



# Consumer Goods Ad-Hoc Insights

SQL Project Challenge

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# Agenda

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## 01. Introduction

Brief intro about company and business problem they have.

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## 03. Ad-hoc Requests and Visualization

See how we handle the business issues and convert SQL query output into visualization and create data story from it or discover insights from it.

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## 02. Understanding Data

Get to know about database schema and data fields

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## 04. Thank you and Feedback

Expecting  
feedbacks  
to. improve  
solutions  
further.

# Introduction

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Atliq Hardwares(imaginary company) is one of the leading computer hardware producers in India and well expanded in other countries too. However, the management noticed that they do not get enough insights to make quick and smart data-informed decisions. They want to expand their data analytics team by adding several junior data analysts. Tony Sharma, their data analytics director wanted to hire someone who is good at both tech and soft skills. Hence, he decided to conduct a SQL challenge which will help him understand both the skills.



# Understanding Data

This database has 6 tables from which two-dimensional tables and other ones are fact tables.

The dataset only contains observations for the years 2020 & 2021

## DB Table Info:

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.

<b>dim_customer</b> <ul style="list-style-type: none"><li>customer_code INT</li><li>customer VARCHAR(150)</li><li>platform VARCHAR(45)</li><li>channel VARCHAR(45)</li><li>market VARCHAR(45)</li><li>sub_zone VARCHAR(45)</li><li>region VARCHAR(45)</li></ul>	<b>fact_manufacturing_cost</b> <ul style="list-style-type: none"><li>product_code VARCHAR(45)</li><li>cost_year YEAR</li><li>manufacturing_cost DECIMAL(15,4)</li></ul>
<b>dim_product</b> <ul style="list-style-type: none"><li>product_code VARCHAR(45)</li><li>division VARCHAR(45)</li><li>segment VARCHAR(45)</li><li>category VARCHAR(45)</li><li>product VARCHAR(200)</li><li>variant VARCHAR(45)</li></ul>	<b>fact_gross_price</b> <ul style="list-style-type: none"><li>product_code VARCHAR(45)</li><li>fiscal_year YEAR</li><li>gross_price DECIMAL(15,4)</li></ul>
	<b>fact_pre_invoice_deductions</b> <ul style="list-style-type: none"><li>customer_code INT</li><li>fiscal_year YEAR</li><li>pre_invoice_discount_pct DECIMAL(5,4)</li></ul>
	<b>fact_sales_monthly</b> <ul style="list-style-type: none"><li>date DATE</li><li>product_code VARCHAR(45)</li><li>customer_code INT</li><li>sold_quantity INT</li><li>fiscal_year YEAR</li></ul>

A dark, moody photograph of a desk. In the upper right corner, a laptop is partially visible. Below it, a white mug filled with a dark liquid, likely coffee, sits on the desk. To the right of the mug, a spiral-bound notebook is open, showing a grid-like pattern on its pages. The background is dark and out of focus, with some greenery visible in the top right corner.

# Ad-Hoc Analysis

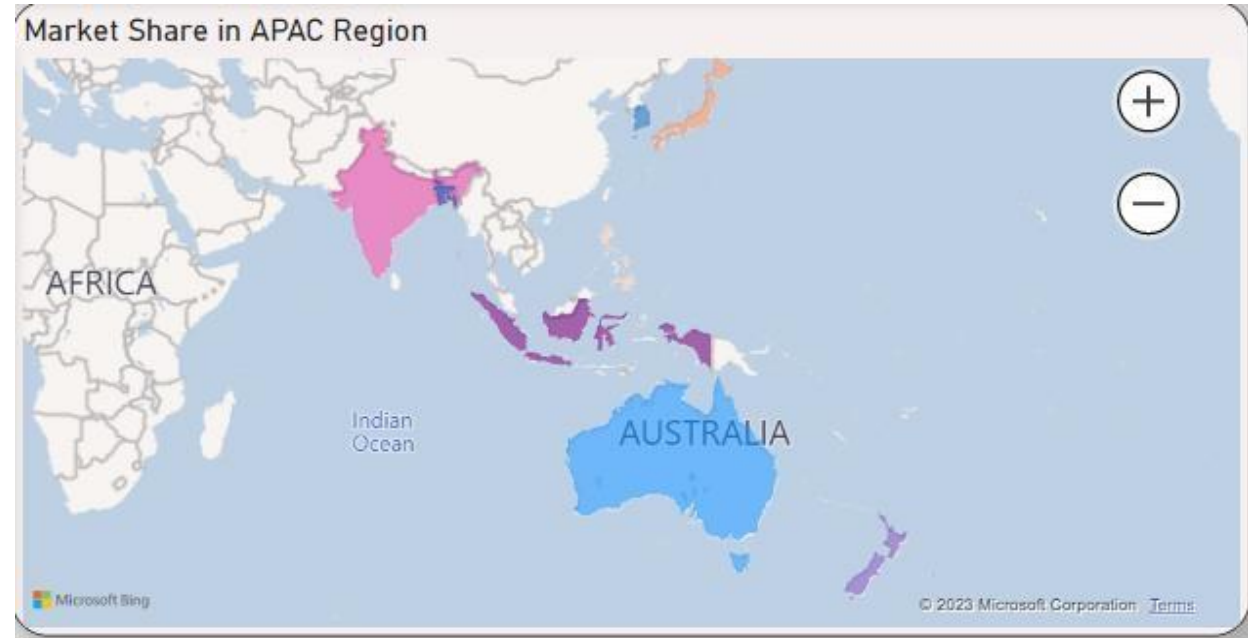
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**Question 1.** Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

```
SELECT
  market
FROM
  dim_customer
WHERE
  region = 'APAC'
  AND customer = 'atliq Exclusive'
ORDER BY market;
```

-- OUTPUT --

market
Australia
Bangladesh
India
India
Indonesia
Japan
Newzealand
Philiphines
South Korea



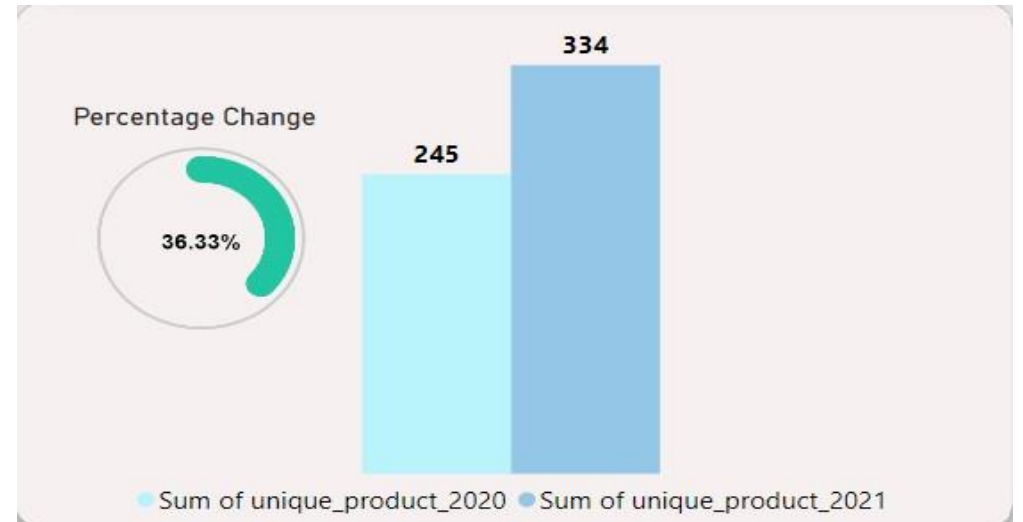
### Key Insights

AtliQExclusive is running business in 8 different countries in APAC region

**Question 2.** What is the percentage of unique product increase in 2021 vs. 2020?

```
WITH cte AS
(SELECT
  SUM(CASE
    WHEN fiscal_year = '2020' THEN 1
    ELSE 0
  END) AS unique_product_2020,
  SUM(CASE
    WHEN fiscal_year = '2021' THEN 1
    ELSE 0
  END) AS unique_product_2021
FROM
  fact_gross_price)
SELECT unique_product_2020, unique_product_2021,
ROUND((unique_product_2021-
unique_product_2020)/unique_product_2020 * 100,2) AS
percent_change
FROM cte;

-- OUTPUT --
+-----+-----+-----+
| unique_product_2020 | unique_product_2021 | percent_change |
+-----+-----+-----+
|          245        |          334        |       36.33    |
+-----+-----+-----+
```



### Key Insights

Unique product count is increased by 36.33 %, it clearly shows Atliq Hardware has significant business growth and it continuously investing in new products to align with market and take competitive advantage over other rivals

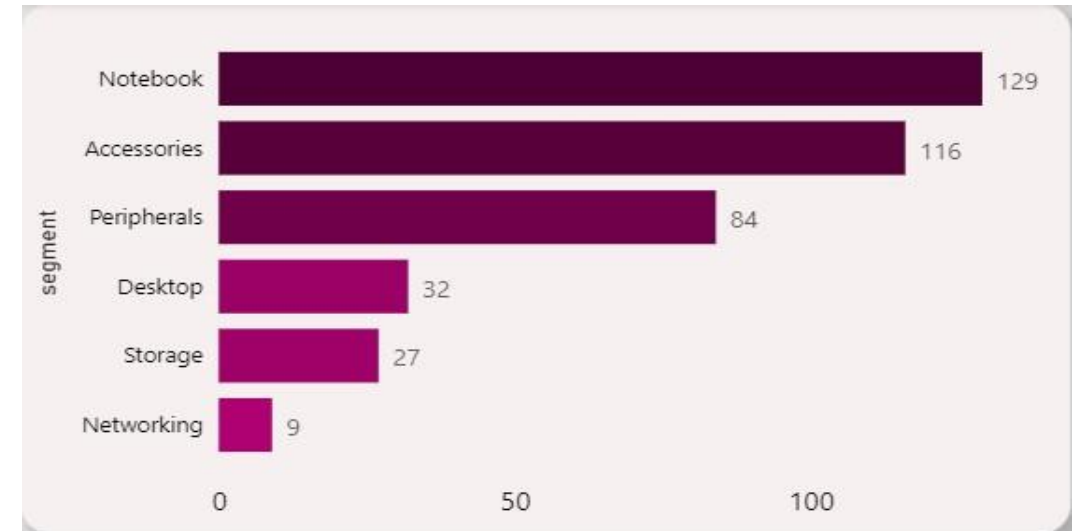


**Question 3.** Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.

```
SELECT
    segment, COUNT(product_code) AS product_count
FROM
    dim_product
GROUP BY segment
ORDER BY 2 DESC;
```

-- OUTPUT --

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



### Key Insights

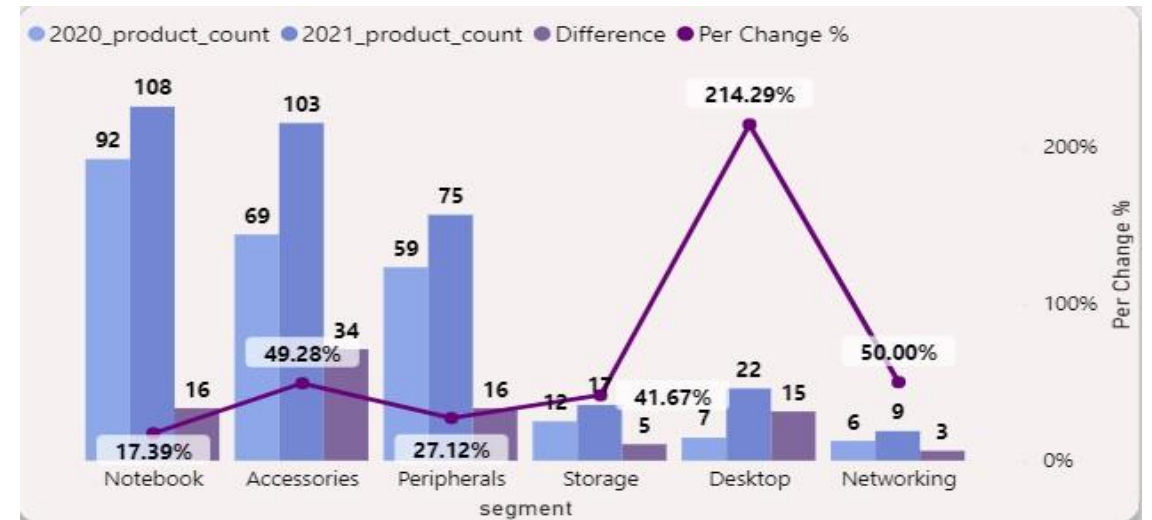
AtliQ Hardware is giving more focus on adding new products mainly in notebook and accessories segment due to high demand. Further, AtliQ might have invested in new segment in networking segment foreseeing IoT demand.



**Question 4.** Follow-up: Which segment had the most increase in unique products in 2021 vs 2020?

```
WITH cte AS
(SELECT
  dp.segment,
  COUNT(CASE
    WHEN fgp.fiscal_year = '2020' THEN dp.product_code
  END) AS 2020_product_count,
  COUNT(CASE
    WHEN fgp.fiscal_year = '2021' THEN dp.product_code
  END) AS 2021_product_count
FROM
  fact_gross_price AS fgp
  JOIN
  dim_product AS dp ON dp.product_code = fgp.product_code
GROUP BY dp.segment)
SELECT
  segment,
  2020_product_count,
  2021_product_count,
  (2021_product_count - 2020_product_count) AS difference
FROM
  cte
ORDER BY 4 DESC;
```

-- OUTPUT --			
segment	2020_product_count	2021_product_count	difference
Accessories	69	103	34
Peripherals	59	75	16
Notebook	92	108	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3



### Key Insights

unique products in accessories segment had its maximum in terms of count while Desktop took its maximum percentage

**Question 5.** Get the products that have the highest and lowest manufacturing costs.

```
SELECT
  p.product_code, product, manufacturing_cost
FROM
  dim_product AS p
  LEFT JOIN
    fact_manufacturing_cost AS fmc ON p.product_code = fmc.product_code
WHERE
  manufacturing_cost = (SELECT
    MAX(manufacturing_cost)
    FROM
      fact_manufacturing_cost)
UNION SELECT
  p.product_code, product, manufacturing_cost
FROM
  dim_product AS p
  LEFT JOIN
    fact_manufacturing_cost AS fmc ON p.product_code = fmc.product_code
WHERE
  manufacturing_cost = (SELECT
    MIN(manufacturing_cost)
    FROM
      fact_manufacturing_cost);
```

-- OUTPUT --

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



### Key Insights

Highest production cost goes to AQ Home Allin 1 Gen2 and lowest is with AQ Master wired X1 Ms

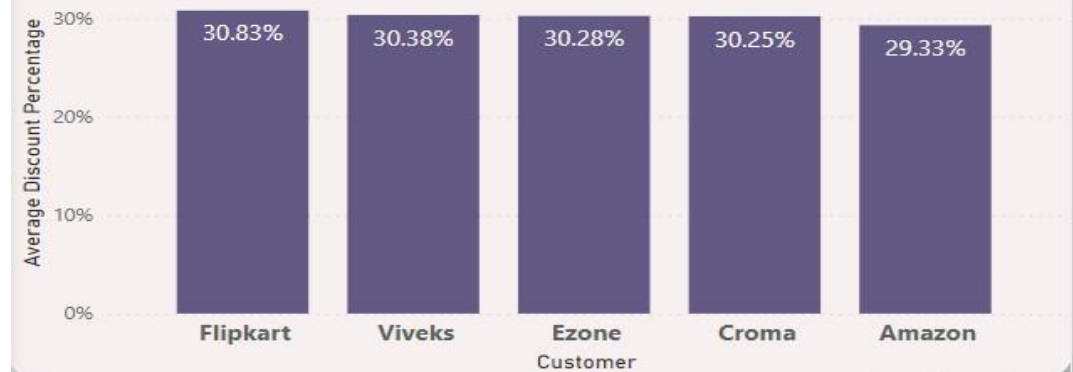
**Question 6.** Generate a report which contains the top 5 customers who received an average high pre\_invoice\_discount\_pct for the fiscal year 2021 and in the Indian market.

```
SELECT
    c.customer_code,
    customer,
    (ROUND(AVG(pre_invoice_discount_pct * 100), 2)
    AS average_discount_percentage
FROM
    dim_customer AS c
    JOIN
    fact_pre_invoice_deductions AS d ON c.customer_code = d.customer_code
WHERE
    fiscal_year = 2021
    AND LOWER(market) = 'india'
GROUP BY c.customer_code, customer
ORDER BY 3 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

Top 5 Customers of 2021 BY AVG. DISCOUNT %



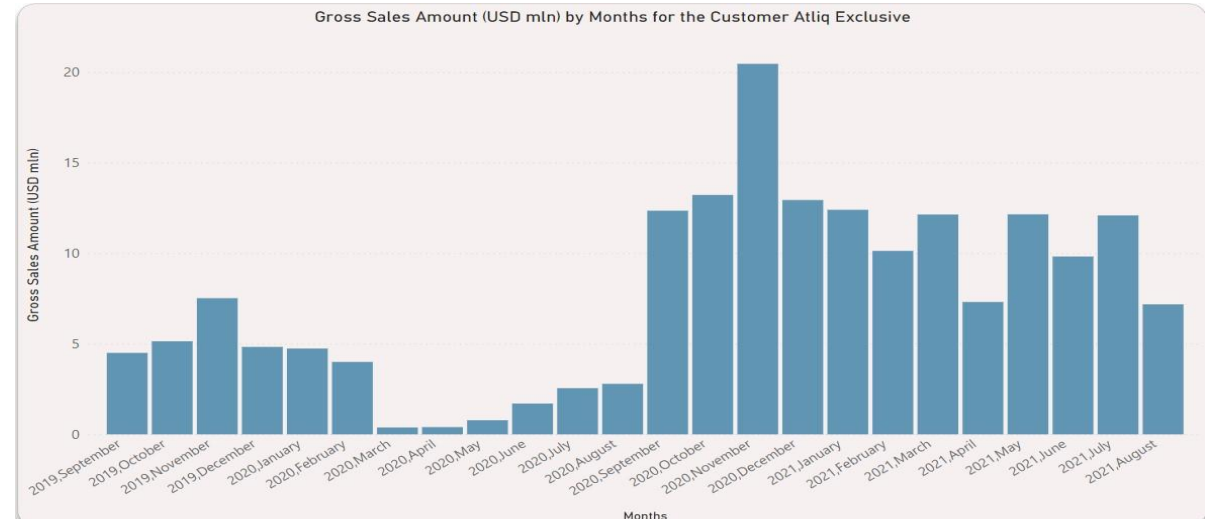
### Key Insights

Top 5 customers receives the almost same average 30% of pre-invoice discount percent

**Question 7.** Get the complete report of the Gross sales amount for the customer “**Atliq Exclusive**” for each month .

```
SELECT
  YEAR(date) AS 'Year',
  MONTH(date) AS 'Month',
  ROUND(SUM(Sales) / 1000000, 2) AS Gross_Sales_Amount
FROM
  (SELECT
    date, customer_code, (sold_quantity * gross_price) AS sales
  FROM
    fact_sales_monthly fsm
  JOIN fact_gross_price AS fgp ON fsm.product_code = fgp.product_code
  AND fsm.fiscal_year = fgp.fiscal_year) AS temp
JOIN
  dim_customer AS dc ON temp.customer_code = dc.customer_code
WHERE
  customer = 'Atliq Exclusive'
GROUP BY YEAR(date), MONTH(date)
ORDER BY 1, 2;
-- OUTPUT --
-- 24 rows
```

Year	Month	Gross_Sales_Amount
2019	9	4.50
2019	10	5.14
2019	11	7.52
2019	12	4.83
2020	1	4.74
2020	2	4.00
...	...	...
2021	6	9.82
2021	7	12.09
2021	8	7.18



## Key Insights

2020 November shows highest gross sales and from 2020 November , on average more than USD 10 million gross sales were done up to 2021 August. This indicates AtliQ performed well in FY 2021.

**Question 8.** In which quarter of 2020, got the maximum total\_sold\_quantity?

```
SELECT
  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'
    ELSE 'Q4'
  END AS quarter,
  ROUND(SUM(sold_quantity) / 1000000, 2) AS 'total_sold_quantity(M)'
FROM
  fact_sales_monthly
WHERE
  fiscal_year = 2020
GROUP BY quarter
ORDER BY 2 DESC;

-- OUTPUT --

+-----+-----+
| quarter | total_sold_quantity(M) |
+-----+-----+
| Q1      | 7.01                   |
| Q2      | 6.65                   |
| Q4      | 5.04                   |
| Q3      | 2.08                   |
+-----+-----+
```



**Key Insights**

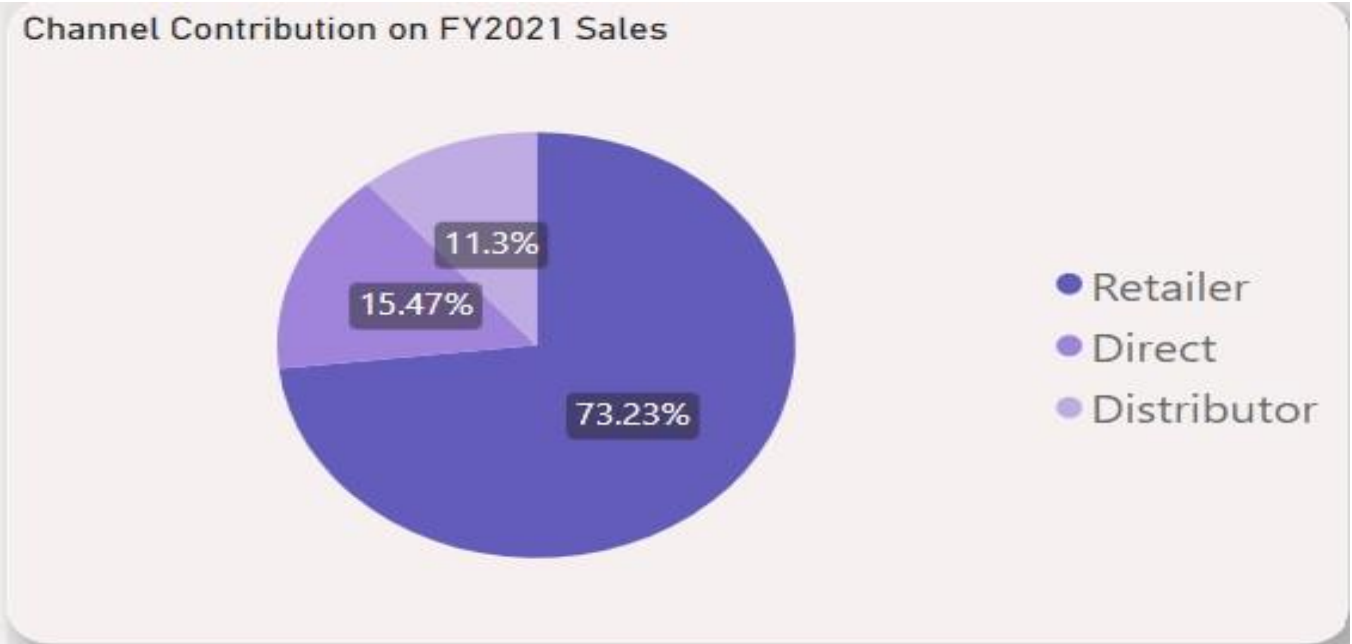
AltiQ Exclusive is outperformed in Q1 & Q2 compared to other quarters. Christmas & New year holidays could be the reasons sales increase in Q1 & Q2

**Question 9.** Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution?

```
SELECT
  channel,
  gross_sales_mln,
  CONCAT(ROUND(gross_sales_mln / (sum(gross_sales_mln)
OVER (PARTITION BY fiscal_year))*100, 2), '%')
  AS percentage
FROM
(
  SELECT
    channel,
    fsm.fiscal_year,
    round(sum(sold_quantity * gross_price) / 1000000, 2)
    AS gross_sales_mln
  FROM
    fact_sales_monthly AS fsm
  JOIN
    fact_gross_price AS fgp
    ON fsm.product_code = fgp.product_code
    AND fsm.fiscal_year = fgp.fiscal_year
  JOIN
    dim_customer AS dc
    ON fsm.customer_code = dc.customer_code
  WHERE
    fsm.fiscal_year = 2021
  GROUP BY
    channel,
    fsm.fiscal_year
)
as temp
ORDER BY
  2 DESC;

-- OUTPUT --
```

channel	gross_sales_mln	percentage
Retailer	1219.08	73.23%
Direct	257.53	15.47%
Distributor	188.03	11.30%



Key Insights

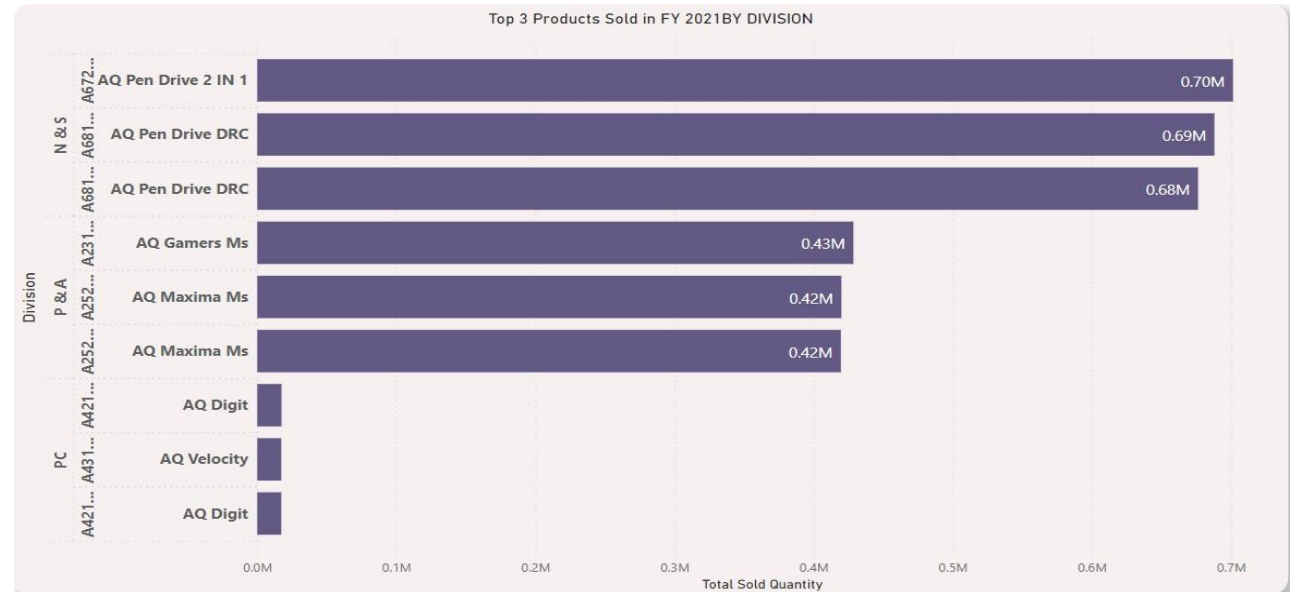
Retailer dominates in helping more gross sales for FY2021. AltIQ needs to take strategic moves in other channels to increase sales.



**Question 10.** Get the Top 3 products in each division that have a high total\_sold\_quantity in the fiscal\_year 2021?

```
WITH cte AS (
  SELECT
    division, fsm.product_code, product,
    SUM(sold_quantity) AS total_sold_qty,
    DENSE_RANK() OVER (
      PARTITION BY division
      ORDER BY
        SUM(sold_quantity) DESC
    ) AS rank_order
  FROM
    dim_product as prod
    JOIN fact_sales_monthly AS fsm ON prod.product_code = fsm.product_code
  WHERE
    fiscal_year = 2021
  GROUP BY
    division, product_code, product
  ORDER BY
    4 DESC,
    5 ASC
)
SELECT
  division, product_code, product, total_sold_qty, rank_order
FROM
  cte
WHERE
  rank_order <= 3;
```


```
-- OUTPUT --
+-----+-----+-----+-----+-----+
| division | product_code | product | total_sold_qty | 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 |
+-----+-----+-----+-----+-----+
```



## Key Insights

Pen Drive takes number one place in total sold quantity by AtliQ.





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Thanks to your valuable time and please share your thoughts, suggestion, improvement points in the comments section



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