

Ad_Hoc Insights

Consumer Goods



CREATED BY
VIJAYA MENSE

WHY?

Objectives

WHAT?

Company's detail and market

HOW?

Data, Requests, and Tools



Objectives

Tony Sharma

- **Atliq Hardware** (fictitious corporation) is one of the major computer hardware manufacturers in India, with a strong presence in other nations.
- Nevertheless, the management did note that they **do not have sufficient insights** to make prompt, wise, and data-informed judgments.
- Plan to **expand** the data analytics team by adding junior data analysts.
- To assess candidates, Data analytics director, **Tony Sharma** plans to conduct a **SQL challenge** to evaluate both tech and soft skills.
- The company seeks insights for **10ad hoc** requests.



Objectives

- **Atliq Hardware** (fictitious corporation) is one of the major computer hardware manufacturers in India, with a strong presence in other nations.
- Nevertheless, the management did note that they **do not have sufficient insights** to make prompt, wise, and data-informed judgments.
- Plan to **expand** the data analytics team by adding junior data analysts.
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- The company seeks insights for **10 ad hoc** requests.



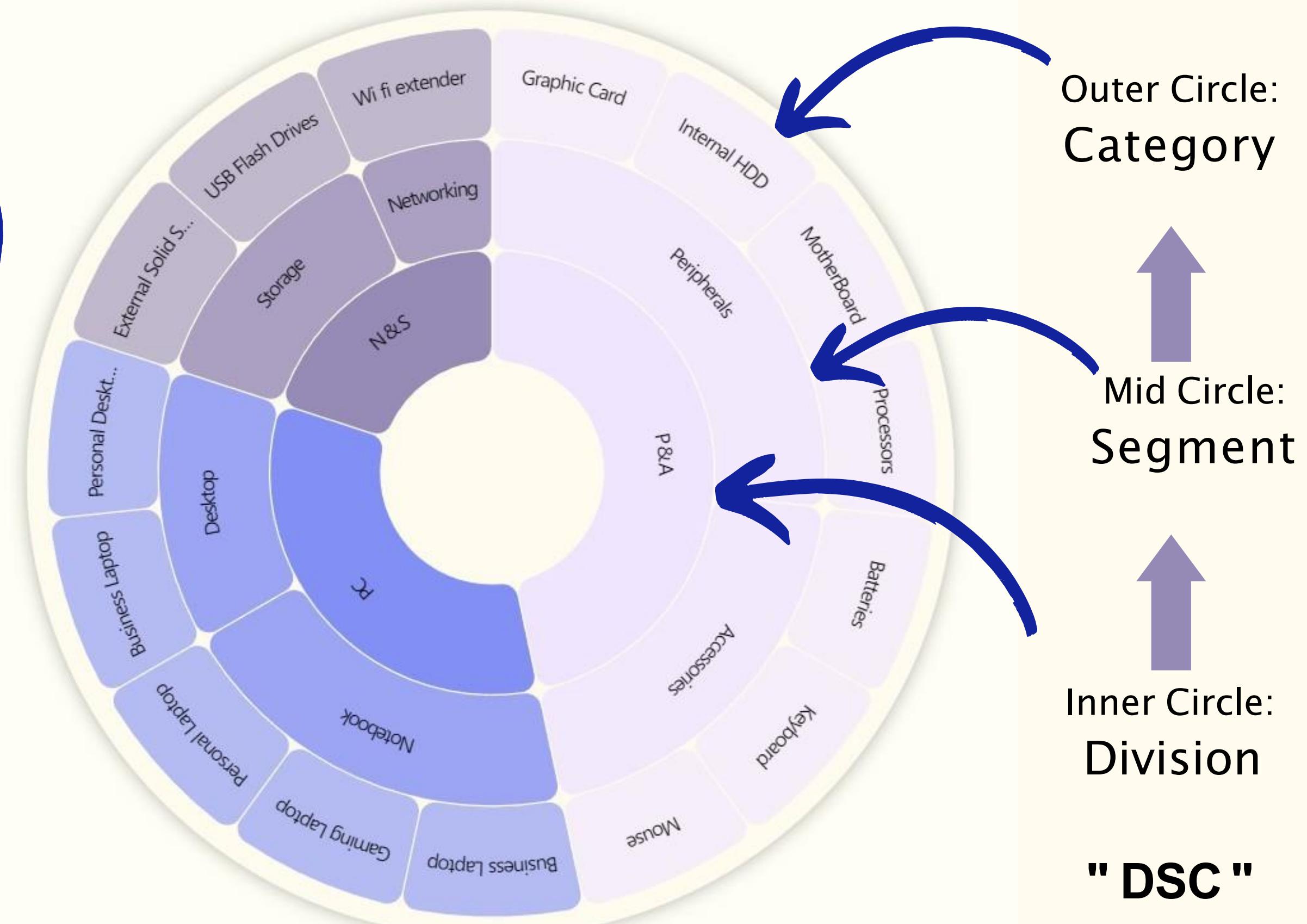
Tony Sharma



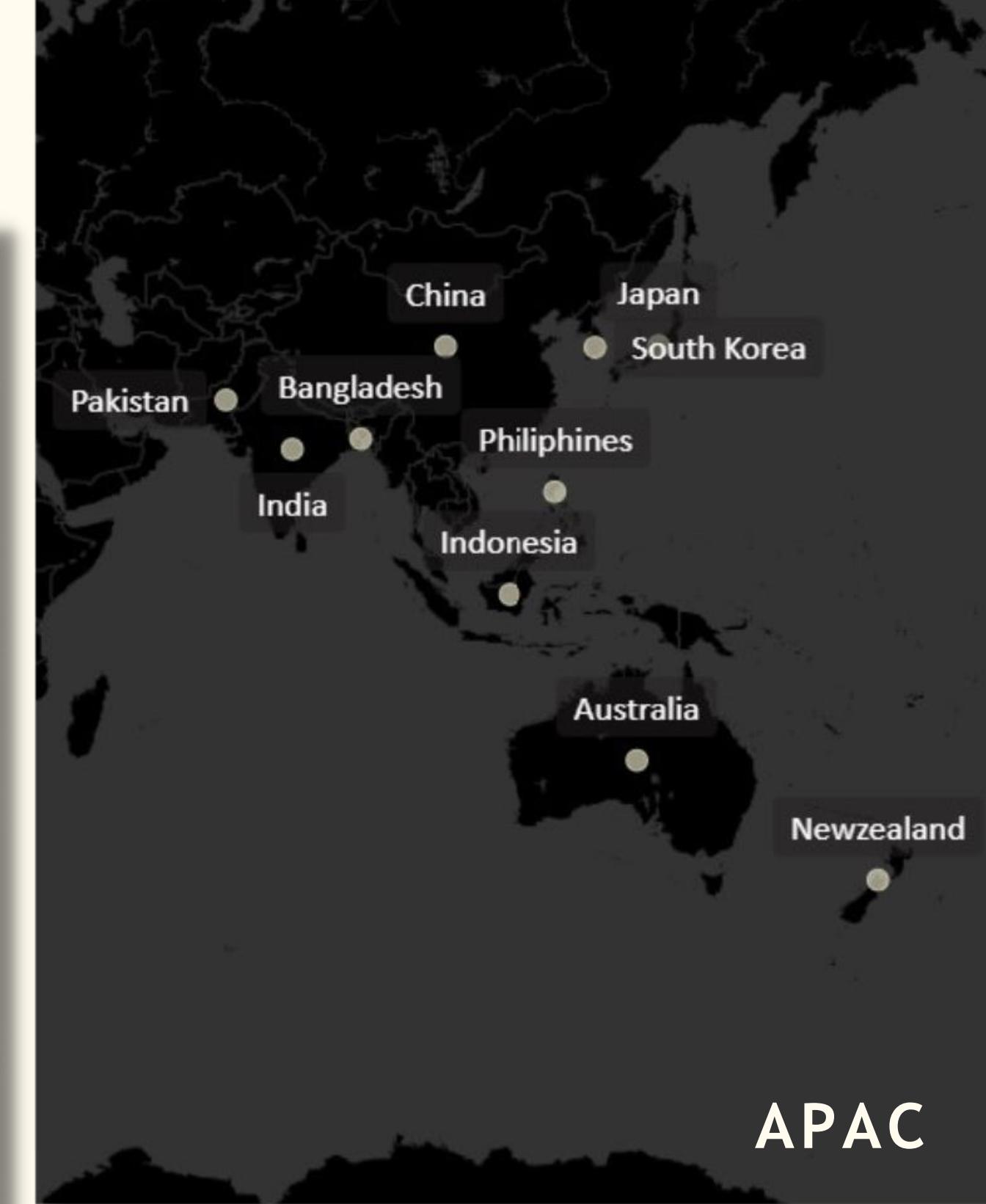
WHAT?

Company Details

Atliq Hardware is a computer hardware and accessory manufacturer.



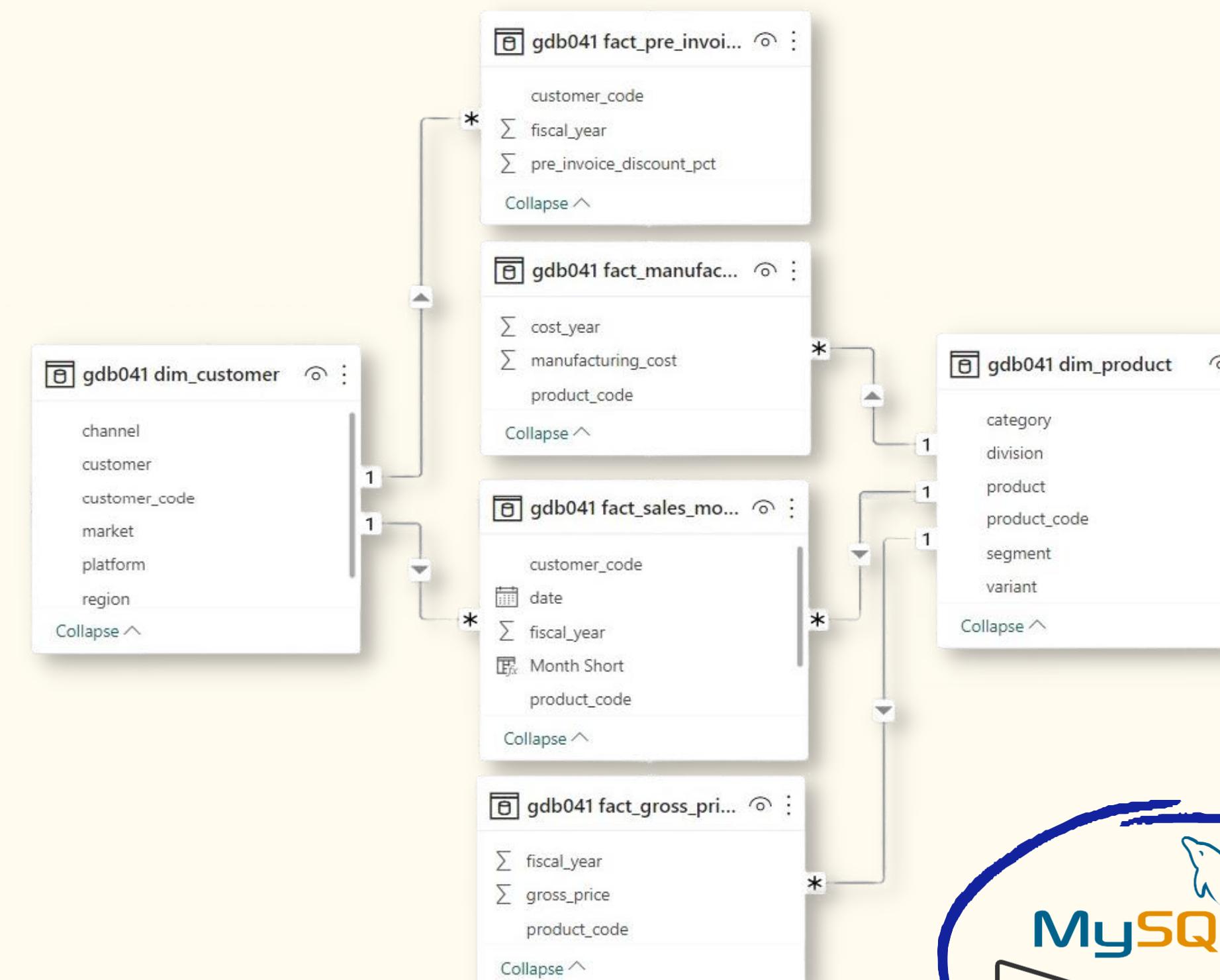
Company's Market



Atliq Hardware

HOW?

Data, Requests, and Tools



For Analysis and Visualization

Codebasics SQL Challenge

Requests:

1. Provide the list of markets in which customer "Atiq 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 "Atiq 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_min
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

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'  
ORDER BY  
    market;
```



Insight

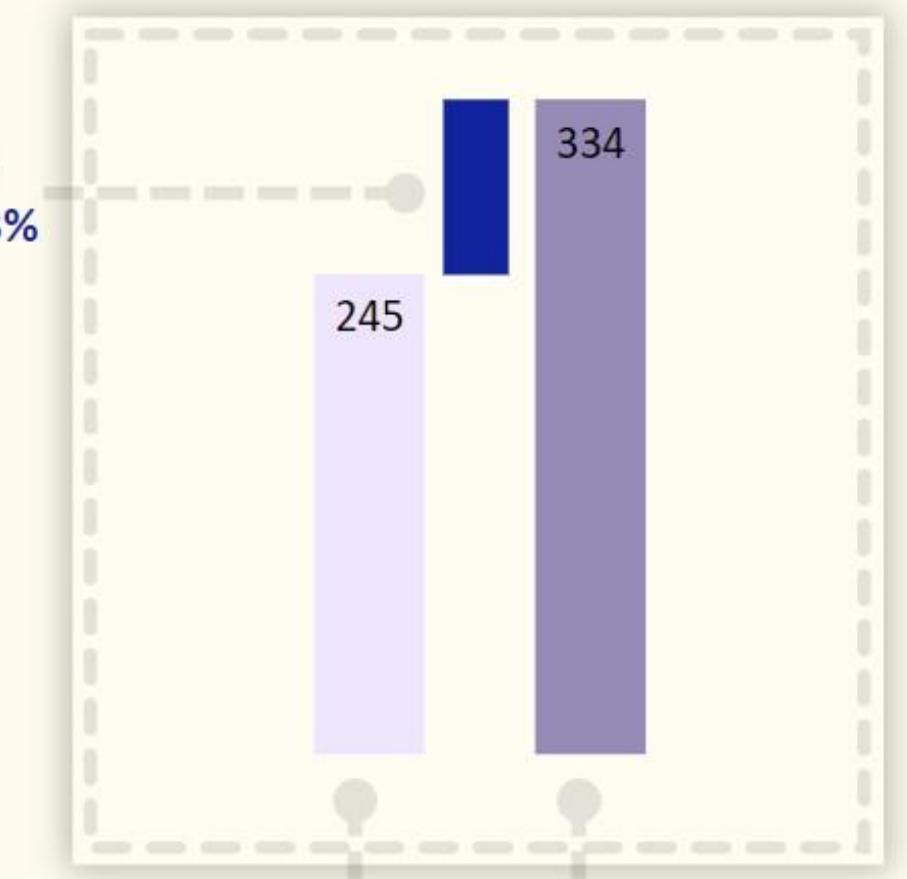


- **Atliq Exclusive** operates its business in **8** countries in APAC region
- Among this, **India** has the highest number of customers.

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

```
WITH
    unique_products_2020 AS (
        SELECT
            COUNT( DISTINCT product_code ) AS unique_products_2020
        FROM
            fact_sales_monthly
        WHERE
            fiscal_year = 2020
    ),
    unique_products_2021 AS (
        SELECT
            COUNT( DISTINCT product_code ) AS unique_products_2021
        FROM
            fact_sales_monthly
        WHERE
            fiscal_year = 2021
    )
SELECT
    up20.unique_products_2020,
    up21.unique_products_2021,
    ROUND( ( unique_products_2021 - unique_products_2020 ) * 100 ) / unique_products_2020, 2 ) AS percentage_chg
FROM
    unique_products_2020 up20,
    unique_products_2021 up21;
```

Unique Products 2021
Vs
Unique Products 2020



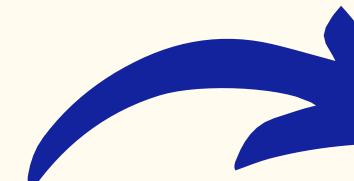
unique_product_2020	unique_products_2021	percentage_chg
245	334	36.33

Insight:
Demand and Production both increased.

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,

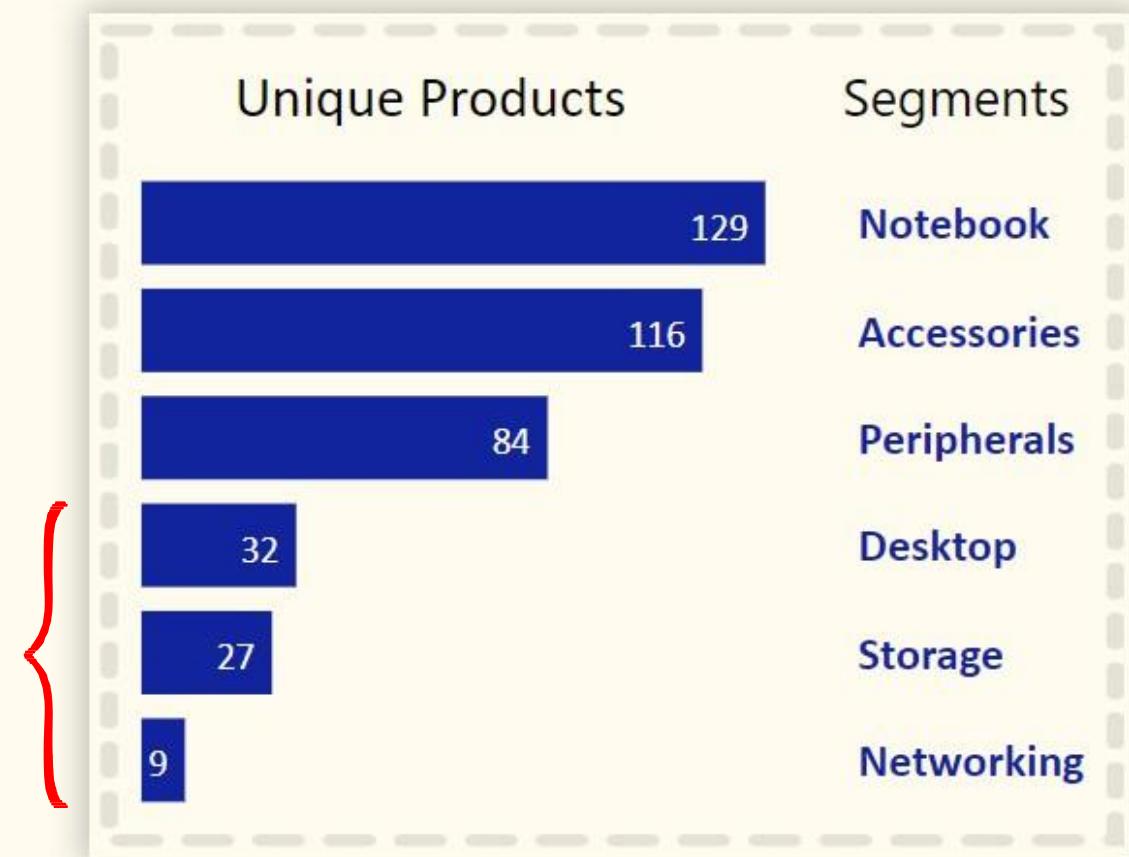
```
SELECT
    segment,
    COUNT( DISTINCT product_code ) AS product_count
FROM
    dim_product
GROUP BY
    segment
ORDER BY
    product_count DESC;
```

segment
product_count



Unique **product counts** for each **segment**

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



Alarming

Insights:

- Segments: notebooks, accessories, and peripherals are showing significant manufacturing growth as compared to desktops, storage, and networking.
- Notebooks, accessories, and peripherals constitute 83% of the total manufactured product.

Desktop

Storage

Networking

- Wifi extender
- USB Flash Drives
- External Solid State Drives
- Personal Desktop
- Business Laptop

Segment	AVG MC	AVG GS	Gross Margin
Peripherals	\$540.92	\$1,814.41	70.19%
Accessories	\$543.74	\$1,816.42	70.07%
Notebook	\$674.68	\$2,255.44	70.09%
Desktop	\$767.44	\$2,553.72	69.95%
Storage	\$897.70	\$2,986.82	69.94%
Networking	\$1,473.32	\$4,953.04	70.25%

AVG MC: Average Manufacturing Cost

AVG GS: Average Gross Sales

Suggestions :

- Package Deal
- Customer Services
- Free Vouchers
- Student Discount
- Cash Back
- Gift cards
- Memberships



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

Unique product difference per
segment from 2020 to 2021

```
WITH
    count_2020 AS(
        SELECT
            dp.segment,
            COUNT(DISTINCT fsm.product_code) AS product_count_2020
        FROM
            dim_product dp
        JOIN
            fact_sales_monthly fsm
        ON
            dp.product_code = fsm.product_code
        WHERE
            fsm.fiscal_year = 2020
        GROUP BY
            dp.segment
    ),
    count_2021 AS(
        SELECT
            dp.segment,
            COUNT(DISTINCT fsm.product_code) AS product_count_2021
        FROM
            dim_product dp
        JOIN
            fact_sales_monthly fsm
        ON
            dp.product_code = fsm.product_code
        WHERE
            fsm.fiscal_year = 2021
        GROUP BY
            dp.segment
    )
SELECT
    c20.segment, c20.product_count_2020,
    c21.product_count_2021,
    (c21.product_count_2021 - c20.product_count_2020) AS difference
FROM
    count_2020 c20
JOIN
    count_2021 c21
    ON
        c20.segment = c21.segment
ORDER BY
    difference DESC;
```

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



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:

Accessories had the largest increase in production.

Storage and networking are experiencing slower production growth than other segments.

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
    fmc.product_code,
    dp.product,
    fmc.manufacturing_cost
FROM
    fact_manufacturing_cost fmc
JOIN
    dim_product dp
    ON
        dp.product_code = fmc.product_code
WHERE
    fmc.manufacturing_cost IN
    (
        SELECT
            MAX(manufacturing_cost)
        FROM
            fact_manufacturing_cost
        UNION
        SELECT
            MIN(manufacturing_cost)
        FROM
            fact_manufacturing_cost
    )
ORDER BY
    fmc.manufacturing_cost DESC;
```

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

Products having the
highest and **lowest**
manufacturing costs

240.54



A6120110206

AQ HOME Allin1 Gen 2

Personal Desktop

0.89



A2118150101

AQ Master wired x1 Ms

Mouse

Insights:

Mouse: AQ Master wired x1Ms (**Variant: Standard 1**) has the lowest manufacturing cost.

Personal Desktop: AQ Home Allin1 Gen2 (**Variant: Plus 3**) has the highest 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

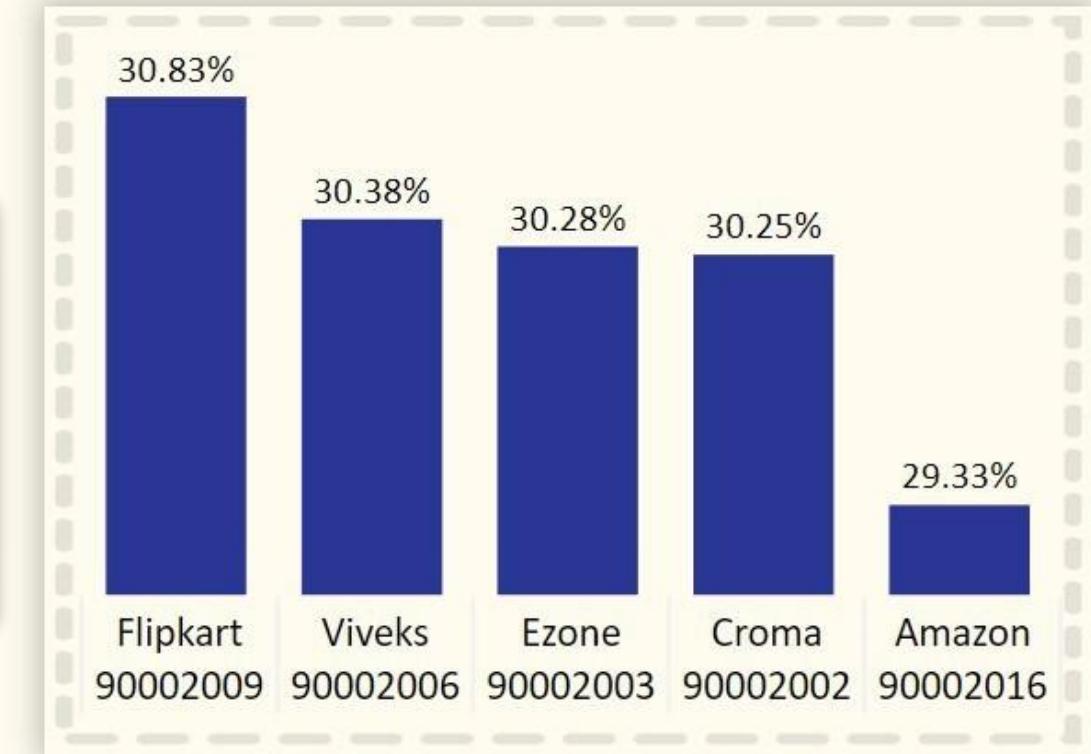
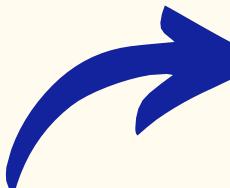
customer

average_discount_percentage

```
WITH
    pid21 AS(
        SELECT
            customer_code, pre_invoice_discount_pct
        FROM
            fact_pre_invoice_deductions
        WHERE
            fiscal_year = 2021
    ),
    market AS(
        SELECT
            customer, customer_code
        FROM
            dim_customer
        WHERE
            market = 'India'
    )
SELECT
    dis.customer_code,
    m.customer,
    AVG(dis.pre_invoice_discount_pct) AS average_discount_percentage
FROM
    pid21 dis
JOIN
    market m
    ON
        m.customer_code = dis.customer_code
GROUP BY
    m.customer
ORDER BY
    pre_invoice_discount_pct DESC
LIMIT
    5;
```

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933

Top 5 Indian customers with highest average discount percentage for FY 2021



Customer & Customer code

Insights:

The largest average pre-invoice discount was given to Flipkart.
The least average pre-invoice discount was given to Amazon.

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:

```

SELECT
    DATE_FORMAT( fsm.date, '%M (%Y)' ) AS Month,
    fsm.fiscal_year AS Fiscal_Year,
    ROUND( SUM( fsm.sold_quantity * fgp.gross_price ), 2 ) AS Gross_Sales_Amount
FROM
    fact_sales_monthly fsm
JOIN
    dim_customer dc
    ON
        dc.customer_code = fsm.customer_code
JOIN
    fact_gross_price fgp
    ON
        fgp.product_code = fsm.product_code
        AND
        fgp.fiscal_year = fsm.fiscal_year
WHERE
    dc.customer = 'Atliq Exclusive'
GROUP BY
    Month,
    Fiscal_Year
ORDER BY
    Fiscal_Year;

```

Month

Year

Gross sales Amount

Month	fiscal_year	Gross_sales_Amount
September (2019)	2020	9092670.34
October (2019)	2020	10378637.60
November (2019)	2020	15231894.97
December (2019)	2020	9755795.06
January (2020)	2020	9584951.94
February (2020)	2020	8083995.55
March (2020)	2020	766976.45
April (2020)	2020	800071.95
May (2020)	2020	1586964.48
June (2020)	2020	3429736.57
July (2020)	2020	5151815.40
August (2020)	2020	5638281.83
September (2020)	2021	19530271.30
October (2020)	2021	21016218.21
November (2020)	2021	32247289.79
December (2020)	2021	20409063.18
January (2021)	2021	19570701.71
February (2021)	2021	15986603.89
March (2021)	2021	19149624.92
April (2021)	2021	11483530.30
May (2021)	2021	19204309.41
June (2021)	2021	15457579.66
July (2021)	2021	19044968.82
August (2021)	2021	11324548.34

FY 2020
79.5 M

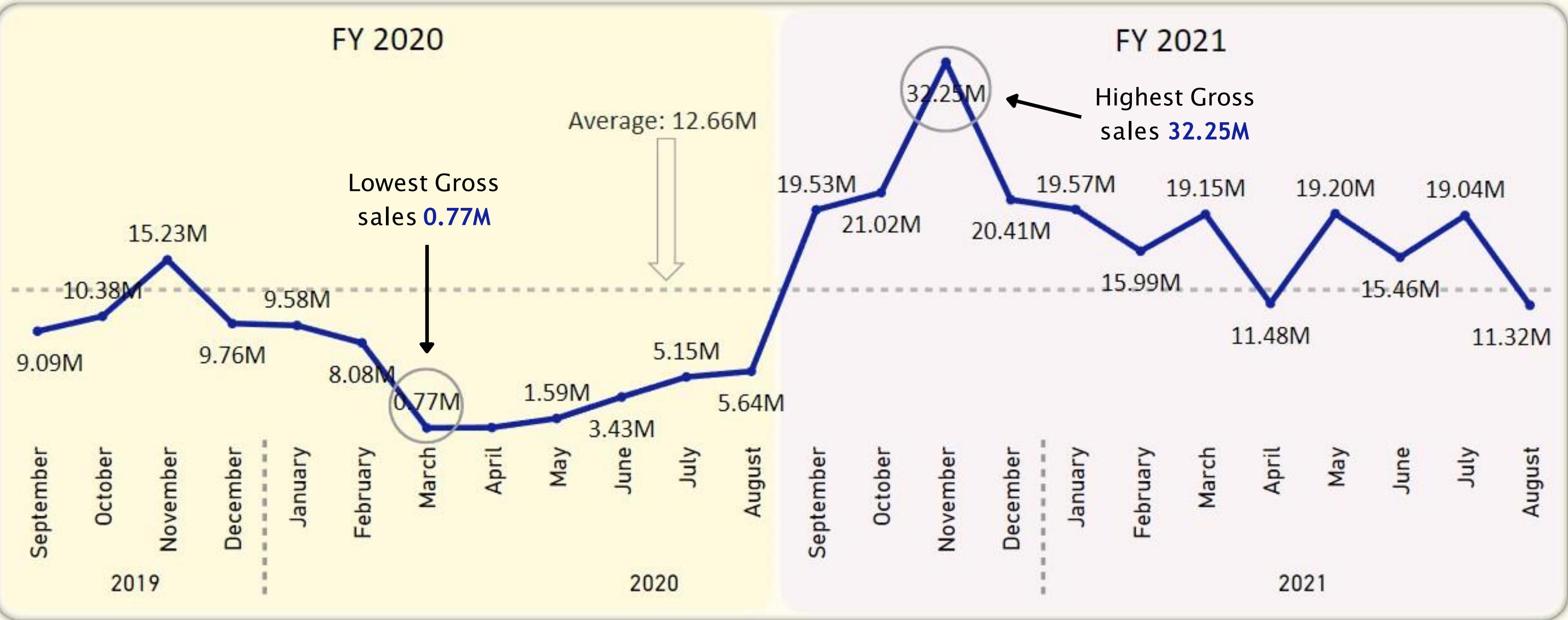
FY2021
224.4 M

Insights:

The lowest Gross sales total for both fiscal years is in March (2020).

The highest Gross sales total for both fiscal years is in November (2020).

73.8% of the total Gross sales figure is in FY2021.



Reasons:

- **COVID-19**
- **Global Chip shortage**

When did the silicon chip shortage start?

From **early 2020**, when the effects of and the mitigation of the COVID-19 pandemic caused disruptions in supply chains and logistics which, coupled with a 13% increase in global demand for PCs owing to some countries' shift to a stay-at-home economy, impacted the availability of key chips necessary for the manufacturing ...

https://en.wikipedia.org/wiki/2020–present_global_chip_shortage

2020–present global chip shortage - Wikipedia

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



```
CREATE DEFINER='root'@'localhost' FUNCTION `get_fiscal_quarter`(  
    calender_date DATE  
) RETURNS char(2) CHARSET utf8mb4  
DETERMINISTIC  
BEGIN  
    DECLARE fiscal_date INT;  
    DECLARE fiscal_quarter CHAR(2);  
    SET fiscal_date =  
        DATE_ADD(  
            calender_date,  
            INTERVAL 4 MONTH  
        );  
    SET fiscal_quarter =  
        CONCAT(  
            'Q',  
            QUARTER( fiscal_date )  
        );  
    RETURN fiscal_quarter;  
END
```

Quarter
total_sold_quantity

Quarters	total_sold_quantity
1	7005619
2	6649642
4	5042541
3	2075087

```
SELECT  
    get_fiscal_quarter(date) 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;
```

Quarters	total_sold_quantity
[1] September	1764002
[1] October	2190792
[1] November	3050825
[2] December	3184205
[2] January	1762652
[2] February	1702785
[3] March	238961
[3] April	819956
[3] May	1016170
[4] June	1559773
[4] July	1692575
[4] August	1790193

Insights:

Quarter 1 of FY 2020 saw the most units sold overall, while Quarter 3 had the fewest.

The highest and lowest overall sold quantity is in December and March.

Quarter 1 accounts for approximately 34% of the total sold quantity for FY 2020.

Total sold quantity in **FY 2020** by **Quarter**



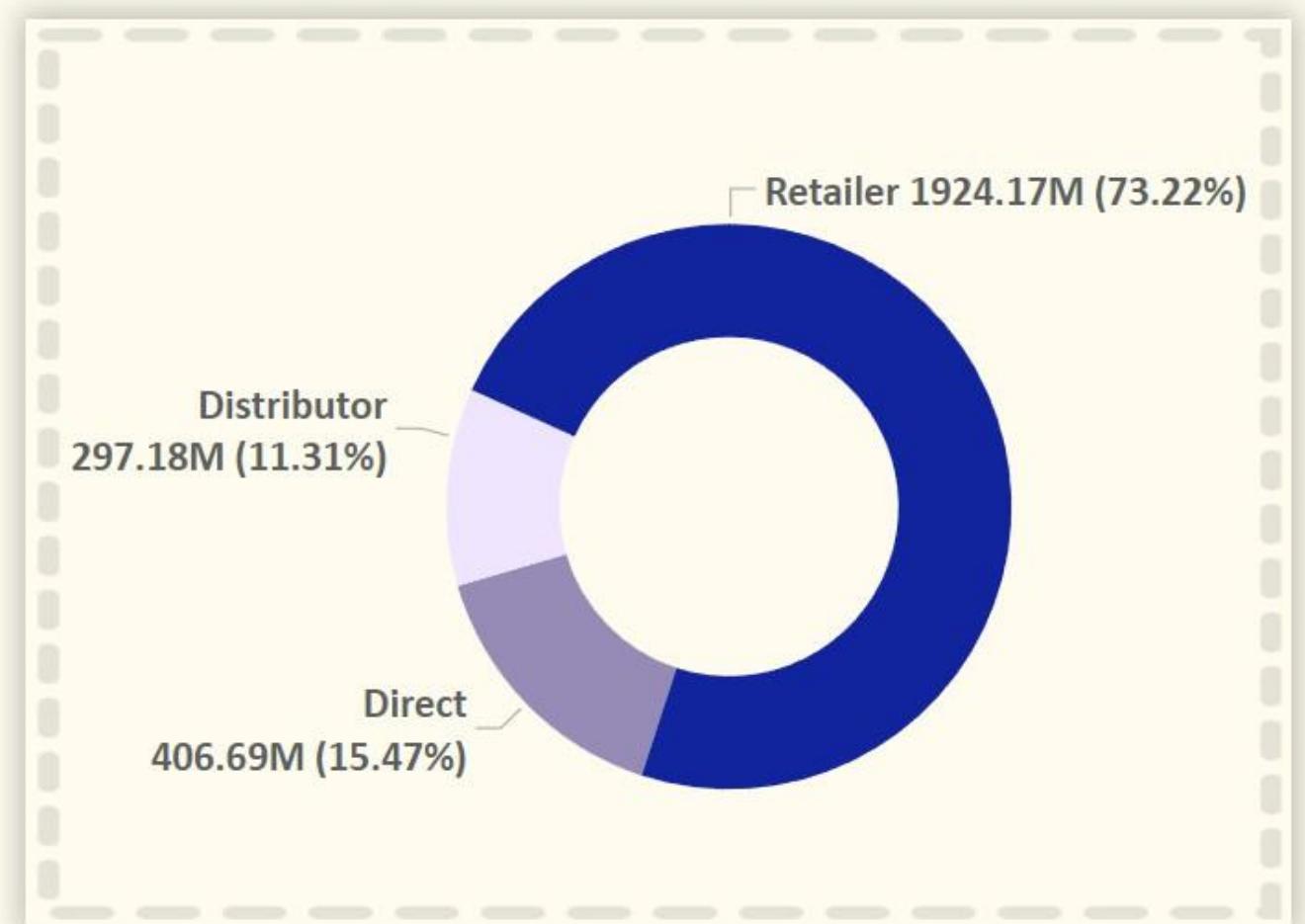
9. Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields,

```
WITH
channel_sales_2021 AS(
    SELECT
        dc.channel,
        ROUND( SUM( fsm.sold_quantity * fgp.gross_price ) / 1000000, 2 ) AS gross_sales_mln
    FROM
        fact_sales_monthly fsm
    JOIN
        dim_customer dc
            ON
                fsm.customer_code = dc.customer_code
    JOIN
        fact_gross_price fgp
            ON
                fsm.product_code = fgp.product_code
                AND
                fsm.fiscal_year = fgp.fiscal_year
    WHERE
        fsm.fiscal_year = 2021
    GROUP BY
        dc.channel
    ORDER BY
        gross_sales_mln DESC
),
total_sales_2021 AS(
    SELECT
        SUM(gross_sales_mln) AS total_gross_sales_mln
    FROM
        channel_sales_2021
)
SELECT
    cs21.channel,
    CONCAT( cs21.gross_sales_mln, 'M' ) AS gross_sales_mln,
    CONCAT( ROUND( ( cs21.gross_sales_mln * 100 ) / ts21.total_gross_sales_mln ), 2 ), '%' ) AS percentage
FROM
    channel_sales_2021 cs21,
    total_sales_2021 ts21;
```

channel
gross_sales_mln
percentage

Gross sales and contribution percentages by
Channels for FY 2021

channel	Gross_sales_mln	percentage
Retailer	1924.17 M	73.22 %
Direct	406.69 M	15.48 %
Distributor	297.18 M	11.31 %



Insights:

Channel: "Retailer" helped bring maximum sales to the company with 73.22% as the contribution percentage.

Channel: "Distributor" makes the least contribution at a percentage of 11.31%.

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,

```
WITH
division_sales_2021 AS(
    SELECT
        dp.division, dp.product_code,
        CONCAT( dp.product, ' (', dp.variant, ')') AS product,
        SUM( fsm.sold_quantity ) AS total_sold_quantity
    FROM fact_sales_monthly fsm
    JOIN dim_product dp
        ON
            fsm.product_code = dp.product_code
    WHERE
        fsm.fiscal_year = 2021
    GROUP BY
        division,
        dp.product_code,
        dp.product
),
sales_rank_2021 AS(
    SELECT
        *,
        DENSE_RANK() OVER( PARTITION BY division ORDER BY total_sold_quantity DESC ) AS rank_order
    FROM
        division_sales_2021
)
SELECT
    *
FROM
    sales_rank_2021
WHERE
    rank_order <= 3;
```

division
product_code
product
total_sold_quantity
rank_order

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

Insight:

Every division has a product with different variants that appears twice in the top three products by division list.

Division • N & S

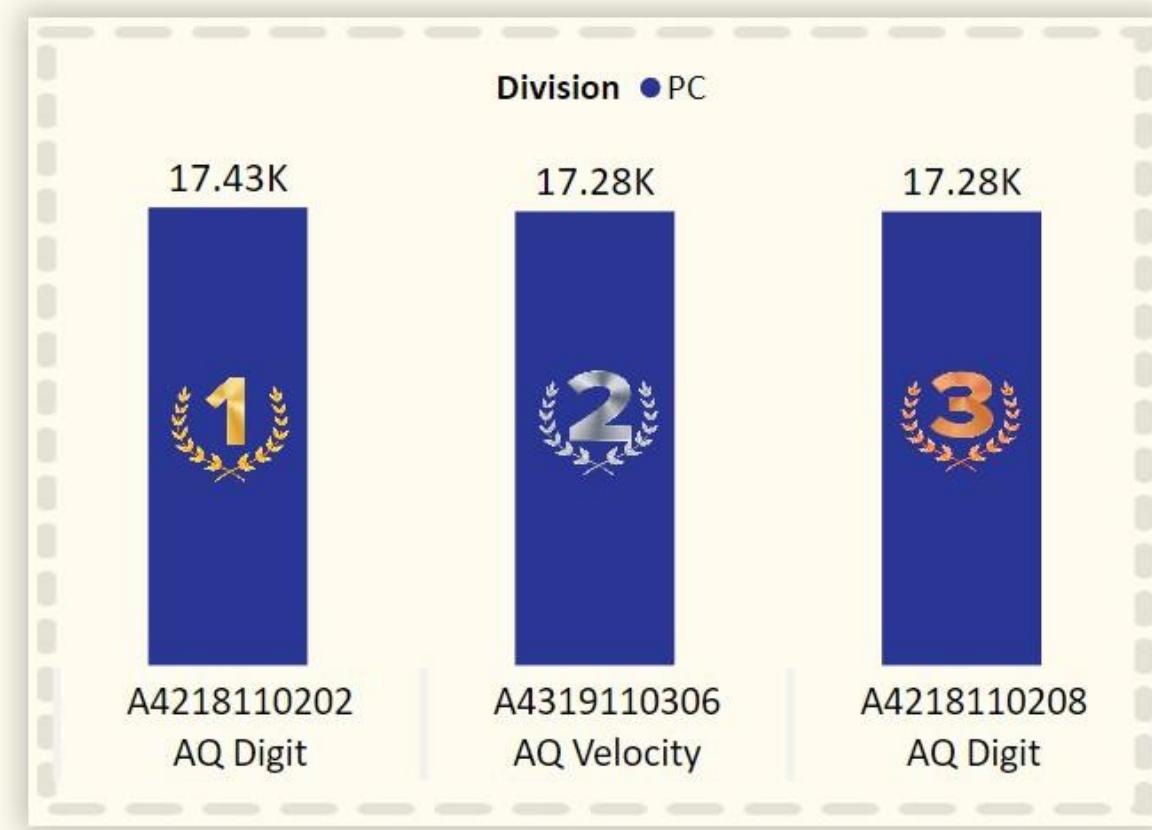


Premium

Plus

Premium

Division • PC

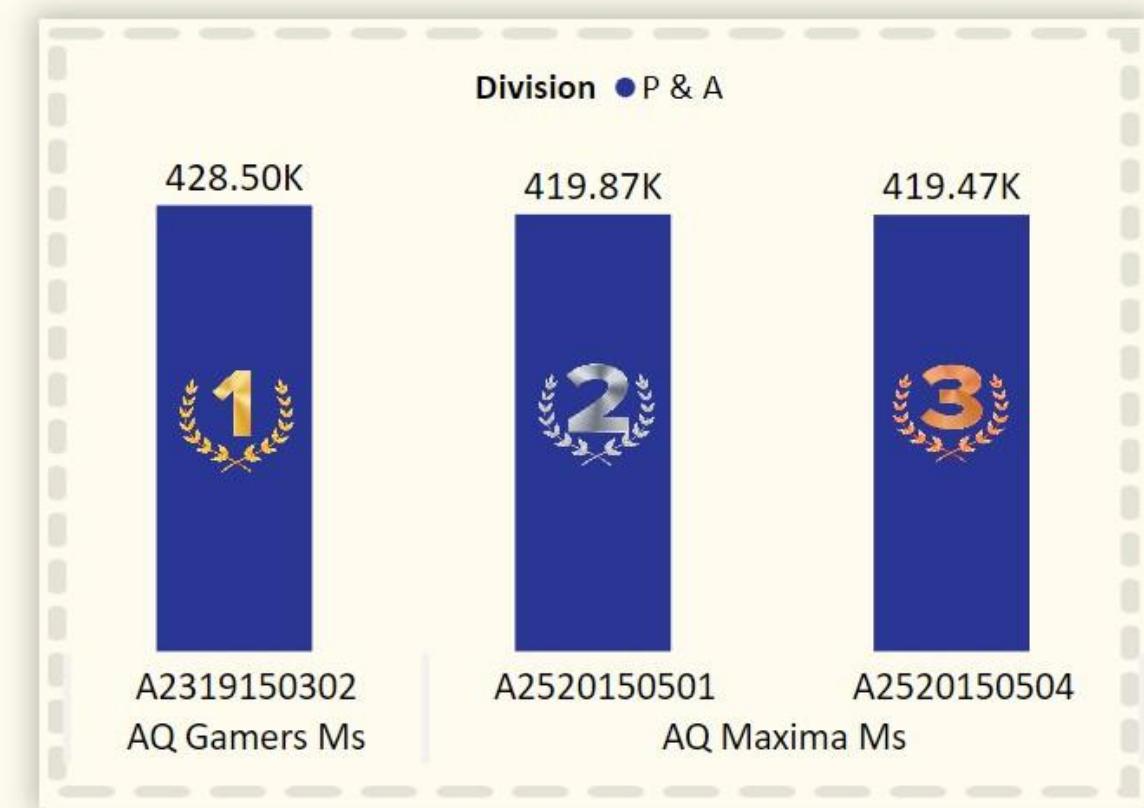


Standard
Blue

Plus Red

Premium
Misty Green

Division • P & A



Standard 2 Standard 1 Plus 2

Summary

Consolidating all :-

- AtliQ's gross sales increased in FY 2021.
- AtliQ is changing and modifying its products which has become a profitable exercise.
- Network & Storage division sold maximum quantity product in FY 2021. Although it brought only 12% of total gross sales amount. Also considering that this division had the least modification of product, I would like to suggest AtliQ to revise products sale price and introduce new products in Network & Storage division.

Thank You