AD-HOC INSIGHTS

Domain: Consumer Goods

PRESENTED BY

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AGENDA

COMPANY OVERVIEW

- Atliq Hardwares is a computer hardware manufacturer in India with a strong international presence.
- The company aims to expand its data analytics team to improve insights and support strategic decisions.

Fiscal Year: The company follows a fiscal year from **September to August** instead of the calendar year.

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OBJECTIVE

Lack of Insights	Management struggles to obtain meaningful data insights for informed decision-making.
Talent Gap	The company needs skilled analysts with strong technical and analytical abilities.
SQL Challenge	A structured SQL challenge is introduced to assess candidates' problem-solving skills.

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TOOLS USED

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MySQL	Power BI	Python	Canva & Power Point
For query execution.	For data visualization.	For DataFrame conversion and dark-themed tables.	For presentation.

DATASET OVERVIEW

Table Name	Description
dim_customer	Customer-related data, including platform and region.
dim_product	Product details like category, segment, and variant.
fact_gross_price	Gross price information for each product.
fact_manufacturing_cost	Cost incurred in the production of each product.
fact_pre_invoice_deductions	Pre-invoice deductions for each product.
fact_sales_monthly	Monthly sales data, including quantity sold.

Database: gdb023

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Ad-Hoc Requests Overview

- The management has identified 10 key ad-hoc requests requiring data-driven insights.
- Each request is analyzed using SQL queries, visualized with Power BI, and presented with actionable insights.
- We will go through each request individually, showcasing answers and findings.

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

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

	market
0	India
1	Indonesia
2	Japan
3	Philiphines
4	South Korea
5	Australia
6	Newzealand
7	Bangladesh

VISUAL REPRESENTION

INSIGHTS

"Atliq Exclusive" operates in eight key markets across the APAC region, including India, Indonesia, Japan, Philippines, South Korea, Australia, Newzealand, and Bangladesh. This indicates a broad market reach.

The company has established operations in both emerging and developed economies, ensuring a diverse customer base and opportunities for growth in high-demand regions.

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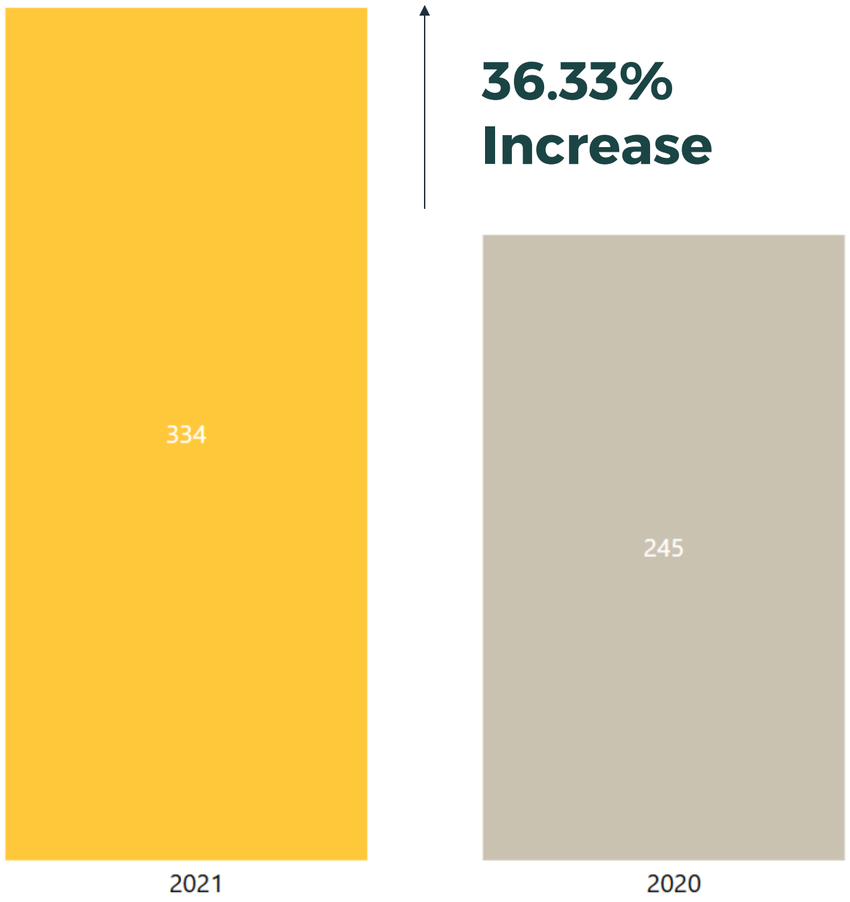
Q2. What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields - unique_products_2020, unique_products_2021, percentage_chg.

```sql
WITH product_20 AS (
  SELECT
    COUNT(DISTINCT product_code) AS unique_products_2020
  FROM
    fact_sales_monthly
  WHERE
    fiscal_year = 2020
),
product_21 AS (
  SELECT
    COUNT(DISTINCT product_code) AS unique_products_2021
  FROM
    fact_sales_monthly
  WHERE
    fiscal_year = 2021
)
SELECT
  unique_products_2020,
  unique_products_2021,
  ROUND(
    (
      (
        unique_products_2021 - unique_products_2020
      ) / unique_products_2020
    )* 100,
    2
  ) AS percentage_chg
FROM
  product_20,
  product_21;
```

	unique_products_2020	unique_products_2021	percentage_chg
0	245	334	36.33

VISUAL REPRESENTION



36.33% Increase

INSIGHTS

- Unique products increased from 245 in 2020 to 334 in 2021, a 36.33% growth.
- Significant year-over-year expansion in product variety.
- Potential factors include market demand, product diversification, or business scaling.

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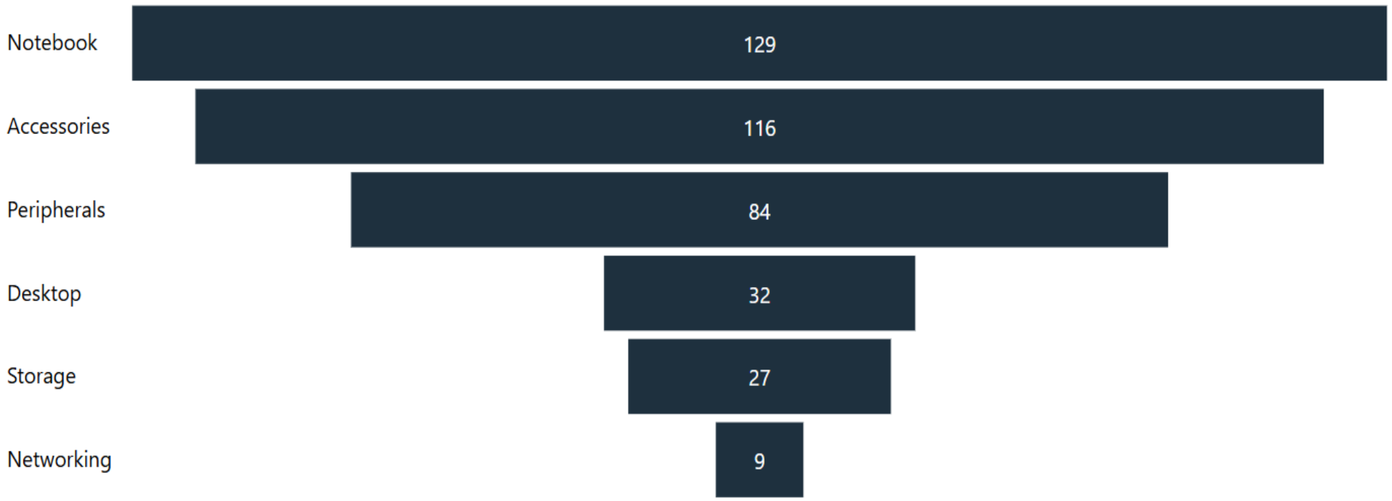
Q3. Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields - segment, product_count.

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

	segment	product_count
0	Notebook	129
1	Accessories	116
2	Peripherals	84
3	Desktop	32
4	Storage	27
5	Networking	9

VISUAL REPRESENTION



INSIGHTS

- Notebook (129) and Accessories (116) dominate in product count, making up the largest segments.
- Peripherals (84) hold a mid-tier position, while Desktop (32) and Storage (27) have relatively lower counts.
- Networking (9) has the fewest products, indicating minimal representation in this segment.

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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
WITH product_20 AS (
  SELECT
    p.segment,
    COUNT(DISTINCT s.product_code) AS product_count_2020
  FROM
    fact_sales_monthly s
    JOIN dim_product p ON s.product_code = p.product_code
  WHERE
    s.fiscal_year = 2020
  GROUP BY
    p.segment
),
product_21 AS (
  SELECT
    p.segment,
    COUNT(DISTINCT s.product_code) AS product_count_2021
  FROM
    fact_sales_monthly s
    JOIN dim_product p ON s.product_code = p.product_code
  WHERE
    s.fiscal_year = 2021
  GROUP BY
    p.segment
)
SELECT
  p20.segment,
  product_count_2020,
  product_count_2021,
  product_count_2021 - product_count_2020 AS difference
FROM
  product_20 p20
  JOIN product_21 p21 ON p20.segment = p21.segment
ORDER BY
  difference DESC;
```

	segment	product_count_2020	product_count_2021	difference
0	Accessories	69	103	34
1	Notebook	92	108	16
2	Peripherals	59	75	16
3	Desktop	7	22	15
4	Storage	12	17	5
5	Networking	6	9	3

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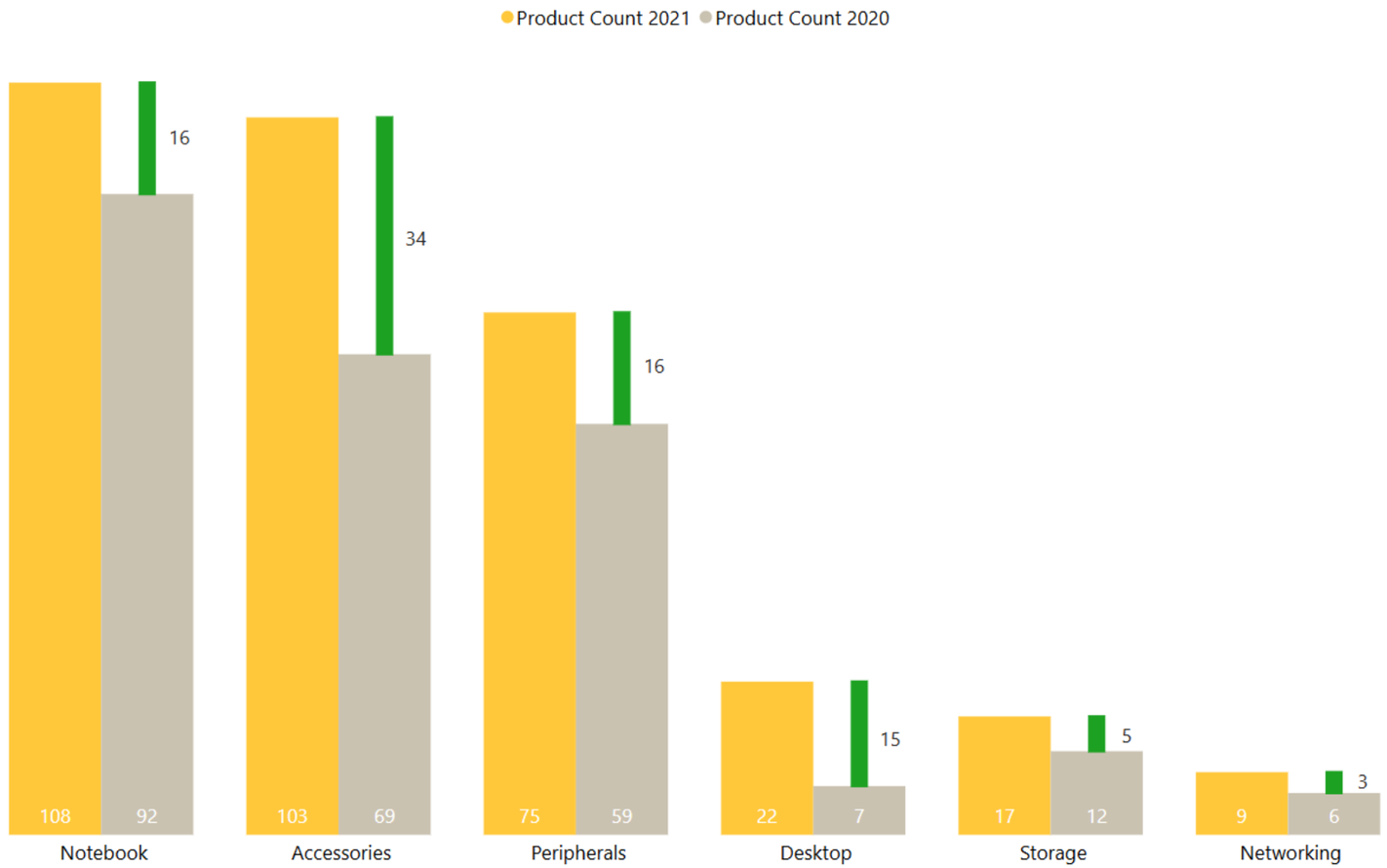
VISUAL REPRESENTION



INSIGHTS

- Accessories experienced the highest increase (+34), followed by Notebooks and Peripherals (+16 each), indicating strong market expansion.
- Desktops saw a significant relative growth (+15) despite having the lowest product count, hinting at a resurgence in demand.
- Storage (+5) and Networking (+3) had minimal growth, suggesting a stable or saturated market.

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

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

VISUAL REPRESENTION

0.89

AQ Master Wired X1 Ms

240.53

AQ HOME Allin 1 Gen 2

INSIGHTS

- AQ HOME Allin 1 Gen 2 has the highest manufacturing cost (240.53), indicating it is a premium or complex product.
- AQ Master wired x1 Ms has the lowest manufacturing cost (0.89), suggesting it is a low-cost accessory or component.
- The cost difference is massive, highlighting a diverse product pricing strategy within the company.

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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
SELECT
  pre.customer_code,
  c.customer,
  ROUND(
    pre.pre_invoice_discount_pct * 100,
    2
  ) AS average_discount_percentag
FROM
  fact_pre_invoice_deductions pre
  JOIN dim_customer c ON pre.customer_code = c.customer_code
WHERE
  pre.pre_invoice_discount_pct > (
    SELECT
      AVG(pre_invoice_discount_pct)
    FROM
      fact_pre_invoice_deductions
  )
  AND pre.fiscal_year = 2021
  AND c.market = "India"
ORDER BY
  average_discount_percentag DESC
LIMIT
  5;
```

	customer_code	customer	average_discount_percentag
0	90002009	Flipkart	30.83
1	90002006	Viveks	30.38
2	90002003	Ezone	30.28
3	90002002	Croma	30.25
4	90002016	Amazon	29.33

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VISUAL REPRESENTION

Customer	Average Discount
Flipkart	30.83
Viveks	30.38
Ezone	30.28
Croma	30.25
Amazon	29.33

INSIGHTS

- Flipkart received the highest average pre-invoice discount (30.83%), indicating strong bulk purchasing power or strategic partnerships.
- Amazon, despite being a major e-commerce player, received the lowest discount (29.33%) among the top 5, showing a possible difference in negotiation strategies.
- The discount percentage among the top 5 is closely clustered (within ~1.5%), suggesting a competitive and standardized discount structure in the Indian market for FY 2021.

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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.

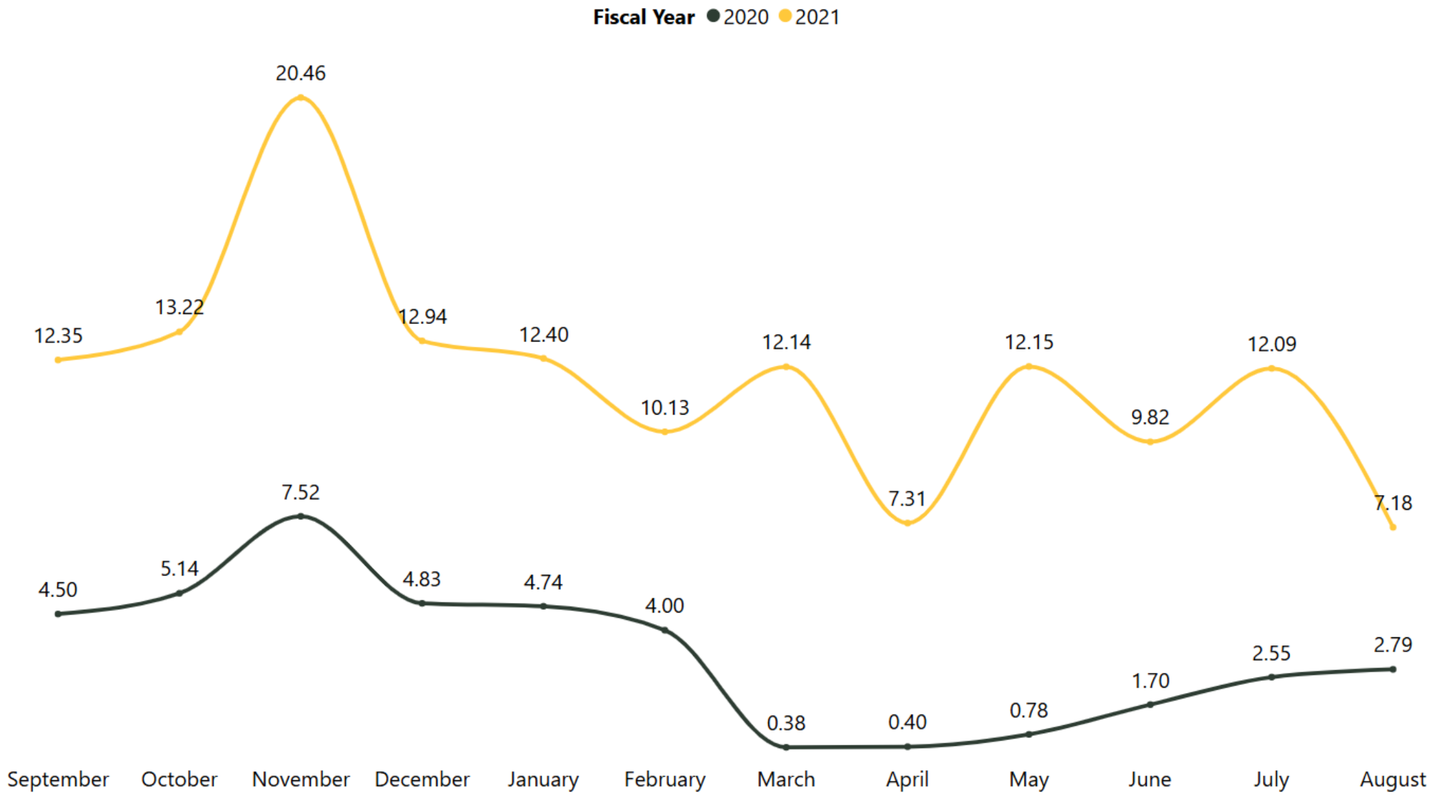
```sql
SELECT
  monthname(f.date) AS Month,
  f.fiscal_year,
  ROUND(
    SUM(g.gross_price * f.sold_quantity)/ 1000000,
    2
  ) AS Gross_sales_Amount
FROM
  fact_gross_price g
  JOIN fact_sales_monthly f ON g.product_code = f.product_code
  AND g.fiscal_year = f.fiscal_year
  JOIN dim_customer c ON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

	Month_2020	Gross_sales_Amount
0	September	4.50
1	October	5.14
2	November	7.52
3	December	4.83
4	January	4.74
5	February	4.00
6	March	0.38
7	April	0.40
8	May	0.78
9	June	1.70
10	July	2.55
11	August	2.79

	Month_2021	Gross_sales_Amount
0	September	12.35
1	October	13.22
2	November	20.46
3	December	12.94
4	January	12.40
5	February	10.13
6	March	12.14
7	April	7.31
8	May	12.15
9	June	9.82
10	July	12.09
11	August	7.18

Values are in Millions

VISUAL REPRESENTION



Values are in Millions

INSIGHTS

- Sales in FY 2021 consistently outperformed FY 2020, showing a positive trend.
- Nov 2021 (20.46M) had the highest sales, followed by Oct (13.22M) & Dec (12.94M).
- Apr 2021 (7.31M) & Aug 2021 (7.18M) recorded the lowest sales.
- Q1 Stability, Mid-Year Fluctuations – Sep–Nov saw strong sales, while Apr–Aug had dips.

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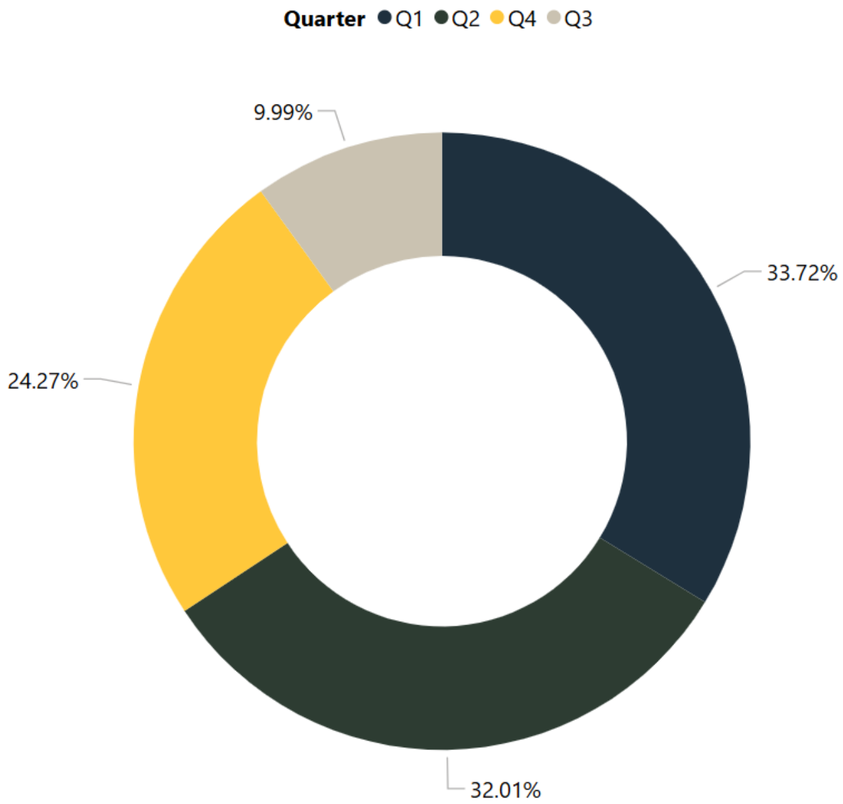
Q8. In which quarter of 2020, got the maximum total_sold_quantity? The final output contains these fields sorted by the total_sold_quantity, Quarter.

```sql
SELECT
  CASE
        WHEN MONTH(date) BETWEEN 9 AND 11
        THEN "Q1"
        WHEN MONTH(date) IN (12, 1, 2)
        THEN "Q2"
        WHEN MONTH(date) BETWEEN 3 AND 5
        THEN "Q3"
        WHEN MONTH(date) BETWEEN 6 AND 8
        THEN "Q4"
    END  AS Quarter,
   SUM(sold_quantity) AS total_sold_quantity
FROM
  fact_sales_monthly
WHERE
  fiscal_year = 2020
GROUP BY
  Quarter
ORDER BY
  total_sold_quantity DESC;
```

	Quarter	total_sold_quantity
0	Q1	7.01
1	Q2	6.65
2	Q4	5.04
3	Q3	2.08

Values are in Millions

VISUAL REPRESENTION



INSIGHTS

- Q1 (Sep–Nov) recorded the highest sales at 7.01M (33.72%).
- Q3 (Mar–May) had the lowest sales at 2.08M (9.99%).
- Sales declined from Q1 to Q3, with a slight recovery in Q4 (5.04M, 24.27%).

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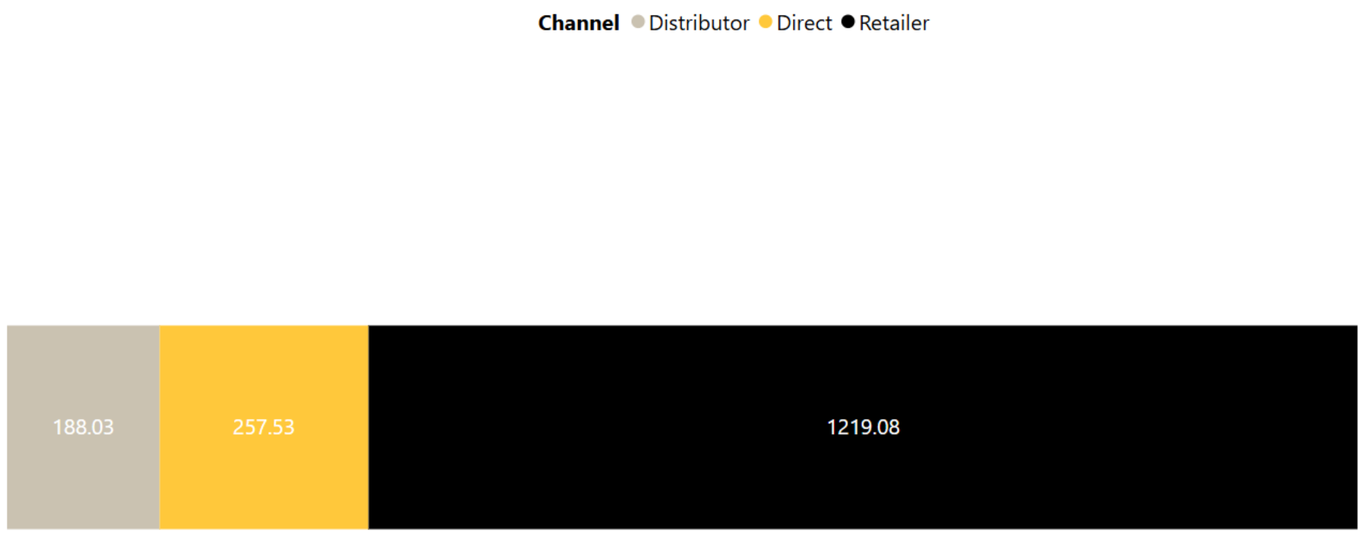
Q9. Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields – channel, gross_sales_mln, percentage.

```sql
WITH channel_gross_sales AS (
  SELECT
    c.channel,
    SUM(g.gross_price * f.sold_quantity)/ 1000000 AS gross_sales_mln
  FROM
    fact_sales_monthly f
    JOIN fact_gross_price g ON f.product_code = g.product_code
    AND f.fiscal_year = g.fiscal_year
    JOIN dim_customer c ON f.customer_code = c.customer_code
  WHERE
    f.fiscal_year = 2021
  GROUP BY
    c.channel
)
SELECT
  *,
  ROUND(
    gross_sales_mln * 100 / SUM(gross_sales_mln) OVER(),
    2
  ) AS percentage
FROM
  channel_gross_sales;
```

	channel	gross_sales_mln	percentage
0	Direct	257.532003	15.47
1	Retailer	1219.081640	73.23
2	Distributor	188.025631	11.30

Values are in Millions

VISUAL REPRESENTION



Values are in Millions

INSIGHTS

- The Retailer channel generated the highest gross sales of 1,219.08 million, contributing 73.23% of total sales, making it the dominant revenue source.
- The Direct channel brought in 257.53 million, contributing 15.47%, indicating a moderate but significant share of total sales.
- The Distributor channel had the lowest contribution at 188.03 million (11.30%), suggesting a relatively smaller but notable role in overall sales.

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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. Product, total_sold_quantity, rank_order.

```sql
WITH product_by_sold_quantity AS (
  SELECT
    f.product_code,
    SUM(f.sold_quantity) AS total_sold_quantity
  FROM
    fact_sales_monthly f
  WHERE
    fiscal_year = 2021
  GROUP BY
    f.product_code
),
ranks AS (
  SELECT
    p.division,
    q.product_code,
    p.product,
    q.total_sold_quantity,
    DENSE_RANK() OVER (
      PARTITION BY p.division
      ORDER BY
        total_sold_quantity DESC
    ) AS rank_order
  FROM
    product_by_sold_quantity q
    JOIN dim_product p ON q.product_code = p.product_code
)
SELECT
  *
FROM
  ranks
WHERE
  rank_order <= 3;
```

	division	product_code	product	total_sold_quantity	rank_order
0	N & S	A6720160103	AQ Pen Drive 2 IN 1	701373.0	1
1	N & S	A6818160202	AQ Pen Drive DRC	688003.0	2
2	N & S	A6819160203	AQ Pen Drive DRC	676245.0	3
3	P & A	A2319150302	AQ Gamers Ms	428498.0	1
4	P & A	A2520150501	AQ Maxima Ms	419865.0	2
5	P & A	A2520150504	AQ Maxima Ms	419471.0	3
6	PC	A4218110202	AQ Digit	17434.0	1
7	PC	A4319110306	AQ Velocity	17280.0	2
8	PC	A4218110208	AQ Digit	17275.0	3

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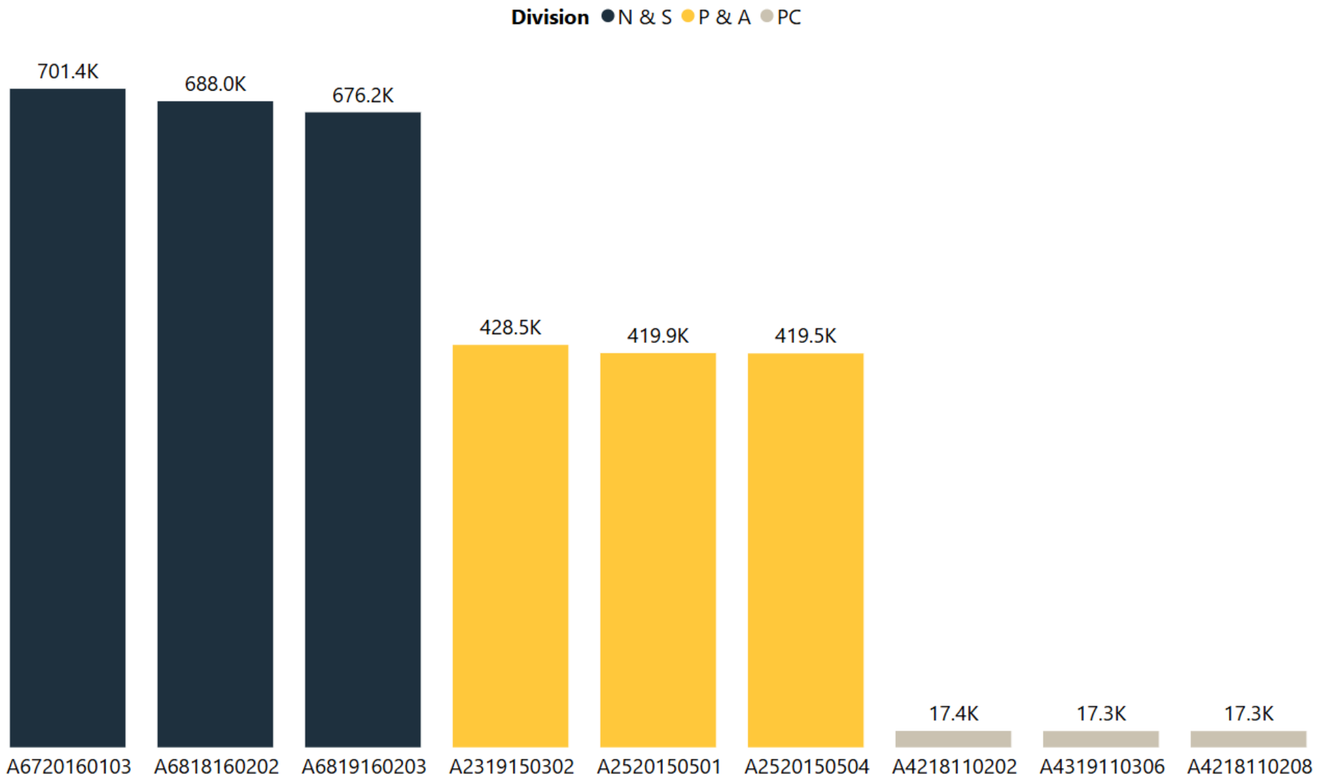
VISUAL REPRESENTION



INSIGHTS

- N & S Division: Highest sales volume; AQ Pen Drive 2 IN 1 leads with 701K units.
- P & A Division: Strong performance; AQ Gamers Ms tops with 428K units.
- PC Division: Lowest sales; AQ Digit leads but only 17K units sold.
- N & S and P & A dominate, while PC has significantly lower sales.

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RESOURCE PAGE

- MySQL Logo – Provided by Icons8
- Power BI Logo – Provided by Icons8
- Arrow PNGs – Provided by Vecteezy
- Max Manufacturing Cost Icon – Provided by Freepik
- Min Manufacturing Cost Icon – Provided by Freepik

THANK YOU

LINKDLN

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GITHUB

https://github.com/ashvini7823