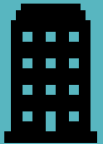# Consumer Goods Ad hoc Insights

Presenter: Gurjeet Singh Sodhi

Agenda

Overview of Company

About data

Objective

Ad hoc request with Insights

Our Company

- Atliq Hardware is one of the leading computer hardware producers in India as well as 26 other countries across the globe

- Manufactures products under 3 major divisions i.e., Peripherals & Accessories, PC, Networking & Storage

- We have a total of 74 Customers like Neptune, Sage, Leader, Vijay Sales etc. across all markets/countries

Objective

- Assist the management team to gain more insights about the business

- Take data-driven decisions to scale business

About data

- We have 4 fact tables i.e., sales monthly, manufacturing cost, pre invoice deductions, gross price which have measurable metrics and 2 dimension table i.e., customer details and product details.

- Fiscal year for Atliq Hardware starts from 1st September and ends on 31st August each year

- Sales data is available for fiscal year 2020-2021

Report, Map visual
Data updated on 1/22/23, 9:43 PM
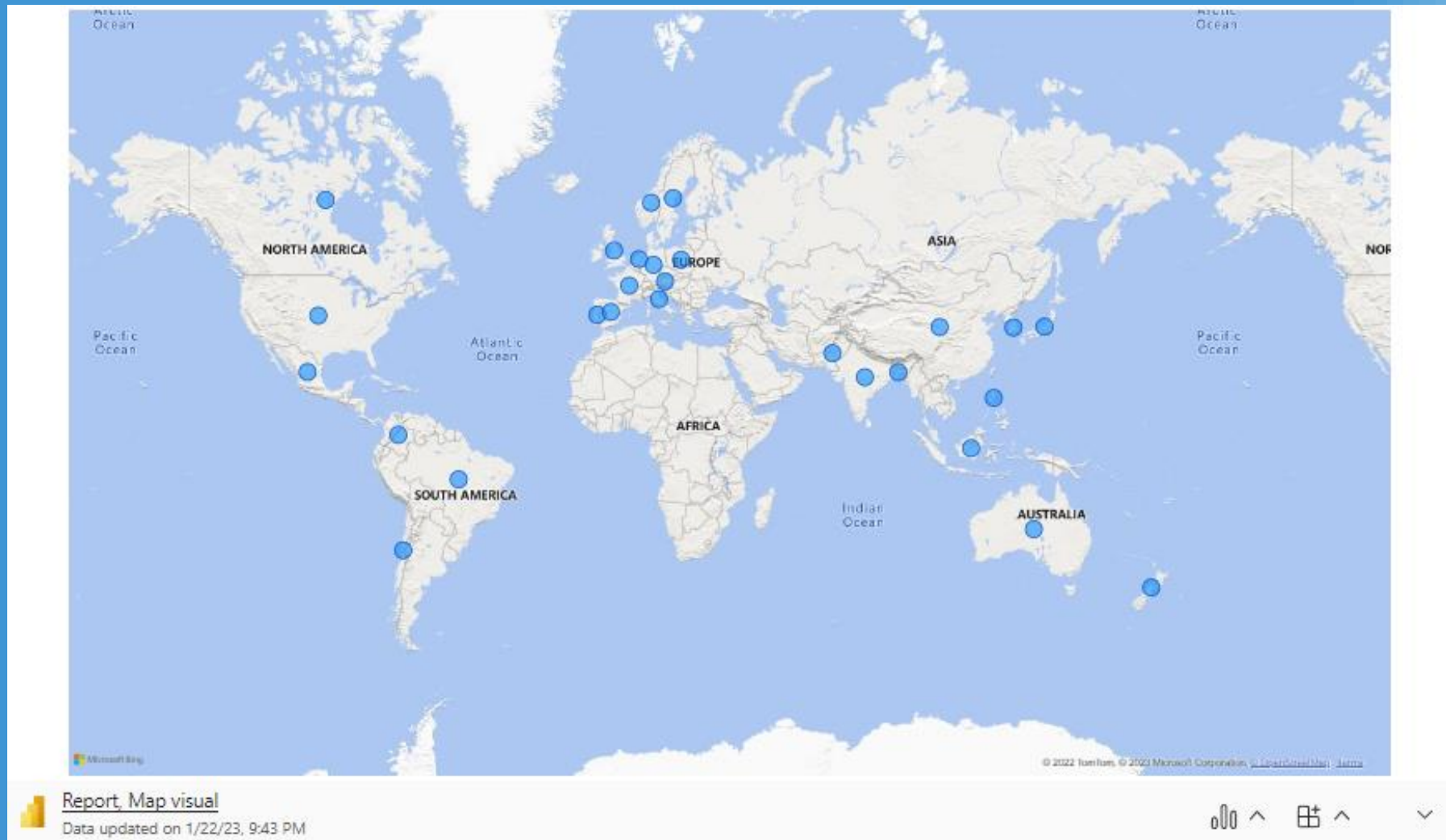
❑ Atliq Hardware is actively doing business in 27 countries across NA, EU and APAC region

Let's see requests, query results and insights

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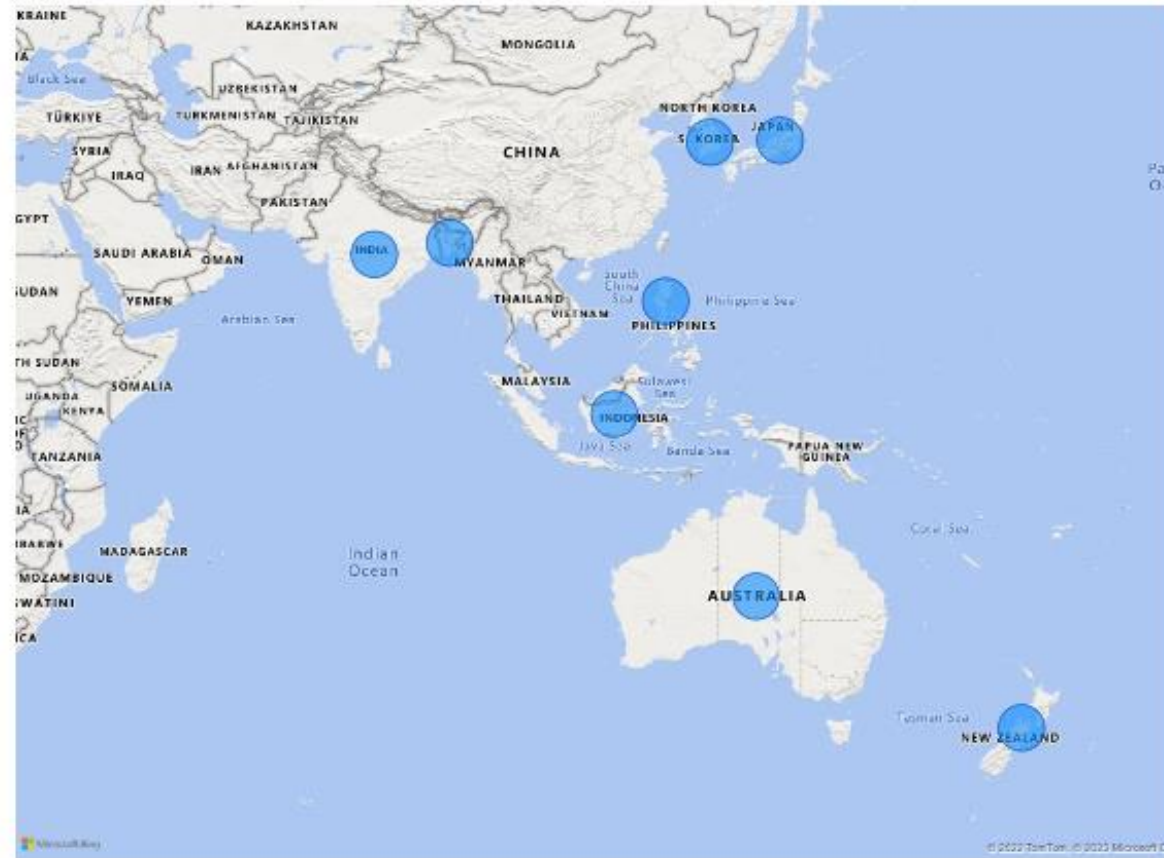
Query:

```
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

❑ Atliq Exclusive operates its business in 8 major markets of Asia Pacific region
❑ Atliq Exclusive has the most stores in APAC region followed by EU(6) and NA(2)

Request 2: What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields:
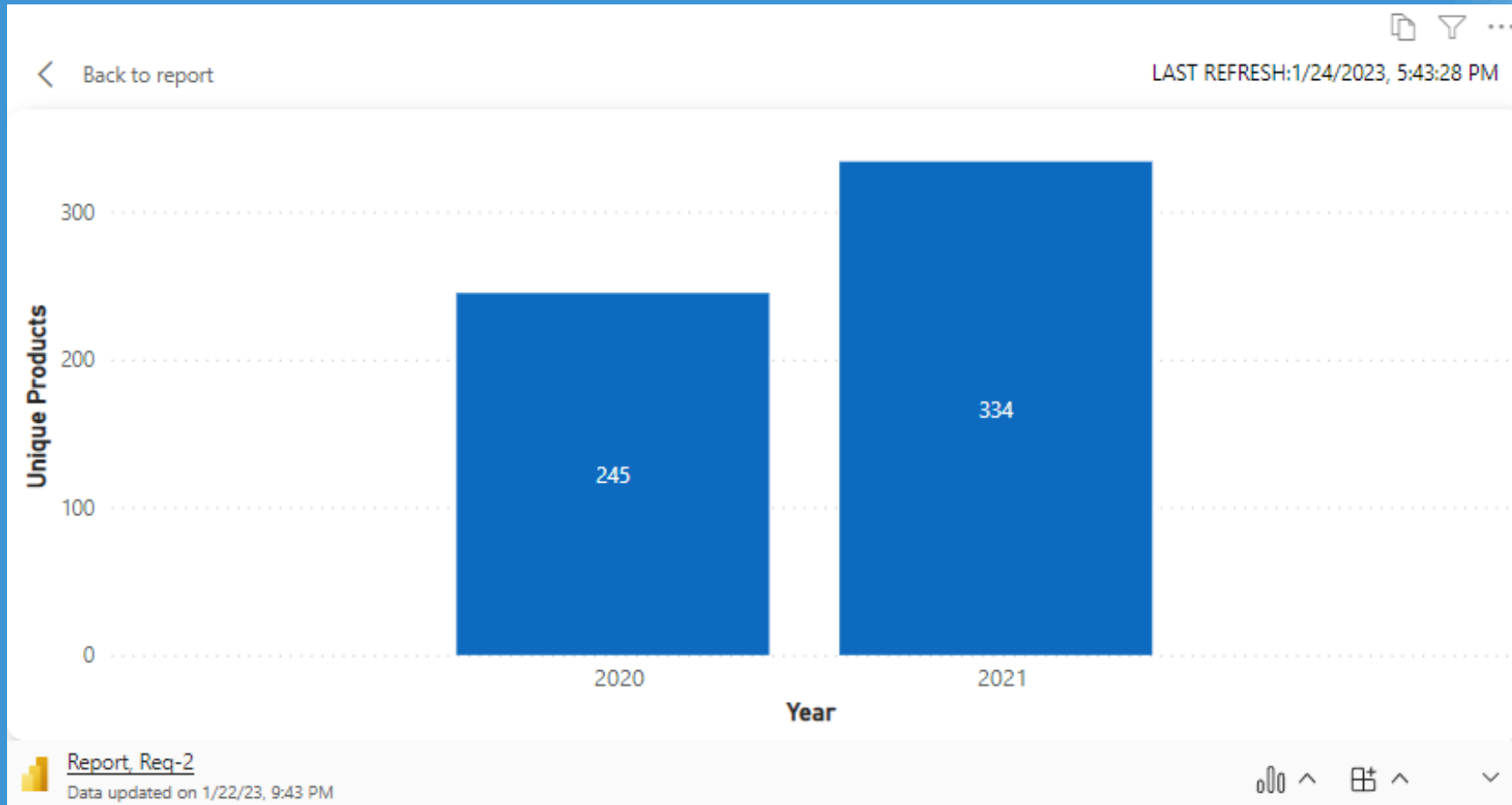unique_products_2020, unique_products_2021, percentage_chg

Query:

Output:

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33%

```
WITH unique_product_count AS
(
        SELECT COUNT(DISTINCT CASE WHEN fiscal_year = 2020 THEN
product_code END) AS unique_products_2020,/* count of distinct/unique
products sold in 2020 */
                COUNT(DISTINCT CASE WHEN fiscal_year = 2021 THEN
product_code END) AS unique_products_2021 /* count of distinct/unique
products sold in 2021 */
                FROM fact_sales_monthly
)
SELECT unique_products_2020,
        unique_products_2020,
        CONCAT(ROUND(((unique_products_2021-
unique_products_2020)*1.0/unique_products_2020)*100,2),'%') AS
percentage_chg
FROM unique_product_count;
```

Insights

❑ With a 36.33% increase in new products, Altiq hardware is building a strong and dynamic reputation by meeting with the changing needs of the customer

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
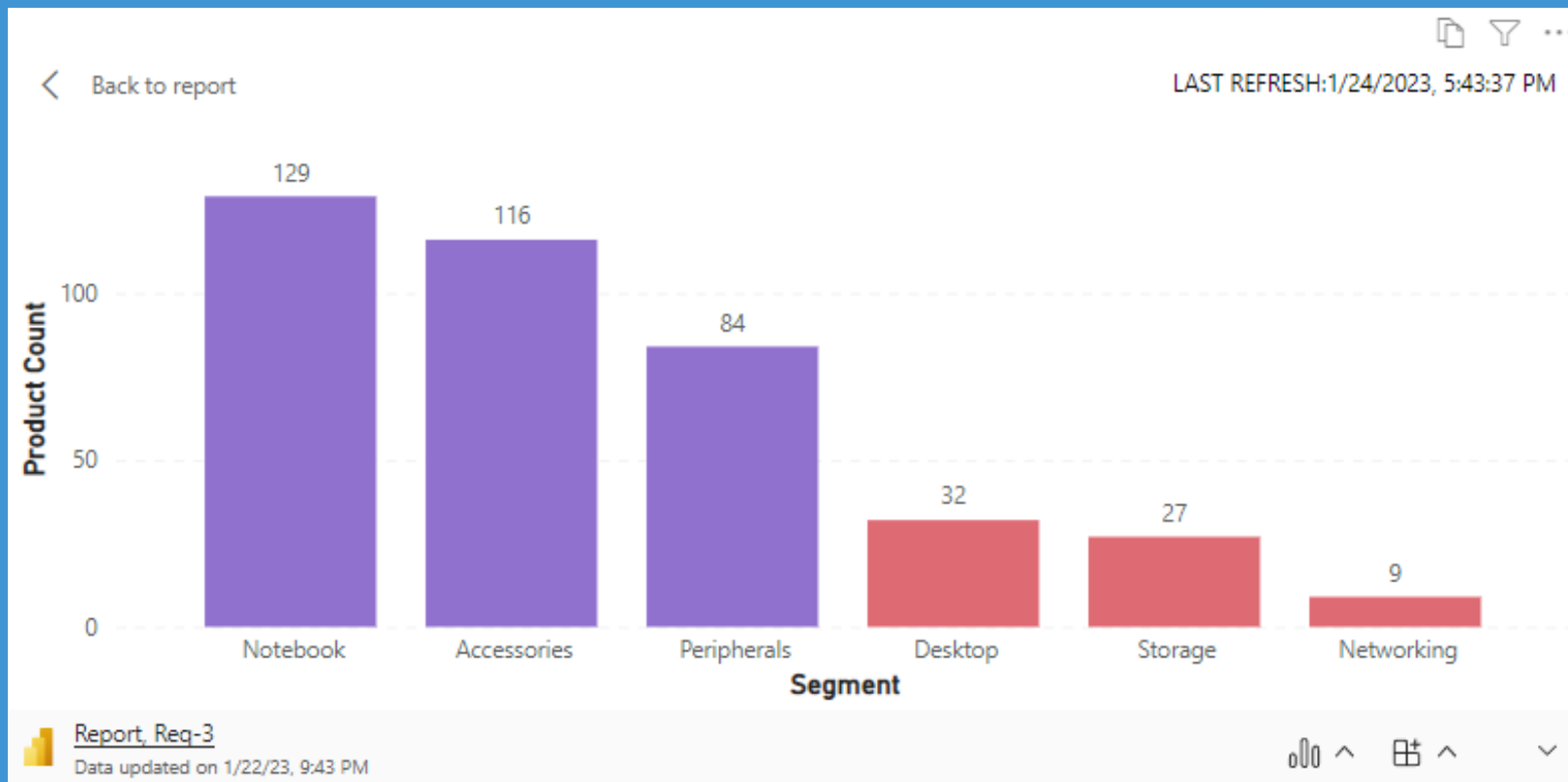
Query:

```
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

Insights

❑ We have a wide range of products under segment: Notebook, Accessories and Peripherals averaging around 110 while segment like Desktop, Storage and Network are lagging with an average of 23 products per segment.

❑ Product Development team needs to evaluate on products that require redesigning as per modern standards

❑ Innovations will keep Atliq Hardware ahead in this competitive market

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

Query:

```sql
WITH unique_product AS
(
 SELECT
      b.segment AS segment,
      COUNT(DISTINCT
          (CASE
              WHEN fiscal_year = 2020 THEN a.product_code END)) AS
product_count_2020,
        COUNT(DISTINCT
          (CASE
              WHEN fiscal_year = 2021 THEN a.product_code END)) AS
product_count_2021
 FROM fact_sales_monthly AS a
 INNER JOIN dim_product AS b
 ON a.product_code = b.product_code
 GROUP BY b.segment
)
SELECT segment, product_count_2020, product_count_2021,
(product_count_2021-product_count_2020) AS difference
FROM unique_product
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
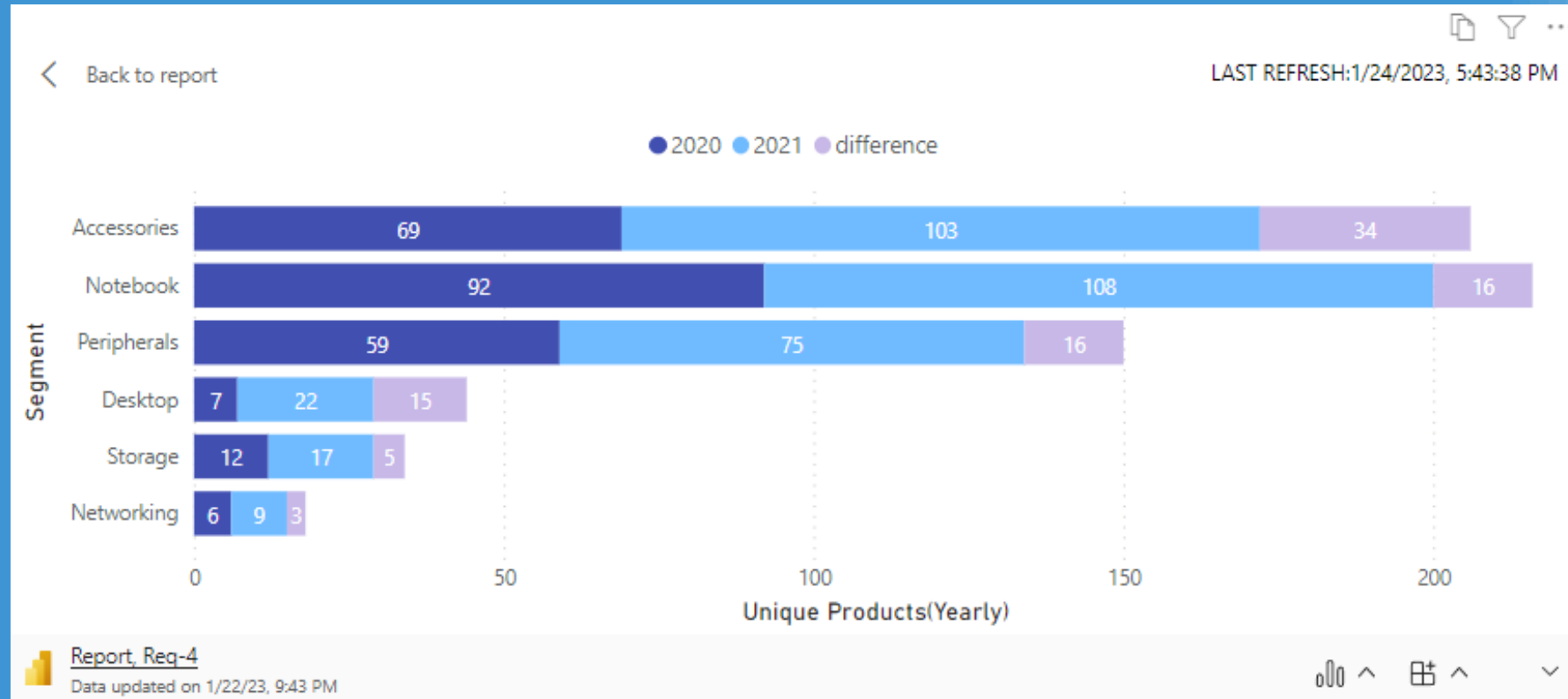
Insights

❑ With the introduction of 34 new products, Accessories segment has the highest increase in number of unique products

❑ Notebook and Peripherals each has an increment of 16 new unique products

❑ Product Development team has done a good job in the Desktop segment by increasing unique products from 7 to 22

❑ Networking segment is at the bottom with 3 new products introduced since 2020

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

Query:

Output:

```
SELECT   a.product_code AS product_code /*here a is alias for
dim_product table*/,
         a.product AS product,
                    CONCAT('$',ROUND(b.manufacturing_cost,2)) AS
manufacturing_cost /*here b is alias for fact_manufacturing_cost
table*/
FROM
dim_product AS a
INNER JOIN
fact_manufacturing_cost AS b
ON a.product_code = b.product_code /* joining on key ie.
product_code*/
WHERE b.manufacturing_cost = (SELECT MAX(manufacturing_cost) FROM
fact_manufacturing_cost) /* filter to fetch product having max
manufacturing cost*/
OR    b.manufacturing_cost = (SELECT MIN(manufacturing_cost) FROM
fact_manufacturing_cost) /* filter to fetch product having min
manufacturing cost*/
ORDER BY b.manufacturing_cost DESC;
```
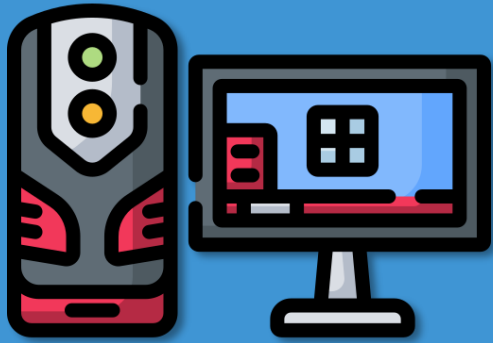
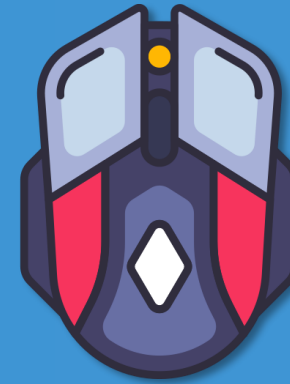| product_code	product	manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	$240.54
A2118150101	AQ Master wired x1 Ms	$0.89

Insights

Highest manufacturing cost

AQ HOME Allin1 Gen 2 (Plus 3)
Category: Personal Desktop

$240.54

Lowest manufacturing cost

AQ Master wired x1 Ms (Standard 1)
Category: Mouse

$0.89

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:
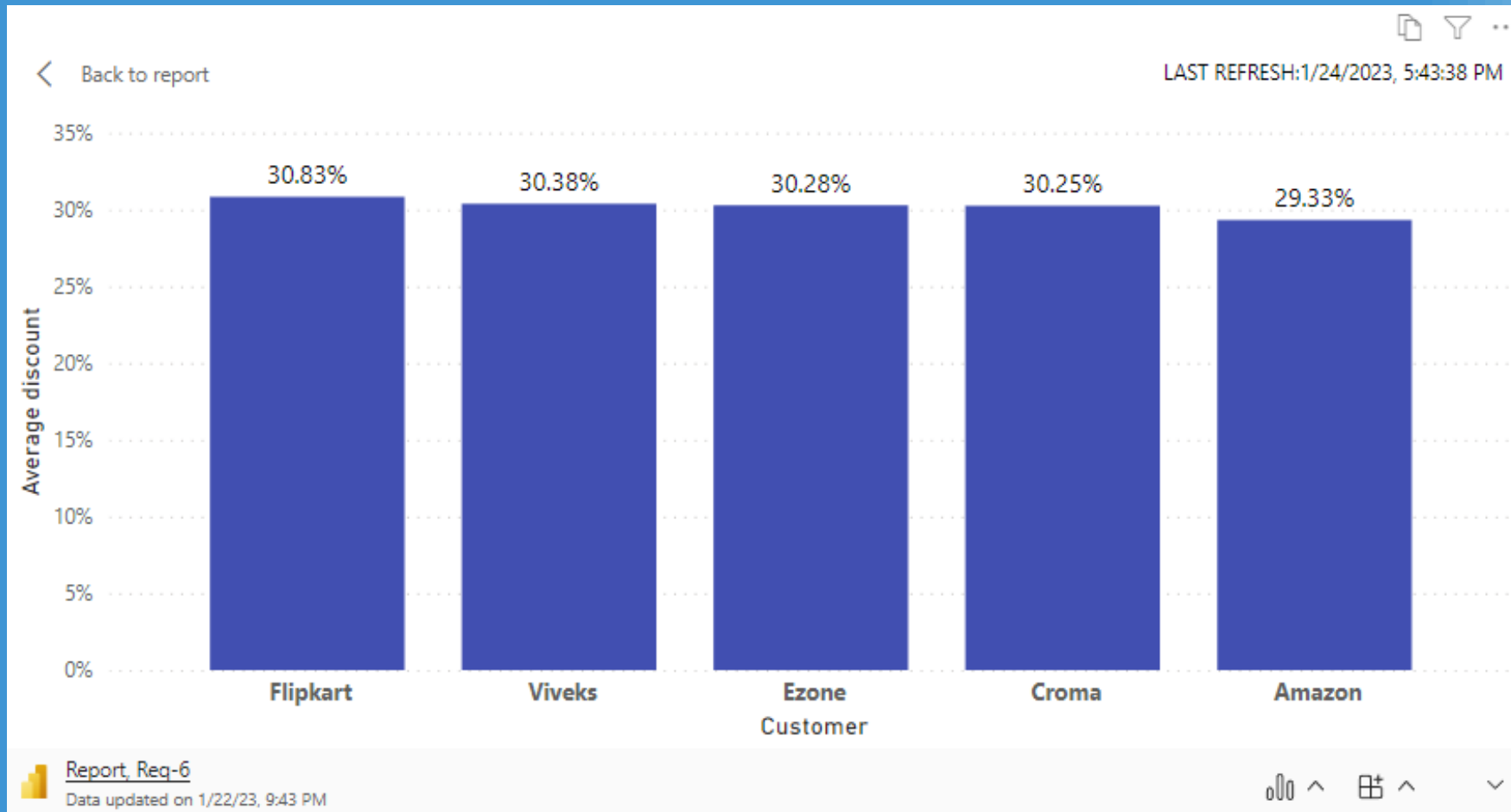customer_code, customer, average_discount_percentage

Query:

```sql
SELECT a.customer_code ,
       b.customer,
       CONCAT(ROUND(AVG(pre_invoice_discount_pct)*100,2),'%') AS
average_discount_percentage
FROM fact_pre_invoice_deductions AS a
INNER JOIN
dim_customer AS b
ON a.customer_code = b.customer_code
WHERE market = 'India'
AND fiscal_year = 2021
GROUP BY customer, customer_code
ORDER BY AVG(pre_invoice_discount_pct) 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%

Insights

❑ Flipkart has received the highest pre invoice discount percent i.e., 30.83%
❑ Top 5 Customers have a collective average around 30.21%
❑ FY 2021, Average discount provided to all customers in Indian market was 24.16%

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

Query:

```
SELECT
        MONTHNAME(date) AS month_name,
        YEAR(date) AS year_,
        CONCAT('$',ROUND(SUM(a.sold_quantity * b.gross_price)/1000000,2)) AS
gross_sales_amount_millions /*value in millions*/
FROM fact_sales_monthly AS a
INNER JOIN fact_gross_price AS b
ON b.product_code = a.product_code
AND b.fiscal_year = a.fiscal_year
INNER JOIN dim_customer AS c
ON c.customer_code = a.customer_code
WHERE c.customer = 'Atliq Exclusive'
GROUP BY month_name, year_
ORDER BY year_;
```

Output:

month_name	year_	gross_sales_amount_millions
September	2019	$4.50
October	2019	$5.14
November	2019	$7.52
December	2019	$4.83
January	2020	$4.74
February	2020	$4.00
March	2020	$0.38
April	2020	$0.40
May	2020	$0.78
June	2020	$1.70
July	2020	$2.55
August	2020	$2.79
September	2020	$12.35
October	2020	$13.22
November	2020	$20.46
December	2020	$12.94
January	2021	$12.40
February	2021	$10.13
March	2021	$12.14
April	2021	$7.31
May	2021	$12.15
June	2021	$9.82
July	2021	$12.09
August	2021	$7.18
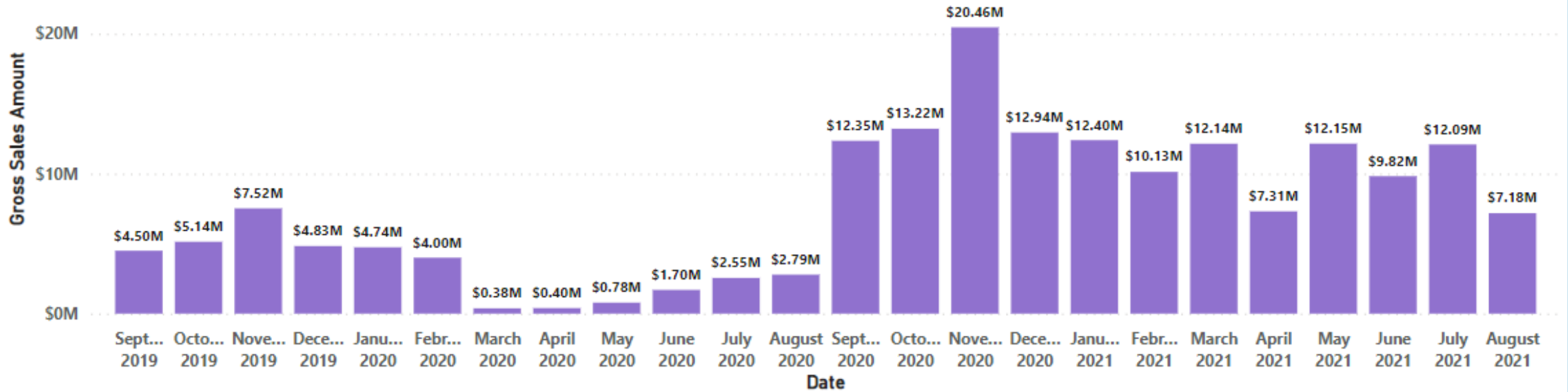
Insights

❑ For Atliq Exclusive Store maximum sales were recorded in November-2020($20.46 Million) and lowest sales recorded in March-2020 ($0.38 Million)
❑ Low sales from March to August were due to pandemic when stores were shut
❑ Sales started improving from September-2020 onwards due to ease in lockdown restrictions and the onset of festival season in India and other markets

Request 8: In which quarter of 2020, got the maximum total_quantity_sold? The final output contains these fields sorted by the total_quantity_sold:
 Quarter, total_quantity_sold

Query:

```
SELECT CASE
                WHEN MONTH(date) IN (9,10,11) THEN 'Q1' /*
Atliq hardware has september as it's first financial month*/
                WHEN MONTH(date) IN (12,1,2) THEN 'Q2'
                WHEN MONTH(date) IN (3,4,5) THEN 'Q3'
                ELSE 'Q4'
                END AS quarters,
        SUM(sold_quantity) AS total_quantity_sold
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY quarters
ORDER BY total_quantity_sold DESC;
```

Output:

quarters	total_quantity_sold
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087
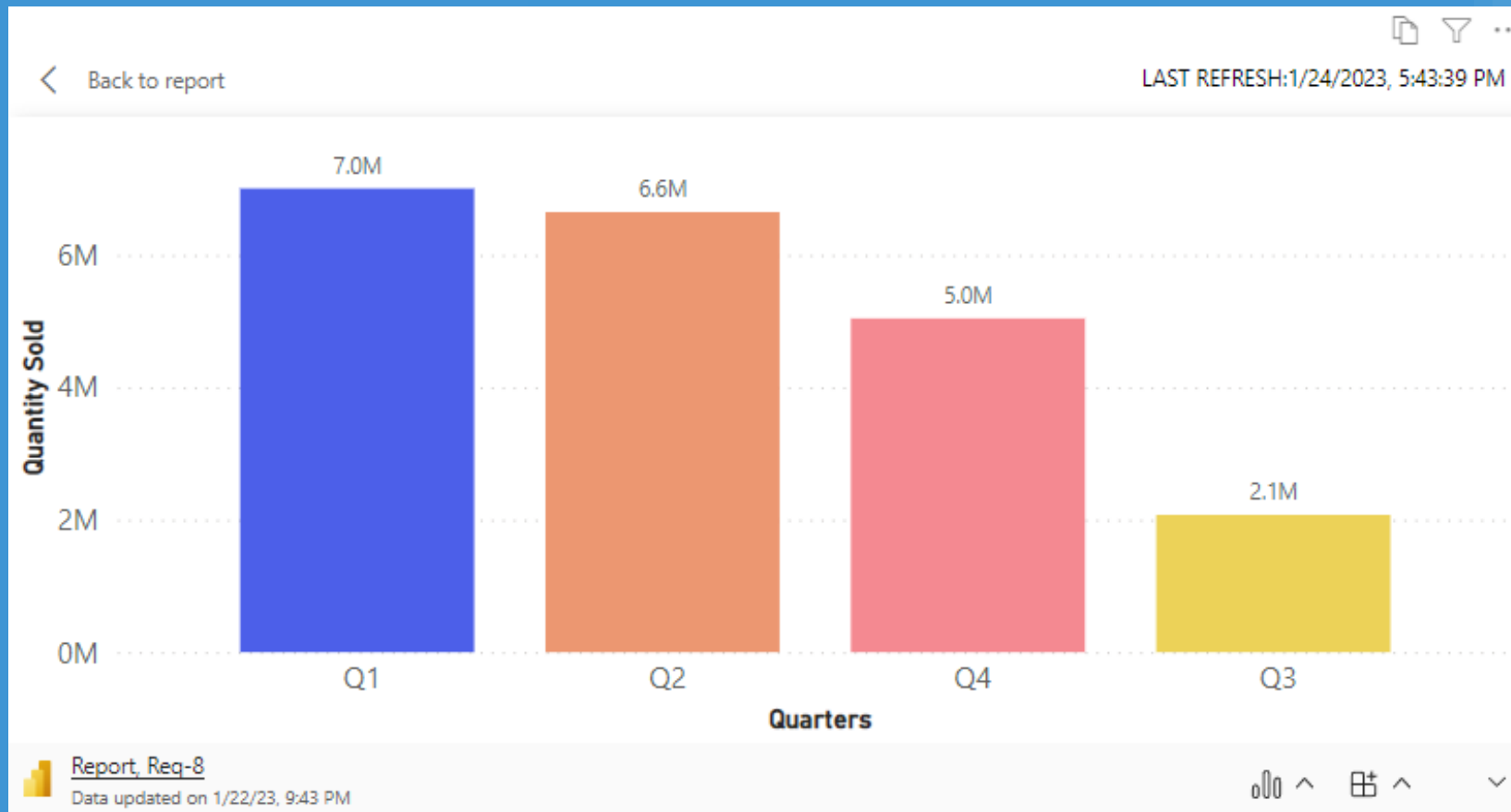
Insights

❑ Q1(September-November) had the maximum quantity sold for FY 2020
❑ Sales dropped in Q3(March-May) because of pandemic
❑ Increase in sales recorded in Q4(June-August)

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

Query:

```sql
WITH gross_sales AS
(
 SELECT c.channel AS channel_,
        ROUND(SUM(b.gross_price*a.sold_quantity)/1000000,2) /*
converting values to millions*/
 AS gross_sales_million
 FROM fact_sales_monthly AS a
 LEFT JOIN fact_gross_price AS b
 ON a.product_code = b.product_code
 AND a.fiscal_year = b.fiscal_year
LEFT JOIN dim_customer AS c
 ON
 a.customer_code = c.customer_code
 WHERE a.fiscal_year = 2021
 GROUP BY c.channel
)

SELECT channel_,
       CONCAT('$',gross_sales_million) AS gross_sales_million,
         CONCAT(ROUND(gross_sales_million/ SUM(gross_sales_million)
OVER()*100,2),'%') AS percentage
FROM gross_sales
ORDER BY percentage DESC;
```

Output:

channel_	gross_sales_million	percentage
Retailer	$1219.08	73.23%
Direct	$257.53	15.47%
Distributor	$188.03	11.30%
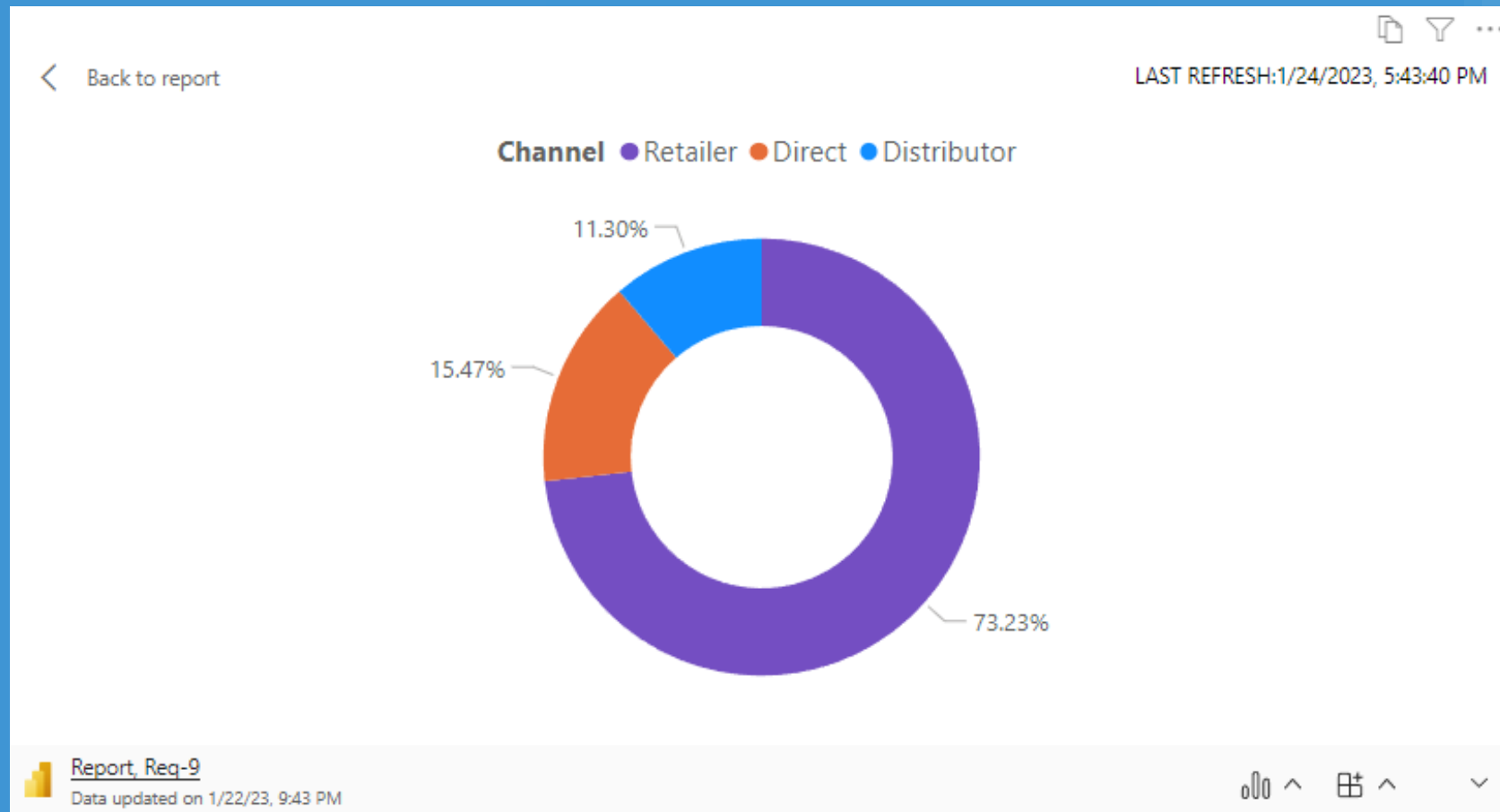
Insights

❑ Retailers with $1219.08 Million which is 73.23% of gross sales for FY 2021 followed by Direct channel with $257.53 Million and Distributor with $188.03 Million.

Query:

Output:

```sql
WITH top_sold_products AS /*creating a CTE for getting top selling products for
all divisions*/
(
        SELECT b.division AS division,
                b.product_code AS product_code,
                b.product AS product,
                SUM(a.sold_quantity) AS total_sold_quantity
        FROM fact_sales_monthly AS a
        INNER JOIN dim_product AS b
        ON a.product_code = b.product_code
        WHERE a.fiscal_year = 2021
        GROUP BY  b.division, b.product_code, b.product /* to get total sold
quantity we will need to group it as shown in this part of query */
        ORDER BY total_sold_quantity DESC
),
top_sold_per_division AS /*creating this CTE to get top 3 based on total_sold
quantity per division*/
(
 SELECT division,
        product_code,
        product,
        total_sold_quantity,
        DENSE_RANK() OVER(PARTITION BY division ORDER BY total_sold_quantity DESC)
AS rank_order /* using dense rank so that we can handle ties and still grab top 3
products*/
 FROM top_sold_products
 )
 SELECT * FROM top_sold_per_division
 WHERE rank_order <= 3;
```

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
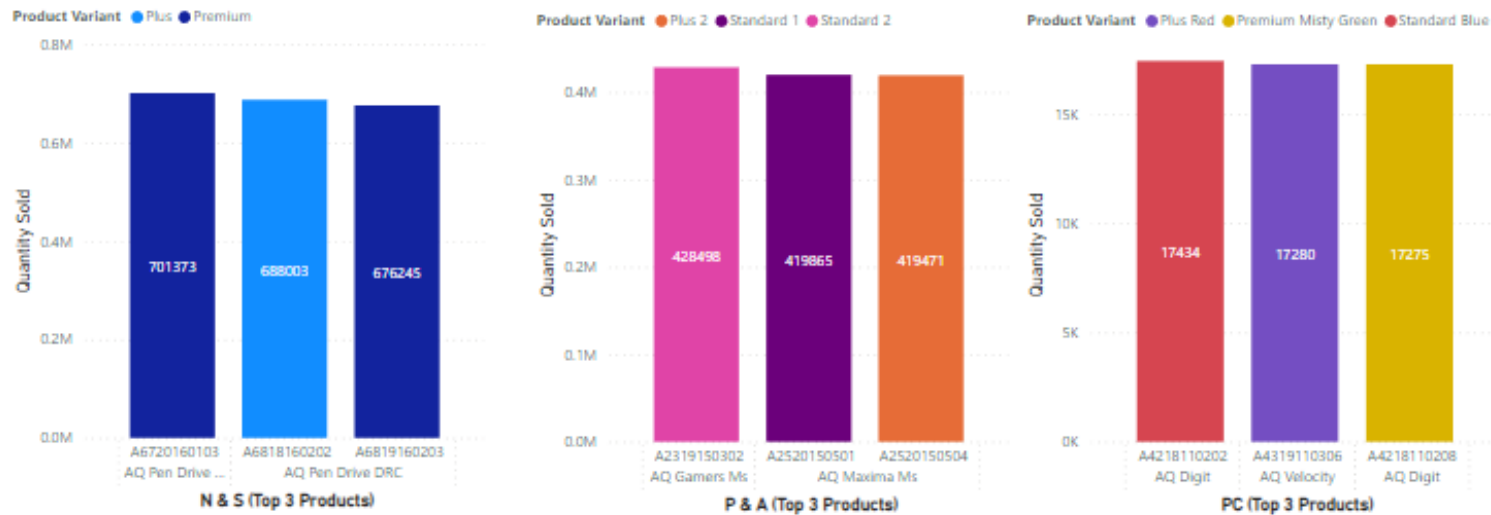
Insights

- ❑ For N&S, the top selling product is AQ Pen Drive 2 IN 1 with a total of 7,01,373 quantities sold in FY 2021 followed by two variants of AQ Pen Drive DRC with 6,88,003 and 6,76,245 quantity sold respectively
- ❑ For P&A, top selling product is AQ Gamers Ms with 4,28,498 quantities sold followed by two variants of AQ Maxima Ms
- ❑ For PC, top selling product is AQ Digit PC with 17,434 quantities sold
- ❑ The company can take some strategic decisions to improve sale in PC division