Ad_Hoc Insights

Domain : Consumer Goods

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Agenda

- Company Overview
- Objective
- Ad-HOC Requests & Tools
- Insights

Company Overview

- AtliQ Hardwares is a computer hardware manufacturer based in India, and it also runs its business in 26 other countries. The company makes products in three main divisions: Peripherals & Accessories, PC, Networking & Storage.
- We have a total of 74 customers across various countries, like Amazon, Flipkart, BestBuy, Neptune, Croma, Staples, Ezone, Ebay etc.
- AtliQ follows a fiscal year that begins on September 1st and ends on August 31st.

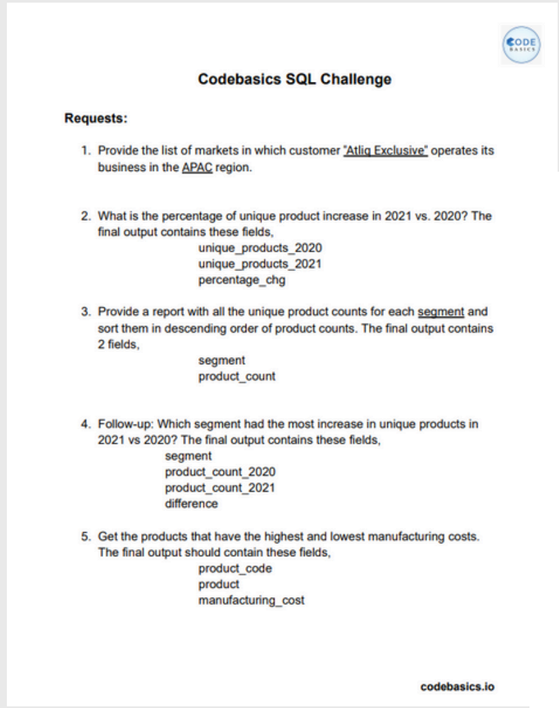
Objective

- AtliQ Hardwares (an imaginary company) is a leading computer hardware company based in India, with a growing presence in international markets.
- Although the company is growing rapidly, the management noticed a gap in data-driven decision-making. They lacked timely and actionable insights to support smart decisions.
- To address this, they decided to hire junior data analysts who are skilled in both tech and soft skills.
- Tony Sharma, the Director of Data Analytics, designed an SQL challenge to test candidates using real business data and see how well they could interpret and present insights.

Ad-HOC Requests & Tools

MySQL Ad-Hoc Queries

Power BI Visualization



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

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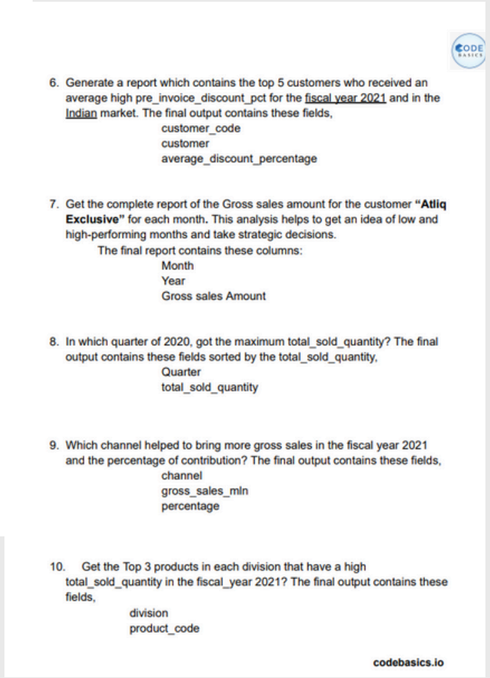


6. Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market. The final output contains these fields,
   customer_code
   customer
   average_discount_percentage

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

Ad-hoc Requests with Insights

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

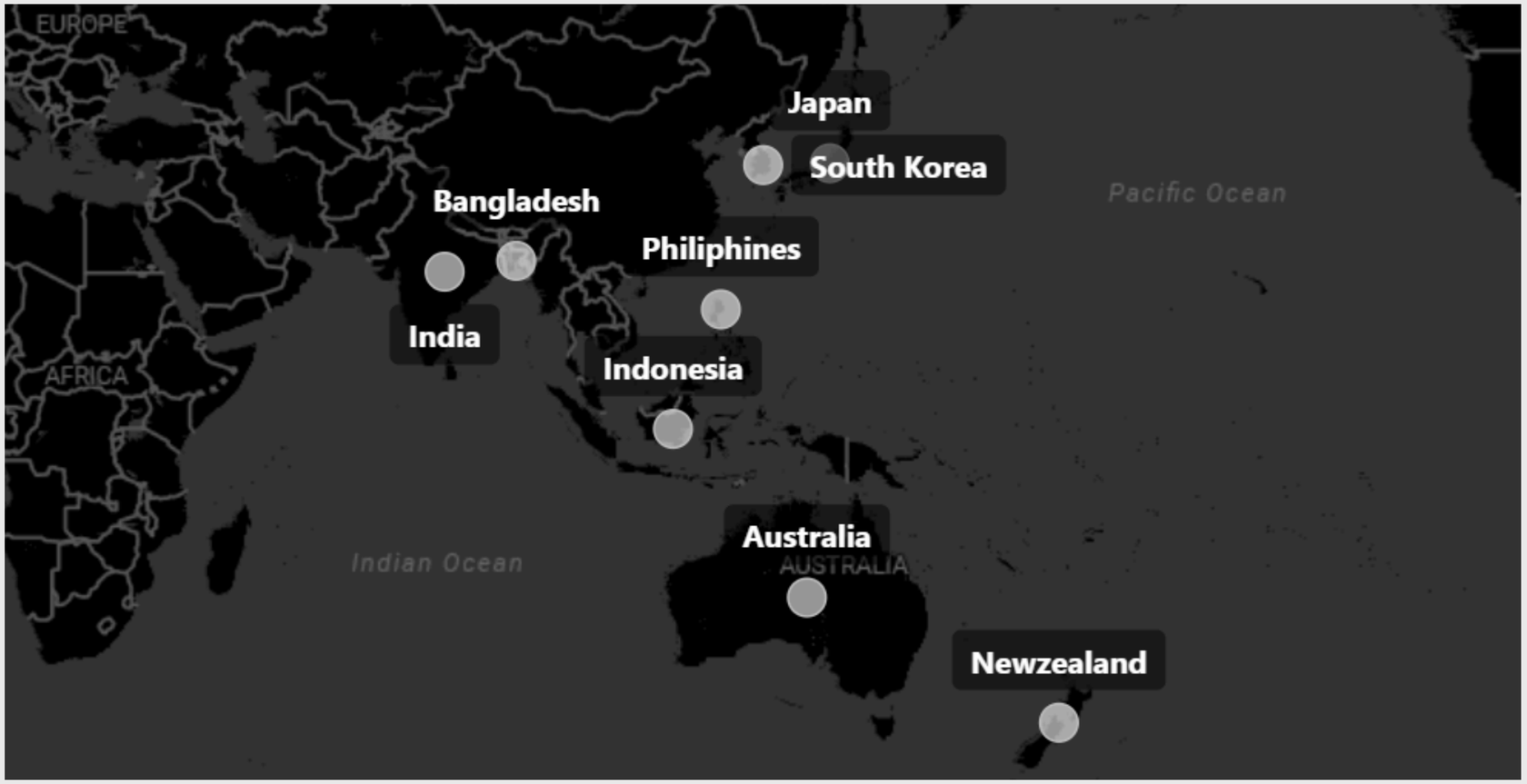
SQL Query

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

Output

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Insights



In the APAC region, our exclusive store is gaining preference in 8 major markets.

Q2. 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.

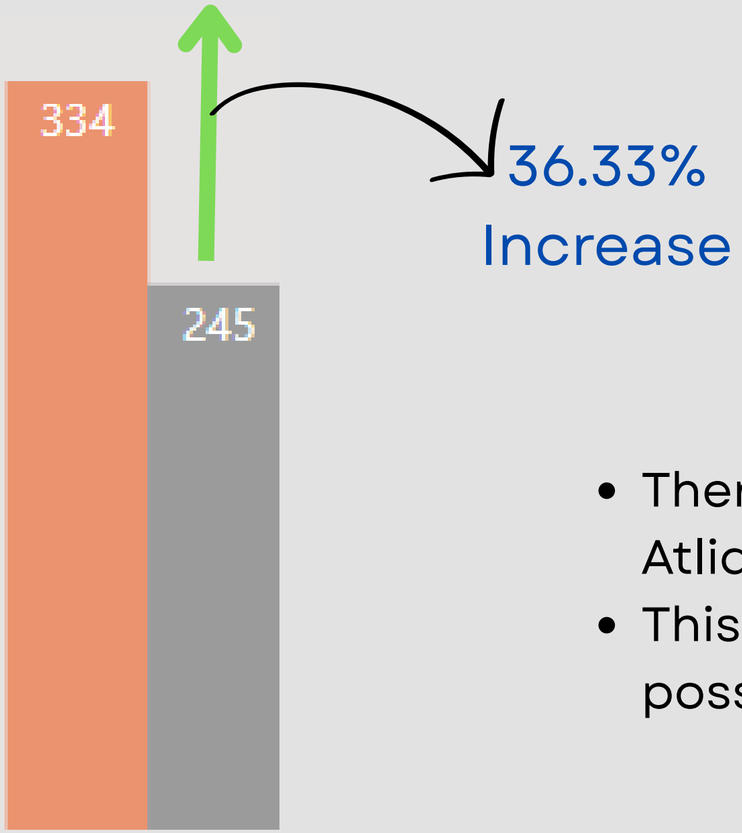
SQL Query

```sql
WITH product_counts AS (
    SELECT
        COUNT(DISTINCT CASE WHEN fiscal_year = 2020 THEN product_code END) AS unique_products_2020,
        COUNT(DISTINCT CASE WHEN fiscal_year = 2021 THEN product_code END) AS unique_products_2021
    FROM fact_sales_monthly
)

SELECT
    unique_products_2020,
    unique_products_2021,
    ROUND(
        ((unique_products_2021 - unique_products_2020) / unique_products_2020) * 100,
        2
    ) AS percentage_chg
FROM product_counts;
```

Output

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

Insights



- There was a 36.33% growth in unique products for Atliq Exclusive in 2021, rising from 245 to 334.
- This change reflects both product expansion and a possible shift in demand or customer preferences.

Q3. 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.

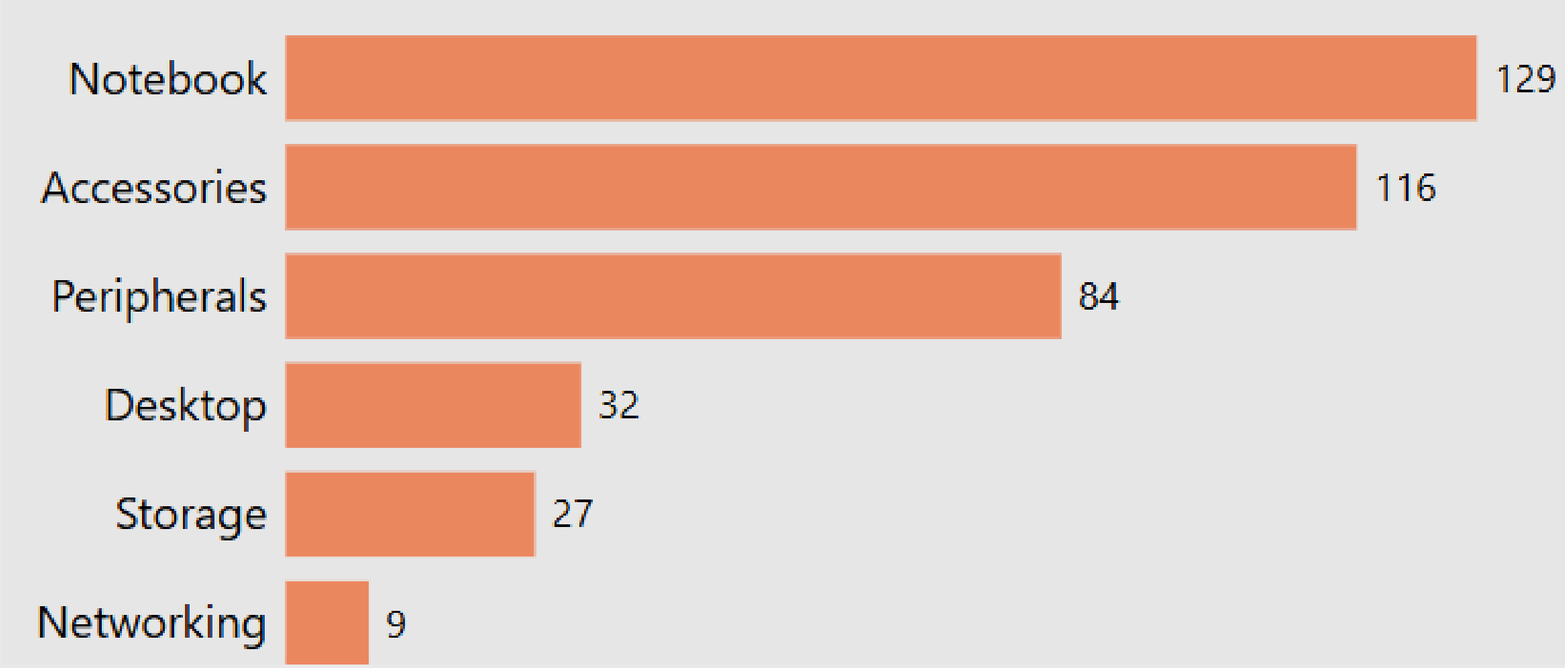
SQL Query

```sql
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

Insights



- Over 50% of all unique products belong to just two segments: Notebook (129) and Accessories (116).
- Peripherals (84) offer a moderate range, serving as a middle ground in the overall distribution.
- In comparison, Desktop (32),Networking (9) and Storage (27) make up less than 10% combined, highlighting a significant gap in product range.

Q4. 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.

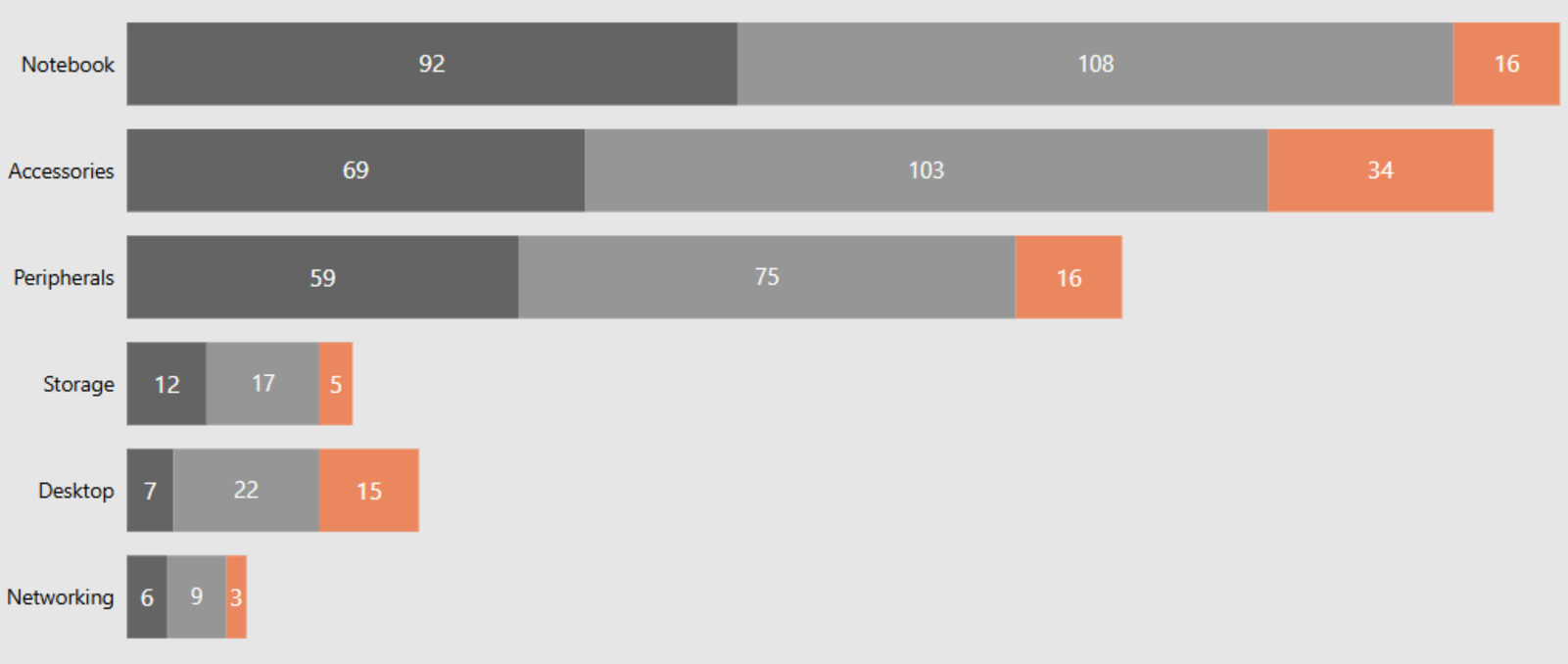
SQL Query

```sql
WITH product_counts AS (
    SELECT
        p.segment,
        COUNT(DISTINCT CASE WHEN fiscal_year = 2020 THEN s.product_code END) AS unique_product_code_20,
        COUNT(DISTINCT CASE WHEN fiscal_year = 2021 THEN s.product_code END) AS unique_product_code_21
    FROM
        fact_sales_monthly s
    JOIN
        dim_product p
        ON s.product_code = p.product_code
    GROUP BY
        p.segment
)

SELECT
    segment,
    unique_product_code_20,
    unique_product_code_21,
    unique_product_code_21 - unique_product_code_20 AS difference
FROM
    product_counts
ORDER BY
    difference DESC;
```

Output

segment	unique_product_code_20	unique_product_code_21	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 led the product expansion in 2021, with 34 new unique products added.
- Notebook, Peripherals, and Desktop showed steady growth, adding 16, 16, and 15 products respectively.
- Storage and Networking had limited development, with only 5 and 3 new products introduced.

Q5. Get the products that have the highest and lowest manufacturing costs. The final output should contain these fields-product_code , product , manufacturing_cost.

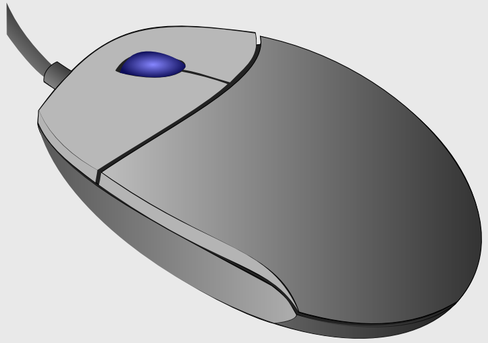
SQL Query

```sql
SELECT
    m.product_code,
    p.product,
    ROUND(m.manufacturing_cost, 2) AS manufacturing_cost
FROM
    fact_manufacturing_cost m
JOIN
    dim_product p
    ON m.product_code = p.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);
```

Output

product_code	product	manufacturing_cost
A2118150101	AQ Master wired x1 Ms	0.89
A6120110206	AQ HOME Allin1 Gen 2	240.54

Insights



Mouse

A2118150101

AQ Master wired x1 Ms (Standard 1)

Personal Desktop

A6120110206

AQ HOME Allin1 Gen 2 (Plus 3)

Mouse: The lowest manufacturing cost is for AQ Master wired x1 Ms, priced at just $0.89.

Personal Desktop: The highest is for AQ HOME Allin1 Gen 2, costing $240.54 to produce.

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. The final output contains these fields-customer_code , customer, average_discount_percentage.

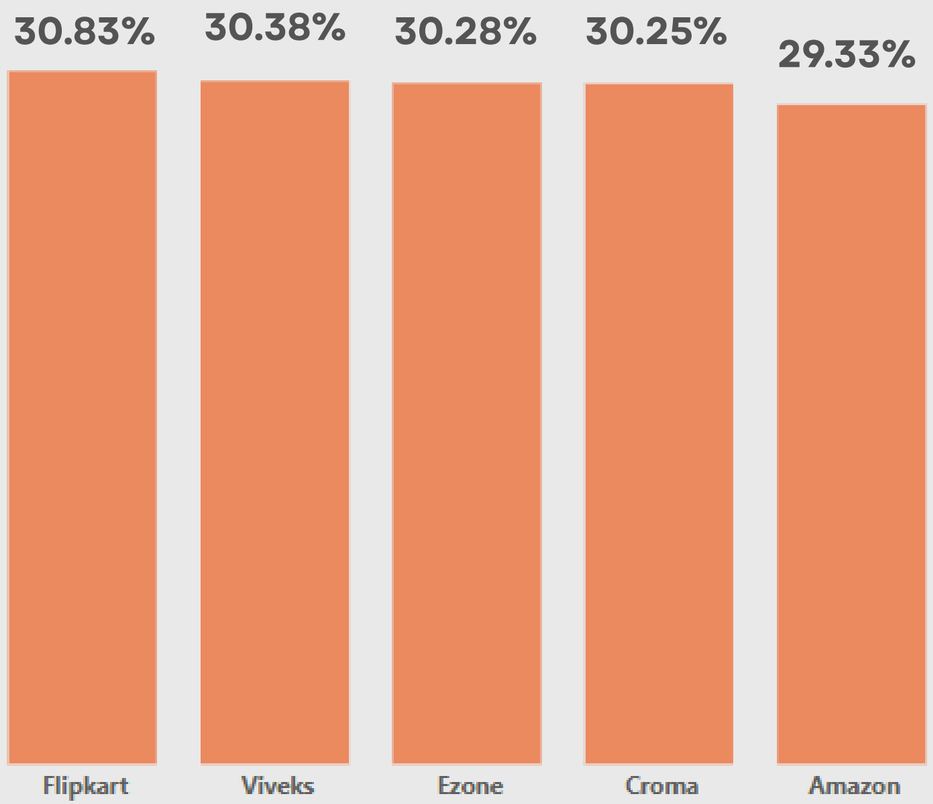
SQL Query

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

Output

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

Insights



In the Indian market for FY 2021, Flipkart received the highest average pre-invoice discount at 30.83%,while Amazon had the lowest among the top five, at 29.33%.

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. The final report contains these columns-Month, Year, Gross sales Amount.

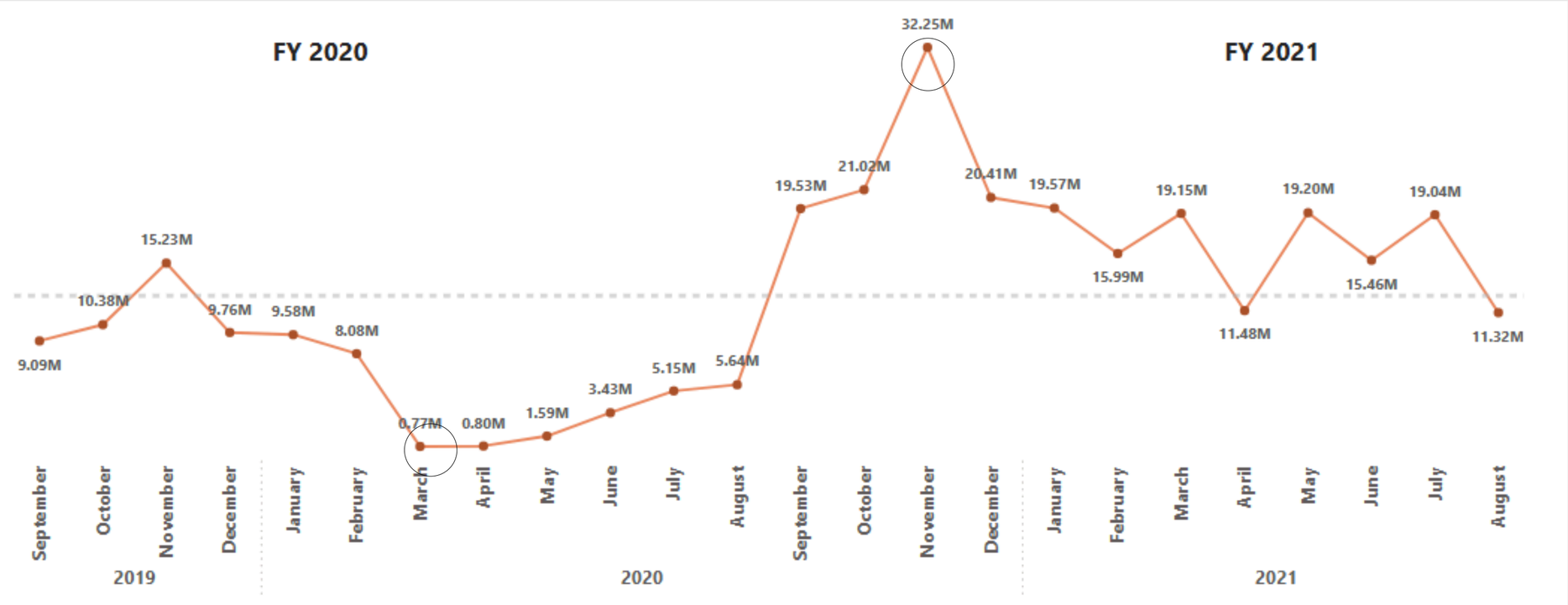
SQL Query

```sql
WITH sales_data AS (
    SELECT
        s.date,
        MONTHNAME(s.date) AS month_name,
        s.fiscal_year,
        g.gross_price,
        s.sold_quantity,
        c.customer
    FROM fact_sales_monthly s
    JOIN fact_gross_price g
        ON s.product_code = g.product_code
    JOIN dim_customer c
        ON s.customer_code = c.customer_code
    WHERE c.customer = 'Atliq Exclusive'
)

SELECT
    month_name,
    fiscal_year,
    SUM(ROUND(gross_price * sold_quantity, 2)) AS Gross_sales_Amount
FROM sales_data
GROUP BY month_name, fiscal_year;
```

Output

month_name	fiscal_year	Gross_sales_Amount
September	2020	9092670.85
October	2020	10378637.79
November	2020	15231895.21
December	2020	9755795.21
January	2020	9584951.90
February	2020	8083995.87
March	2020	766976.28
April	2020	800072.08
May	2020	1586963.98
June	2020	3429736.75
July	2020	5151815.71
August	2020	5638281.79
September	2021	19530271.90
October	2021	21016218.96
November	2021	32247290.68
December	2021	20409063.68
January	2021	19570702.79
February	2021	15986605.01
March	2021	19149625.28
April	2021	11483530.74
May	2021	19204310.02
June	2021	15457580.57
July	2021	19044969.71
August	2021	11324548.87

Insights



- November was the top-performing month in both FY 2020 and FY 2021.
- March 2020(0.77M) recorded the lowest sales figure during the entire two-year period.
- November 2021 recorded the highest gross sales(32.25M) across both years.
- In both fiscal years, gross sales consistently increased from September to November.

Q8. 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.

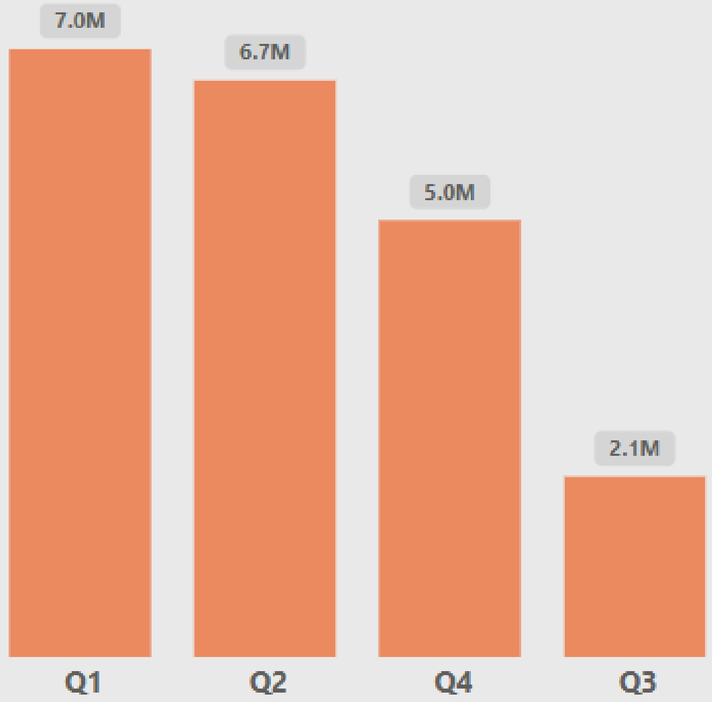
SQL Query

```sql
WITH quarter_data AS (
  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,
    sold_quantity
  FROM fact_sales_monthly
  WHERE fiscal_year = 2020
)

SELECT
  quarter,
  ROUND(SUM(sold_quantity)/1000000, 2) AS total_sold_quantity
FROM quarter_data
GROUP BY quarter
ORDER BY total_sold_quantity DESC;
```

Output

quarter	total_sold_quantity
Q1	7.01
Q2	6.65
Q4	5.04
Q3	2.08

Insights



- The most products were sold in Q1, with 7.0 million units.
- Q2 was close behind, selling 6.7 million units.
- In Q4, sales dropped to 5.0 million units, still decent but lower than the first half.
- Q3 had the lowest sales, with only 2.1 million units sold.

Q9. 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.

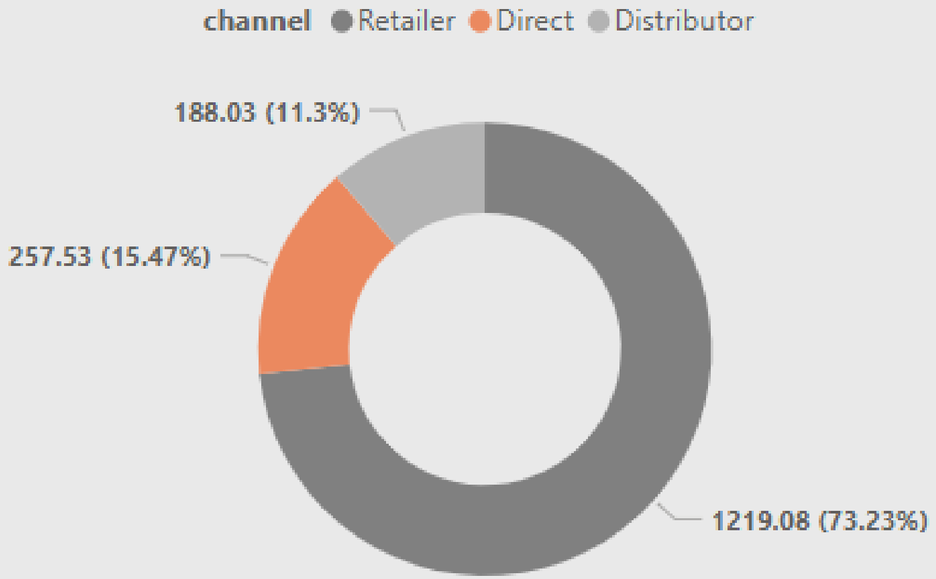
SQL Query

```sql
WITH channel_sales AS (
    SELECT
        c.channel,
        SUM(g.gross_price * s.sold_quantity) / 1000000 AS gross_sales_mln
    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 s.customer_code = c.customer_code
    WHERE
        s.fiscal_year = 2021
    GROUP BY
        c.channel
)

SELECT
    channel,
    gross_sales_mln,
    ROUND(gross_sales_mln * 100 / SUM(gross_sales_mln) OVER (), 2) AS
percentage_of_contribution
FROM  channel_sales;
```

Output

channel	gross_sales_mln	percentage_of_contribution
Direct	257.53200265	15.47
Retailer	1219.08163995	73.23
Distributor	188.02563093	11.30

Insights



- In FY 2021, the Retailer channel was the strongest contributor, generating 1219 million, which is over 73% of total gross sales.
- Direct and Distributor channels contributed significantly less, at 15.47% and 11.30% respectively.

Q10. 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.

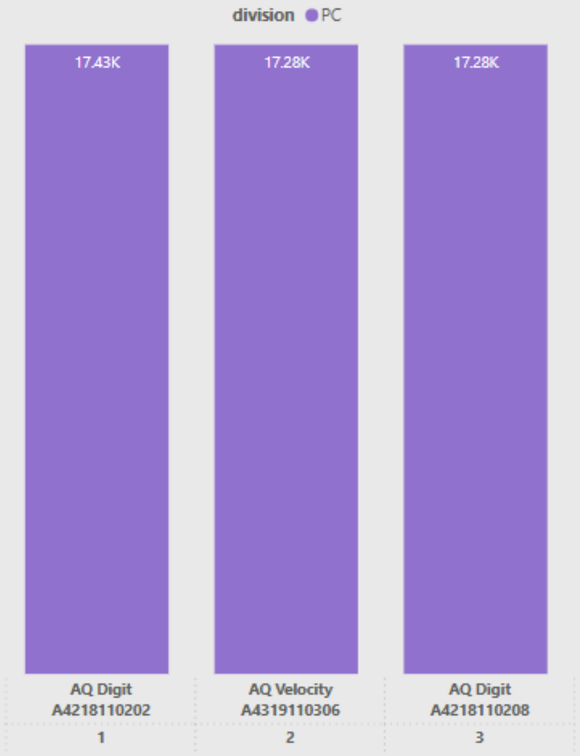
SQL Query

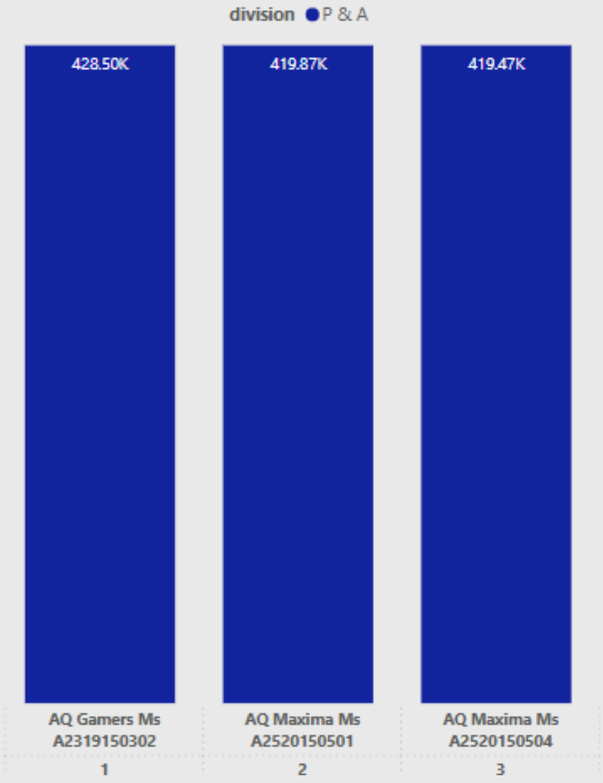
```sql
WITH product_sales AS (
    SELECT
        d.division,
        s.product_code,
        d.product,
        SUM(s.sold_quantity) AS total_sold_quantity,
        DENSE_RANK() OVER (PARTITION BY d.division ORDER BY SUM(s.sold_quantity)
DESC) AS rank_order
    FROM
        fact_sales_monthly s
    JOIN
        dim_product d
        ON s.product_code = d.product_code
    WHERE
        s.fiscal_year = 2021
    GROUP BY
        d.division, s.product_code,
        d.product
)

SELECT
    division,
    product_code,
    product,
    total_sold_quantity,
    rank_order
FROM product_sales
WHERE
rank_order <= 3
ORDER BY
    division, rank_order;
```

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 'N & S' division had the highest-selling products overall, with each of its top 3 products crossing 670,000 units sold.
- The 'P & A' division also performed strongly, with its top 3 products selling over 400,000 units each.
- The 'PC' division, while smaller in volume, showed consistent performance with its top products selling around 17,000 units each.
- Repeated appearances of certain products, including AQ Maxima Ms and AQ Digit, reflect focused customer interest.

THANK YOU

For your attention