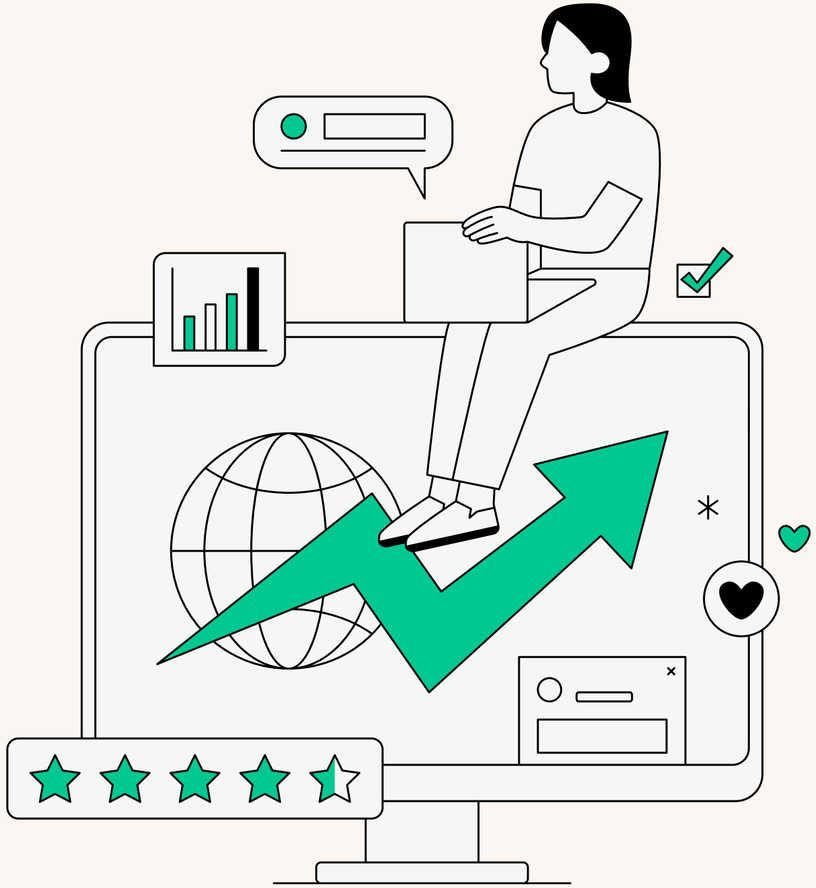
CODE BASICS

Atliq Hardware

Consumer Goods Ad-hoc Insights

Domain: Consumer Goods | **Function:** Executive Management



Presented by Aditya Rajvaidya

About AtliQ Hardware

Atliq Hardwares is a leading computer hardware manufacturer in India, with a strong presence in international markets.

Atliq Hardware follows a September-to-August fiscal year

- **Fiscal Year 2020: September 2019 – August 2020**
- **Fiscal Year 2021: September 2020 – August 2021**

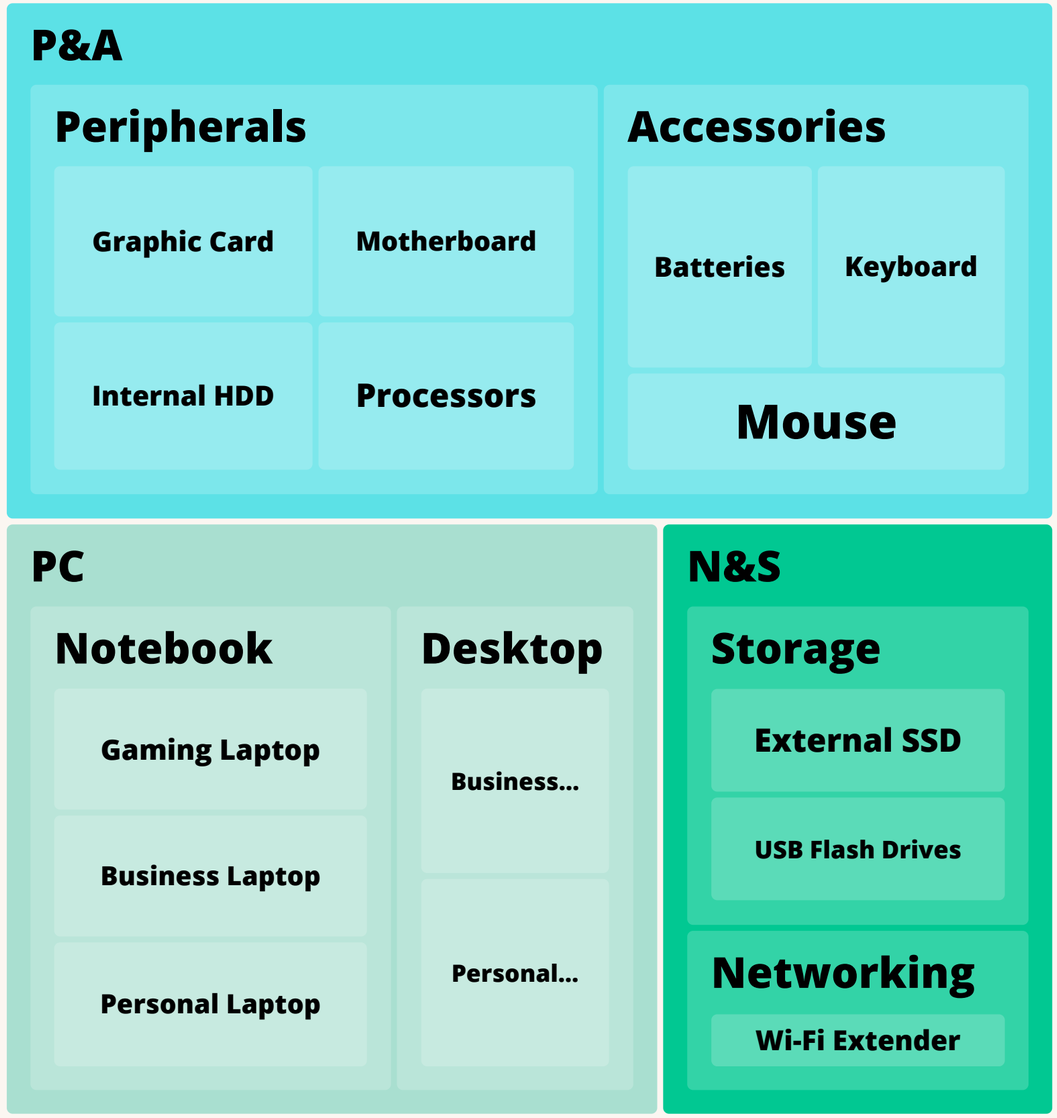
Product Line and Sales Channels

Atliq distributes its products through multiple channels to ensure widespread availability

DIRECT

DISTRIBUTOR

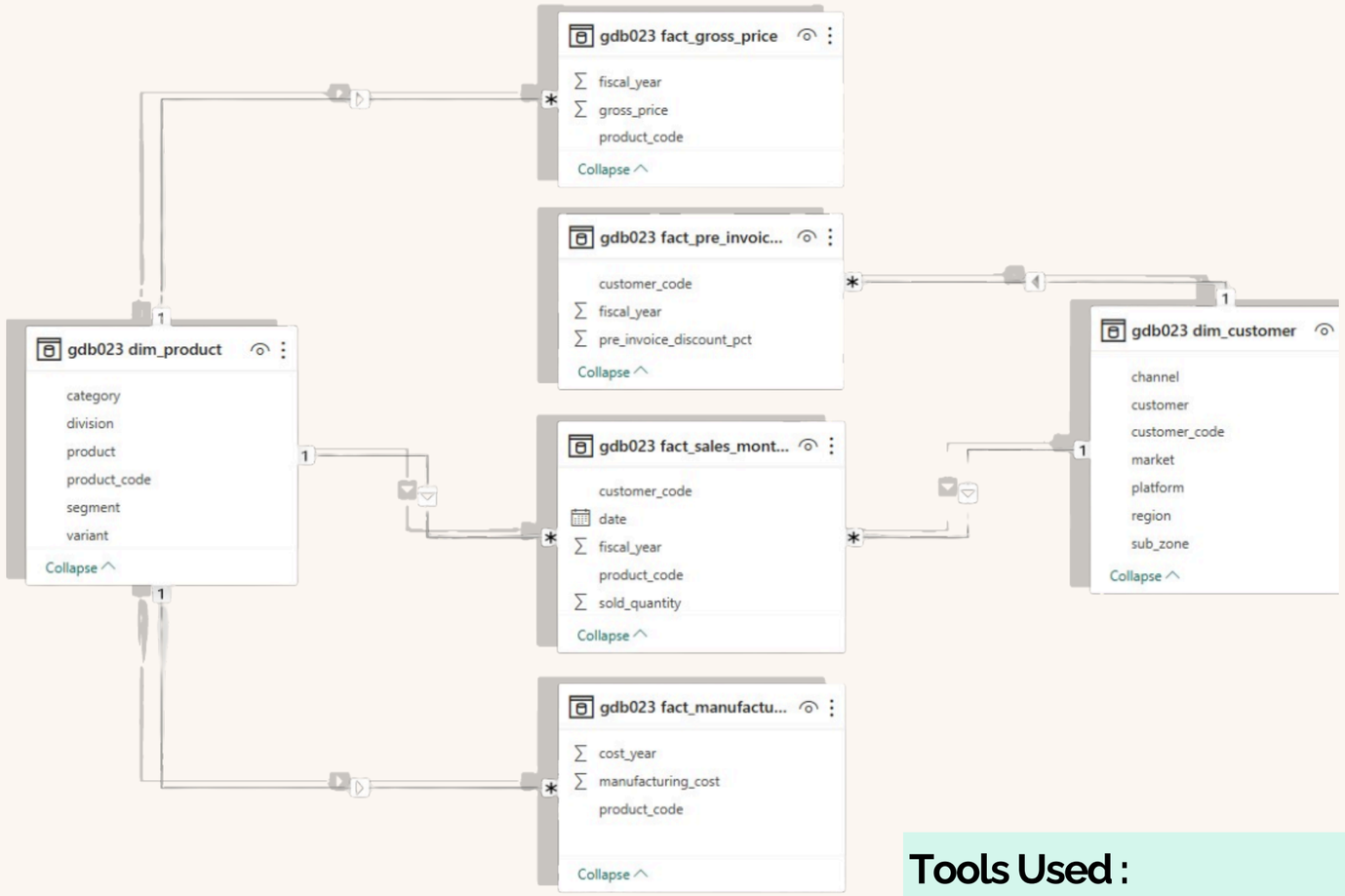
RETAILER

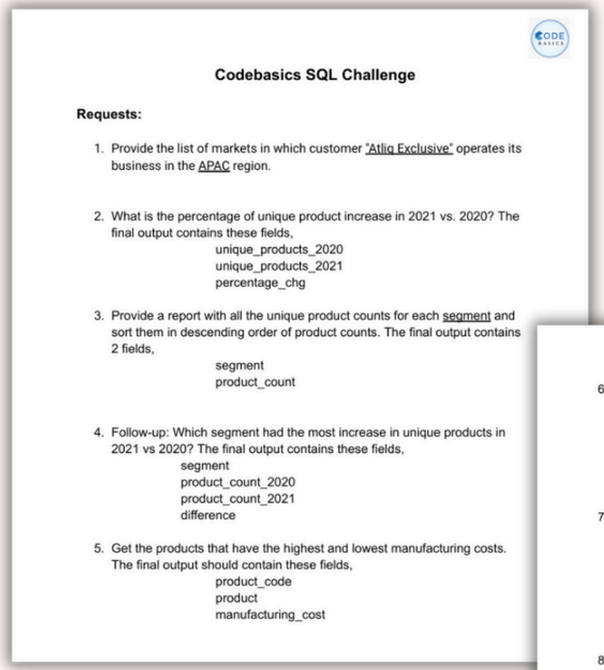


Objectives

- Management faced challenges due to insufficient insights for quick decision-making.
- Tony Sharma, the Data Analytics Director, decided to expand the team by hiring junior data analysts.
- The goal was to find candidates with both technical expertise and business understanding.
- Tony designed a unique SQL challenge to evaluate candidates' skills.
- The challenge included answering 10 real, pressing business questions.
- It tested problem-solving abilities as well as communication of insights.
- This initiative aimed to enable faster, data-driven decision-making for management.

Ad-Hoc Requests, Data & Tools





Codebasics SQL Challenge

Requests:

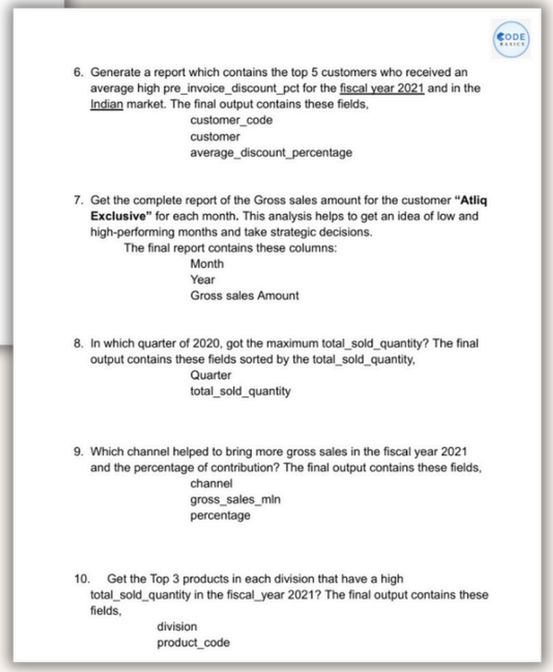
1. Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

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



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

Data is provided for the fiscal year 2020 and 2021

Tools Used :

- **Power BI : For Visualization.**
- **MySQL : For query down Ad-Hoc requests.**

A few points to keep in mind

Gross Sales = Sold Quantity * Gross Price per Unit

Represents the total sales value before any discounts.

Net Sales = Gross Sales Amount - Pre-Invoice Discount Amount

Net Invoice Sales is equivalent to Net Sales or Revenue. Because No other discounts apply after invoicing.

Gross Margin = Net Sales / Revenue - COGS (Manufacturing Cost)

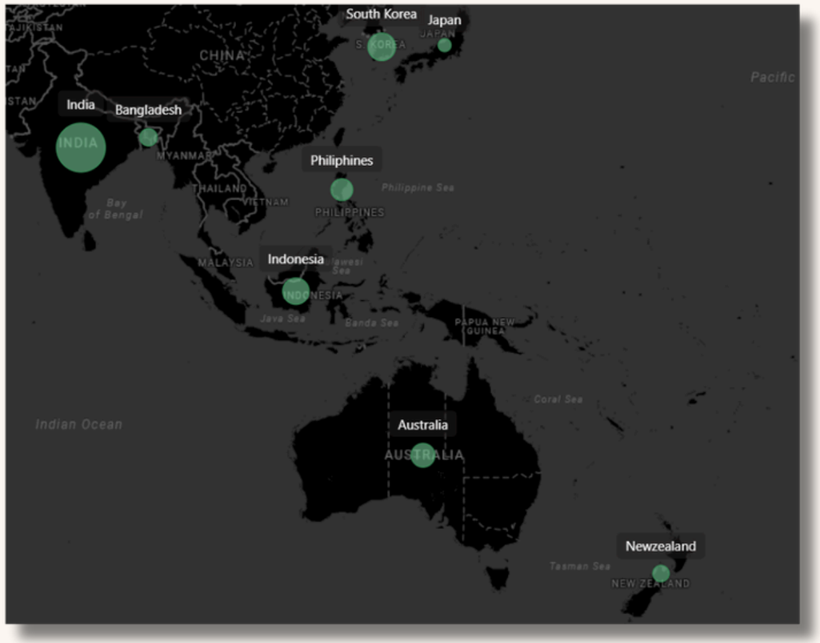
COGS in this analysis consists solely of Manufacturing Costs. Other potential COGS elements are not applicable to the data presented.

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

SQL Query:

```
SELECT
    DISTINCT(c.market),
    round(sum((f.sold_quantity * g.gross_price) * (1 - p.pre_invoice_discount_pct) / 1000000), 2) AS Net_Invoice_Sales

FROM
    fact_sales_monthly f

JOIN
    fact_gross_price g ON f.product_code = g.product_code AND g.fiscal_year = f.fiscal_year

JOIN
    fact_pre_invoice_deductions p ON f.customer_code = p.customer_code AND f.fiscal_year = p.fiscal_year

JOIN
    dim_customer c ON f.customer_code = c.customer_code

WHERE
    c.region = 'APAC' AND c.customer = 'Atliq Exclusive'

GROUP BY c.market
ORDER BY market;
```

market	Net_Inovice_Sales
India	49.33
South Korea	14.56
Indonesia	12.99
Australia	9.97
Philiphines	8.00
Bangladesh	4.44
Newzealand	3.65
Japan	1.77



market	Gross Sales	Net Invoice Sales	Gross Margin
India	$59.88M	$49.33M	$31.43M
South Korea	$15.70M	$14.56M	$9.87M
Indonesia	$14.25M	$12.99M	$8.72M
Australia	$10.88M	$9.97M	$6.71M
Philiphines	$8.73M	$8.00M	$5.39M
Bangladesh	$4.72M	$4.44M	$3.03M
Newzealand	$4.05M	$3.65M	$2.44M
Japan	$1.96M	$1.77M	$1.18M
Total	**$120.17M**	**$104.70M**	**$68.77M**

INSIGHTS:

Regional Presence: Atliq Exclusive operates across eight diverse APAC markets, demonstrating a broad regional reach.

India dominates the APAC region in all metrics—Gross Sales, Net Invoice Sales, and Gross Margin—showcasing exceptional market performance.

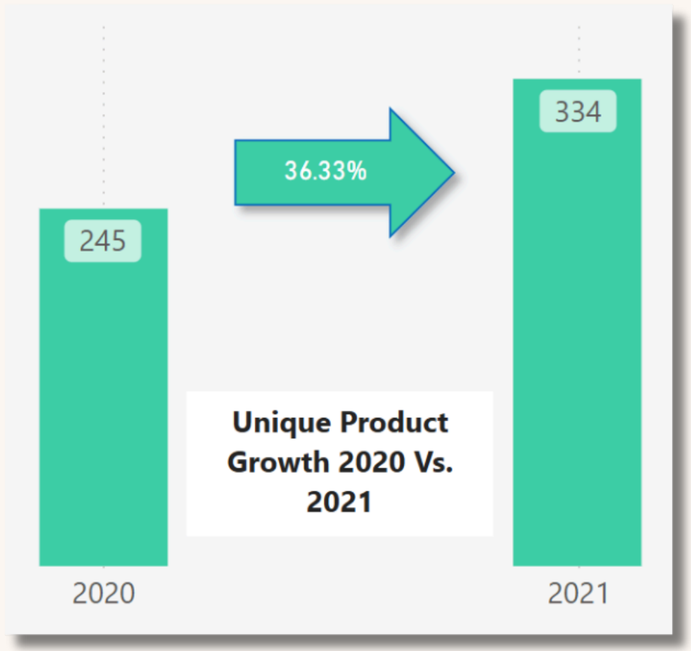
Japan lags significantly, recording the lowest figures in all metrics among the markets.

South Korea, Indonesia, and **Australia** demonstrate competitive and consistent contributions, performing at similar levels in Gross Sales and Net Invoice Sales.

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

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33



SQL Query:

```
WITH product_count 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
  *,
  ROUND((unique_products_2021 - unique_products_2020) * 100 / unique_products_2020, 2) AS percentage_chg

FROM product_count;
```

INSIGHTS:

The number of unique products increased from **245 in 2020** to **334 in 2021,** representing a substantial growth rate of **36.33%.**

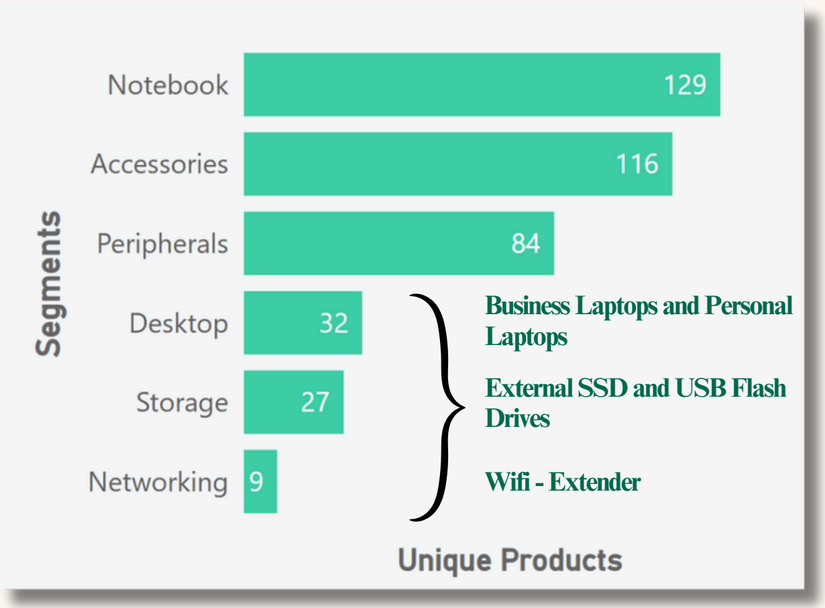
Request 3: Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields,

- segment
- product_count

SQL Query:

```
SELECT
  segment,
  COUNT(DISTINCT product_code) AS product_count

FROM
  dim_product

GROUP BY
  segment

ORDER BY
  product_count DESC;
```

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



INSIGHTS:

Notebooks, Accessories, Peripherals are the top segments showcasing high demand and diverse offerings.

Desktop, Storage, and Networking are the bottom segments with least number of unique product count.

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 Query:

```
WITH CTE1 AS (
   SELECT segment,
              COUNT(DISTINCT CASE
                                  WHEN fiscal_year = 2020 THEN f.product_code
                                  END) AS unique_products_2020,
              COUNT(DISTINCT CASE
                                  WHEN fiscal_year = 2021 THEN f.product_code
                                  END) AS unique_products_2021

    FROM fact_sales_monthly f
    JOIN dim_product USING(product_code)
   GROUP BY segment
)
SELECT *, (unique_products_2021 - unique_products_2020) AS difference
FROM CTE1
ORDER BY difference DESC;
```

segment	unique_products_2020	unique_products_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

segment	Unique Products 2020	Unique Products 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:

Accessories had the most increase in the product count as well as in production in the period of **FY 2020** and **FY 2021.**

Storage, and Networking, had the least increase in the product count among all the segments **but they are also increasing.**

segment	Net Invoice Sales 2020	Net Invoice Sales 2021	Net Invoice Sales (2021 vs 2020)
Notebook	$133M	$411M	$279M
Accessories	$102M	$378M	$276M
Peripherals	$93M	$257M	$164M
Storage	$42M	$84M	$42M
Desktop	$1M	$72M	$70M
Networking	$40M	$70M	$30M

segment	Gross Margin 2020	Gross Margin 2021	Gross Margin (2021 vs 2020)
Notebook	$81M	$250M	$169M
Accessories	$62M	$230M	$168M
Peripherals	$57M	$157M	$100M
Storage	$26M	$51M	$26M
Desktop	$1M	$43M	$43M
Networking	$25M	$43M	$18M

INSIGHTS:

Strong Growth in Sales and Margin: All product segments show noticeable growth in Net Invoice Sales and Gross Margin from **2020 to 2021**, indicating an overall business improvement.

Notebook and Accessories Lead: The Notebook and Accessories segments drive the highest growth in both **Net Invoice Sales** and **Gross Margin**, highlighting their dominant contribution.

Emerging Segments Show Promise: Despite lower starting points, the **Desktop** and **Storage** segments demonstrate significant percentage increases, reflecting strong growth potential.

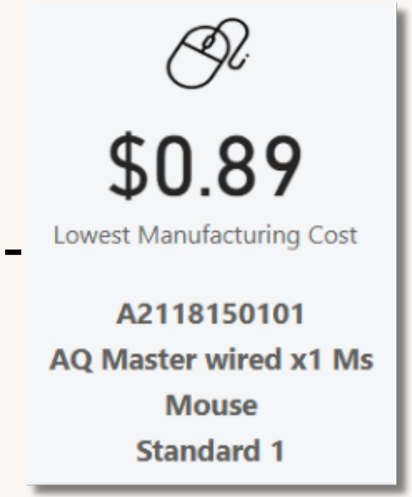
Request 5: Get the products that have the highest and lowest manufacturing costs. The final output should contain these fields,

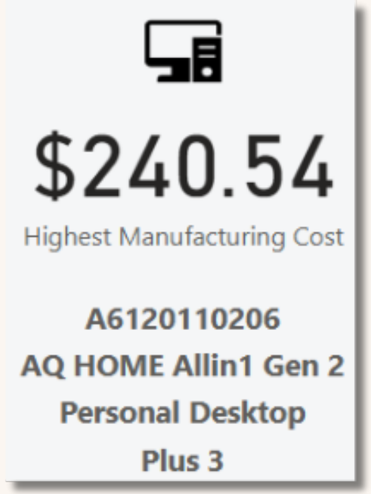
- product_code
- product
- manufacturing_cost

SQL Query:

```
SELECT product_code, product, manufacturing_cost

FROM dim_product

JOIN fact_manufacturing_cost USING(product_code)

WHERE manufacturing_cost = (SELECT MAX(manufacturing_cost)
                            FROM fact_manufacturing_cost)

   OR manufacturing_cost = (SELECT MIN(manufacturing_cost)
                            FROM fact_manufacturing_cost);
```

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





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,  .customer, AVG(d.pre_invoice_discount_pct) AS average_discount_percentage

FROM
   fact_pre_invoice_deductions d

JOIN
   dim_customer c USING (customer_code)

WHERE
   d.fiscal_year = 2021 AND c.market = 'India'

GROUP BY c.customer_code, c.customer

ORDER BY average_discount_percentage DESC  LIMIT 5;
```

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.30830000
90002006	Viveks	0.30380000
90002003	Ezone	0.30280000
90002002	Croma	0.30250000
90002016	Amazon	0.29330000

INSIGHTS:

AtliQ had given almost equal pre invoice discount to all top 5 customers **i.e approx 30%**.

Flipkart had the highest pre-invoice discount **30.83%** in FY 2021.

customer_code	customer	AVG Pre Invoice Discount % 2020	AVG Pre Invoice Discount % 2021	Net_Invoice_ Sales LY $	Net Invoice Sales 2021	Net Invoice Sales (2021 vs 2020)
90002009	Flipkart	28.26%	30.83%	$9M	$21M	$12M
90002006	Viveks	23.98%	30.38%	$5M	$17M	$12M
90002003	Ezone	26.11%	30.28%	$4M	$17M	$12M
90002002	Croma	18.60%	30.25%	$5M	$16M	$11M
90002016	Amazon	18.76%	29.33%	$8M	$18M	$10M
90002011	Atliq Exclusive	26.56%	27.93%	$4M	$18M	$13M
90002004	Vijay Sales	28.70%	27.53%	$5M	$18M	$14M
90002005	Lotus	23.50%	27.02%	$5M	$17M	$13M
90002007	Girias	26.20%	25.08%	$4M	$18M	$14M
90002010	Ebay	20.76%	22.59%	$8M	$18M	$10M
90002013	Electricalslytical	28.85%	22.53%	$4M	$18M	$14M
90002008	Amazon	20.00%	22.07%	$13M	$31M	$18M
90002001	Reliance Digital	18.94%	21.19%	$5M	$18M	$13M
70002018	Atliq e Store	22.55%	20.61%	$8M	$19M	$11M
90002014	Expression	26.54%	20.57%	$5M	$19M	$14M
90002015	Propel	22.27%	20.04%	$5M	$19M	$15M
90002012	Electricalsocity	25.72%	19.57%	$5M	$20M	$15M
70002017	Atliq Exclusive	7.35%	7.03%	$6M	$22M	$16M

INSIGHTS:

Amazon (90002008 & 90002016) and **Atliq Exclusive** (90002011 & 70002017) has different customer codes.

Possible Reasons:

- **Amazon** operating through different business units or divisions.
- **Atliq Exclusive** has distinct branches, locations, or subsidiaries

Despite having a high discount **(~30%)** in **2021** all **top 5 customers** saw moderate YoY net sales growth **(~$11M–$12M).**

where as some customers like **Amazon** (90002008) and all the **bottom 4 customers** had shown highest growth in **net invoice sales.**

"showing that deep discounts don't always translate to the highest gains."

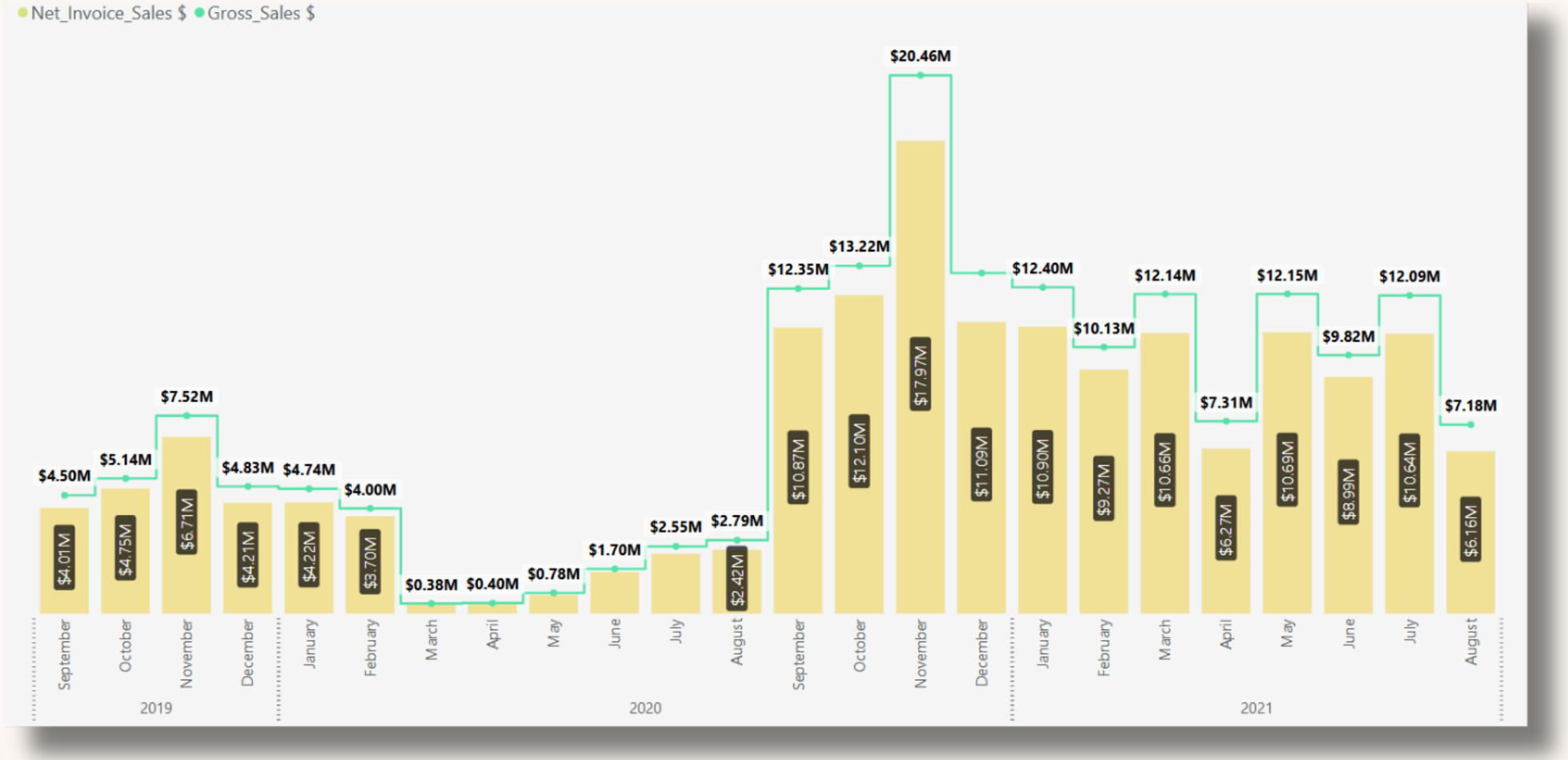
Request 7: Get the complete report of the Gross sales amount for the customer “Atliq Exclusive” for each month . This analysis helps to get an idea of low and high-performing months and take strategic decisions. The final report contains these columns:

- Month
- Year
- Gross sales Amount

SQL Query:

```
SELECT
    DATE_FORMAT(f.date, '%M') AS "Month", f.fiscal_year AS "Year",
    CONCAT(ROUND(SUM(f.sold_quantity * g.gross_price / 1000000), 2), 'M') AS "Gross Sales Amount",
    CONCAT(ROUND(SUM((f.sold_quantity * g.gross_price) * (1 - p.pre_invoice_discount_pct) / 1000000), 2), "M") AS
"Net_Invoice_Sales"

FROM
    fact_sales_monthly f
JOIN
    fact_gross_price g ON g.product_code = f.product_code AND g.fiscal_year = f.fiscal_year
JOIN
    fact_pre_invoice_deductions p ON f.fiscal_year = p.fiscal_year AND f.customer_code = p.customer_code
JOIN
    dim_customer c ON f.customer_code = c.customer_code
WHERE
    c.customer = "Atliq Exclusive"
GROUP BY
    f.fiscal_year, f.date
ORDER BY
    f.fiscal_year;
```

Month	Year	Gross Sales Amount	Net_Inovice_Sales
September	2020	4.50M	4.01M
October	2020	5.14M	4.75M
November	2020	7.52M	6.71M
December	2020	4.83M	4.21M
January	2020	4.74M	4.22M
February	2020	4.00M	3.70M
March	2020	0.38M	0.34M
April	2020	0.40M	0.34M
May	2020	0.78M	0.70M
June	2020	1.70M	1.57M
July	2020	2.55M	2.27M
August	2020	2.79M	2.42M
September	2021	12.35M	10.87M
October	2021	13.22M	12.10M
November	2021	20.46M	17.97M
December	2021	12.94M	11.09M
January	2021	12.40M	10.90M
February	2021	10.13M	9.27M
March	2021	12.14M	10.66M
April	2021	7.31M	6.27M
May	2021	12.15M	10.69M
June	2021	9.82M	8.99M
July	2021	12.09M	10.64M
August	2021	7.18M	6.16M



INSIGHTS:

Fiscal year **2020** contributed approximately **28.5%** of the total Gross Sales and **29.1%** of the total Net Sales. while fiscal year **2021** contributed the remaining **71.5%** and **70.9%**, respectively.

The lowest gross and net sales were observed in **March, April,** and **May 2020**, likely due to economic slowdowns and reduced consumer spending during the initial phases of the **COVID-19** pandemic.

On the other hand, the highest sales were recorded in **September, October,** and **November 2021**, which could be attributed to increased demand during the **festive** and **holiday seasons**, along with **supply chain stabilization**.

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(f.date) IN (9, 10, 11) THEN 'Q1'
    WHEN Month(f.date) IN (12, 1, 2) THEN 'Q2'
    WHEN Month(f.date) IN (3, 4, 5) THEN 'Q3'
    WHEN Month(f.date) IN (6, 7, 8) THEN 'Q4'
  END AS "Quarter",
  CONCAT(ROUND(SUM(sold_quantity)/1000000, 2), " M") AS total_sold_quantity
FROM fact_sales_monthly f
WHERE fiscal_year = 2020
GROUP BY
  f.date,
  CASE
    WHEN MONTH(f.date) IN (9, 10, 11) THEN 'Q1'
    WHEN MONTH(f.date) IN (12, 1, 2) THEN 'Q2'
    WHEN MONTH(f.date) IN (3, 4, 5) THEN 'Q3'
    WHEN MONTH(f.date) IN (6, 7, 8) THEN 'Q4'
  END
ORDER BY
  total_sold_quantity DESC;
```

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

INSIGHTS:

In **Quarter 1** of fiscal year **2020** AtliQ got the maximum total sold quantity of products
Quarter 3 of fiscal year **2020** got the least total sold quantity of products mainly due to the pandemic- **COVID- 19.**

SQL Query:

```
SELECT
    DATE_FORMAT(f.date, '%M') AS "Month",
    CASE
        WHEN Month(f.date) IN (9, 10, 11) THEN 'Q1'
        WHEN Month(f.date) IN (12, 1, 2) THEN 'Q2'
        WHEN Month(f.date) IN (3, 4, 5) THEN 'Q3'
        WHEN Month(f.date) IN (6, 7, 8) THEN 'Q4'
    END AS "Quarter",
    CONCAT(ROUND(SUM(sold_quantity)/1000000, 2), " M") AS total_sold_quantity
FROM fact_sales_monthly f
WHERE fiscal_year = 2020
GROUP BY
    f.date,
    CASE
        WHEN MONTH(f.date) IN (9, 10, 11) THEN 'Q1'
        WHEN MONTH(f.date) IN (12, 1, 2) THEN 'Q2'
        WHEN MONTH(f.date) IN (3, 4, 5) THEN 'Q3'
        WHEN MONTH(f.date) IN (6, 7, 8) THEN 'Q4'
    END
ORDER BY
    total_sold_quantity DESC;
```

Month	Quarter	total_sold_quantity	
September	Q1	1.76 M	7.01M
October	Q1	2.19 M	
November	Q1	3.05 M	
December	Q2	3.18 M	6.65M
January	Q2	1.76 M	
February	Q2	1.70 M	
March	Q3	0.24 M	2.08M
April	Q3	0.82 M	
May	Q3	1.02 M	
June	Q4	1.56 M	5.04M
July	Q4	1.69 M	
August	Q4	1.79 M	

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:

```
SELECT
   c.channel,
   CONCAT(ROUND(SUM(f.sold_quantity * g.gross_price / 1000000), 2), ' M')  AS gross_sales,
   ROUND(SUM(f.sold_quantity * g.gross_price) * 100 / (SELECT SUM(f.sold_quantity * g.gross_price)
                                                       FROM  fact_sales_monthly f
                                                       JOIN fact_gross_price g USING(product_code)
                                                       WHERE f.fiscal_year = 2021),
                                                       2) AS percentage

FROM
   fact_sales_monthly f
JOIN
   dim_customer c USING (customer_code)
JOIN
   fact_gross_price g USING (product_code)
WHERE
   f.fiscal_year = 2021
GROUP BY c.channel
ORDER BY gross_sales DESC;
```

channel	gross_sales	percentage
Retailer	1924.17 M	73.22
Distributor	297.18 M	11.31
Direct	406.69 M	15.47

INSIGHTS:

Retailer channel dominates with **1.92B** in sales, contributing **73.22%** of total gross sales.

This means that the majority of **AtliQ's** business was generated through the **retailer** channel.

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 Query:

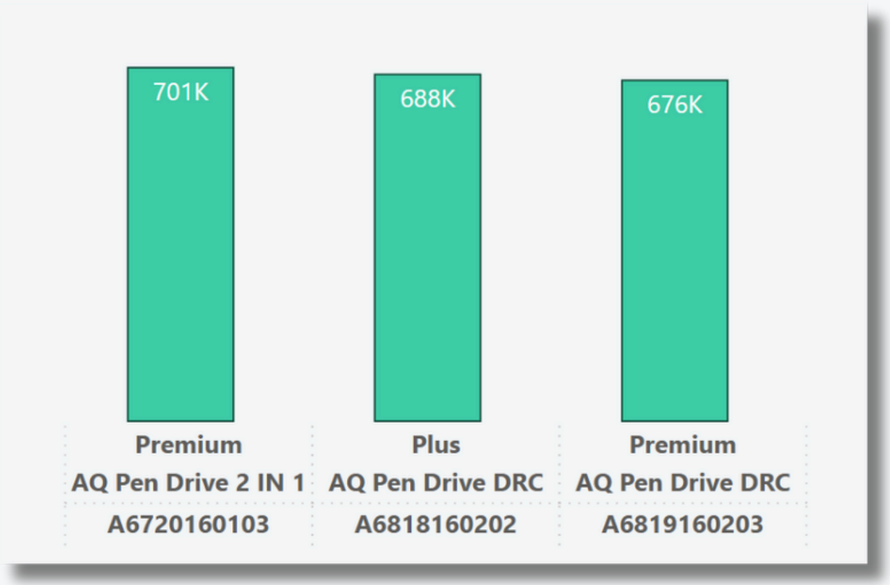
```
WITH total_sold_quantity AS (
  SELECT
    p.division, p.product_code, CONCAT(p.product, ' [', p.variant, ']') AS product,
    SUM(f.sold_quantity) AS total_sold_quantity
  FROM fact_sales_monthly f
  JOIN dim_product p USING (product_code)
  WHERE fiscal_year = 2021
  GROUP BY p.division, p.product_code, p.product, p.variant
  ORDER BY total_sold_quantity DESC
),
get_rank AS (
  SELECT *,
    DENSE_RANK() OVER(PARTITION BY division ORDER BY total_sold_quantity DESC) AS rank_order
  FROM total_sold_quantity
)
SELECT *
FROM get_rank
WHERE rank_order <= 3;
```

division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1 [Premium]	701373	1
N & S	A6818160202	AQ Pen Drive DRC [Plus]	688003	2
N & S	A6819160203	AQ Pen Drive DRC [Premium]	676245	3
P & A	A2319150302	AQ Gamers Ms [Standard 2]	428498	1
P & A	A2520150501	AQ Maxima Ms [Standard 1]	419865	2
P & A	A2520150504	AQ Maxima Ms [Plus 2]	419471	3
PC	A4218110202	AQ Digit [Standard Blue]	17434	1
PC	A4319110306	AQ Velocity [Plus Red]	17280	2
PC	A4218110208	AQ Digit [Premium Misty Green]	17275	3

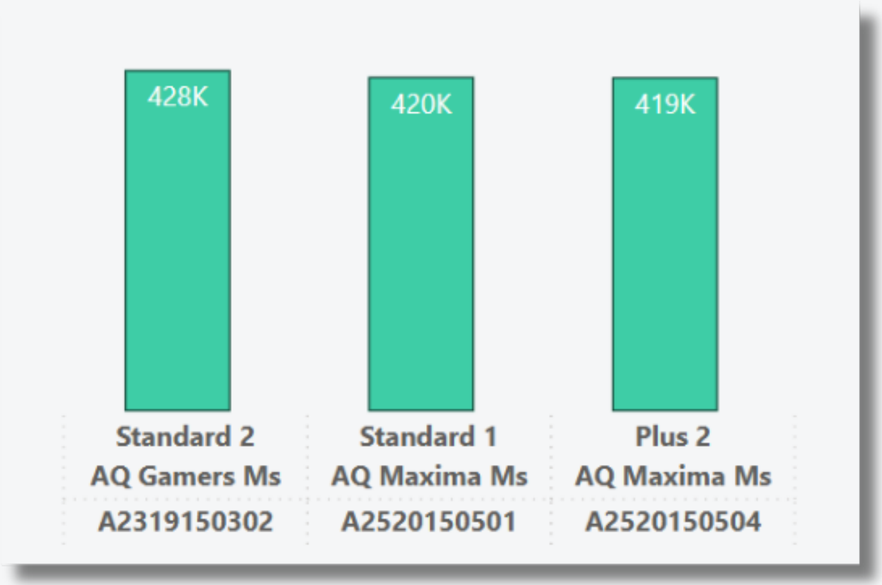
INSIGHTS:

The **N & S** division dominates in terms of **total quantity sold**, followed by **P & A**, and lastly **PC**, which has significantly lower numbers.

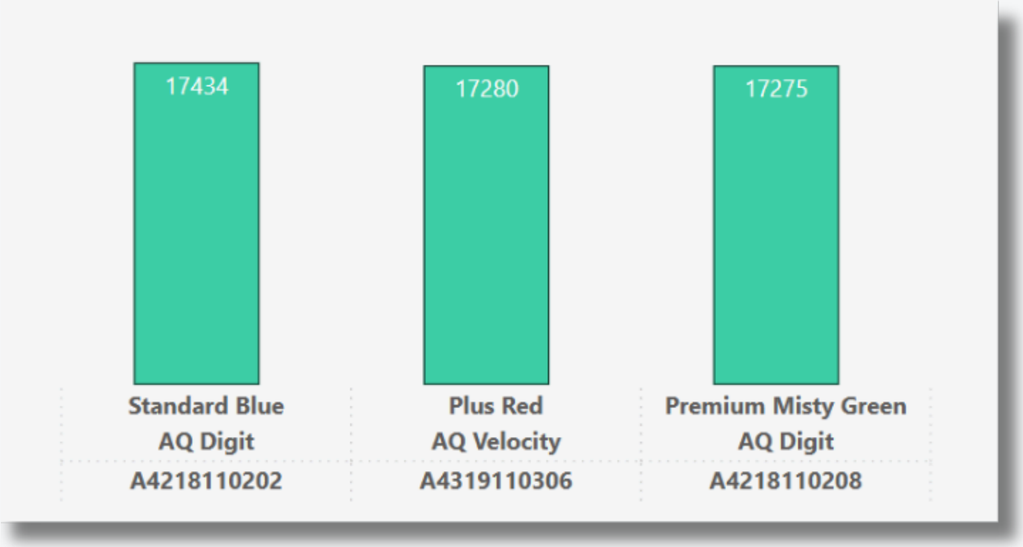
Premium and **Plus** models frequently appear in the top ranks, showing a common customer preference for high-end variants.



Segment: N & S



Segment: P & A



Segment: PC

Presented by Aditya Rajvaidya

Thank you very much!

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