

CONSUMER GOODS AD – HOC INSIGHTS

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Objectives

- ❖ AtliQ Hardware stands out as a prominent manufacturer of computer hardware within India, boasting a robust international footprint.
- ❖ Management has observed a deficiency in their ability to swiftly and intelligently make data-driven decisions. Consequently, they aim to bolster their data analytics team by recruiting multiple junior data analysts.
- ❖ In order to comprehensively evaluate the suitability of Tony Sharma as a potential candidate, the Director of Data Analytics, Tony Sharma, plans to arrange an SQL challenge. This challenge will assess not only his technical proficiency but also his soft skills.
- ❖ The company has pinpointed 10 specific ad hoc requests for which they are seeking valuable insights.

Input Data

dim_customer
customer_code INT
customer VARCHAR(150)
platform VARCHAR(45)
channel VARCHAR(45)
market VARCHAR(45)
sub_zone VARCHAR(45)
region VARCHAR(45)

fact_pre_invoice_deductions
customer_code INT
fiscal_year YEAR
pre_invoice_discount_pct DECIMAL(5,4)

fact_sales_monthly
date DATE
product_code VARCHAR(45)
customer_code INT
sold_quantity INT
fiscal_year YEAR

fact_manufacturing_cost
product_code VARCHAR(45)
cost_year YEAR
manufacturing_cost DECIMAL(15,4)

fact_gross_price
product_code VARCHAR(45)
fiscal_year YEAR
gross_price DECIMAL(15,4)

dim_product
product_code VARCHAR(45)
division VARCHAR(45)
segment VARCHAR(45)
category VARCHAR(45)
product VARCHAR(200)
variant VARCHAR(45)

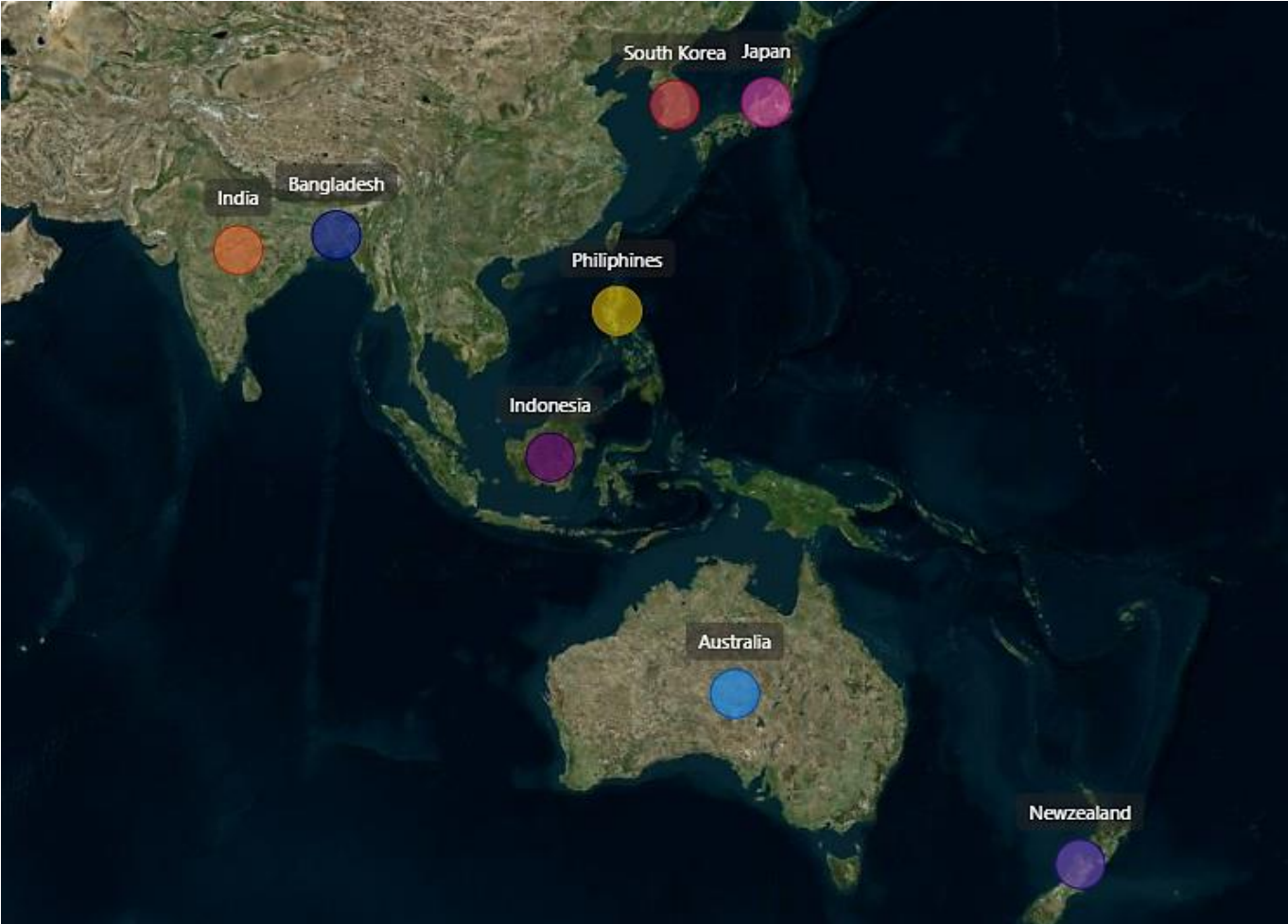
Request – 1 : Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

SQL Query

```
Select DISTINCT market
FROM dim_customer
WHERE customer = "Atliq Exclusive" and region = "APAC";
```

Output

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh



"AtliQ Exclusive" has expanded its presence into 8 key markets within the Asia-Pacific (APAC) region. This is a significant achievement.

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

SQL Query

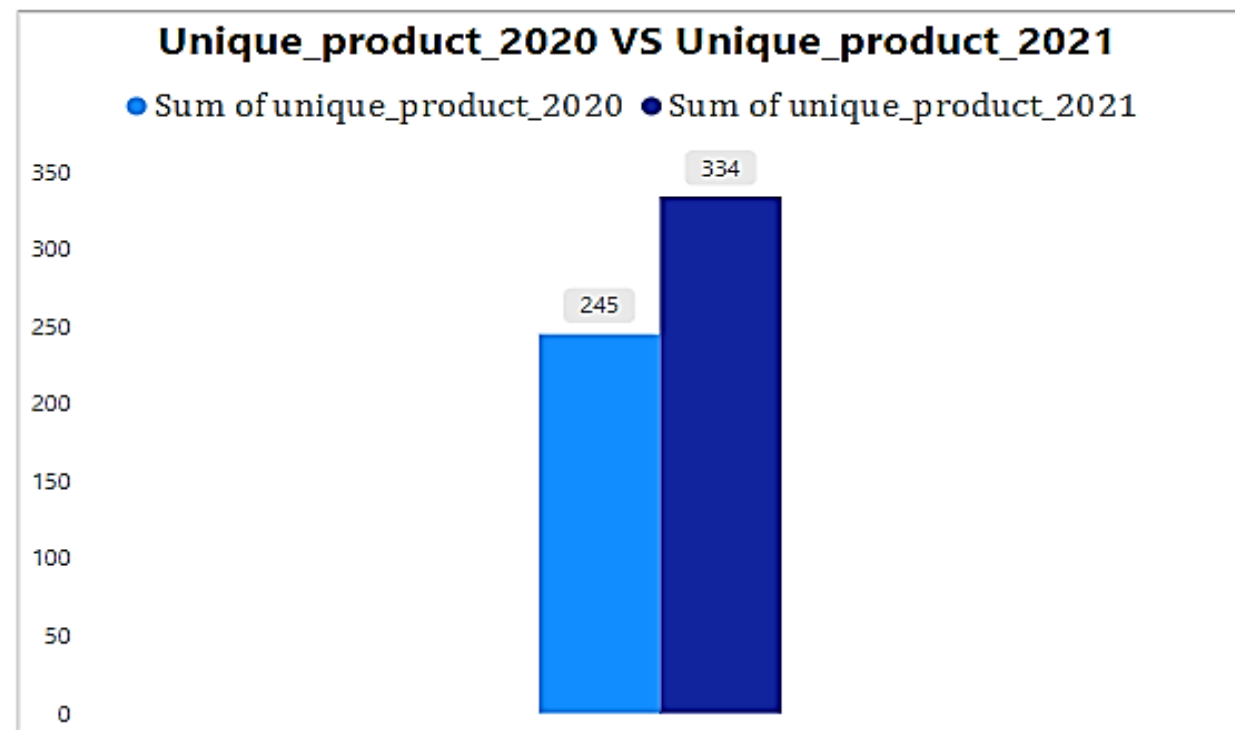
```
WITH CTE1 AS(  
    SELECT COUNT(DISTINCT product_code) unique_product_2020  
    FROM fact_sales_monthly  
    WHERE fiscal_year = 2020),  
CTE2 AS(  
    SELECT COUNT(DISTINCT product_code) unique_product_2021  
    FROM fact_sales_monthly  
    WHERE fiscal_year = 2021)  
  
SELECT  
    unique_product_2020,  
    unique_product_2021,  
    ROUND((unique_product_2021 - unique_product_2020) * 100 / unique_product_2020, 2) as percentage_chg  
FROM CTE1  
JOIN CTE2;
```

Output

unique_product_2020	unique_product_2021	percentage_chg
245	334	36.33

Visual and insights

unique_product_2020	unique_product_2021	percentage_chg
245	334	36.33



- We are actively showcasing continuous innovation, consistently rolling out new products. In 2020, we offered 245 products, and by 2021, that number surged by 36%, reaching a total of 334 products.

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

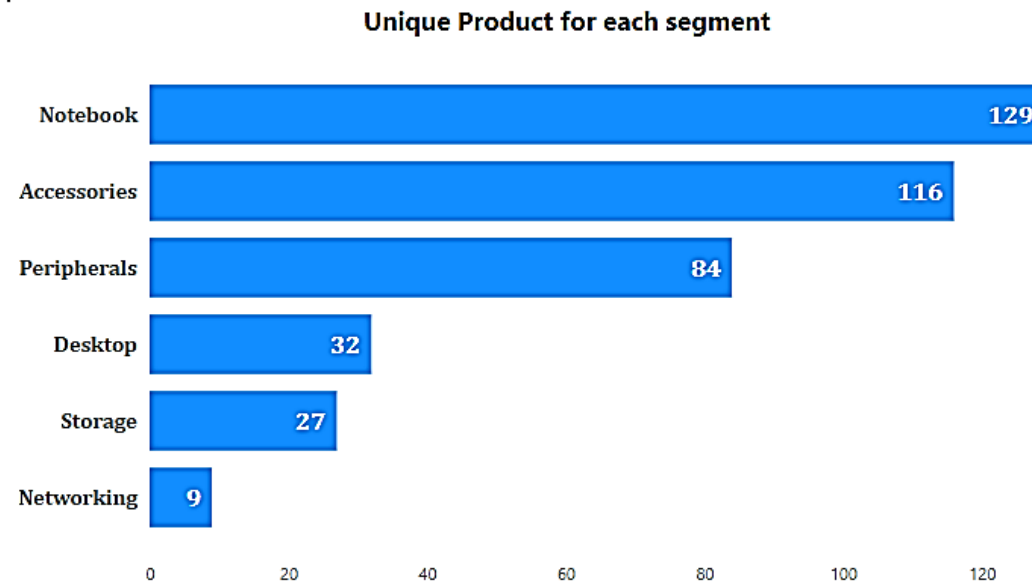
```
SELECT
    segment,
    COUNT(DISTINCT product_code) as product_count
FROM dim_product
GROUP BY segment
ORDER BY product_count DESC;
```

Output

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

Visual and insights

segment	product_count
Notebook	129
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Networking	9



- Segments like Notebooks, Accessories, and Peripherals are seeing significant manufacturing growth compared to Desktop storage and networking.
- Together, Notebooks, Accessories, and Peripherals constitute 83% of our manufacturing output.

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
- difference

SQL Query

```
> WITH CTE1 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 fiscal_year = 2020  
    GROUP BY p.segment),  
-  
> CTE2 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 fiscal_year = 2021  
    GROUP BY p.segment)  
-  
  
SELECT  
    CTE1.segment,  
    product_count_2020,  
    product_count_2021,  
    (product_count_2021 - product_count_2020) as Difference  
FROM CTE1  
JOIN CTE2  
    on CTE1.segment = CTE2.segment  
ORDER BY Difference DESC;]
```

Output

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

- Accessories saw the most significant rise in production.
- Storage and Networking are undergoing slower growth compared to other 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

SQL Query

```
SELECT
    p.product_code,
    p.product,
    c.manufacturing_cost
FROM
    dim_product p
JOIN
    fact_manufacturing_cost c
    on p.product_code = c.product_code
WHERE
    c.manufacturing_cost = (
        SELECT max(manufacturing_cost)
        FROM fact_manufacturing_cost)
    OR
    c.manufacturing_cost = (
        SELECT min(manufacturing_cost)
        FROM fact_manufacturing_cost);
```

Output

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

- AQ HOME Allin 1 Gen 2 **Personal Desktop** has highest manufacturing cost.
- AQ Master wired x1 Ms **Mouse** has 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

SQL Query

```
SELECT
    c.customer_code,
    c.customer,
    d.pre_invoice_discount_pct AS average_discount_percentage
FROM
    dim_customer c
JOIN
    fact_pre_invoice_deductions d
ON c.customer_code = d.customer_code
WHERE
    pre_invoice_discount_pct > (
        SELECT avg(pre_invoice_discount_pct)
        FROM fact_pre_invoice_deductions
    )
AND
    c.market = "india" AND d.fiscal_year = 2021
ORDER BY average_discount_percentage DESC
LIMIT 5;
```

Output

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

- Flipkart received the **highest** average_discount_percentage.
- Amazon received the **lowest** average_discount_percentage.

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

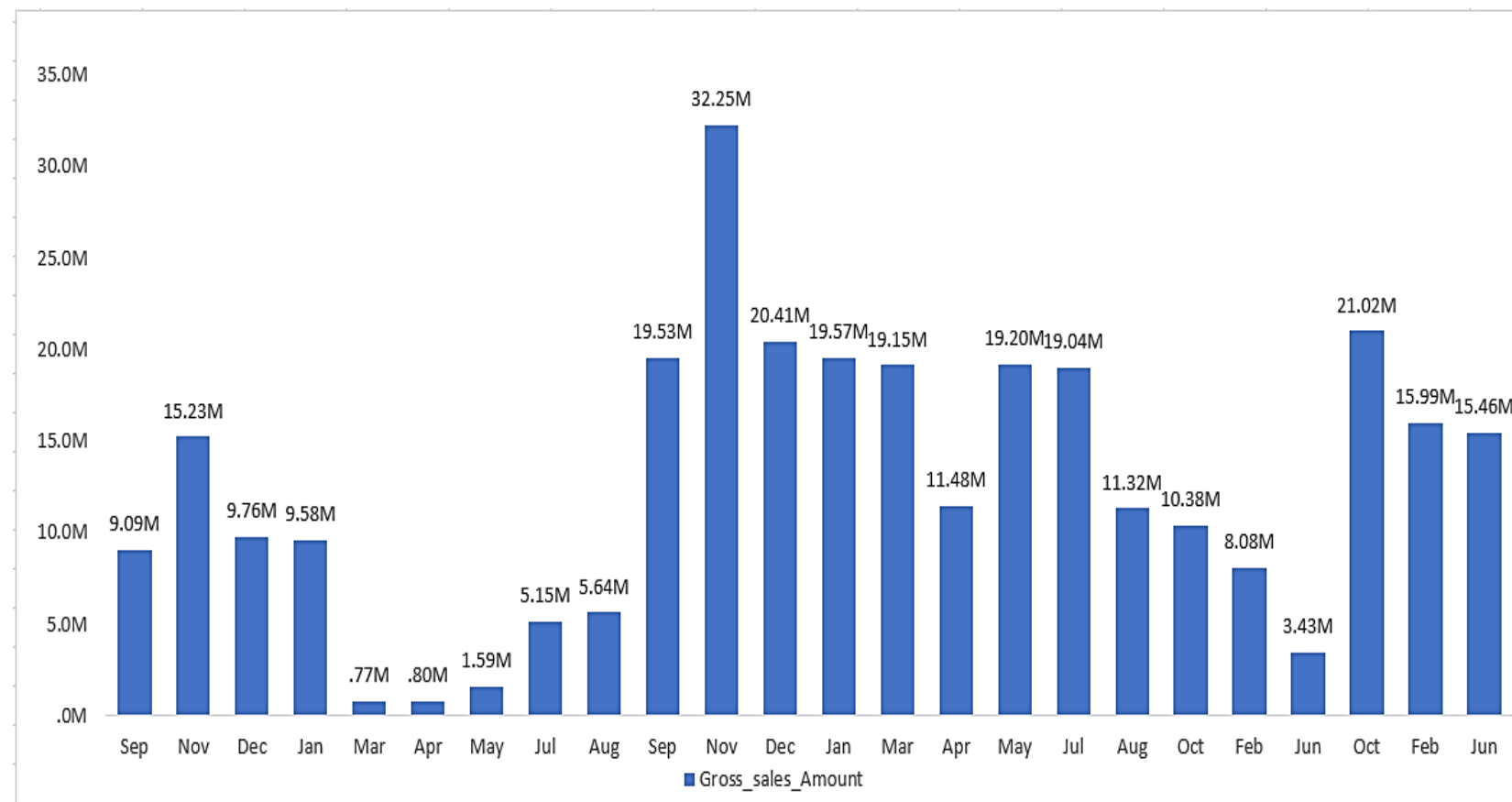
```
SELECT
    monthname(s.date) as Month,
    year(s.date) as Year,
    round(sum(gross_price * sold_quantity),2) as Gross_sales_Amount
FROM
    dim_customer c
JOIN
    fact_sales_monthly s
    ON c.customer_code = s.customer_code
JOIN
    fact_gross_price g
    ON g.product_code = s.product_code
WHERE customer = "Atliq Exclusive"
GROUP BY s.date;
```

Output

Month	Year	Gross_sales_Amount
September	2019	9092670.34
November	2019	15231894.97
December	2019	9755795.06
January	2020	9584951.94
March	2020	766976.45
April	2020	800071.95
May	2020	1586964.48
July	2020	5151815.40
August	2020	5638281.83
September	2020	19530271.30
November	2020	32247289.79
December	2020	20409063.18
January	2021	19570701.71
March	2021	19149624.92
April	2021	11483530.30
May	2021	19204309.41
July	2021	19044968.82
August	2021	11324548.34
October	2019	10378637.60
February	2020	8083995.55
June	2020	3429736.57
October	2020	21016218.21
February	2021	15986603.89
June	2021	15457579.66

Visual and insights

Month	Year	Gross_sales_Amount
September	2019	9092670.34
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May	2020	1586964.48
July	2020	5151815.40
August	2020	5638281.83
September	2020	19530271.30
November	2020	32247289.79
December	2020	20409063.18
January	2021	19570701.71
March	2021	19149624.92
April	2021	11483530.30
May	2021	19204309.41
July	2021	19044968.82
August	2021	11324548.34
October	2019	10378637.60
February	2020	8083995.55
June	2020	3429736.57
October	2020	21016218.21
February	2021	15986603.89
June	2021	15457579.66



- AtliQ Exclusive sold the most stuff in **November 2020** and Least in **March 2020**.
- After experiencing a decline in sales from March to August due to the impact of COVID-19, we are now seeing a positive turnaround. Sales have been steadily increasing and surpassing even our figures from 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

SQL Query

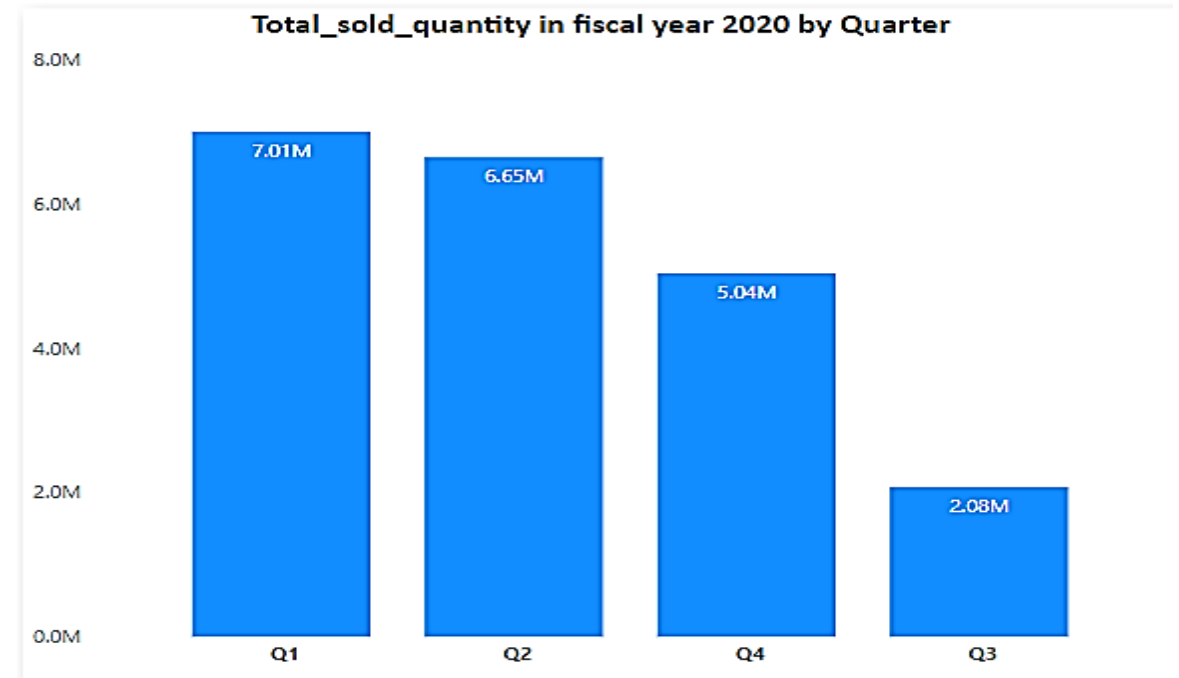
```
SELECT  
    CASE  
        WHEN month(s.date) IN (9,10,11) THEN "Q1"  
        WHEN month(s.date) IN (12,1,2) THEN "Q2"  
        WHEN month(s.date) IN (3,4,5) THEN "Q3"  
        WHEN month(s.date) IN (6,7,8) THEN "Q4"  
    END AS Quarter,  
    concat(FORMAT(SUM(s.sold_quantity) / 1000000 , 2) , " M") AS Total_sold_quantity  
from fact_sales_monthly s  
where s.fiscal_year = '2020'  
GROUP BY Quarter  
ORDER BY Total_sold_quantity DESC;
```

Output

Quarter	Total_sold_quantity
Q1	7.01 M
Q2	6.65 M
Q4	5.04 M
Q3	2.08 M

Visual and insights

Quarter	Total_sold_quantity
Q1	7.01 M
Q2	6.65 M
Q4	5.04 M
Q3	2.08 M



- Q1 of FY 2020 saw the peak in unit sales, while Q3 experienced the lowest sales.
- Around 34% of the total units sold in FY 2020 were accounted for by Q1

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

SQL Query

```
with CTE AS (  
    SELECT  
        c.channel,  
        concat(round(sum(gross_price * sold_quantity) / 1000000 ,2), " M") as Gross_sales_mil  
    FROM  
        dim_customer c  
        JOIN fact_sales_monthly s ON c.customer_code = s.customer_code  
        JOIN fact_gross_price g ON s.product_code = g.product_code  
    WHERE  
        s.fiscal_year = 2021  
    GROUP BY  
        c.channel  
    ORDER BY Gross_sales_mil DESC)  
  
SELECT  
    channel,  
    Gross_sales_mil,  
    CONCAT(ROUND((Gross_sales_mil * 100) / SUM(Gross_sales_mil) OVER() , 2), " %") AS Percentage  
FROM CTE;
```

Output

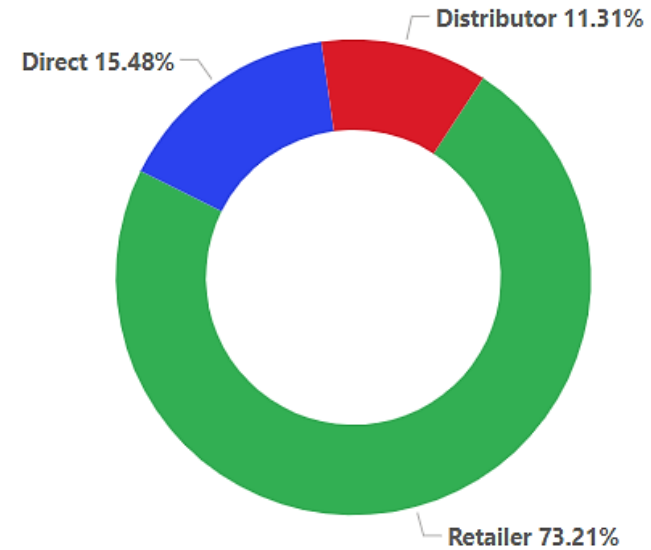
channel	Gross_sales_mil	Percentage
Direct	406.69 M	15.48 %
Distributor	297.18 M	11.31 %
Retailer	1924.17 M	73.22 %

Visual and insights

channel	Gross_sales_mil	Percentage
Direct	406.69 M	15.48 %
Distributor	297.18 M	11.31 %
Retailer	1924.17 M	73.22 %



Gross Sales and contribution % by channels for FY 2021



- Our sales were predominantly driven by **retailers**, accounting for **75%** of the total sales, with only a small fraction attributed to distributors and direct sales 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

SQL Query

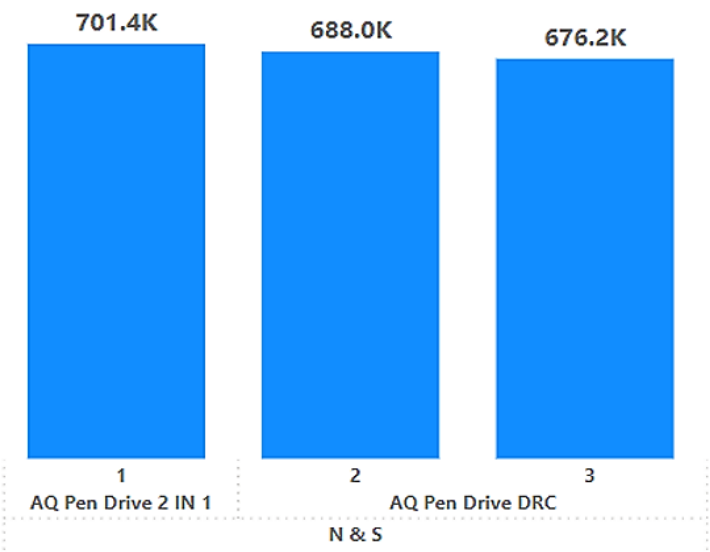
```
WITH CTE AS (  
  SELECT  
    p.division,  
    p.product_code,  
    p.product,  
    SUM(s.sold_quantity) AS Total_sold_quantity,  
    RANK() OVER(PARTITION BY division ORDER BY SUM(s.sold_quantity) DESC) AS Rank_order  
  FROM  
    dim_product p  
  JOIN  
    fact_sales_monthly s  
    ON p.product_code = s.product_code  
  WHERE  
    s.fiscal_year = '2021'  
  GROUP BY  
    p.division,  
    p.product_code,  
    p.product  
)  
SELECT *  
FROM CTE  
WHERE  
  Rank_order <= 3;
```

Output

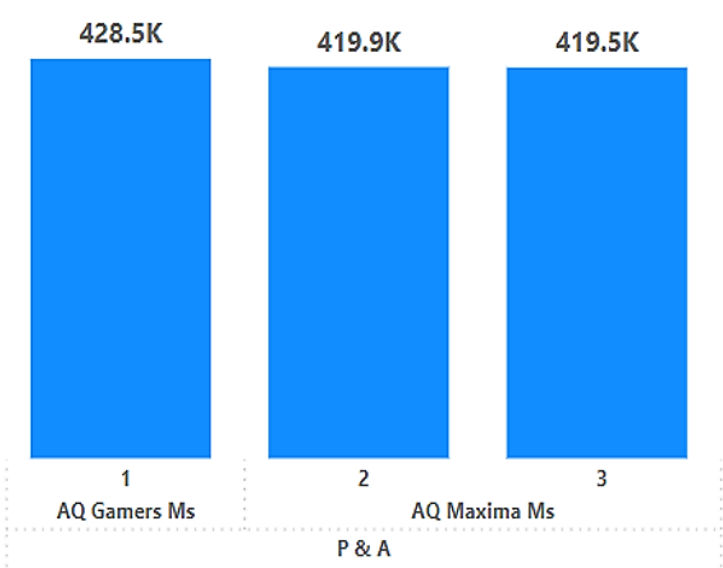
division	product_code	product	Total_sold_quantity	Rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima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

Visual and insights

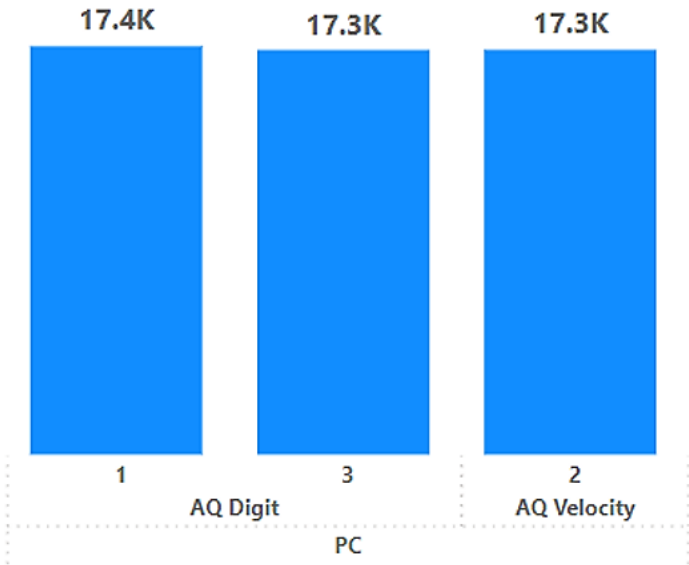
division	product_code	product	Total_sold_quantity	Rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima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



Pen drives emerged as the top-selling products & collectively reaching a total sales volume of approximately 700,000 units, making them the top three performers.



Mouse emerged as the top-selling products & collectively reaching a total sales volume of approximately 400,000 units, making them the top three performers.



Personal Laptop emerged as the top-selling products & collectively reaching a total sales volume of approximately 17,000 units, making them the top three performers.



Thank you