ATLIQ Hardware

AD-HOC Insights

CONSUMER GOODS

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Problem Statement

- Atliq Hardware (imaginary company), a top player in the computer hardware industry both in India and internationally, has hit a roadblock.
- The management has noticed that they're not getting the insights they need to make quick and smart decisions based on data.
- This lack of timely information is holding them back from responding effectively to market demands and competition.
- To tackle this challenge, Atliq Hardware has decided to launch an SQL challenge aimed at digging into their sales, product, and customer data.
- The goal? To uncover valuable insights that will help management make informed decisions, adapt their strategies, and ultimately drive the business forward.

Objectives

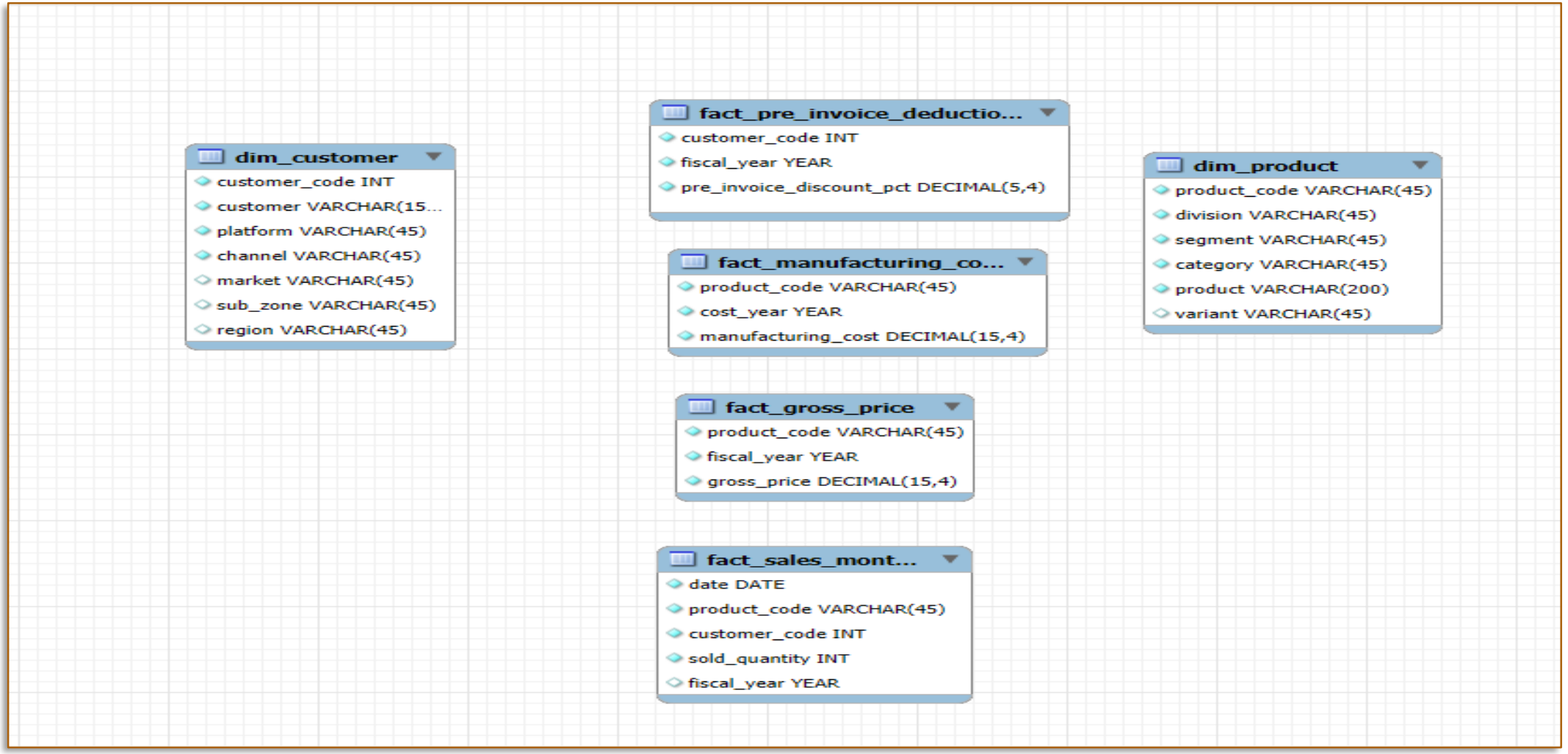
1. **Address Specific Requests:** Fulfill 10 specific data requests using SQL for extraction and analysis.

2. **Utilize Power BI:** Leverage Power BI for effective data visualization.

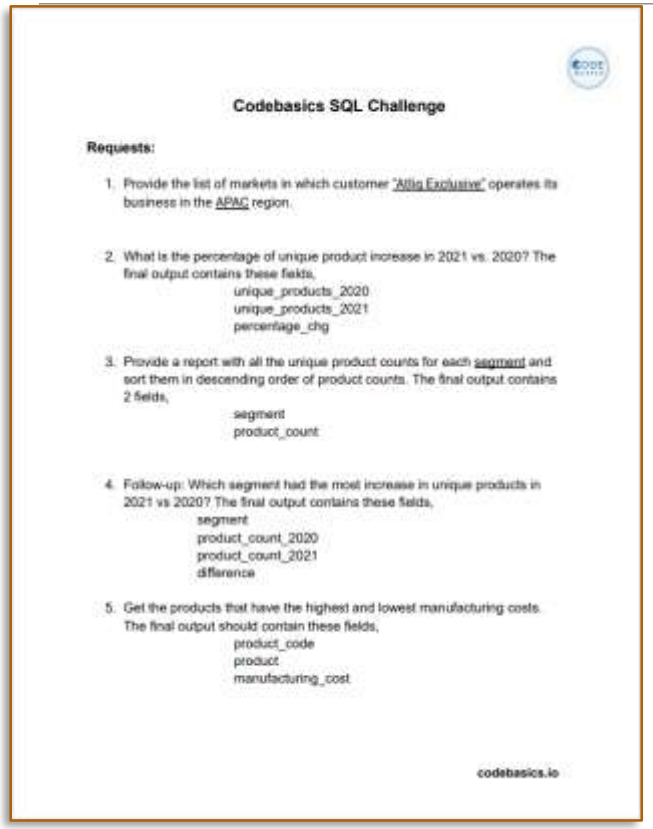
3. **Generate Actionable Insights:** Produce insights that can directly inform and enhance decision-making.

4. **Support Strategic Goals:** Aid Atliq Hardware in achieving its strategic objectives through informed data analysis.
5. **Enhance Operational Efficiency**: Contribute to the overall growth and operational efficiency of the company.

Database Overview



Requests and Analytical Tools



Codebasics SQL Challenge

Requests:

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

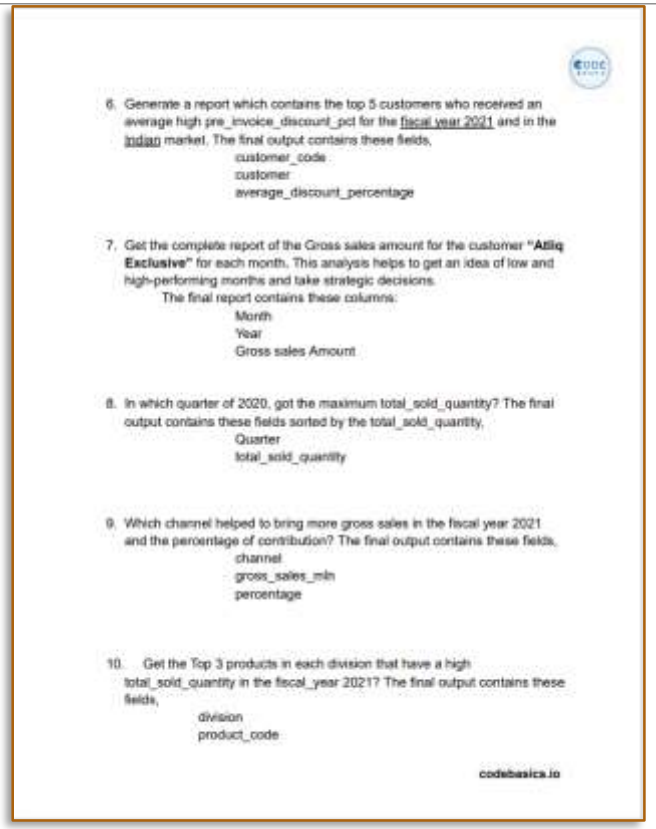
2. What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields,
   - unique_products_2020
   - unique_products_2021
   - percentage_chg

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

4. Follow-up: 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
   - difference

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

codebasics.io



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

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

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

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
   - percentage

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

codebasics.io

Tools Used:

MySQL

Power BI

AtliQ's Market

AD-HOC requests, insights & query results

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

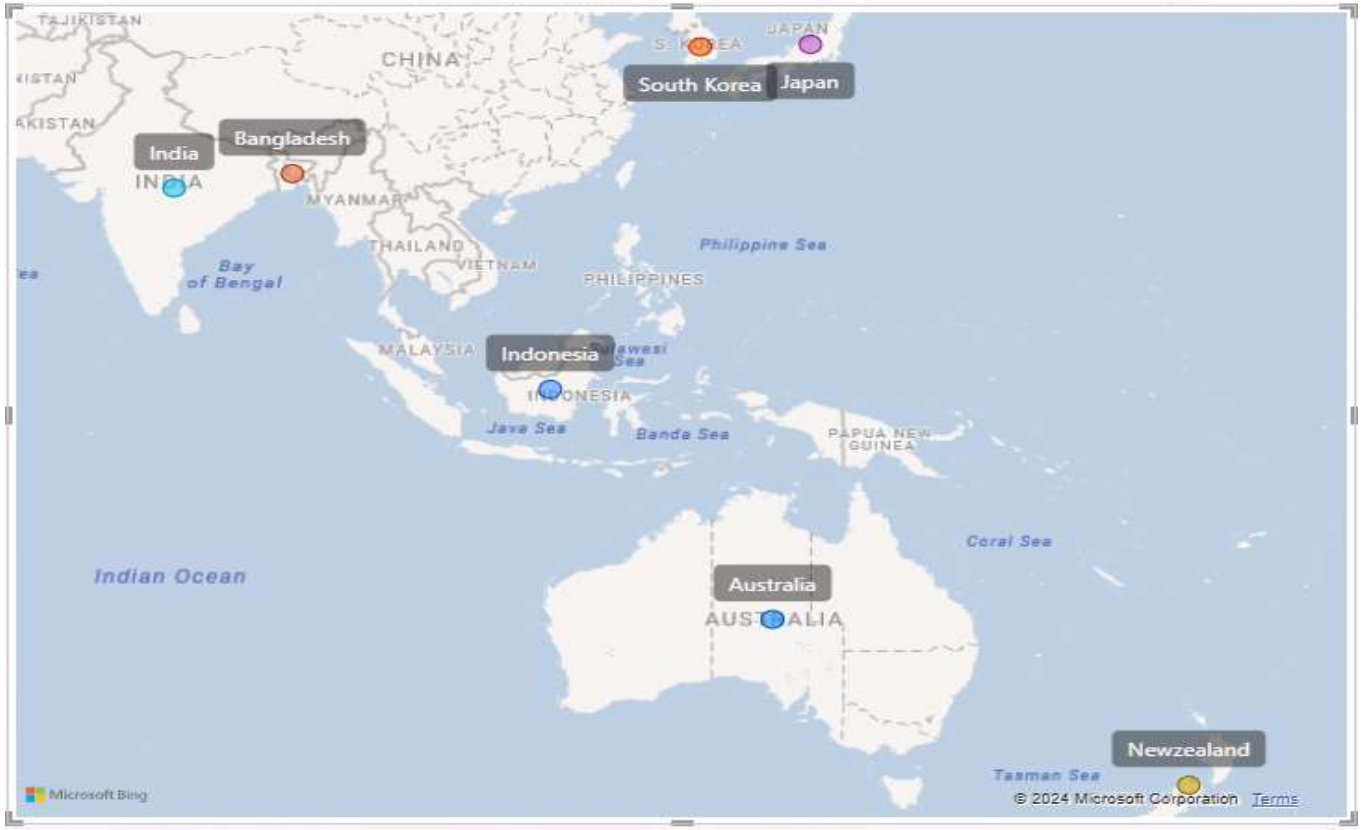
QUERY

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

OUTPUT

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh
India

Insights



Our Atliq Exclusive store is now available in 8 important markets across the APAC region.

- 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, percentage_chg

Query

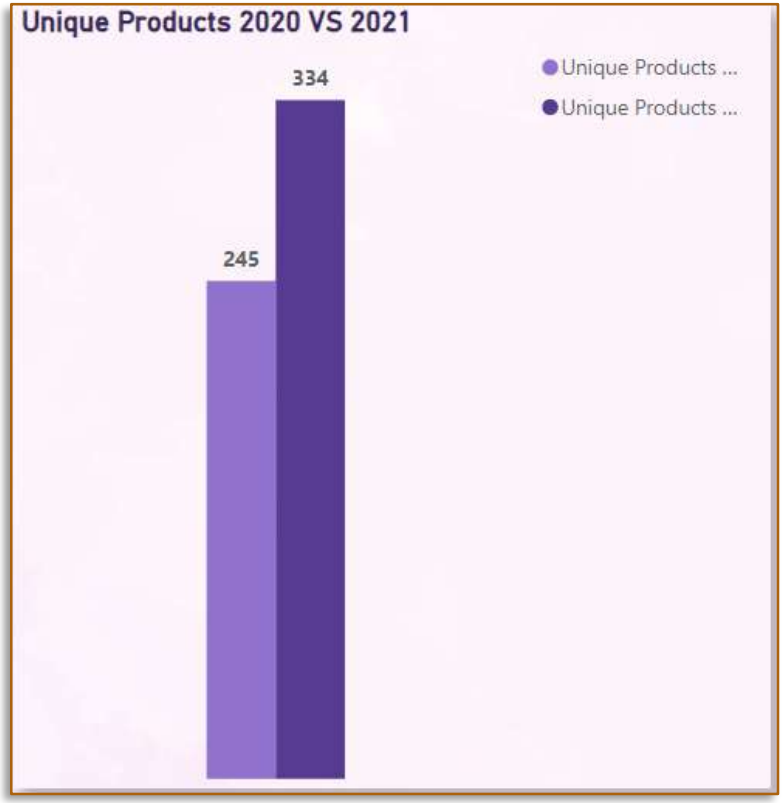
```
WITH CTE AS (
    SELECT COUNT(DISTINCT product_code) AS unique_products_2020 FROM fact_sales_monthly
    WHERE fiscal_year = 2020
),
CTE2 AS (
    SELECT COUNT(DISTINCT product_code) AS unique_products_2021 FROM fact_sales_monthly
    WHERE fiscal_year = 2021
)

SELECT CTE.unique_products_2020, CTE2.unique_products_2021,
    ROUND(
        ((CTE2.unique_products_2021 - CTE.unique_products_2020) * 100.0 / NULLIF(CTE.unique_products_2020, 0)), 2) AS percentage_chg
FROM
    CTE
CROSS JOIN
    CTE2;
```

Output

	unique_products_2020	unique_products_2021	percentage_chg
▶	245	334	36.33

Percentage Chg
36.33%



Insights

The number of unique products went up from **245** in 2020 to **334** in 2021, a **36.33%** increase. This growth shows how the company is focused on new ideas and meeting different customer needs.

- 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

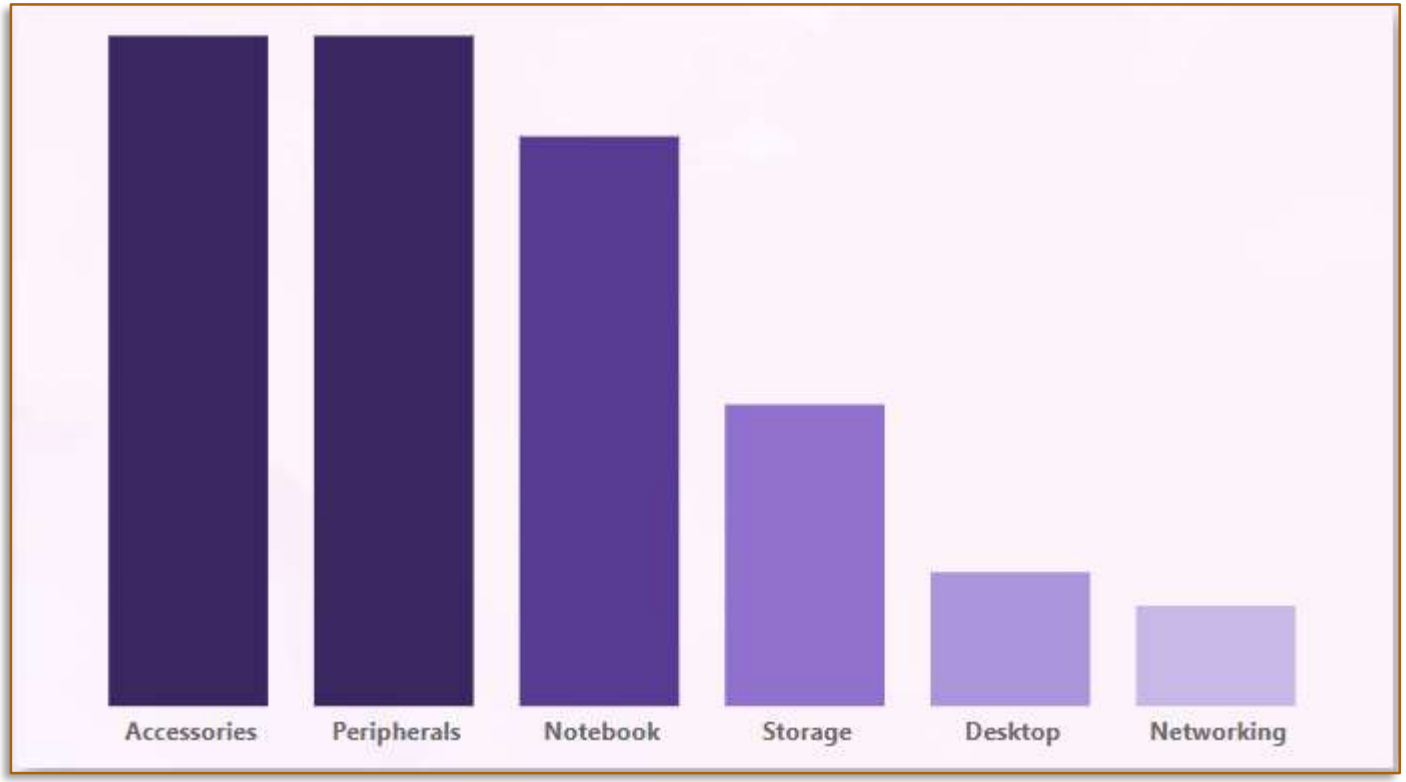
QUERY

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

OUTPUT

segment	product_count
Accessories	20
Peripherals	20
Notebook	17
Storage	9
Desktop	4
Networking	3

Insights



- AtliQ's main products are Notebooks, Accessories, and Peripherals, making up **82.87%** of the lineup.
- The rest, **17.13%**, includes Desktops, Storage, and Networking. To grow, AtliQ should focus more on the bigger category and create products that match what’s popular in the market right now.

- Request 4: Follow-up: 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, difference

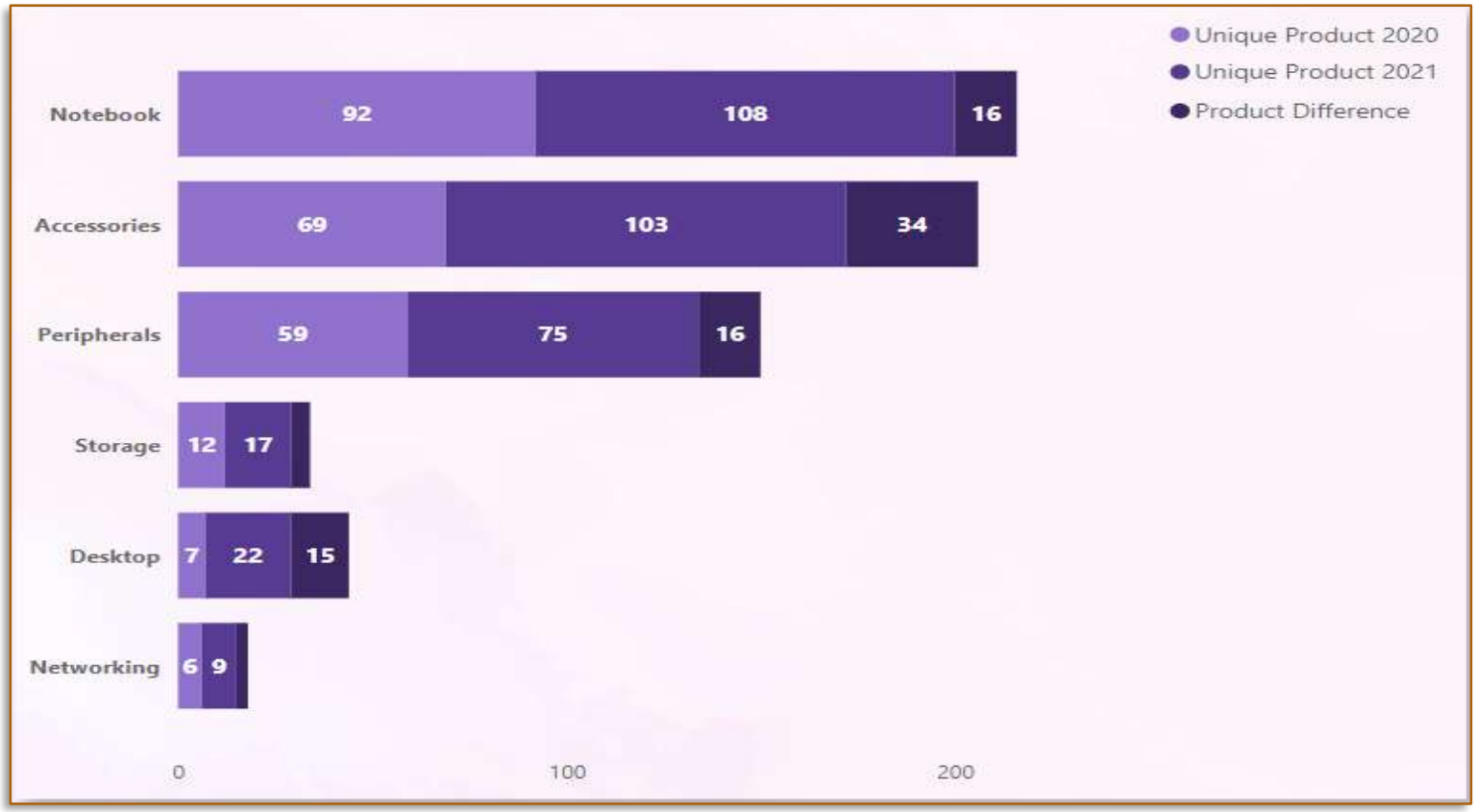
QUERY

```
WITH product_data_2020 AS (SELECT dp.segment, COUNT(DISTINCT dp.product_code) AS count_2020 FROM dim_product dp
                           INNER JOIN fact_sales_monthly fsm
                           ON dp.product_code = fsm.product_code
                           WHERE fsm.fiscal_year = 2020
                           GROUP BY dp.segment),
product_data_2021 AS (SELECT dp.segment, COUNT(DISTINCT dp.product_code) AS count_2021 FROM dim_product dp
                      INNER JOIN
                      fact_sales_monthly fsm
                      ON dp.product_code = fsm.product_code
                      WHERE
                      fsm.fiscal_year = 2021
                      GROUP BY
                      dp.segment)

SELECT pd_2020.segment, pd_2020.count_2020, pd_2021.count_2021, (pd_2021.count_2021 - pd_2020.count_2020) AS product_difference
FROM product_data_2020 pd_2020
INNER JOIN product_data_2021 pd_2021
ON pd_2020.segment = pd_2021.segment;
```

OUTPUT

segment	count_2020	count_2021	product_difference
Accessories	69	103	34
Desktop	7	22	15
Networking	6	9	3
Notebook	92	108	16
Peripherals	59	75	16
Storage	12	17	5



Insights

- From 2020 to 2021, every division has expanded its range of unique products, showing growth and variety in all categories. Accessories saw the biggest jump, adding **34** new products during this period.

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

QUERY

```
(SELECT dp.product_code, dp.product, fmc.manufacturing_cost FROM dim_product dp
    JOIN
    fact_manufacturing_cost fmc
    ON dp.product_code = fmc.product_code
    ORDER BY
    fmc.manufacturing_cost DESC
    LIMIT 1)

UNION ALL

 (SELECT
        dp.product_code,
        dp.product,
        fmc.manufacturing_cost
    FROM
    dim_product dp
    JOIN
    fact_manufacturing_cost fmc
    ON dp.product_code = fmc.product_code
    ORDER BY
    fmc.manufacturing_cost ASC
    LIMIT 1
);
```

OUTPUT

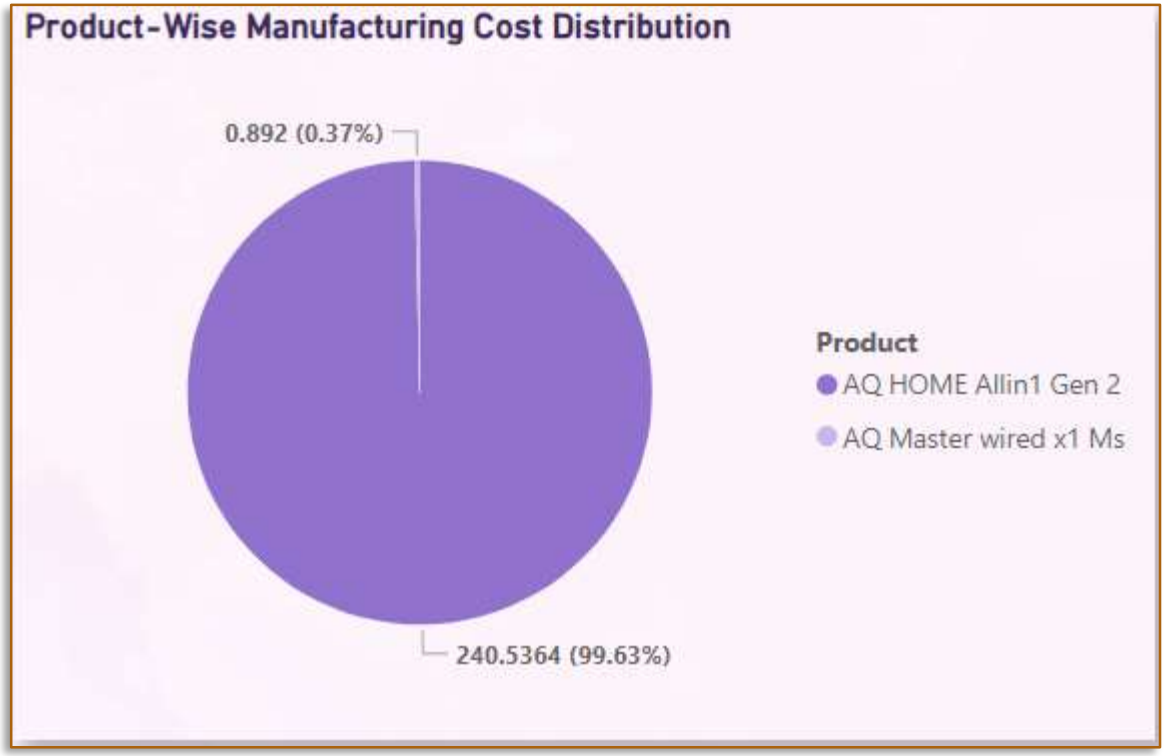
	product_code	product	manufacturing_cost
▶	A6120110206	AQ HOME Allin1 Gen 2	240.5364
	A2118150101	AQ Master wired x1 Ms	0.8920

Highest
Manufacturing Cost

AQ Home Allin1 Gen2

Lowest
Manufacturing Cost

AQ Master wired x1 Ms



Insights

- The AQ Home Allin1 Gen2 (Plus3 variant) personal desktop has the highest manufacturing cost, while the AQ Master wired x1 Ms (Standard1 variant) mouse comes in with the lowest manufacturing cost.

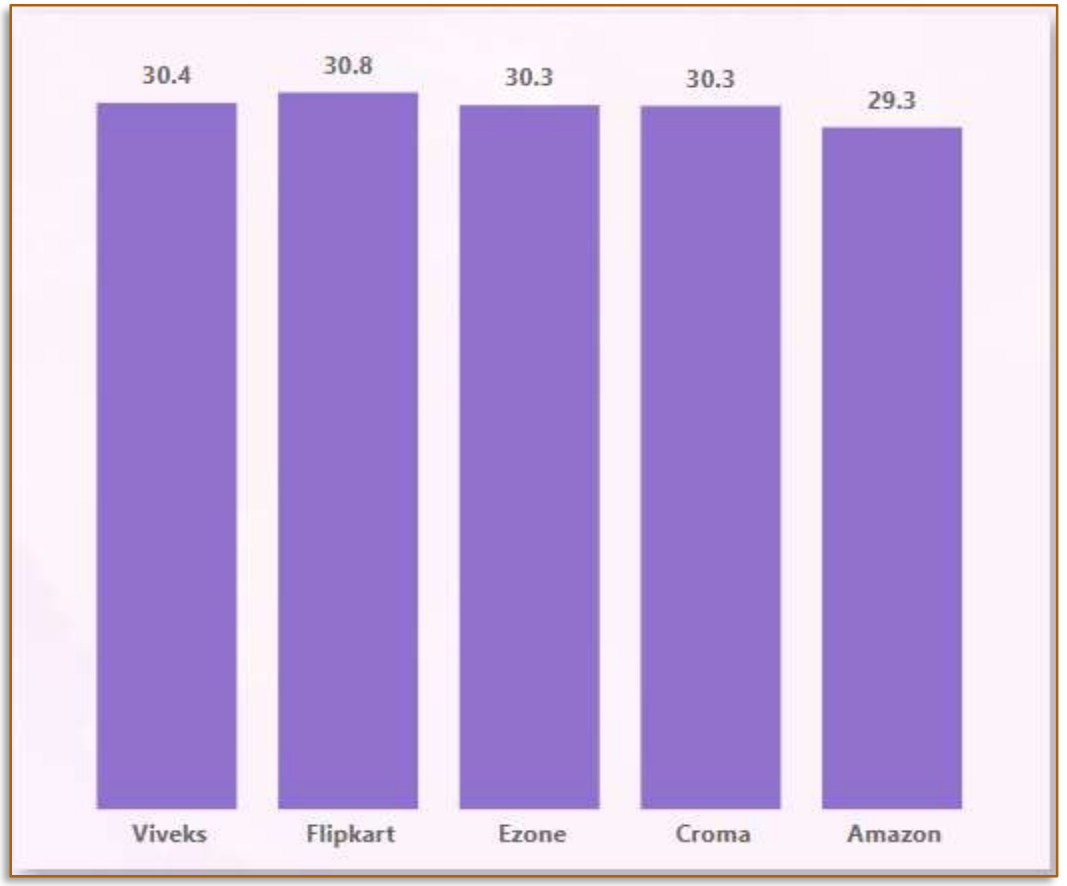
- Request 6: Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market. The final output contains these fields, customer_code, customer, average_discount_percentage

QUERY

```
SELECT
    dc.customer_code, dc.customer, ROUND(AVG(pre_invoice_discount_pct)*100, 2) AS average_discount_percentage
FROM dim_customer dc
LEFT JOIN fact_pre_invoice_deductions fp
ON dc.customer_code = fp.customer_code
WHERE
    fp.fiscal_year = 2021 and dc.market = 'India'
GROUP BY
    dc.customer, dc.customer_code
ORDER BY
    average_discount_percentage DESC LIMIT 5;
```

OUTPUT

customer_code	customer	average_discount_percentage
90002009	Flipkart	30.83
90002006	Viveks	30.38
90002003	Ezone	30.28
90002002	Croma	30.25
90002016	Amazon	29.33



Insights

- Flipkart gets the biggest discount in the Indian market, with a pre-invoice discount of **30.63%.**
- Amazon, on the other hand, received the lowest average discount at **29.33%.**

- 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

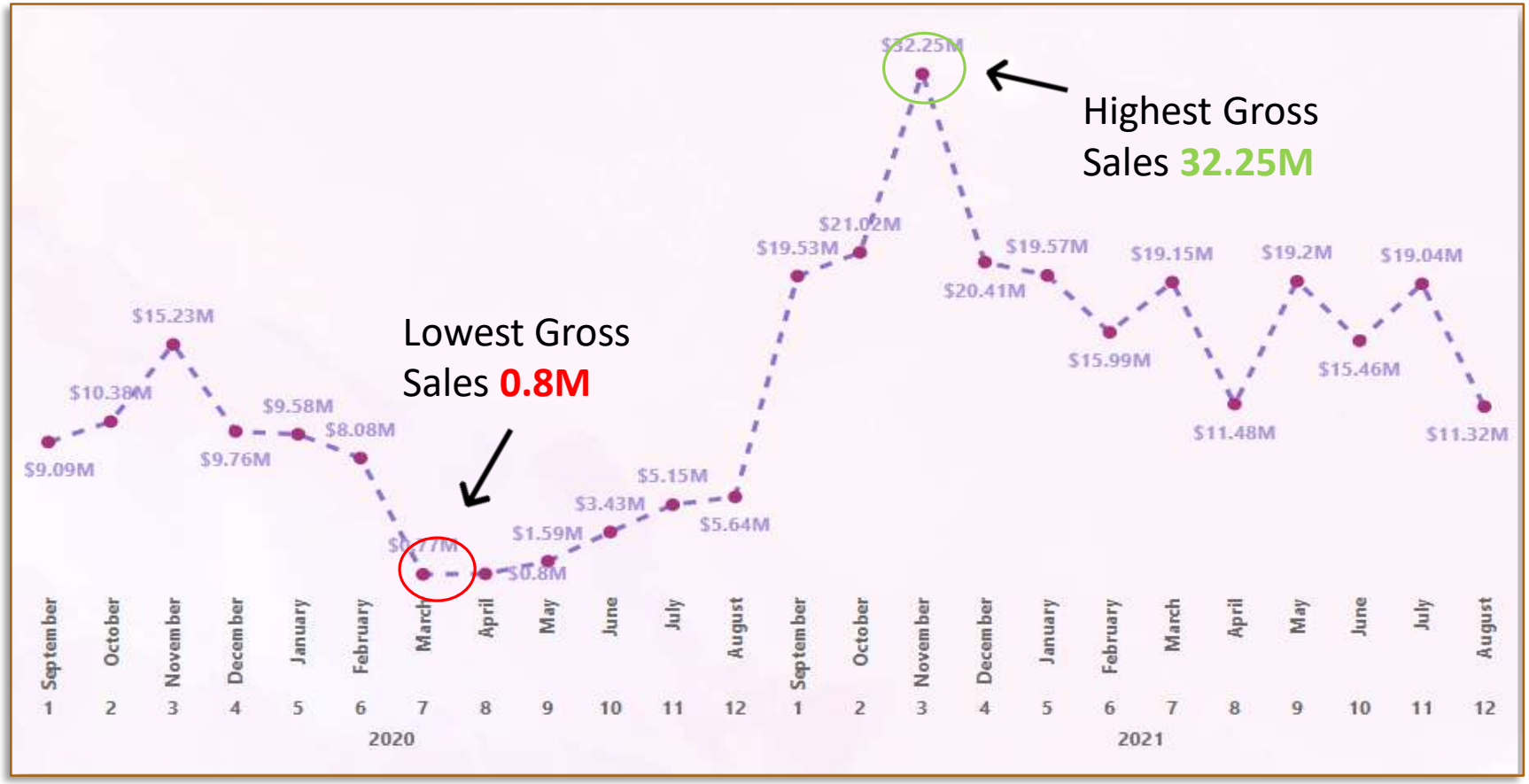
QUERY

```
SELECT
    MONTHNAME(fsm.date) AS month_label,
    fsm.fiscal_year AS fiscal_year,
    CONCAT(FORMAT(SUM(fsm.sold_quantity * fgp.gross_price) / 1000000, 2), 'M') AS gross_sales
FROM
    fact_sales_monthly fsm
JOIN
    dim_customer c ON fsm.customer_code = c.customer_code
JOIN
    fact_gross_price fgp ON fsm.product_code = fgp.product_code
WHERE
    c.customer = 'AtliQ Exclusive'
GROUP BY
    month_label, fiscal_year
ORDER BY
    fiscal_year;
```

OUTPUT

month_label	fiscal_year	gross_sales
September	2020	9.09M
October	2020	10.38M
November	2020	15.23M
December	2020	9.76M
January	2020	9.58M
February	2020	8.08M
March	2020	0.77M
April	2020	0.80M
May	2020	1.59M
June	2020	3.43M
July	2020	5.15M
August	2020	5.64M
September	2021	19.53M
October	2021	21.02M
November	2021	32.25M
December	2021	20.41M
January	2021	19.57M
February	2021	15.99M
March	2021	19.15M
April	2021	11.48M
May	2021	19.20M
June	2021	15.46M
July	2021	19.04M
August	2021	11.32M

Insights



- The drop in sales from **March to August** was mainly due to the effects of COVID-19.
- However, it's great to see that sales have been gradually increasing since then and are performing well compared to 2020.

- 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, Quarter total_sold_quantity

QUERY

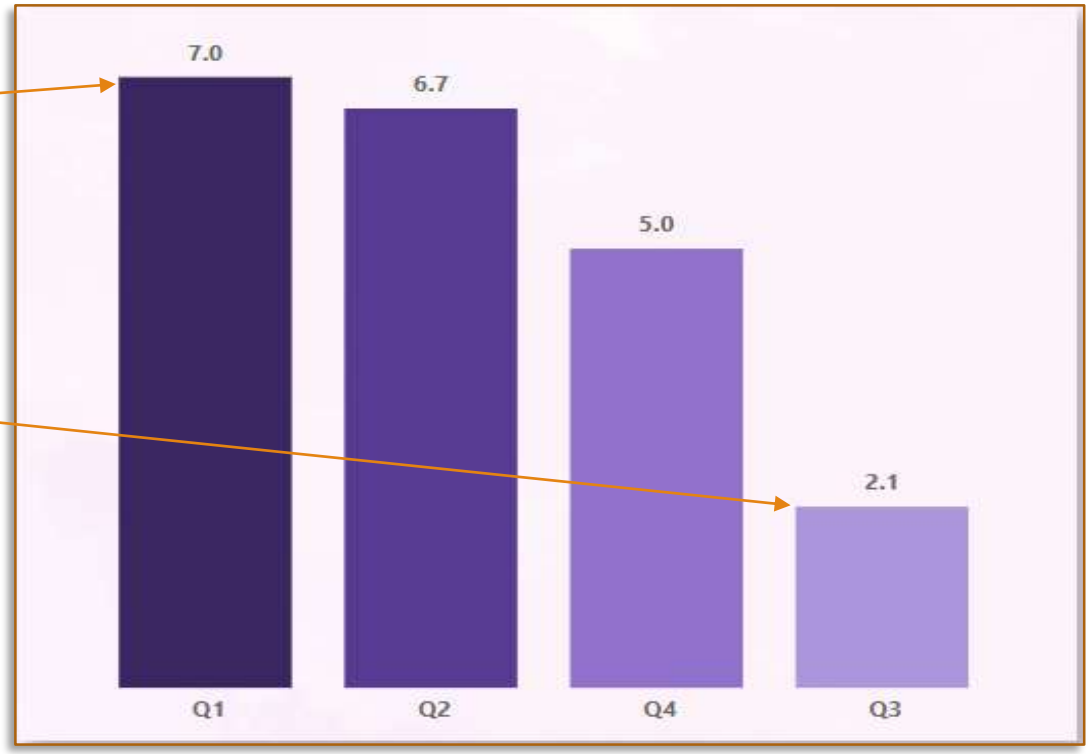
```
SELECT
    CASE
        WHEN date BETWEEN '2019-09-01' AND '2019-11-01' THEN 'Q1'
        WHEN date BETWEEN '2019-12-01' AND '2020-02-01' THEN 'Q2'
        WHEN date BETWEEN '2020-03-01' AND '2020-05-01' THEN 'Q3'
        WHEN date BETWEEN '2020-06-01' AND '2020-08-01' THEN 'Q4'
    END AS Quarters,
    ROUND(SUM(sold_quantity) / 1000000, 2) AS total_sold_quantity
FROM
    fact_sales_monthly
WHERE
    fiscal_year = 2020
GROUP BY quarters
ORDER BY total_sold_quantity DESC;
```

OUTPUT

	Quarters	total_sold_quantity
▶	Q1	7.01
	Q2	6.65
	Q4	5.04
	Q3	2.08

Highest total Sold Quantity

Lowest total Sold Quantity



Insights

- The first quarter (**Q1**) of FY 2020 was a standout period for sales, showing strong performance at the beginning of the financial year.
- However, in the third quarter (**Q3**) (March, April, May), AtliQ faced a notable drop in sales, likely linked to the COVID-19 pandemic, which highlighted tough market conditions and changing consumer habits.

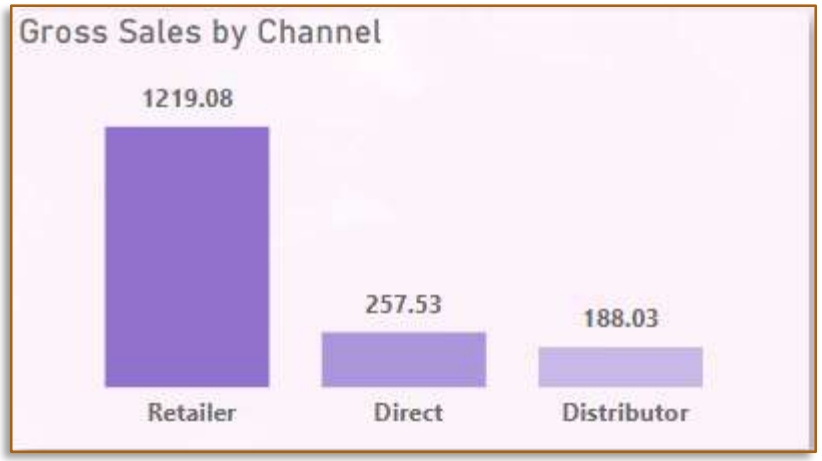
- Request 9: Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields, channel, gross_sales_mln, percentage

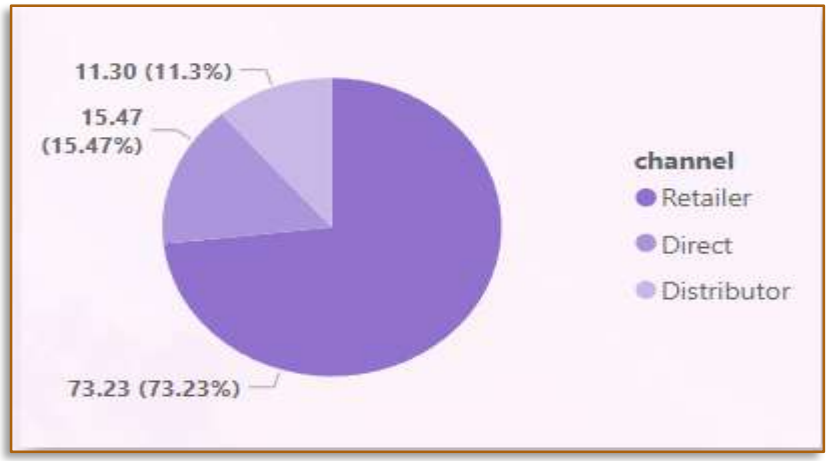
QUERY

```
WITH CTE AS (
    SELECT
        channel,
        ROUND(SUM(gross_price * sold_quantity) / 1000000, 2) AS gross_sales_mln
    FROM
        fact_sales_monthly s
    JOIN
        fact_gross_price fg USING (product_code, fiscal_year)
    JOIN
        dim_customer dc USING (customer_code)
    WHERE
        fiscal_year = 2021
    GROUP BY
        channel
)
SELECT
    channel,
    gross_sales_mln,
    ROUND((gross_sales_mln * 100) / SUM(gross_sales_mln) OVER (), 2) AS pct
FROM
    CTE
ORDER BY
    pct DESC;
```

OUTPUT

	channel	gross_sales_mln	pct
▶	Retailer	1219.08	73.23
	Direct	257.53	15.47
	Distributor	188.03	11.30





Insights

Most of our sales, about **73.22%**, came from retailers. In comparison, only a tiny portion of our sales was made through direct and distributor channels.

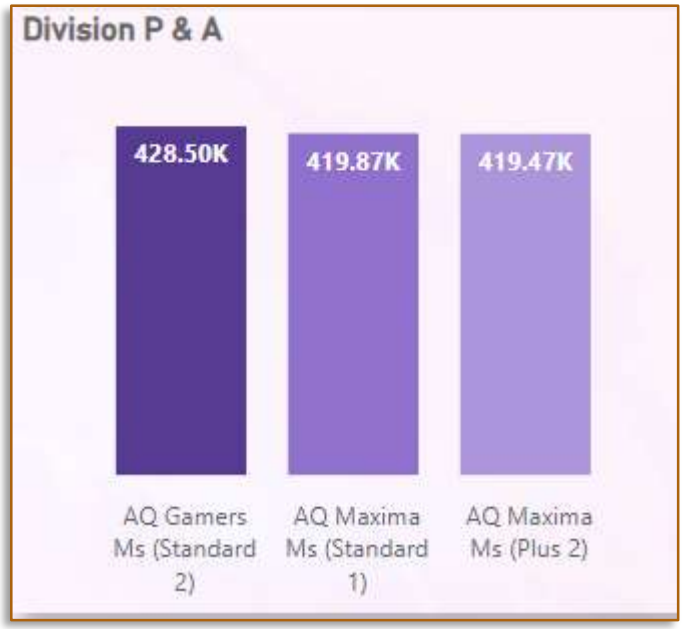
- Request 10: Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021? The final output contains these fields, division, product_code, product, total_sold_quantity, rank_order

QUERY

```
WITH product_sales AS (SELECT p.division, s.product_code, CONCAT(p.product, ' (', p.variant, ')') AS full_product_name,
                SUM(s.sold_quantity) AS total_sold_quantity,
                RANK() OVER (PARTITION BY p.division ORDER BY SUM(s.sold_quantity) DESC) AS sales_rank
                FROM
                dim_product p
                JOIN
                fact_sales_monthly s ON p.product_code = s.product_code
                WHERE
                s.fiscal_year = 2021
                GROUP BY
                p.division, s.product_code, p.product, p.variant)
SELECT division, product_code, full_product_name AS product_name, total_sold_quantity, sales_rank
FROM
    product_sales
WHERE
    sales_rank <= 3
ORDER BY
    division, sales_rank;
```

OUTPUT

division	product_code	product_name	total_sold_quantity	sales_rank
N & S	A6720160103	AQ Pen Drive 2 IN 1 (Premium)	701373	1
N & S	A6818160202	AQ Pen Drive DRC (Plus)	688003	2
N & S	A6819160203	AQ Pen Drive DRC (Premium)	676245	3
P & A	A2319150302	AQ Gamers Ms (Standard 2)	428498	1
P & A	A2520150501	AQ Maxima Ms (Standard 1)	419865	2
P & A	A2520150504	AQ Maxima Ms (Plus 2)	419471	3
PC	A4218110202	AQ Digit (Standard Blue)	17434	1
PC	A4319110306	AQ Velocity (Plus Red)	17280	2
PC	A4218110208	AQ Digit (Premium Misty Green)	17275	3



Insights

- The three best-selling products in **N&S** were pen drives, with sales reaching approximately **700,000** units.
- The three highest-selling products in **P&A** were mice, totaling about **400,000** units sold.
- The three best-selling products in **PC** were personal laptops, with sales around **17,000** units.

THANK YOU!