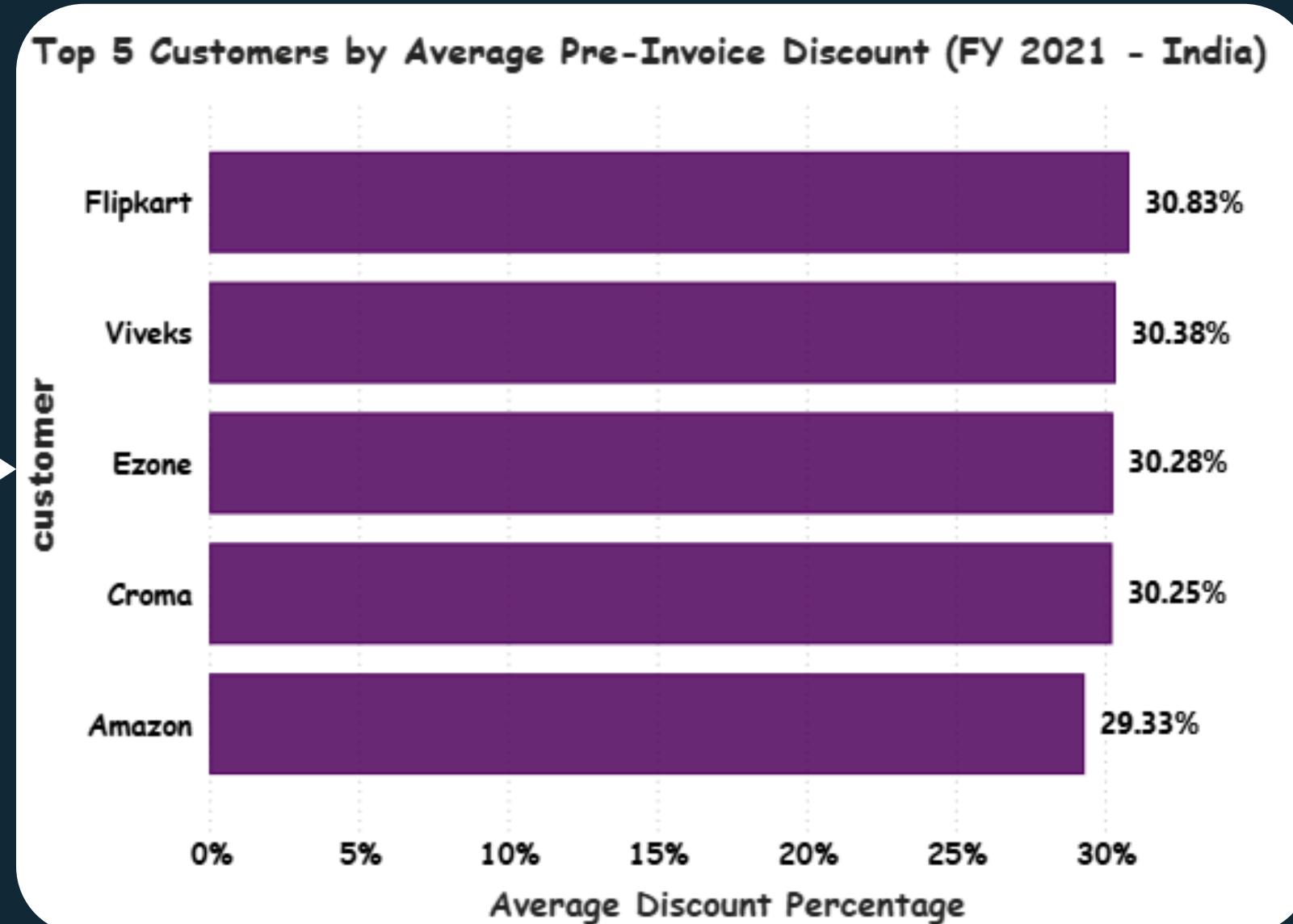
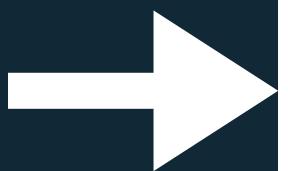
Request 6: Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market. The final output contains these fields, customer_code, customer, average_discount_percentage.

SQL Query:

```
SELECT
    c.customer_code,
    c.customer,
    ROUND(AVG(pid.pre_invoice_discount_pct),4) AS average_discount_percentage
FROM dim_customer c
JOIN fact_pre_invoice_deductions pid
ON c.customer_code = pid.customer_code
WHERE pid.fiscal_year=2021 AND c.market= 'India'
GROUP BY c.customer_code, c.customer
ORDER BY average_discount_percentage DESC
LIMIT 5;
```

Conversion of Output to Visual

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933



Insights: Flipkart received the highest average pre-invoice discount (30.83%) in FY 2021 among Indian customers, followed by Viveks, Ezone, Croma and Amazon. This indicates these top retail partners likely place larger or more frequent bulk orders, qualifying them for higher discount percentages.

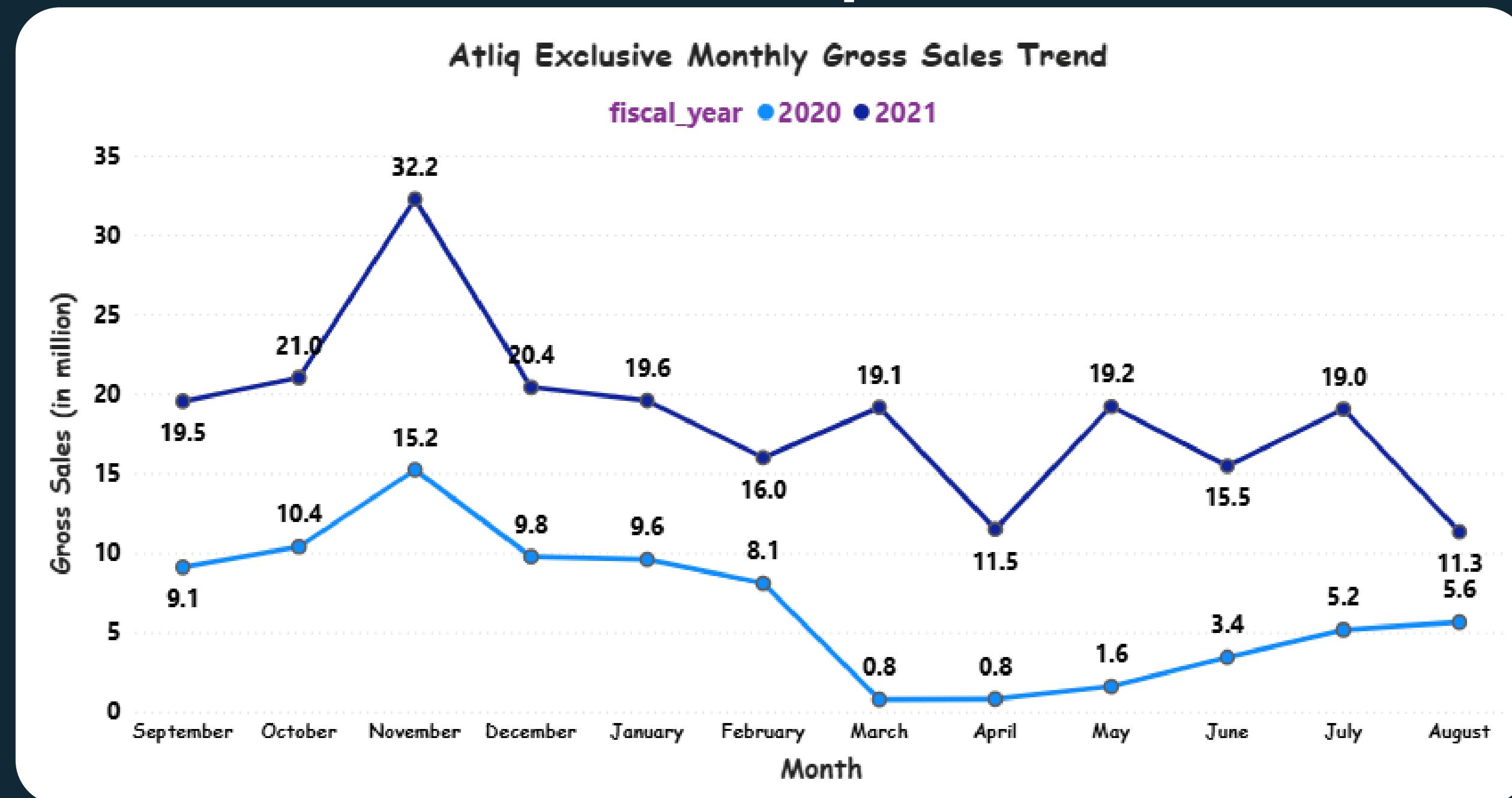
Request 7: Get the complete report of the Gross sales amount for the customer “Atliq Exclusive” for each month. This analysis helps to get an idea of low and high-performing months and take strategic decisions. The final report contains these columns: Month, Year, Gross sales Amount

SQL Query:

```
SELECT  
    MONTHNAME(s.date) AS Month,  
    s.fiscal_year,  
    ROUND(SUM(s.sold_quantity * gp.gross_price),2) AS Gross_sales_Amount  
FROM fact_sales_monthly s  
JOIN fact_gross_price gp  
    ON s.product_code = gp.product_code  
JOIN dim_customer c  
    ON c.customer_code = s.customer_code  
WHERE c.customer = 'Atliq Exclusive'  
GROUP BY s.fiscal_year, MONTH(s.date), MONTHNAME(s.date);
```

Month	fiscal_year	Gross_sales_Amount
September	2020	9092670.34
October	2020	10378637.60
November	2020	15231894.97
December	2020	9755795.06
January	2020	9584951.94
February	2020	8083995.55
March	2020	766976.45
April	2020	800071.95
May	2020	1586964.48
June	2020	3429736.57
July	2020	5151815.40
August	2020	5638281.83
September	2021	19530271.30
October	2021	21016218.21
November	2021	32247289.79
December	2021	20409063.18
January	2021	19570701.71
February	2021	15986603.89
March	2021	19149624.92
April	2021	11483530.30
May	2021	19204309.41
June	2021	15457579.66
July	2021	19044968.82
August	2021	11324548.34

Conversion of Output to Visual



Insights: Gross sales rose steadily from FY2020 to FY2021, showing strong year-on-year growth. November remained the peak month in both years, driven by festive demand. Sales dipped in March–April 2020 due to the COVID-19 lockdown but recovered consistently afterward.

Request 8: In which quarter of 2020, got the maximum total_sold_quantity? The final output contains these fields sorted by the total_sold_quantity, Columns: Quarter, total_sold_quantity

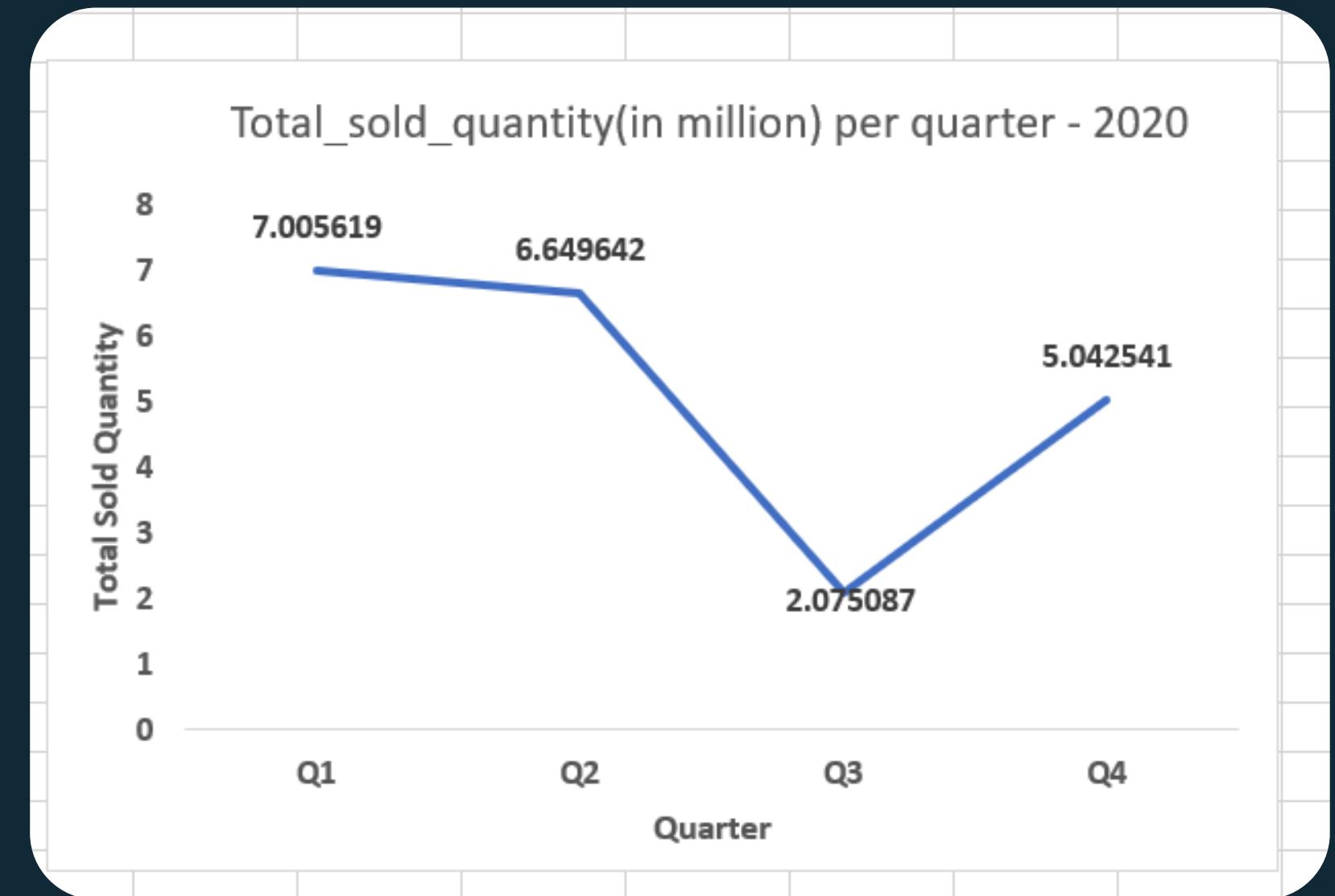
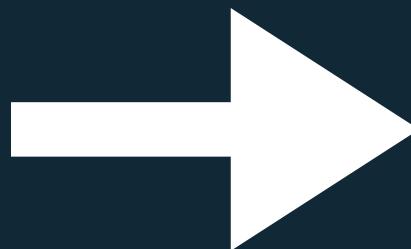
SQL Query:

```
WITH quantity_sold AS (
  SELECT
    date,
    CASE WHEN MONTH(date) IN (9,10,11) THEN 'Q1'
          WHEN MONTH(date) IN (12,1,2) THEN 'Q2'
          WHEN MONTH(date) IN (3,4,5) THEN 'Q3'
          WHEN MONTH(date) IN (6,7,8) THEN 'Q4'
        END AS Quarter,
    sold_quantity
  FROM fact_sales_monthly
  WHERE fiscal_year = 2020)
  SELECT Quarter, SUM(sold_quantity) AS total_sold_quantity
  FROM quantity_sold
  GROUP BY Quarter
  ORDER BY total_sold_quantity DESC;
```

	Quarter	total_sold_quantity
Q1	7005619	
Q2	6649642	
Q4	5042541	
Q3	2075087	

Conversion of Output to Visual

Quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087



Insights: Quarter 1 (Sep–Nov) of Atliq Hardware recorded the highest sold quantity, followed by Quarter 2 and Quarter 4. This indicates strong demand during Q1 due to festive season promotions and higher discounts. Quarter 3 (Mar–May) had the lowest sales, likely due to COVID-19 lockdowns affecting customer activity.

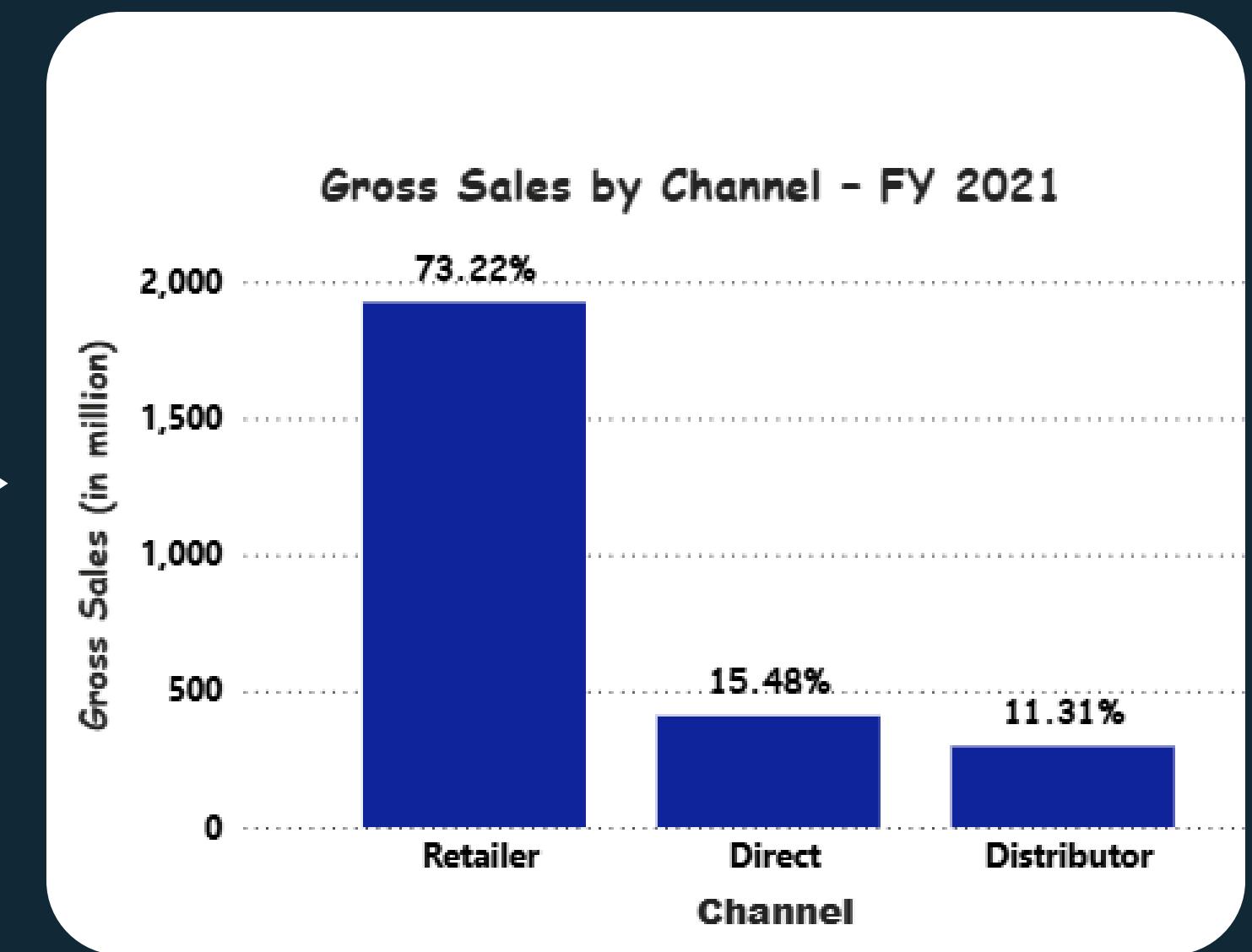
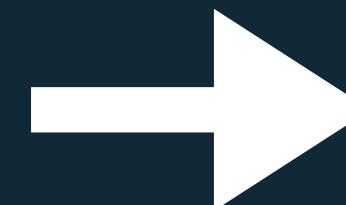
Request 9: Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields: channel, gross_sales_mln and percentage

SQL Query:

```
• WITH channelwise_gross_sales AS (
  SELECT
    c.channel,
    ROUND(SUM(s.sold_quantity*gp.gross_price)/1000000,2) AS gross_sales_mln
  FROM fact_sales_monthly s
  JOIN fact_gross_price gp
  ON s.product_code = gp.product_code
  JOIN dim_customer c
  ON s.customer_code = c.customer_code
  WHERE s.fiscal_year = 2021
  GROUP BY c.channel)
  SELECT
    channel, gross_sales_mln,
    ROUND(gross_sales_mln*100/SUM(gross_sales_mln) OVER(),2) AS percentage
  FROM channelwise_gross_sales
  ORDER BY percentage DESC;
```

Conversion of Output to Visual

channel	gross_sales_mln	percentage
Retailer	1924.17	73.22
Direct	406.69	15.48
Distributor	297.18	11.31



Insights: The Retailer channel contributed the highest gross sales (\$1924.17M, 73.22%), followed by Direct and Distributor channels. Retail remains the dominant revenue driver for Atliq Hardware.

Request 10: Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021? The final output contains these fields, division, product_code, product, total_sold_quantity, rank_order

SQL Query:

```
4 • ① WITH product_sales_2021 AS(
5   SELECT p.division, p.product_code, p.product,
6     SUM(s.sold_quantity) AS total_sold_quantity
7   FROM dim_product p
8   JOIN fact_sales_monthly s
9   ON p.product_code = s.product_code
10  WHERE s.fiscal_year = 2021
11  GROUP BY p.division, p.product_code, p.product),
12 ② ranked_products_by_division AS(
13    SELECT division, product_code, product, total_sold_quantity,
14    dense_rank() OVER(partition by division ORDER BY total_sold_quantity DESC) AS rank_order
15    FROM product_sales_2021)
16
17  SELECT division, product_code, product, total_sold_quantity, rank_order
18  FROM ranked_products_by_division
19  WHERE rank_order<=3;
```

Conversion of Output to Visual

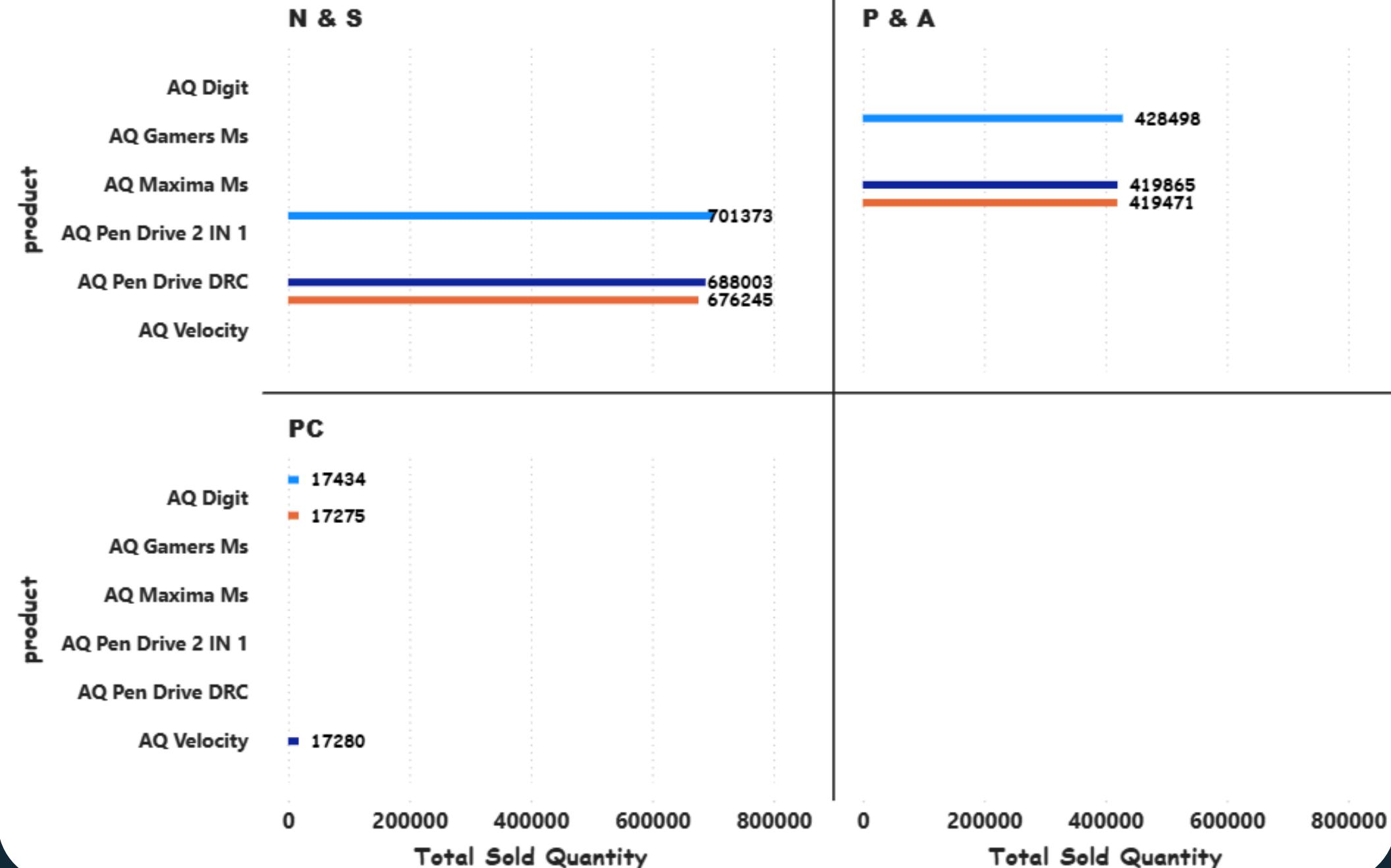


division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
	A6818160202	AQ Pen Drive DRC	688003	2
	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima Ms	419471	3
PC	A4218110202	AQ Digit	17434	1
PC	A4319110306	AQ Velocity	17280	2
PC	A4218110208	AQ Digit	17275	3

Insight: The N & S division leads in total sold quantity, with “AQ Pen Drive 2 IN 1” as the top-selling product due to high demand and frequent purchases. The P&A and PC divisions follow, with their top 3 products showing lower sales, reflecting a clear division-wise sales hierarchy.

Top 3 Products by Total Sold Quantity in Each Division - FY 2021

Rank Order ● 1 ● 2 ● 3



Conclusion

- AtliQ Hardwares demonstrates strong overall performance with a growing market presence, an expanding product portfolio, and clear seasonal sales peaks. The company has strengthened its APAC footprint through Atliq Exclusive and significantly increased its product range in 2021, particularly in the Accessories segment. Retailers remain the dominant revenue channel, while high-volume customers, such as Flipkart, Viveks, Croma, Ezone, and Amazon, continue to drive strong sales and receive higher discount benefits. The wide variation in manufacturing costs highlights opportunities for better pricing and cost optimization. Sales trends indicate that November is a recurring peak month and Q1 (September–November) is the best-performing quarter. Overall, AtliQ's growth is fueled by strong customer partnerships, expanding products, and stable consumer demand.

Recommendations

- Prioritize segments with strong product expansion, such as Accessories, to align with growing market demand.
- Optimize manufacturing costs for high-cost products to improve overall margins.
- Strengthen the Retailer channel since it drives the highest revenue and offers strong growth potential.
- Optimize discounts for major customers to maintain strong sales while safeguarding profitability.
- Boost supply and marketing during peak periods, especially November and Q1 (Sep-Nov), to maximize seasonal demand.

Thank You!

Your time and attention are truly appreciated.