Consumer Goods Ad-Hoc Insights

Presented by : Ankit Kumar

OBJECTIVE

- AtliQ Hardware, a global computer hardware manufacturer based in India, is enhancing its data analytics team to support informed decision-making.

- The Director of Data Analytics, Tony Sharma, plans to conduct an SQL challenge to assess both technical skills and soft skills of potential junior data analysts.

- The company has identified 10 specific ad hoc requests, reflecting real-world challenges, for candidates to provide valuable insights.

- Acknowledging the critical role of data insights, AtliQ Hardware is strategically focusing on strengthening its data analytics capabilities.

- As part of the initiative, the organization aims to bring in junior data analysts who can effectively address practical challenges in the field.

Data Understanding

This file provides a comprehensive overview for six main tables:

1. dim_customer: contains customer-related data

2. dim_product: contains product-related data

3. fact_gross_price: contains gross price information for each product

4. fact_manufacturing_cost: contains the cost incurred in the production of each product

5. fact_pre_invoice_deductions: contains pre-invoice deductions information for each product

6. fact_sales_monthly: contains monthly sales data for each product.

REQUEST 1

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

QUERY

```sql
SELECT market
FROM dim_customer
WHERE
    customer = 'AtliQ Exclusive'
        AND region = 'APAC'
GROUP BY market;
```

OUTPUT

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

INSIGHTS

- **AtliQ Exclusive has expanded its reach into eight primary markets across the APAC region.**

- **It reflects a robust market presence and adaptability to different cultural and economic contexts in the Asia-Pacific region.**
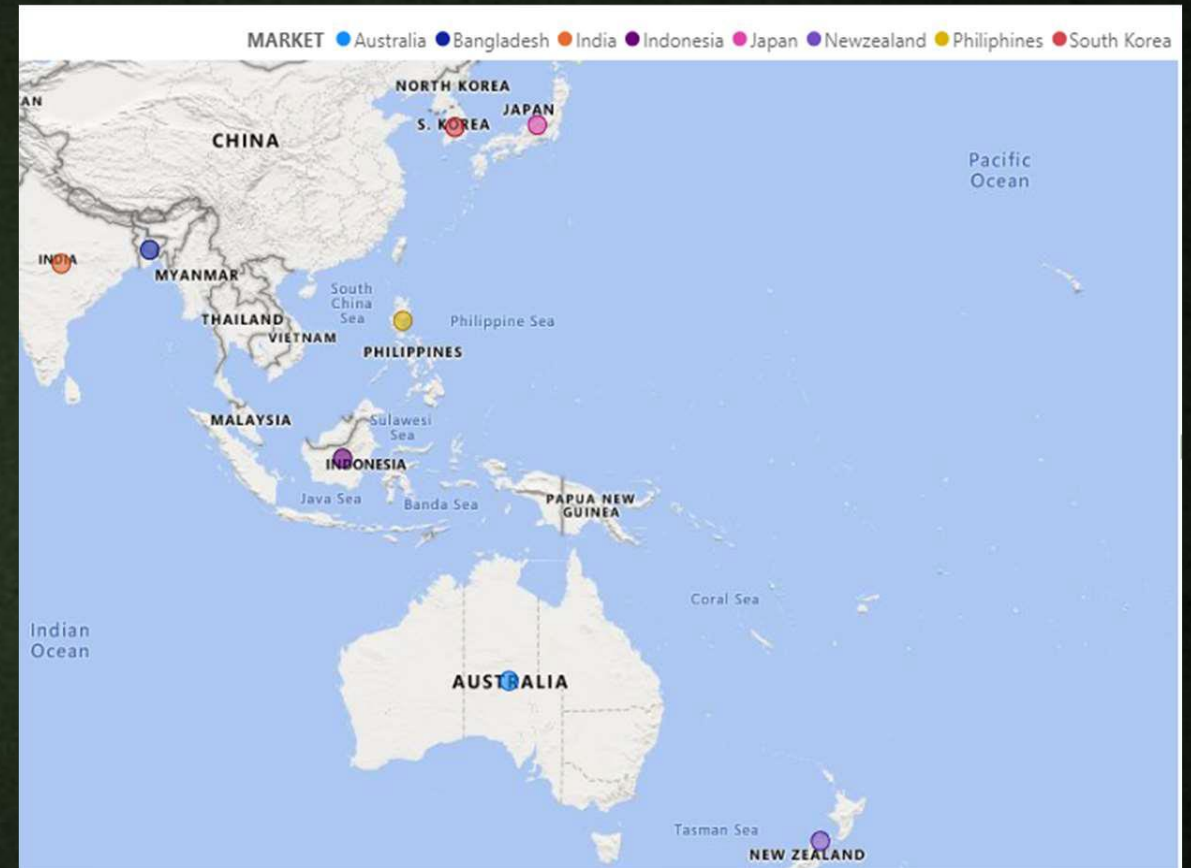
REQUEST 2

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

QUERY

```sql
WITH cte1 AS(
SELECT COUNT(DISTINCT product_code)  AS
unique_products_2020
FROM fact_sales_monthly
WHERE fiscal_year = "2020"),
cte2 AS (SELECT *,
(SELECT COUNT(DISTINCT product_code)
FROM fact_sales_monthly
WHERE fiscal_year = "2021") AS
unique_products_2021
FROM cte1)
SELECT
*, ROUND(((unique_products_2021 -
unique_products_2020)/unique_products_2020)*100,
2) AS pct_change
FROM cte2;
```
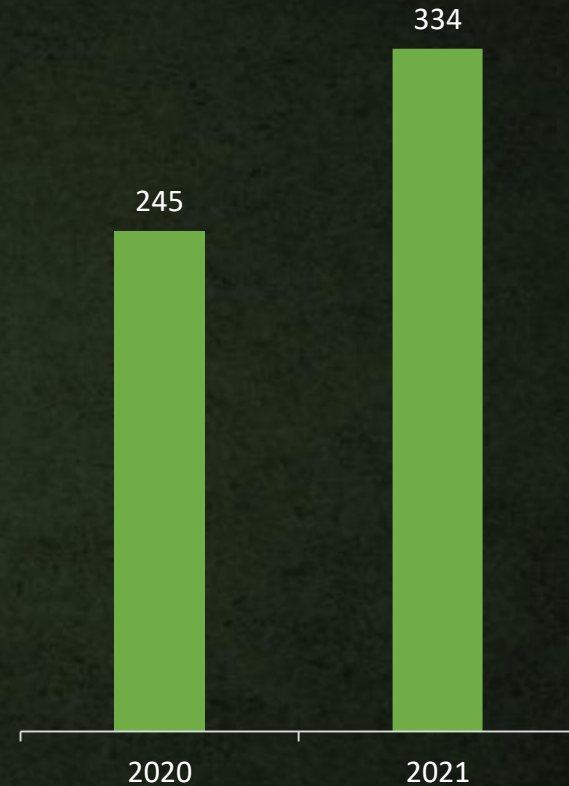
OUTPUT

unique_products_2020	unique_products_2021	pct_change
245	334	36.33

INSIGHTS

- **During the fiscal year 2020, our product count stood at 245, and by FY 2021, it had risen to 334.**

- **The percentage change represents a growth of 36.33% in unique products from one year to the next.**

334

245

2020   2021

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
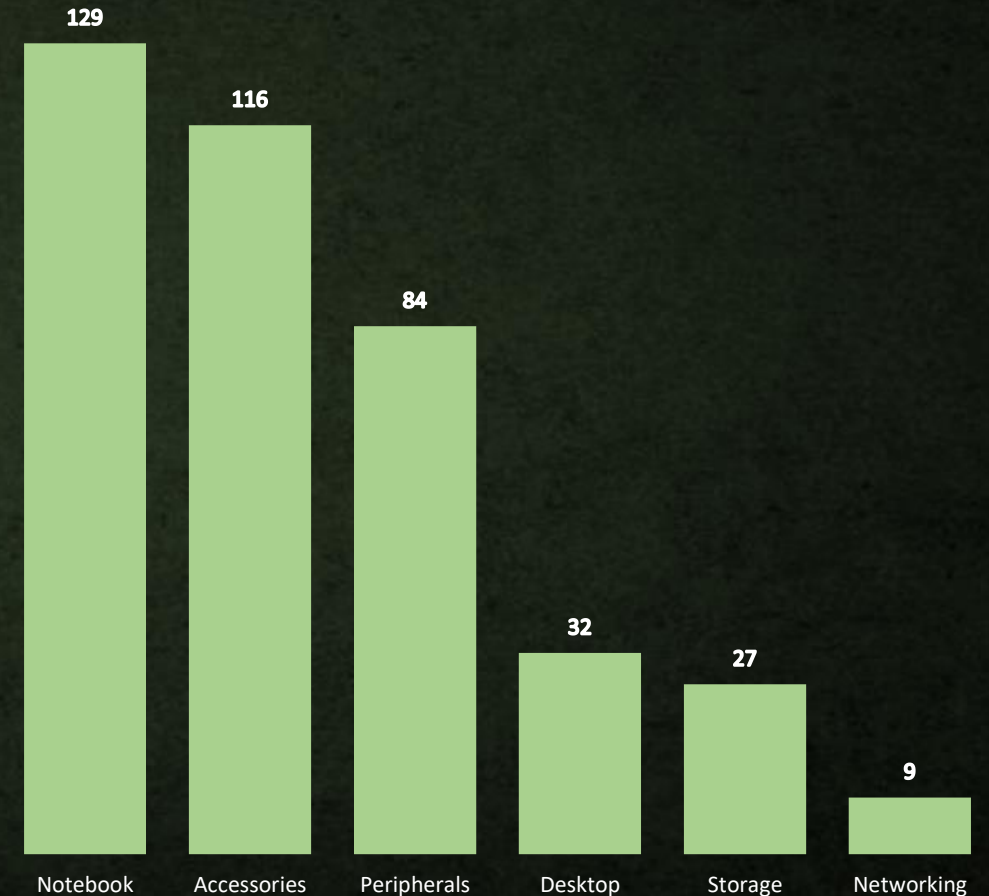
QUERY

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

OUTPUT

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

INSIGHTS

➢ **AtliQ Hardware offers a comprehensive range of products in the Notebook, Peripherals, and Accessories segments.**

➢ **The "Notebook" segment has the highest product count, with 129 products.**

➢ **The "Networking" segment has the smallest product count with only 9 products.**

➢ **Recognizing the strategic imperative to diversify our product portfolio, we aim to expand into the desktop, networking, and storage markets.**

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.

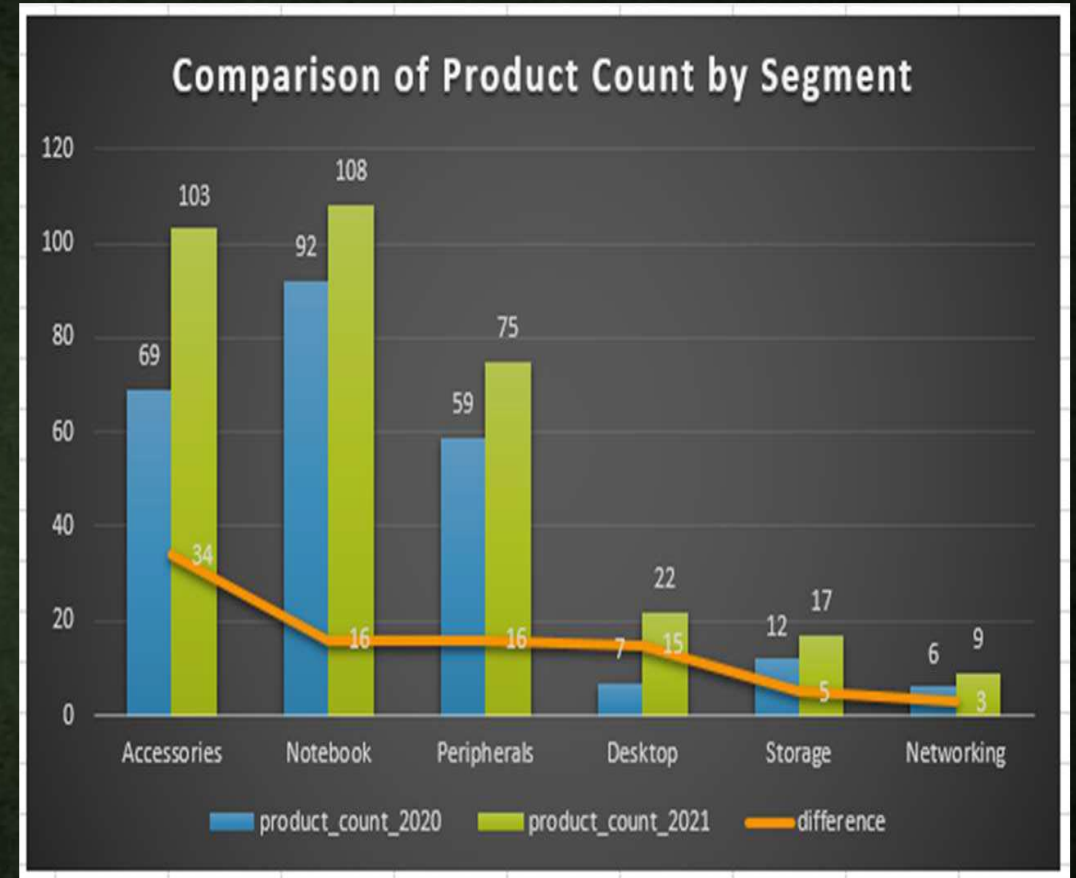## QUERY

```sql
WITH cte1 AS (
SELECT p.segment, COUNT(DISTINCT product_code) AS
        unique_product2020
FROM fact_sales_monthly s
JOIN dim_product p
USING ( product_code)
WHERE fiscal_year = "2020"
GROUP BY segment),
cte2 AS (
SELECT p.segment, COUNT(DISTINCT product_code) AS
        unique_product2021
FROM fact_sales_monthly s
JOIN dim_product p
USING ( product_code)
WHERE fiscal_year = "2021"
GROUP BY segment),
cte3 AS (
SELECT p20.segment, p20.unique_product2020 AS
    product_cnt_2020, p21.unique_product2021 AS
    product_cnt2021
FROM cte1 p20
JOIN cte2 p21
USING (segment))
SELECT *, (product_cnt2021 - product_cnt_2020) AS
difference
FROM cte3
ORDER BY difference DESC;
```

OUTPUT

segment	product_cnt_2020	product_cnt2021	difference
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

➢ **In 2021, AtliQ Hardware placed a primary emphasis on extending its footprint in the accessories market, unveiling a total of 34 new accessory products.**

➢ **These insights suggest a general trend of product portfolio growth, particularly in the "Accessories" and "Notebook" segments, which can indicate a strategy to cater to a broader range of customer preferences.**

Comparison of Product Count by Segment

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 p.product, p.product_code,
m.manufacturing_cost
FROM dim_product p
JOIN fact_manufacturing_cost m
USING (product_code)
WHERE m.manufacturing_cost = (SELECT
MAX(manufacturing_cost) FROM
fact_manufacturing_cost)
    OR m.manufacturing_cost = (SELECT
MIN(manufacturing_cost) FROM
fact_manufacturing_cost)
ORDER BY manufacturing_cost DESC;
```

OUTPUT

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

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

```sql
SELECT c.customer_code, c.customer,
    ROUND(AVG(f.pre_invoice_discount_pct)*100,2) AS
avg_discount_pct
FROM dim_customer c
JOIN fact_pre_invoice_deductions f
USING (customer_code)
WHERE fiscal_year = "2021" AND market = "India"
GROUP BY customer_code, customer
ORDER BY avg_discount_pct DESC
LIMIT 5;
```

OUTPUT

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

INSIGHTS

➢ **Given that Flipkart maintains the status of being the most heavily discounted customer in the Indian market, boasting a pre-invoice discount percentage of 30.83%.**

➢ **AtliQ applied approximately equivalent pre-invoice discount percentages to each of its top 5 clients in 2021.**

avg_discount_pct

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

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
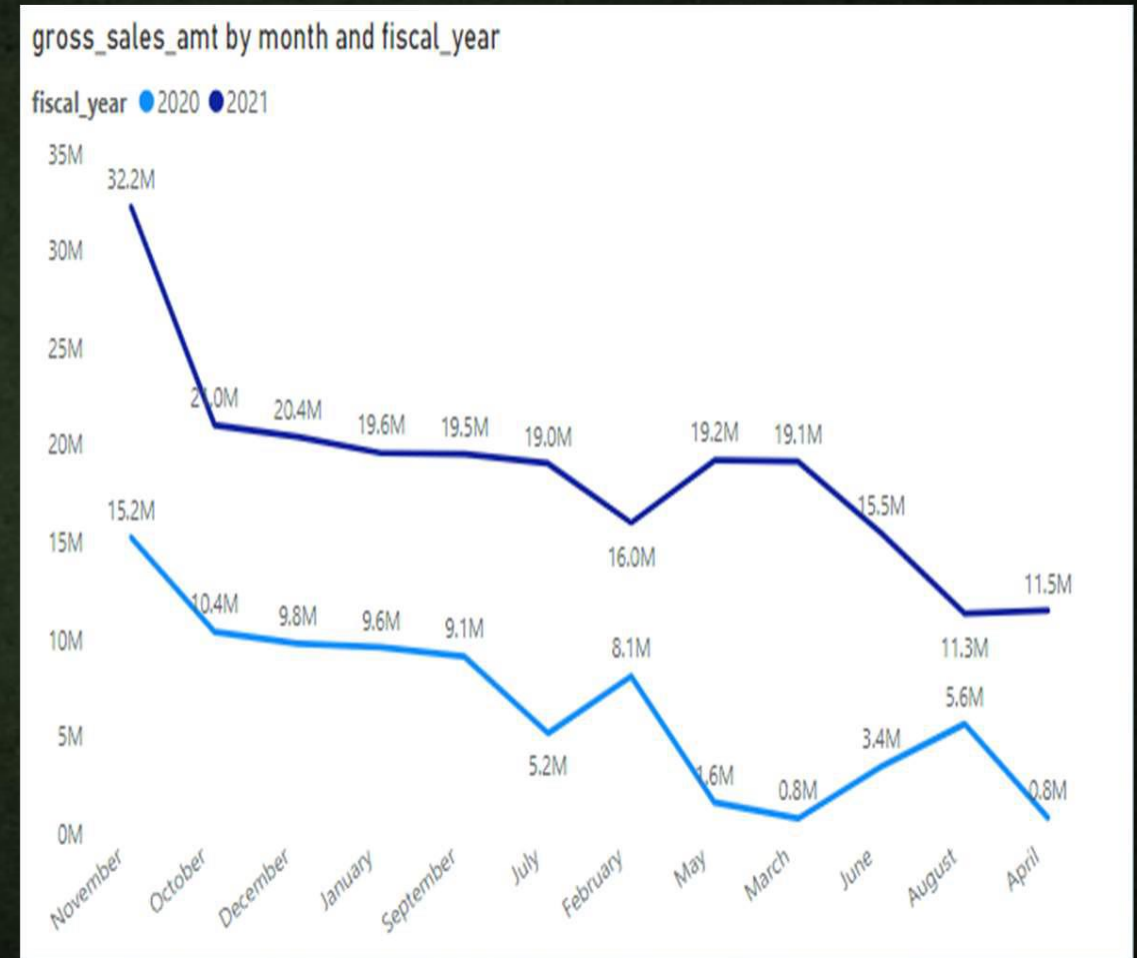
QUERY

```sql
SELECT monthname(s.date) AS Month, YEAR(s.date) AS Year,
    CONCAT(ROUND(SUM(g.gross_price*s.sold_quantity)/1000000,2), "M")
        AS Gross_Sales_Amt
FROM fact_gross_price g
JOIN fact_sales_monthly s
ON g.product_code = s.product_code
    AND g.fiscal_year = s.fiscal_year
JOIN dim_customer c
ON s.customer_code = c.customer_code
WHERE customer = "Atliq Exclusive"
GROUP BY Month, Year
ORDER BY Year;
```

OUTPUT

Month	Year	Gross_Sales_Amt
September	2019	4.50M
October	2019	5.14M
November	2019	7.52M
December	2019	4.83M
January	2020	4.74M
February	2020	4.00M
March	2020	0.38M
April	2020	0.40M
May	2020	0.78M
June	2020	1.70M
July	2020	2.55M
August	2020	2.79M
September	2020	12.35M
October	2020	13.22M
November	2020	20.46M
December	2020	12.94M
January	2021	12.40M
February	2021	10.13M
March	2021	12.14M
April	2021	7.31M
May	2021	12.15M
June	2021	9.82M
July	2021	12.09M
August	2021	7.18M

INSIGHTS

➢ **AtliQ Exclusive achieved its peak sales in November 2020, with March 2020 marking the lowest point in sales.**

➢ **The decrease in sales from March to August can be linked to the repercussions of COVID-19.**

➢ **Nevertheless, there is a positive outlook as sales have steadily recovered post-pandemic, demonstrating resilience and surpassing the levels observed in 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
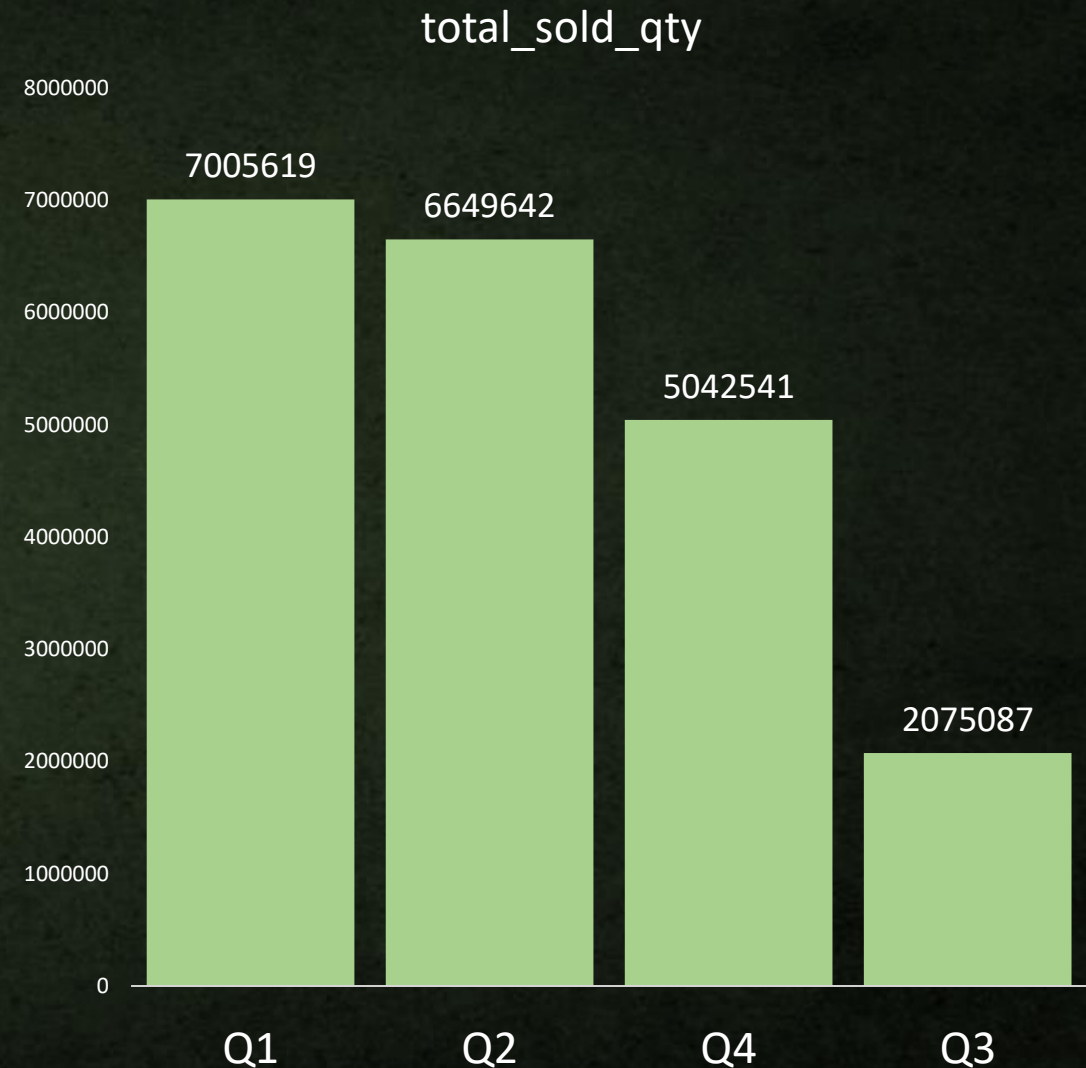
QUERY

```sql
SELECT CONCAT("Q", QUARTER(DATE_ADD(date, INTERVAL 4 MONTH))) AS
    Quarter, SUM(sold_quantity) AS total_sold_qty
FROM fact_sales_monthly
WHERE fiscal_year = "2020"
GROUP BY Quarter
ORDER BY total_sold_qty DESC;
```

OUTPUT

Quarter	total_sold_qty
Q1	7005619
Q2	6649642
Q4	50... 6649642
Q3	2075087

INSIGHTS

➤ **During the third quarter of fiscal year 2020 (March, April, and May), characterized by the peak of COVID-19 and extensive lockdowns affecting businesses, the quantity sold sharply declined to 2.1 million.**

➤ **Interestingly, there was a notable surge in demand for computer accessories during this period, likely driven by a large number of students either beginning or continuing their coursework online.**

➤ **This increased demand probably played a role in the early rebound observed in the fourth quarter.**

total_sold_qty

	total_sold_qty
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

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
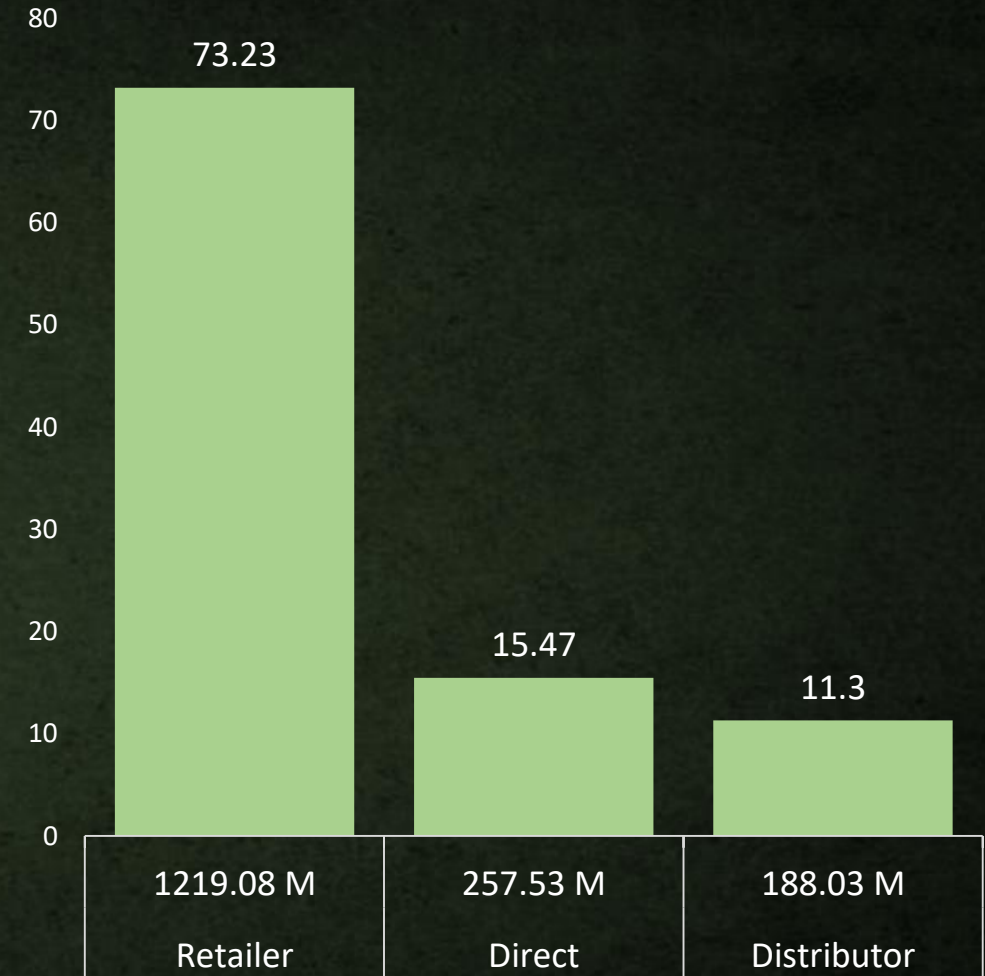
QUERY

```sql
WITH cte AS(
  SELECT CONCAT(ROUND(SUM(s.sold_quantity * g.gross_price) /
      1000000, 2), ' M') AS gross_sales_mln, c.channel
  FROM fact_sales_monthly s
    JOIN fact_gross_price g
    ON s.product_code = g.product_code
    AND s.fiscal_year = g.fiscal_year
  JOIN dim_customer c
    ON c.customer_code = s.customer_code
    WHERE s.fiscal_year = '2021'
    GROUP BY channel)
SELECT channel,
    gross_sales_mln,
    ROUND(gross_sales_mln / SUM(gross_sales_mln) OVER() * 100, 2)
     AS Percentage
FROM cte
ORDER BY Percentage DESC;
```

OUTPUT

channel	gross_sales_mln	Percentage
Retailer	1219.08 M	73.23
Direct	257.53 M	15.47
Distributor	188.03 M	11.3

INSIGHTS

➢ **The "Retailer" channel accounts for the majority of sales, contributing to 73.22% of gross sales.**

➢ **The "Direct" channel also plays a significant role,**

➢ **representing 15.47% of gross sales.**

➢ **The "Distributor" channel contributes 11.31% of gross sales.**

➢ **A significant focus on the "Retailer" channel suggests it is the primary revenue driver.**

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

QUERY

```sql
WITH cte1 AS (
  SELECT p.division, p.product_code, p.product,
    SUM(s.sold_quantity) AS total_sold_quantity
    FROM dim_product p
    JOIN fact_sales_monthly s
    USING (product_code)
    WHERE fiscal_year = '2021'
  GROUP BY p.division, p.product_code,p.product),
cte2 AS (
  SELECT *, DENSE_RANK() OVER(PARTITION BY division
   ORDER BY total_sold_quantity DESC) AS rank_order
  FROM cte1)
SELECT * FROM cte2
WHERE rank_order <= 3;
```

OUTPUT

division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	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

INSIGHTS

➢ **The three best-selling product in the N & S division were pen drivers. Strong consumer preference for pen drives and related items in this division.**

➢ **The three best-selling product in the P & A division were pen mouse. This division specializes in gaming-related products, appealing to a specific customer niche..**

➢ **The three best-selling product in the PC division were laptops. The division specializes in PC-related products, indicating a focus on the computing niche.**

RECOMMENDATIONS FOR ENHANCING ATLIQ'S SALES PERFORMANCE

❖ **Ensure top-notch customer service to foster lasting relationships.**

❖ **Deploy a robust marketing strategy across diverse channels.**

❖ **Cultivate a distinctive brand identity and convey your unique value proposition.**

❖ **Allocate resources to train the sales team for enhanced effectiveness.**

❖ **Provide competitive pricing and appealing promotional offers.**

❖ **Expand and improve product offerings to align with market demands.**

❖ **Regularly collect customer feedback for continuous improvement.**