Consumer Goods Analysis

Ad - Hoc Insights

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Company Overview

AtliQ Hardware is a fast-growing hardware manufacturing company that sells a wide range of products like mice, desktops, laptops, storage devices, and more.

🌍 **They operate in four major regions:**

- Asia Pacific (APAC)
- Europe (EU)
- North America (NA)
- Latin America (LATAM)

The company's fiscal year starts in September and ends in August

Problem Statement

AtliQ Hardware lacks actionable insights for making quick, data-driven decisions and wants to expand its analytics team by hiring junior data analysts. The company requires efficient SQL queries to address 10 ad-hoc business requests and deliver cleaned, verified data to support informed decision-making. My goal is to complete the challenge by writing efficient SQL queries and gaining actionable insights.

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.

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

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

Output:

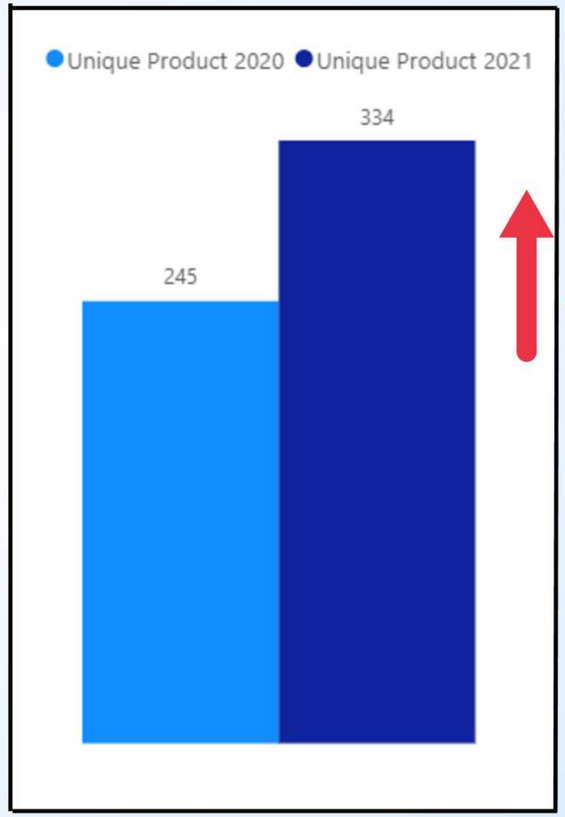
market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

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
WITH cte1 AS (
SELECT
    count(DISTINCT product_code) AS unique_products_2020
FROM fact_sales_monthly
WHERE fiscal_year="2020"
),
cte2 AS (
SELECT
    count(DISTINCTROW product_code) AS unique_products_2021
FROM fact_sales_monthly
WHERE fiscal_year="2021"
)
SELECT unique_products_2020,
        unique_products_2021,
        (unique_products_2021 - unique_products_2020) * 100 / unique_products_2020 as percentage_chg
FROM cte1 c1
JOIN cte2 c2;
```

Output:

	unique_products_2020	unique_products_2021	percentage_chg
▶	245	334	36.3265



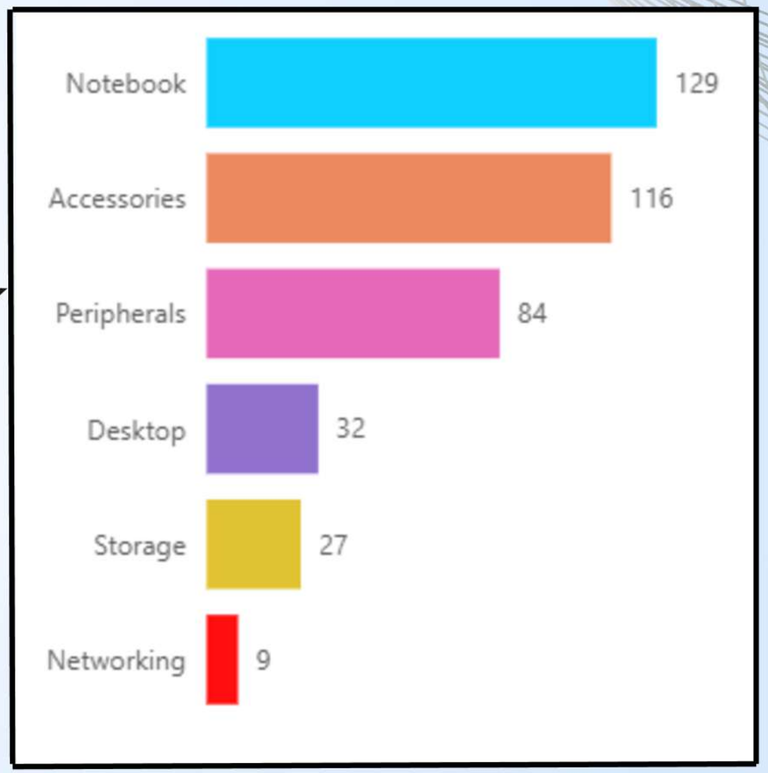
Percentage change 36.33%

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**

```
SELECT  segment,
    count(DISTINCT product_code) product_count
FROM dim_product
GROUP BY segment
ORDER BY product_count 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



★ Notebooks are leading with 129 sales, and accessories follow with 116, showing that customers prefer portable and flexible devices. Desktops (32), storage (27), and networking (9) have much lower sales.

Request 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**

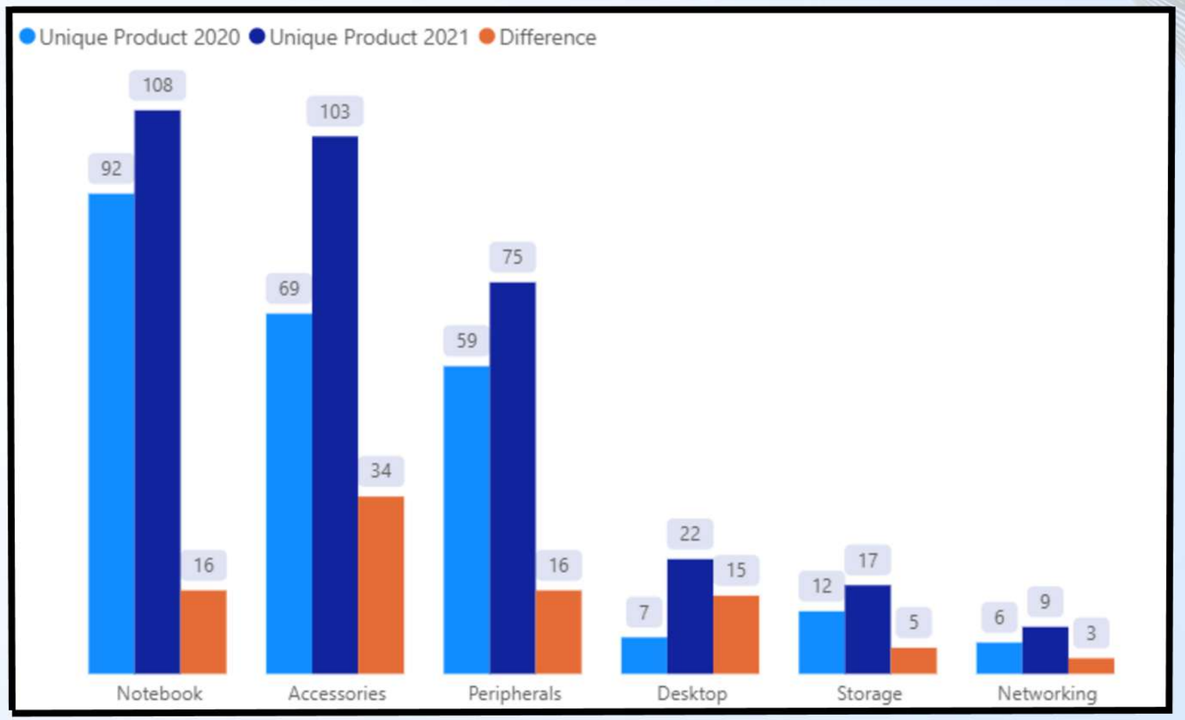
```sql
WITH unique_products AS(
SELECT
    segment,
    COUNT(DISTINCT(CASE WHEN fiscal_year = 2020 THEN s.product_code END)) AS product_count_2020,
    COUNT(DISTINCT(CASE WHEN fiscal_year = 2021 THEN s.product_code END)) AS product_count_2021
FROM dim_product p
JOIN fact_sales_monthly s
    USING (product_code)
GROUP BY p.segment


)

SELECT
*,
    product_count_2021 - product_count_2020 AS difference
FROM unique_products
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



★ The number of unique products increased in 2021 compared to 2020 across all categories, with Accessories showing the largest growth (an increase of 34 products).

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**

```
(SELECT
    p.product_code,
    p.product,
    m.manufacturing_cost
FROM fact_manufacturing_cost m
JOIN dim_product p
    USING(product_code)
ORDER BY m.manufacturing_cost DESC
LIMIT 1 )

UNION

(SELECT
    p.product_code,
    p.product,
    m.manufacturing_cost
FROM fact_manufacturing_cost m
JOIN dim_product p
    USING(product_code)
ORDER BY m.manufacturing_cost ASC
LIMIT 1 );
```

Output:

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

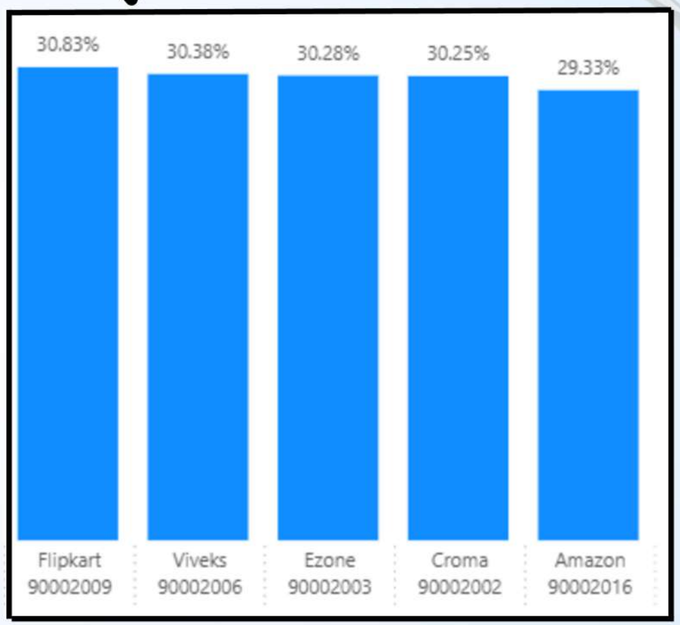
★ The AQ HOME Allin1 Gen 2 desktop has the highest manufacturing cost (240.54) and AQ Master wired mouse (0.89) is the lowest manufacturing cost

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
WITH CTE1 AS(
            SELECT *
            FROM fact_pre_invoice_deductions
            JOIN dim_customer c
            USING (customer_code)
            WHERE
                fiscal_year = 2021 and
                c.market = 'India'
)
SELECT
    customer_code,
    customer,
    concat(round(avg(pre_invoice_discount_pct) * 100 , 2), ' %') as average_discount_percentage
FROM CTE1
WHERE
    fiscal_year = 2021 and
    market = "India"
GROUP BY customer_code, customer
ORDER BY avg(pre_invoice_discount_pct) * 100 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 %



★ Flipkart offers the highest average discount, but overall, average discounts are similar across all customers.

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**

```
SELECT
    MONTHNAME(s.date) AS month,
    s.fiscal_year AS year,
    sum(gross_price * sold_quantity) AS gross_sales
FROM fact_sales_monthly s
JOIN dim_customer c
    USING (customer_code)
JOIN fact_gross_price g
    USING (product_code)
WHERE c.customer = 'Atliq Exclusive'
GROUP BY month, year
ORDER BY year ASC;
```

Output:

	month	year	gross_sales
▶	September	2020	9092670.3392
	October	2020	10378637.5961
	November	2020	15231894.9669
	December	2020	9755795.0577
	January	2020	9584951.9393
	February	2020	8083995.5479
	March	2020	766976.4531
	April	2020	800071.9543
	May	2020	1586964.4768
	June	2020	3429736.5712
	July	2020	5151815.4020
	August	2020	5638281.8287
	September	2021	19530271.3028
	October	2021	21016218.2095
	November	2021	32247289.7946
	December	2021	20409063.1769
	January	2021	19570701.7102
	February	2021	15986603.8883
	March	2021	19149624.9239
	April	2021	11483530.3032
	May	2021	19204309.4095
	June	2021	15457579.6626
	July	2021	19044968.8164
	August	2021	11324548.3409

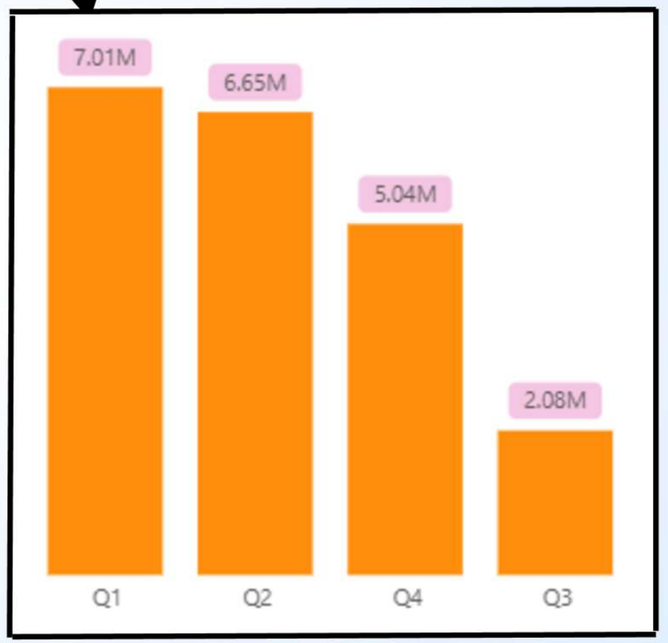
★ Sales were steady in 2019, fell in early 2020, then increased later that year. In 2021, sales increased mid-year but declined afterward.

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**

```
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"
            WHEN month(date) IN (6, 7, 8)   THEN    "Q4"
            END  AS quarter,
    SUM(sold_quantity) as total_sold_qty
FROM fact_sales_monthly
where fiscal_year = 2020
GROUP BY quarter
ORDER BY total_sold_qty DESC;
```

Output:

	quarter	total_sold_qty
	Q1	7005619
	Q2	6649642
	Q4	5042541
	Q3	2075087



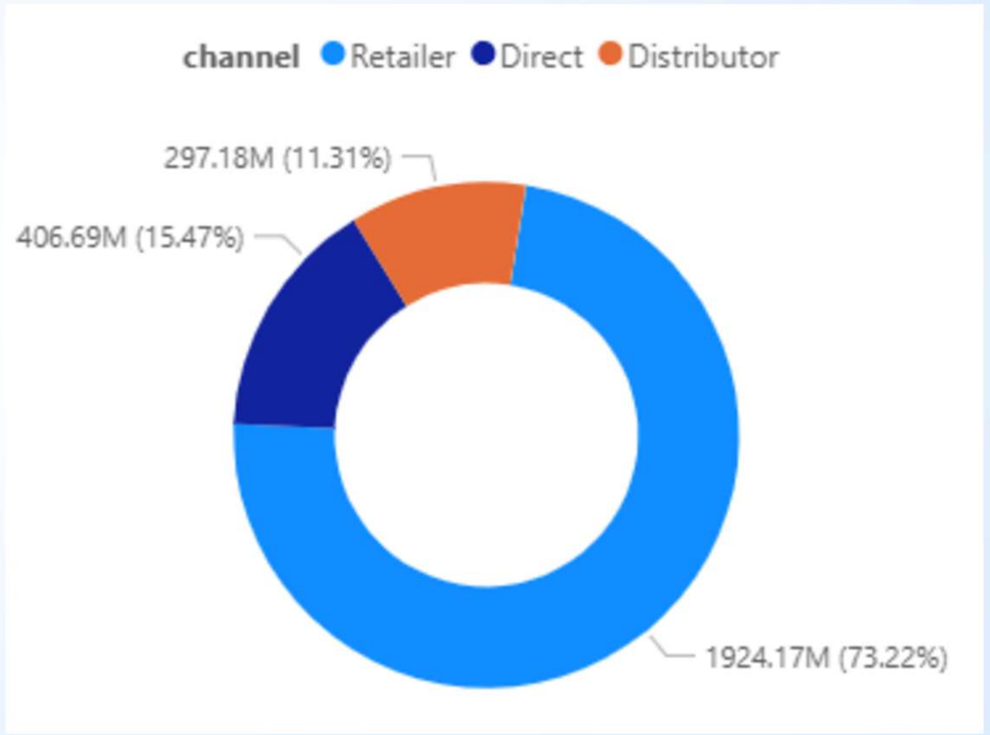
★ Sales peaked in Q1 and gradually declined through the year, reaching the lowest point in Q3 before a slight recovery in Q4.

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**

```
WITH gross_sales_2021 AS (
SELECT
    channel,
    round(sum(gross_price * sold_quantity) / 1000000 ,2) AS gross_sales_mln
    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 s.fiscal_year = 2021
    GROUP BY c.channel
),
s_total AS (
SELECT
    sum(gross_sales_mln) as total
FROM gross_sales_2021)
SELECT
    channel,
    gross_sales_mln,
    concat(round((gross_sales_mln / total) * 100,2), ' %') AS pct_contrubtion
FROM gross_sales_2021
CROSS JOIN s_total
ORDER BY gross_sales_mln desc;
```

Output:

channel	gross_sales_mln	pct_contrubtion
Retailer	1924.17	73.22 %
Direct	406.69	15.48 %
Distributor	297.18	11.31 %

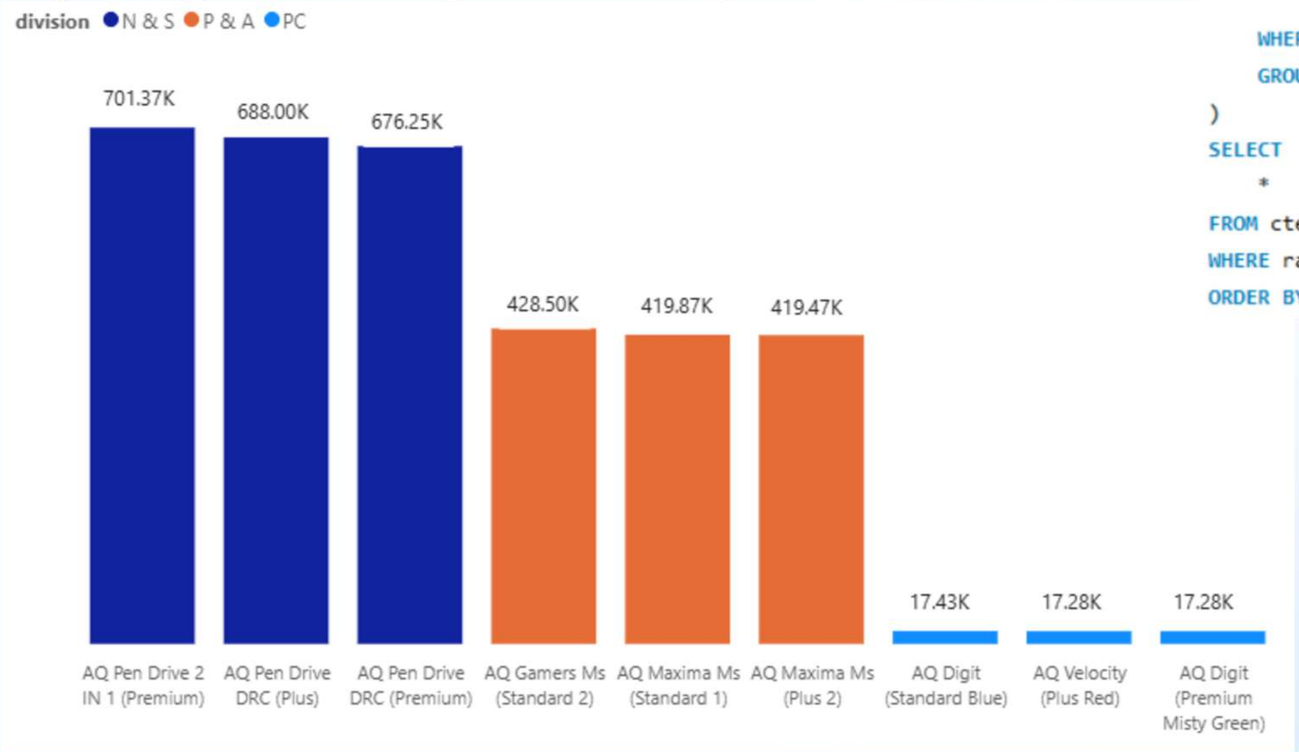


★ Retailers account for more than 70% of total sales, while direct sales and distributors contribute smaller shares.

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, product total_sold_quantity, rank_order**

```sql
WITH cte1 AS (
    SELECT
        p.division,
        p.product_code,
        CONCAT(p.product, " (", p.variant, ")") AS product,
        SUM(sold_quantity) AS total_sold_qty,
        RANK() OVER(PARTITION BY p.division ORDER BY SUM(sold_quantity) DESC) AS rank_order
    FROM fact_sales_monthly fs
    JOIN dim_product p
        ON p.product_code = fs.product_code
    WHERE fiscal_year = 2021
    GROUP BY p.division, p.product_code, p.product, p.variant
)
SELECT
    *
FROM cte1
WHERE rank_order <= 3
ORDER BY division, rank_order ASC;
```

Top 3 Highest Selling Products by division in FY 2021



Thank You ☺