CONSUMER GOODS
Ad Hoc Insights

Presented by Megha S

COMPANY OVERVIEW

AtliQ Hardwares

- **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, conduct a **SQL challenge** which will help him evaluate both the skills.

- **AtliQ Hardwares** produces products for three main divisions:
  - Computer networking and storage,
  - peripherals and Accessories (like keyboards, mouse etc..),
  - PC components (like personal desktops and laptops)

AtliQ's Markets:
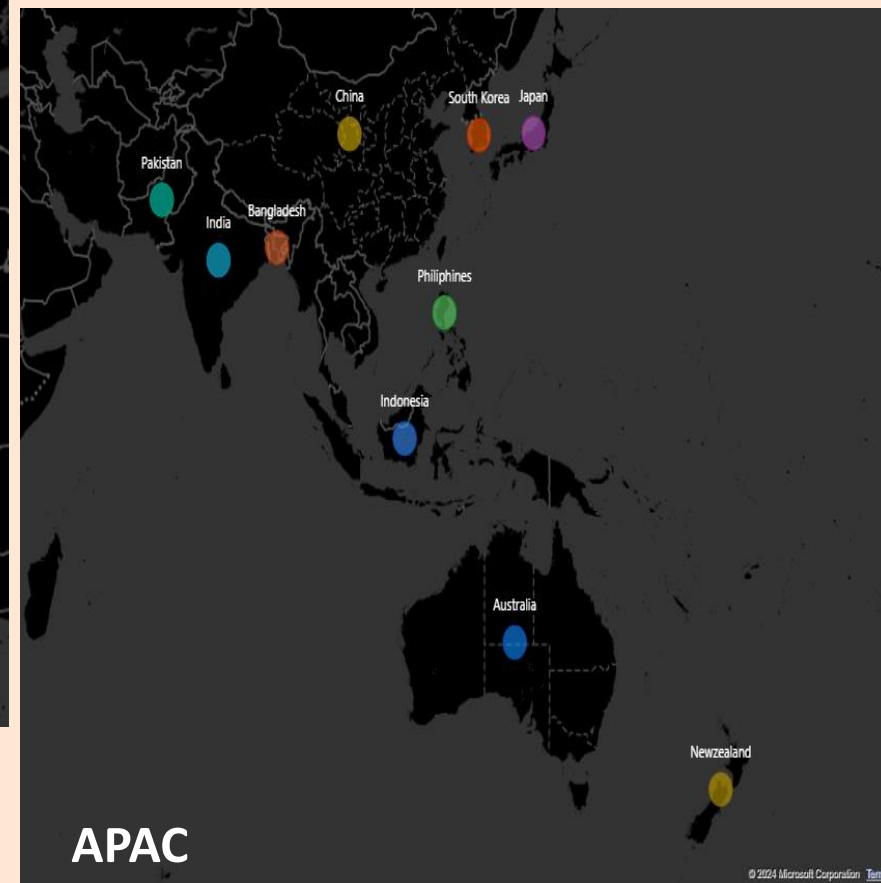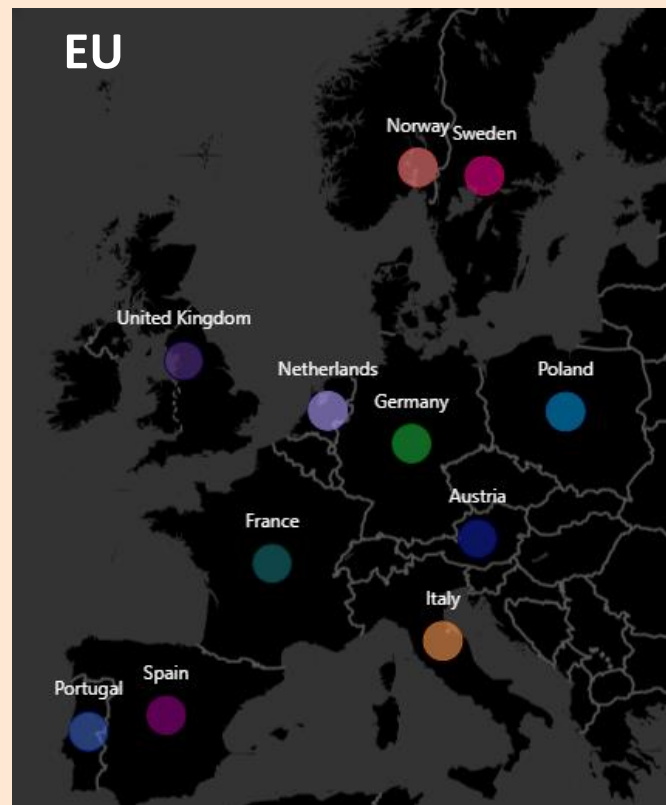
- **AtliQ Hardwares** does business in four main region of the world: Asia-Pacific(APAC), Europe(EU), North America(NA) and Latin America(LATAM)

10 Ad Hoc 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

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
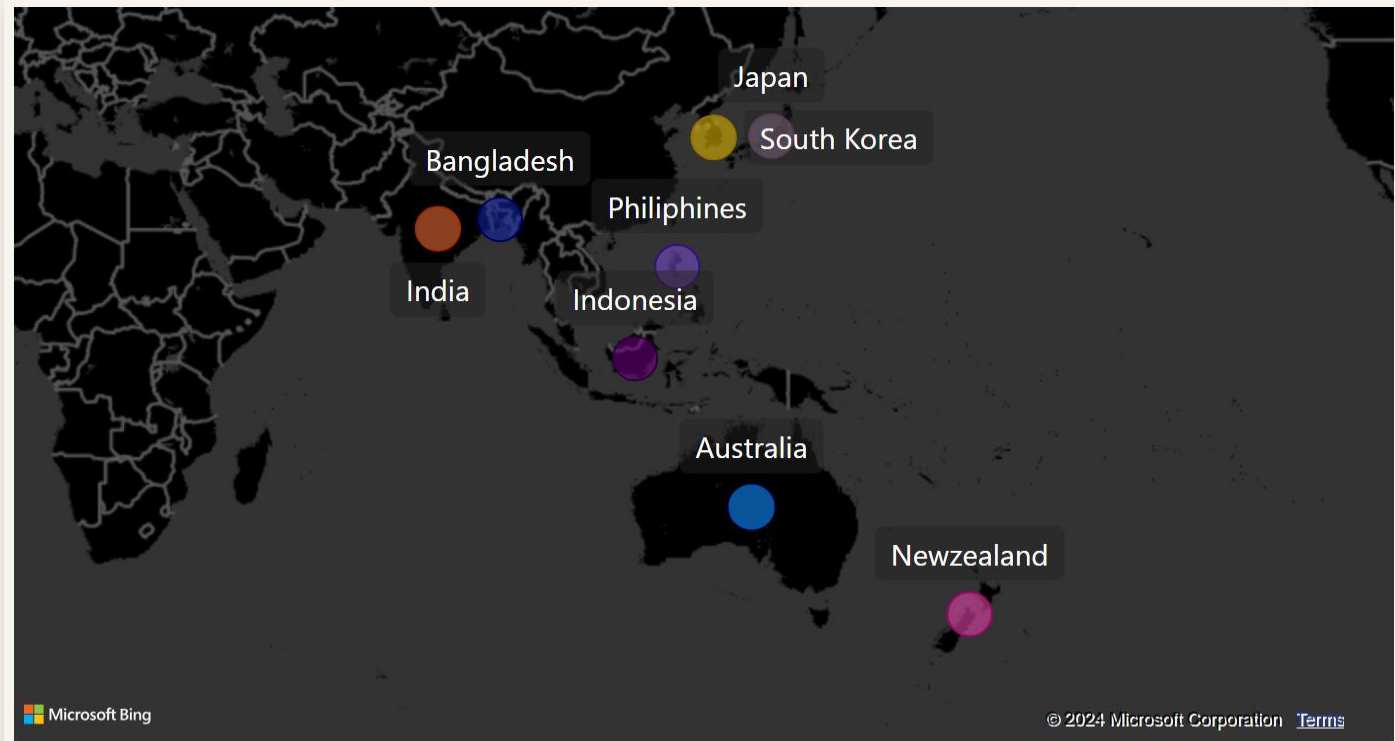   - product_code

Tools Used:

MySQL for Queries

Power BI for Analysis and Visualization

Q1: Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region

List of markets in which customer "Atliq Exclusive" operates

```sql
SELECT
    DISTINCT MARKET
FROM
    DIM_CUSTOMER
WHERE
    REGION = 'APAC'
AND
    CUSTOMER = 'Atliq Exclusive';
```

Insights: AtliQ Exclusive operates its business in 8 markets of Asia Pacific APAC region.

Q2: What is the percentage of unique product increase in 2021 vs. 2020?


```sql
Unique product increase in 2021 vs. 2020

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
  P20.UNIQUE_PRODUCTS_2020, P21.UNIQUE_PRODUCTS_2021,
  ROUND( ( (P21.UNIQUE_PRODUCTS_2021 - P20.UNIQUE_PRODUCTS_2020)
   *100 / P20.UNIQUE_PRODUCTS_2020) , 2) AS "PERCENTAGE_CHG"
FROM
  Products_2021 P21 CROSS JOIN Products_2020 P20 ;
```

- UNIQUE_PRODUCTS_2020 ● UNIQUE_PRODUCTS_2021

36.33%
Percentage Change

334

245
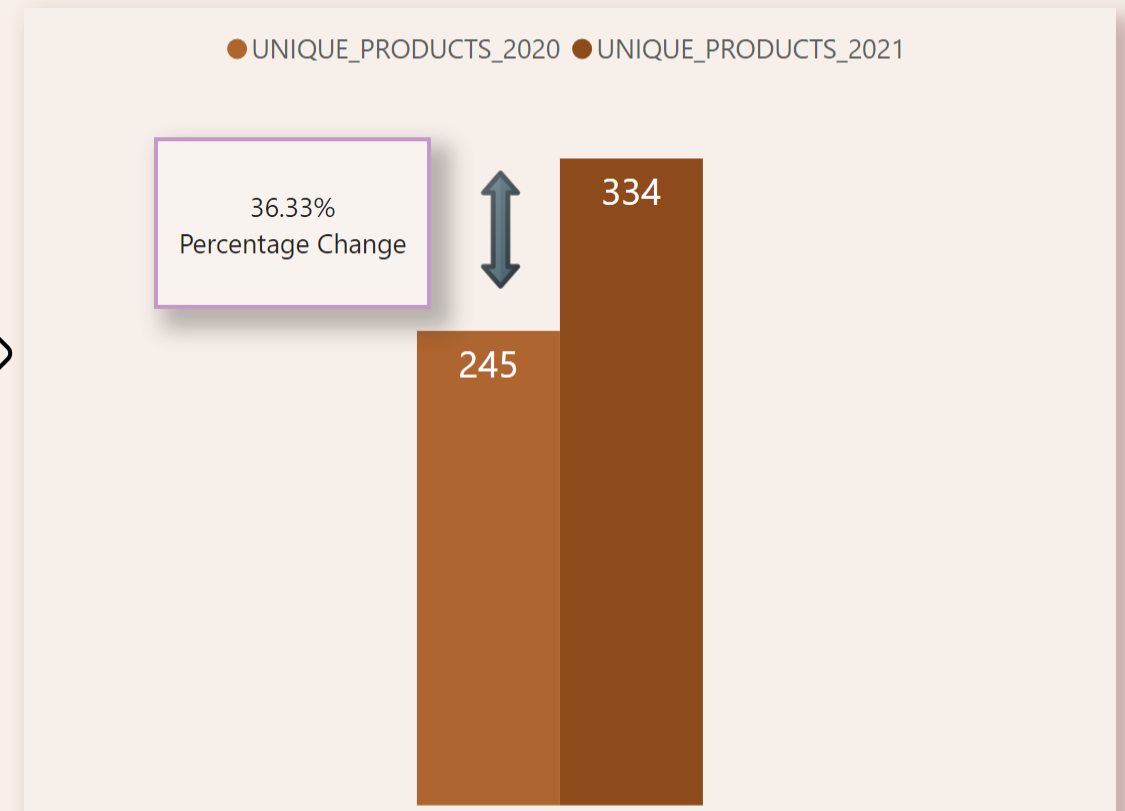
Insights: **Products demand and production increased from 2020 to 2021**

Q3: Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.

```
Unique product counts for each segment

SELECT
    SEGMENT,
    COUNT(DISTINCT PRODUCT_CODE) AS "PRODUCT_COUNT"
FROM
    DIM_PRODUCT
GROUP BY
    SEGMENT
ORDER BY
    PRODUCT_COUNT DESC;
```


Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9
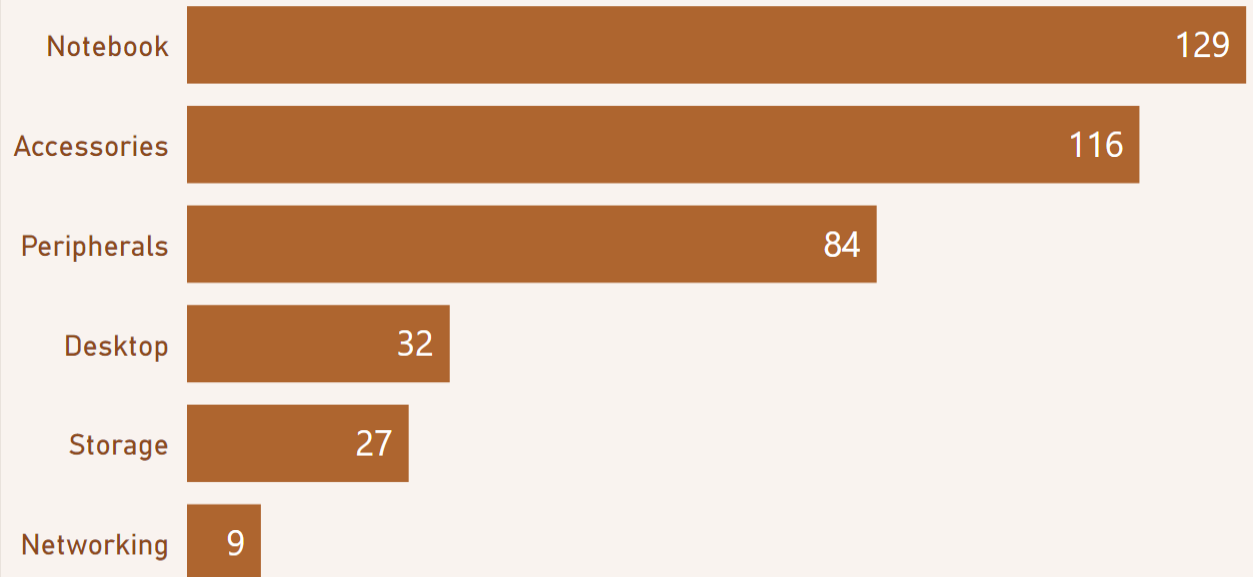
Unique Products

Insights: **Segments Notebook, Accessories and Peripherals stands out with a remarkable number of unique products compared to desktop, storage and networking.**

Q4: Follow-up: Which segment had the most increase in unique products in 2021 vs 2020?


```
Segment had the most increase in unique products in 2021 vs 2020

WITH
PRODUCTS_2020 AS
  (SELECT SEGMENT, COUNT( DISTINCT P.PRODUCT_CODE) AS "product_count_2020"
  FROM
    DIM_PRODUCT P JOIN FACT_SALES_MONTHLY FS
  ON
    FS.PRODUCT_CODE= P.PRODUCT_CODE
  WHERE
    FISCAL_YEAR = 2020
  GROUP BY SEGMENT)
,
PRODUCTS_2021 AS
  (SELECT SEGMENT, COUNT(DISTINCT P.PRODUCT_CODE) AS "product_count_2021"
  FROM
    DIM_PRODUCT P JOIN FACT_SALES_MONTHLY FS
  ON
    FS.PRODUCT_CODE= P.PRODUCT_CODE
  WHERE
    FISCAL_YEAR = 2021
  GROUP BY SEGMENT)

SELECT
    P20.SEGMENT,  product_count_2021, product_count_2020,
    (product_count_2021-product_count_2020) AS "DIFFERENCE"
FROM
    PRODUCTS_2020 P20  JOIN PRODUCTS_2021 P21
ON
    P20.SEGMENT = P21.SEGMENT;
```

SEGMENT	Product_count_2020	Product_count_2021	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: **Accessories shows the largest increase in production from 2020 to 2021, and Networking and Storage segments production growth is lagging behind compared to compared to other segments.**

Q5: Get the products that have the highest and lowest manufacturing costs.

```sql
                    Products that have the highest and lowest manufacturing costs

SELECT
    DP.PRODUCT_CODE, PRODUCT, MANUFACTURING_COST
FROM
    DIM_PRODUCT DP JOIN FACT_MANUFACTURING_COST FM
ON
    FM.PRODUCT_CODE = DP.PRODUCT_CODE
WHERE MANUFACTURING_COST IN
(
    (SELECT MAX(MANUFACTURING_COST) FROM fact_manufacturing_cost)
,
    (SELECT MIN(MANUFACTURING_COST) FROM fact_manufacturing_cost)
)
ORDER BY
    MANUFACTURING_COST DESC;
```

PRODUCT	MANUFACTURING_COST
AQ HOME Allin1 Gen 2	240.54
AQ Master wired x1 Ms	0.89

| 0.892	240.5364
AQ Master wired x1 Ms MOUSE	AQ HOME Allin1 Gen 2 Personal Desktop

Insights:

AQ HOME Allin1 Gen 2 personal desktop has the highest manufacturing cost, and
AQ Master wired x1 Ms mouse has the lowest manufacturing cost
among all the products manufactured by AtliQ Hardware.

Q6: 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.

```sql
-- Top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021

SELECT
    DC.CUSTOMER,
    AVG(PRE_INVOICE_DISCOUNT_PCT) AS "AVERAGE_DISCOUNT_PERCENTAGE"
FROM
    FACT_PRE_INVOICE_DEDUCTIONS FINV JOIN DIM_CUSTOMER DC
ON
    DC.CUSTOMER_CODE = FINV.CUSTOMER_CODE
WHERE
    FISCAL_YEAR = 2021 AND MARKET = 'INDIA'
GROUP BY
    DC.CUSTOMER
ORDER BY
    AVERAGE_DISCOUNT_PERCENTAGE DESC
LIMIT 5 ;
```
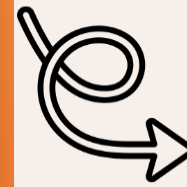
Flipkart
30.83%
AVERAGE_DISCOUNT_PERCENTAGE

Viveks
30.38%
AVERAGE_DISCOUNT_PERCENTAGE

Ezone
30.28%
AVERAGE_DISCOUNT_PERCENTAGE

Croma
30.25%
AVERAGE_DISCOUNT_PERCENTAGE

Vijay Sales
27.53%
AVERAGE_DISCOUNT_PERCENTAGE

Insights:

Flipkart received the highest average percentage discount of 30.83%
Vijay Sales received the lowest average percentage discount of 27.53%
Among the TOP 5 customers who received average high pre invoice discount percentage in Fiscal year 2021

Q7: 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

```sql
SELECT
  DATE_FORMAT(DATE, '%M') AS MONTHS, GP.FISCAL_YEAR,
  ROUND(SUM(SOLD_QUANTITY*GROSS_PRICE)/1000000,2)
                              AS "GROSS SALES AMOUNT(Mlns)"
FROM
  FACT_SALES_MONTHLY FS
JOIN
  FACT_GROSS_PRICE GP
ON
  FS.FISCAL_YEAR = GP.FISCAL_YEAR AND FS.PRODUCT_CODE = GP.PRODUCT_CODE
JOIN
  DIM_CUSTOMER DC
ON
  DC.CUSTOMER_CODE = FS.CUSTOMER_CODE
WHERE
  CUSTOMER = 'Atliq Exclusive'
GROUP BY
  MONTHS, GP.FISCAL_YEAR
ORDER BY
  GP.FISCAL_YEAR ASC;
```


Gross sales amount for the customer "AtliqExclusive" for each month
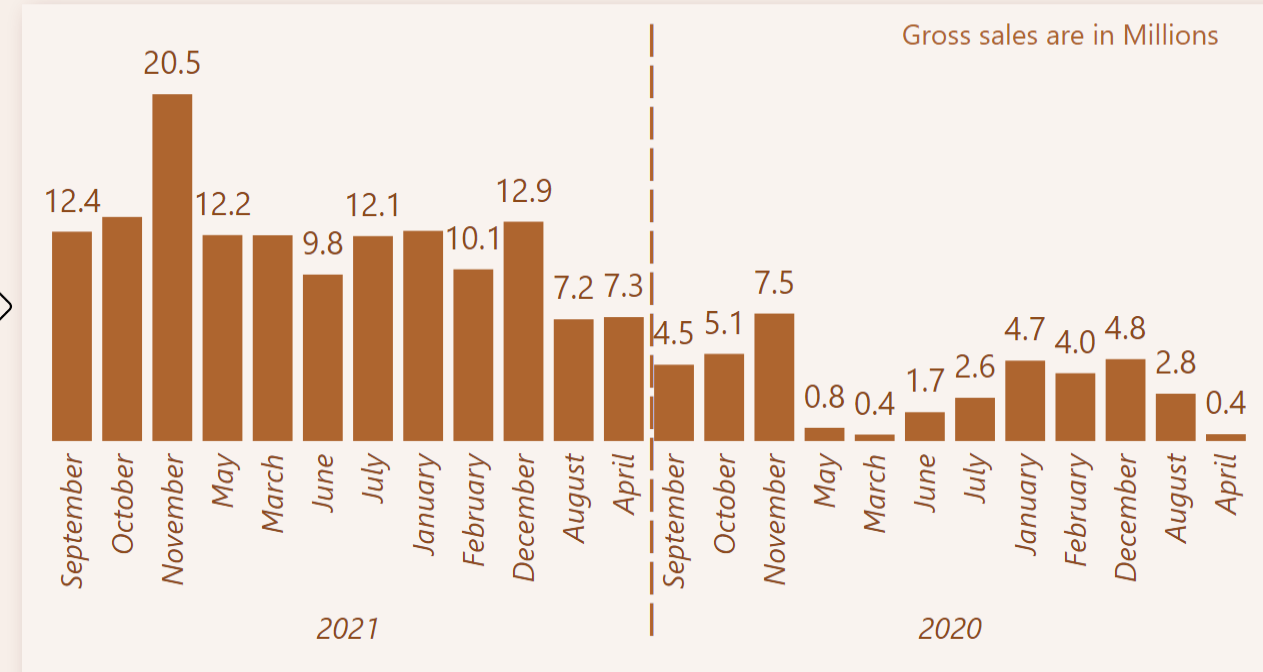
Insights:
AtliQ Exclusive saw the highest Gross sales in the month of **November 2021** and lowest sales in the months of **March and April 2020**

Q8: In which quarter of 2020, got the maximum total_sold_quantity?

The quarter of 2020 that got the maximum total_sold_quantity

```sql
SELECT
    CONCAT('Q',quarter(DATE_ADD (DATE, INTERVAL 4 MONTH) ) ) AS "QUATER",
    SUM(SOLD_QUANTITY)/1000000 AS "TOTAL_SOLD_QUANTITY_Mlns"
FROM
    FACT_SALES_MONTHLY
WHERE
    FISCAL_YEAR = 2020
GROUP BY
    QUATER
ORDER BY
    TOTAL_SOLD_QUANTITY_Mlns DESC;
```

Quarter	Value
Q1	7.01
Q2	6.65
Q4	5.04
Q3	2.08
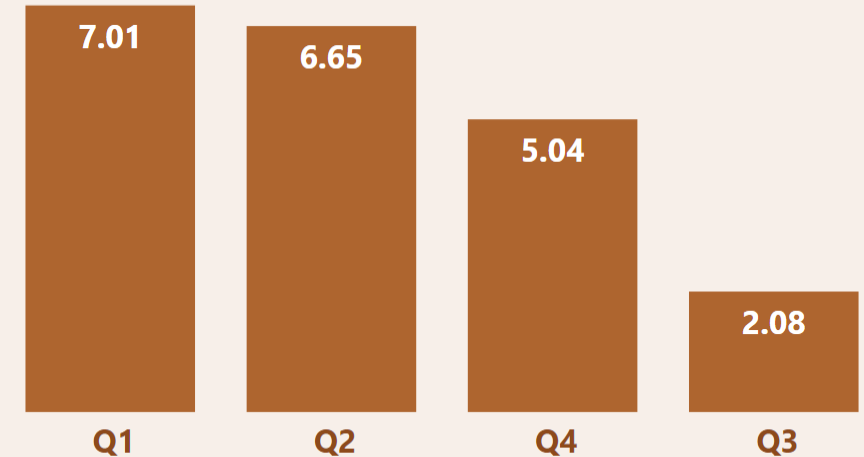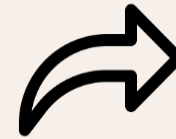
Values are in Millions

Insights:

    Quarter 1 of fiscal year 2020 saw the most number of products sold quantity where as

    Quarter 3 of 2020 saw the lowest number of products sold quantity.

    Quarter 1 contributed almost 34% of the total products sold quantity for fiscal year 2020.

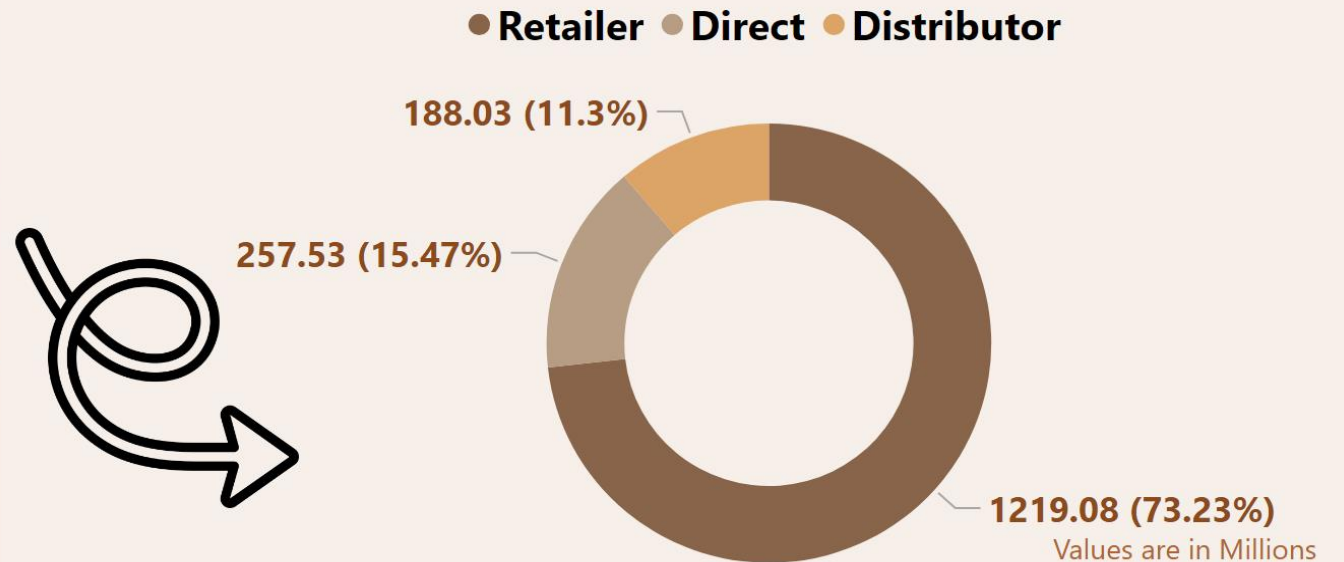# Q9: Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution

```sql
WITH
Gross_sales AS
    (SELECT
      CHANNEL,
      ROUND(SUM(SOLD_QUANTITY * GROSS_PRICE) /1000000,2)
                              AS "GROSS_SALES_Mlns"
    FROM FACT_GROSS_PRICE GP
    JOIN FACT_SALES_MONTHLY FS
    ON
      FS.FISCAL_YEAR = GP.FISCAL_YEAR AND FS.PRODUCT_CODE = GP.PRODUCT_CODE
    JOIN DIM_CUSTOMER DC
    ON
      DC.CUSTOMER_CODE = FS.CUSTOMER_CODE
    WHERE
      GP.FISCAL_YEAR = 2021
    GROUP BY CHANNEL)
,
Total_sale AS
    (SELECT
        SUM(GROSS_SALES_MLNS) AS "TOTAL_SALES_Mlns"
      FROM Gross_sales )

SELECT
    CHANNEL, GROSS_SALES_MLNS,
    ROUND( (GROSS_SALES_MLNS / TOTAL_SALES_Mlns) *100,2) AS "PERCENTAGE"
FROM
    Gross_sales CROSS JOIN Total_sale
ORDER BY GROSS_SALES_MLNS DESC;
```

channel that bring more gross sales in the fiscal year 2021 and the percentage of contribution

● **Retailer** ● **Direct** ● **Distributor**

188.03 (11.3%)

257.53 (15.47%)

1219.08 (73.23%)

Values are in Millions

Insights:

Platform **Retailer** brought most gross sales to AtliQ Hardware contributing 73% to the total sales.
Distributor brought the least gross sales to the company contributing 11.3% to the total gross sales in the fiscal year 2021.

Q10: Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021

```sql
Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021
WITH
Division_sales AS
  (SELECT
    DIVISION, DP.PRODUCT_CODE, DP.PRODUCT,
    SUM(SOLD_QUANTITY) AS "TOTAL_SOLD_QUANTITY"
  FROM
    DIM_PRODUCT DP JOIN FACT_SALES_MONTHLY FSM
  ON
    FSM.PRODUCT_CODE = DP.PRODUCT_CODE
  WHERE
    FSM.FISCAL_YEAR = 2021
  GROUP BY
    DP.DIVISION, DP.PRODUCT_CODE, DP.PRODUCT)
,
Sales_rank AS
  (SELECT *,
    DENSE_RANK() OVER(PARTITION BY DIVISION ORDER BY TOTAL_SOLD_QUANTITY DESC)
                    S_rnk FROM Division_sales)

SELECT * FROM Sales_rank where S_rnk <= 3;
```

DIVISION	PRODUCT_CODE	PRODUCT	TOTAL_SOLD_QUANTITY
N & S	A6720160103	AQ Pen Drive 2 IN 1	701.37K
N & S	A6818160202	AQ Pen Drive DRC	688.00K
N & S	A6819160203	AQ Pen Drive DRC	676.25K
P & A	A2319150302	AQ Gamers Ms	428.50K
P & A	A2520150501	AQ Maxima Ms	419.87K
P & A	A2520150504	AQ Maxima Ms	419.47K
PC	A4218110202	AQ Digit	17.43K
PC	A4218110208	AQ Digit	17.28K
PC	A4319110306	AQ Velocity	17.28K

Insights:

For N&S, **AQ Pen Drive 2 in 1 is the top selling product with a total of 701.37 thousand quantities sold in FY 2021** and two variants of **AQ pen drive DRC** with sale of **688** and **676.25** thousand quantities respectively.