Atliq
Hardwares

Ad_Hoc Insights Consumer Goods

Insights Presentation for Strategic Decisions in the Consumer Goods Sector

Atliq
Hardwares

Hello!

Warm greetings to everyone. I am pleased to present key insights gathered from the SQL challenge for Atliq Hardwares. Today, we will explore data-driven insights that address critical business questions and provide strategies to drive growth and efficiency across various segments.

Agenda Overview

01 Objective

02 Company's Details and Market

03 Dataset Structure, Challenge, and Tools

04 Conclusion

05 Queries

Objectives

- Atliq Hardware (fictitious company) is a leading computer hardware manufacturer in India with a strong presence globally.
- Management noted insufficient insights for making timely, data-informed decisions.
- Plans are underway to expand the data analytics team by hiring junior analysts.
- Tony Sharma, Data Analytics Director, will conduct a SQL challenge to evaluate candidates' tech and soft skills.
- The challenge involves generating insights for 10 ad-hoc business requests.

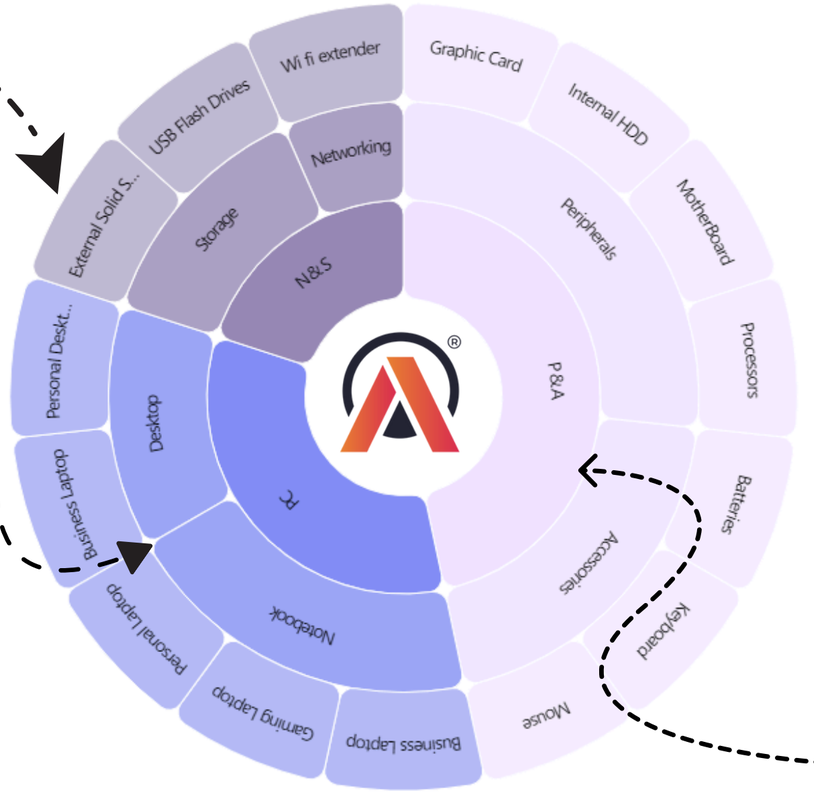
Company Details

Atliq Hardware is a manufacturer of computer hardware and accessories.

Outer Circle:
Category

Mid Circle:
Segment

Inner Circle:
Division



FISCAL YEAR

SEPTEMBER 2019 - AUGUST 2020

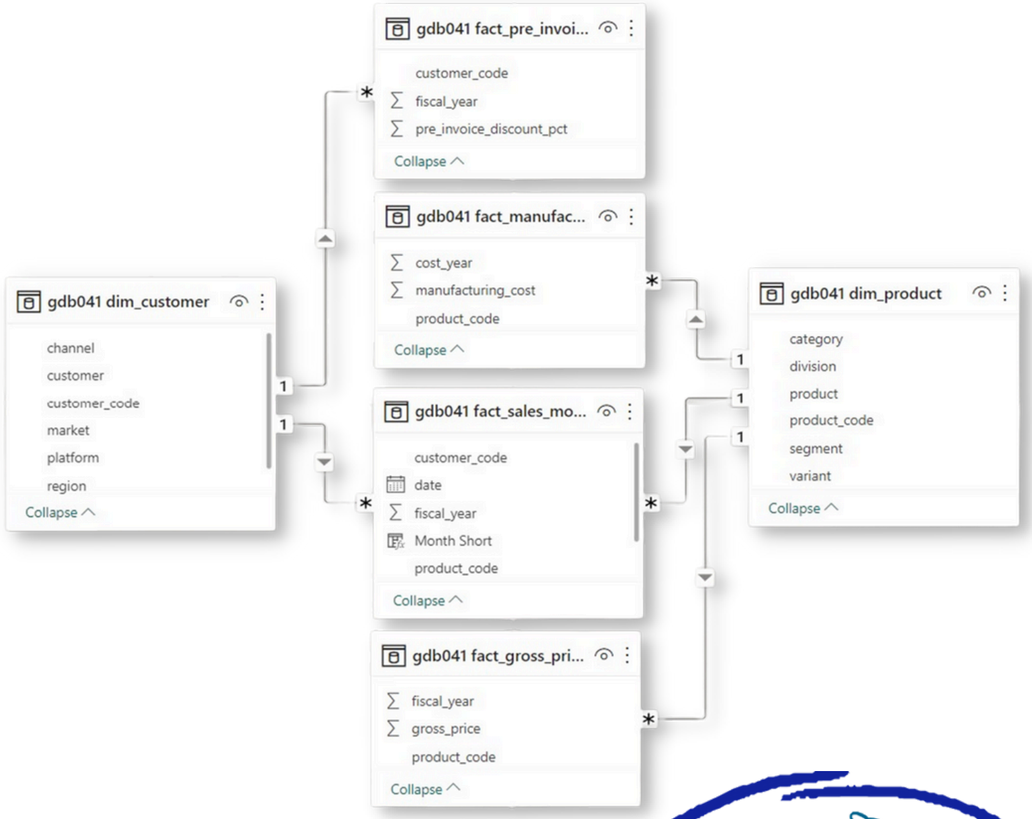
FY 2020

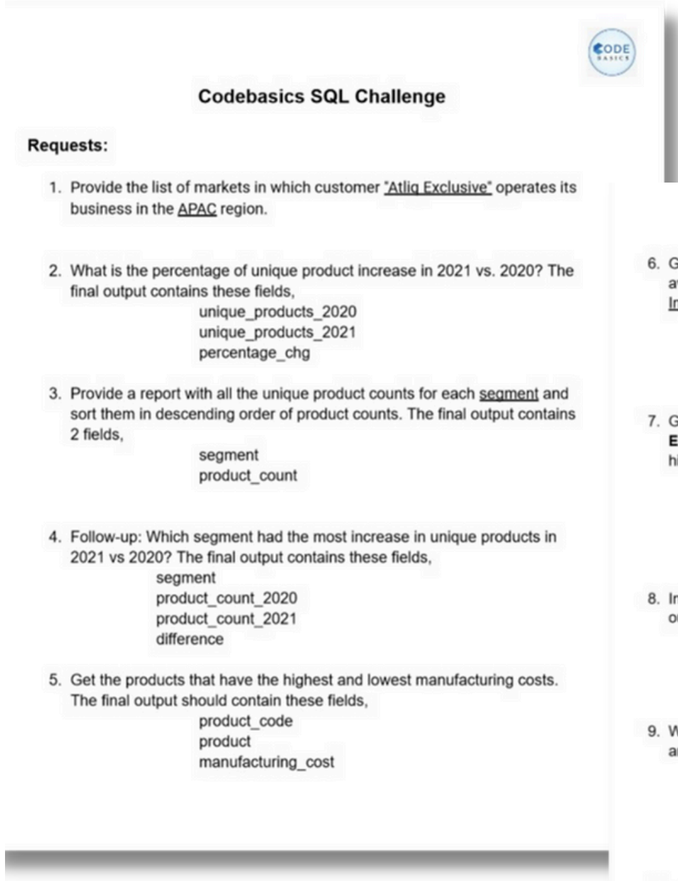
SEPTEMBER 2020 - AUGUST 2021

FY 2021

Company's Market

Dataset Structure, Challenge, and Tools





Codebasics SQL Challenge

Requests:

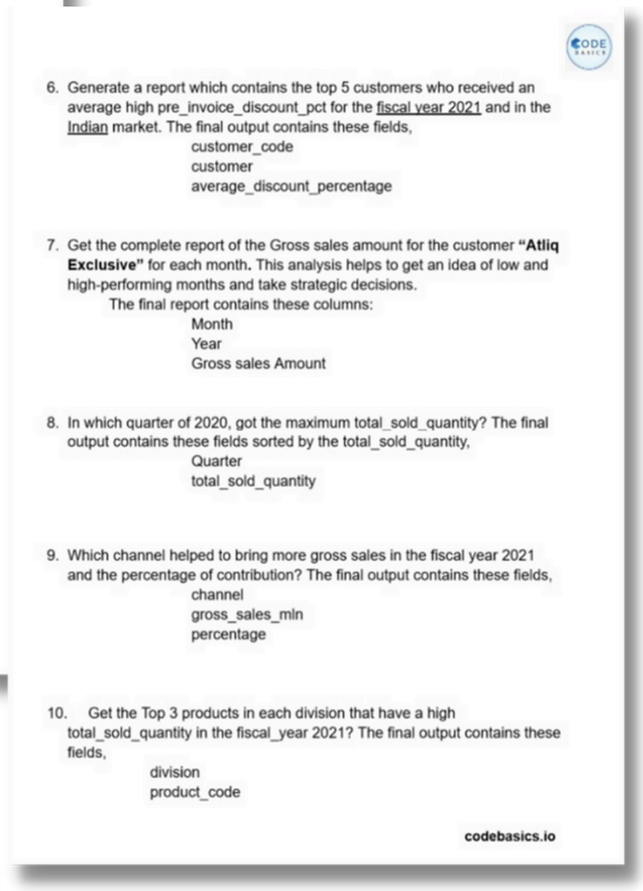
1. Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

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

codebasics.io

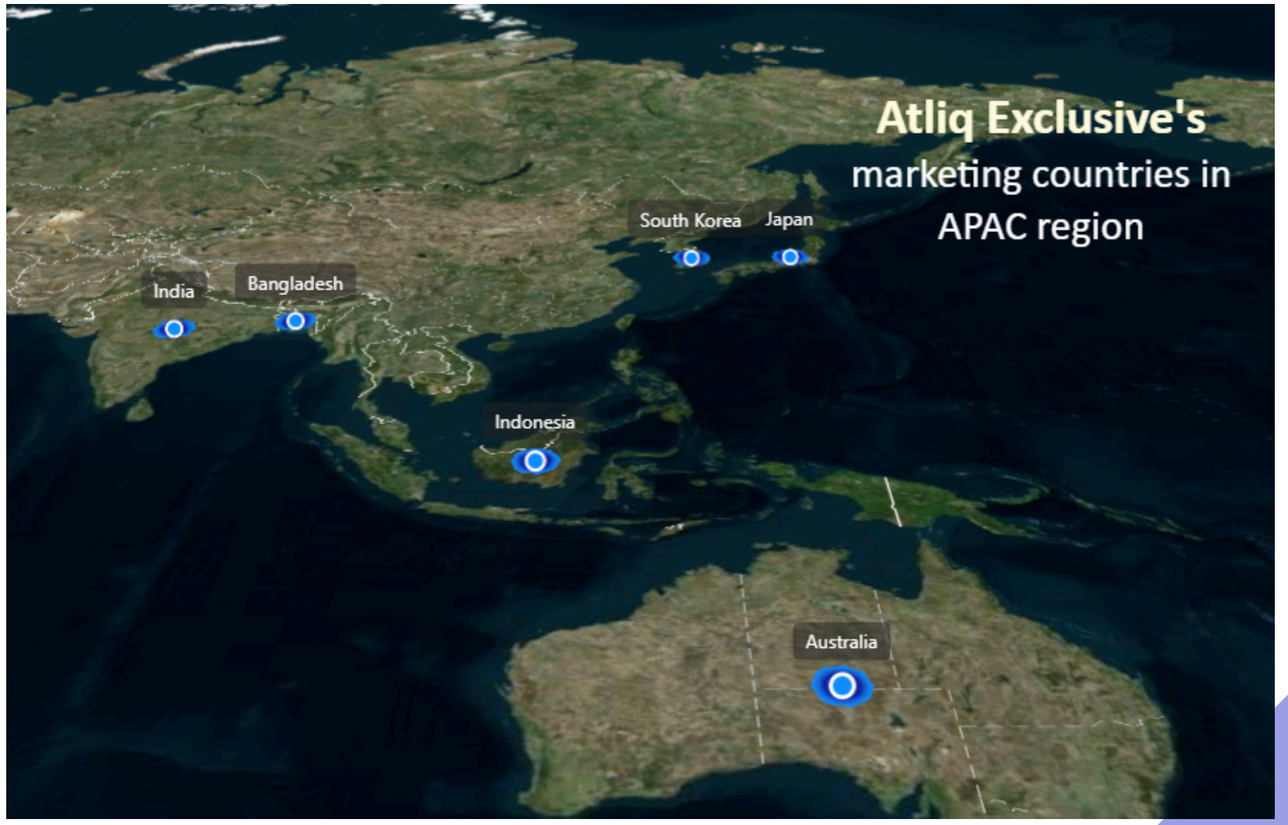
MySQL

Power BI

ForAnalysis and Visualization

1. Provide the list of markets where customer "AtliqExclusive" operates its business in the APAC region.

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea



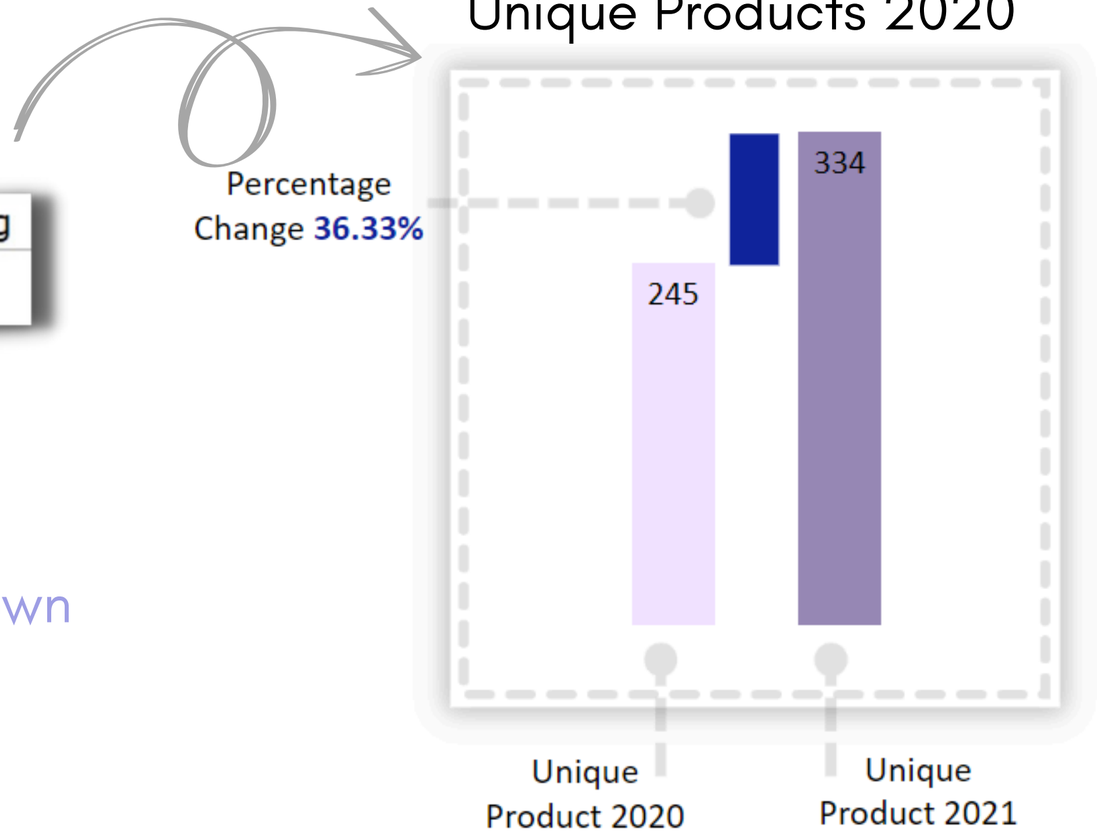
2. What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields,

unique_products_2020

unique_products_2021

percentage_chg

unique_product_2020	unique_products_2021	percentage_chg
245	334	36.33



Insight:

- Both demand and production have shown an upward trend.

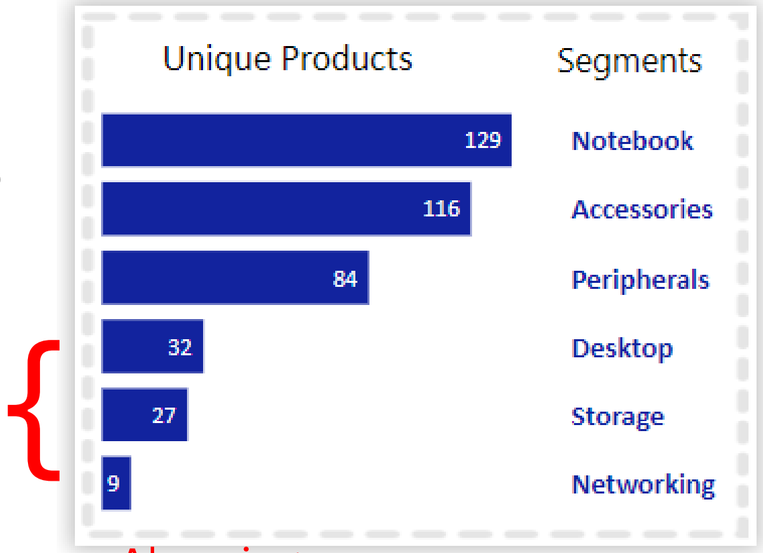
3. Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields,

segment

product_count

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

Unique product counts for each segment



Insight:

- 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.

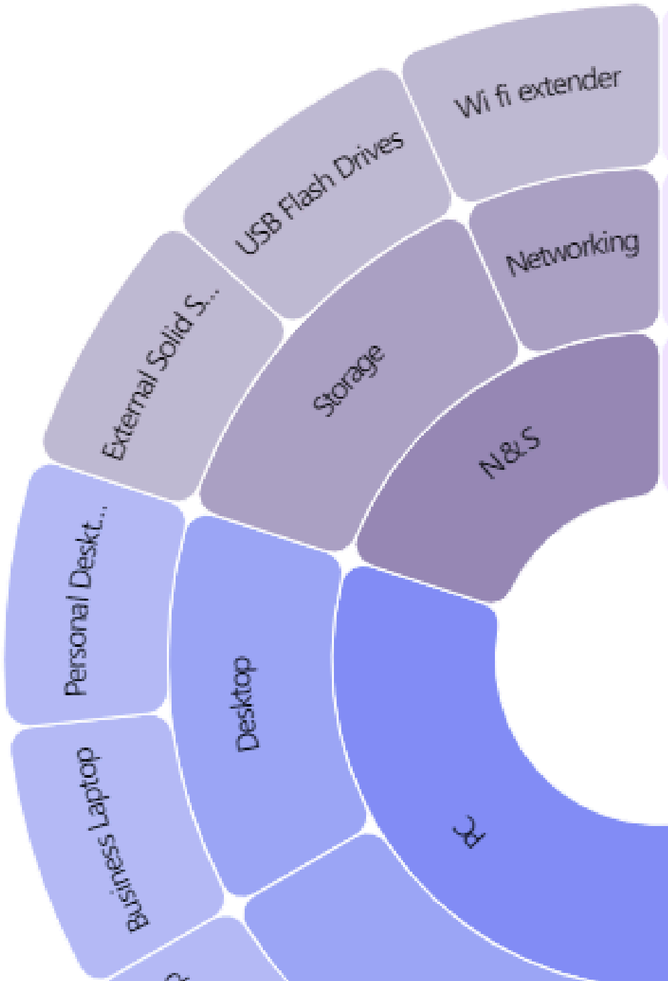
- Wifi extender
- USB Flash Drives
- External Solid State Drives
- Personal Desktop
- Business Laptop

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
AVGGS: 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

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

Unique product difference per segment from 2020 to 2021

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

Insight:

- Accessories had the largest increase in production.
- Storage and networking are experiencing slower production growth than other segments.

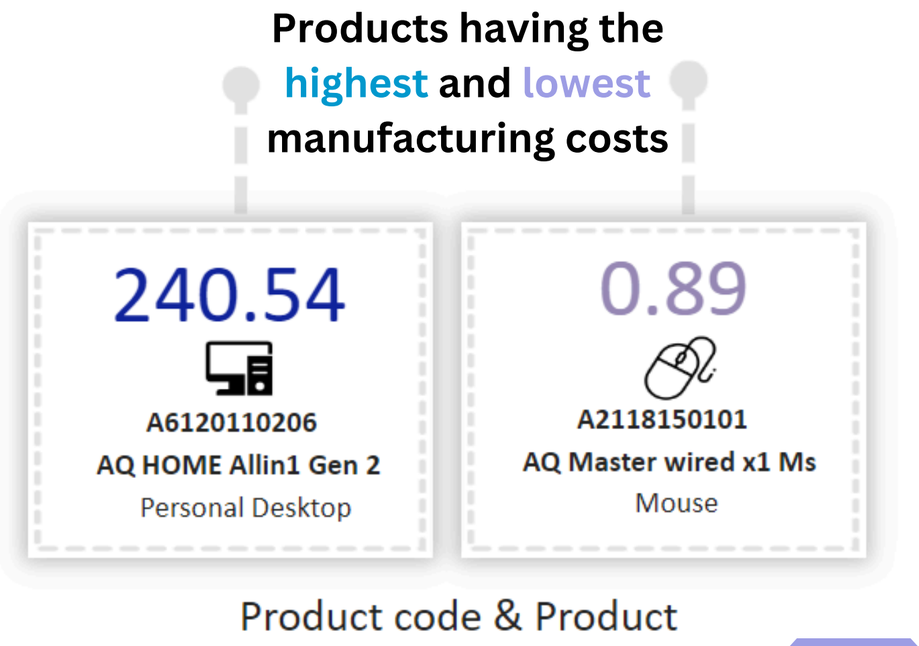
5. Get the products that have the highest and lowest manufacturing costs.
The final output should contain these fields,

product_code

product

manufacturing_cost

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



Insight:

- Mouse: AQ Master wired x1 Ms (Variant: Standard 1) has the lowest manufacturing cost.
- PersonalDesktop: 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 2021andin the Indian market. The final output contains these fields,

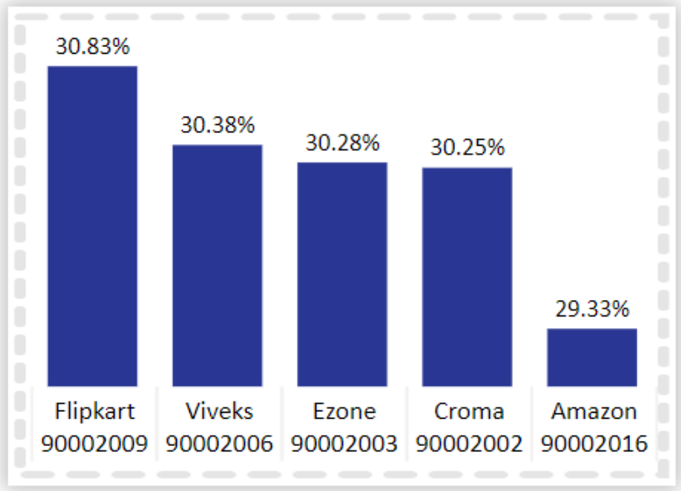
customer_code

customer

average_discount_percentage

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

Insight:

- 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:

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

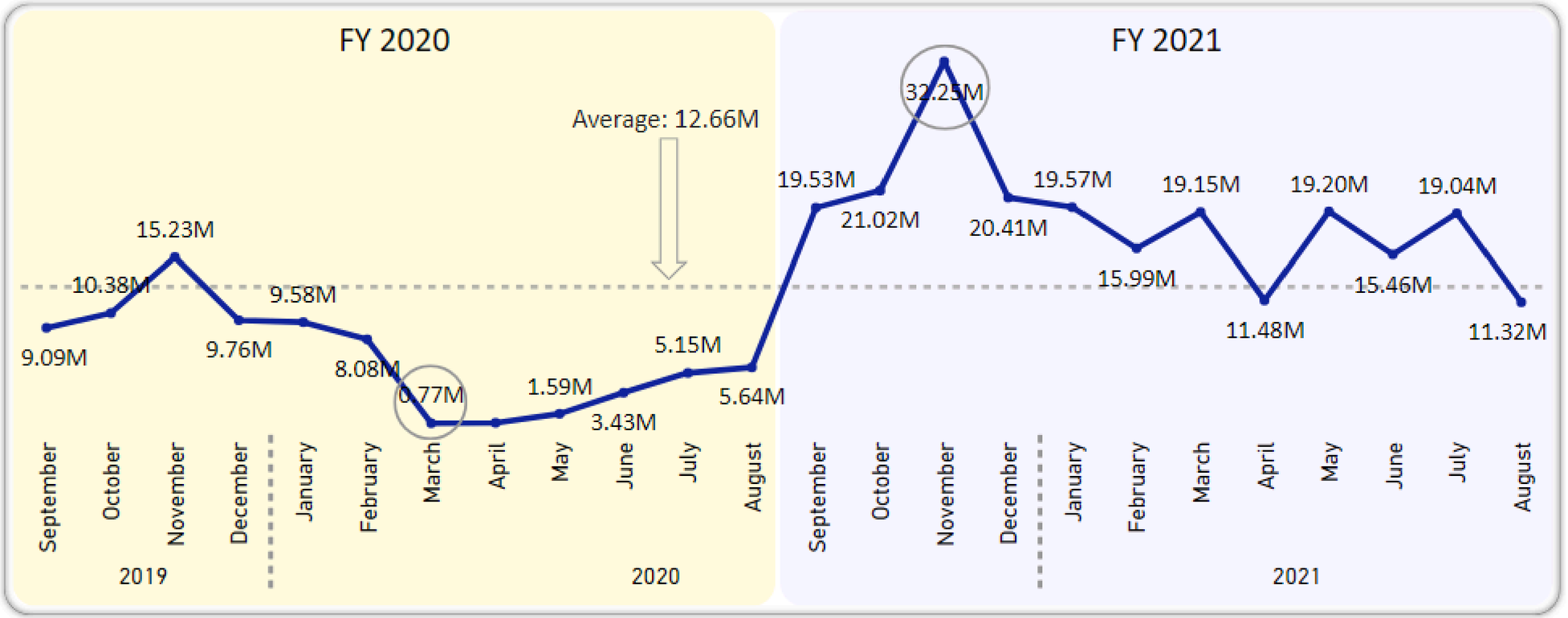
79.5 M

FY 2021

224.4 M

Insight:

- 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 FY 2021.



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_...

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 bythetotal_sold_quantity,

Quarter

total_sold_quantity

Quarters	total_sold_quantity
1	7005619
2	6649642
4	5042541
3	2075087

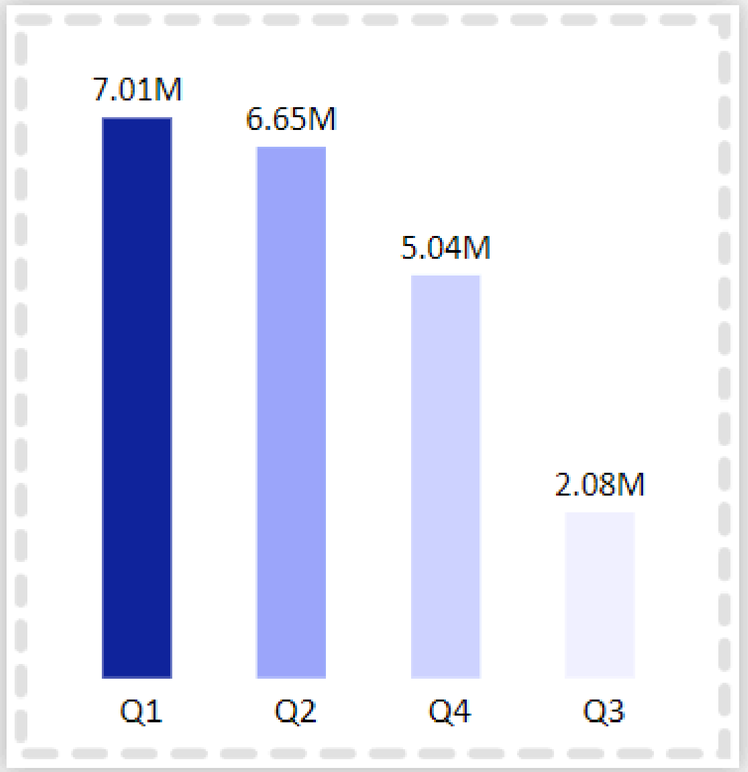
Quarters	total_sold_quantity
[1] September	1764002
[1] October	2190792
[1] November	3050825
[2] December	3184205
[2] January	1762652
[2] February	1702785
[3] March	238961
[3] April	819956
[3] May	1016170
[4] June	1559773
[4] July	1692575
[4] August	1790193

Insight:

- Quarter 1 of FY2020 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 FY2020.

Total sold quantity in FY 2020 by Quarter

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



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,

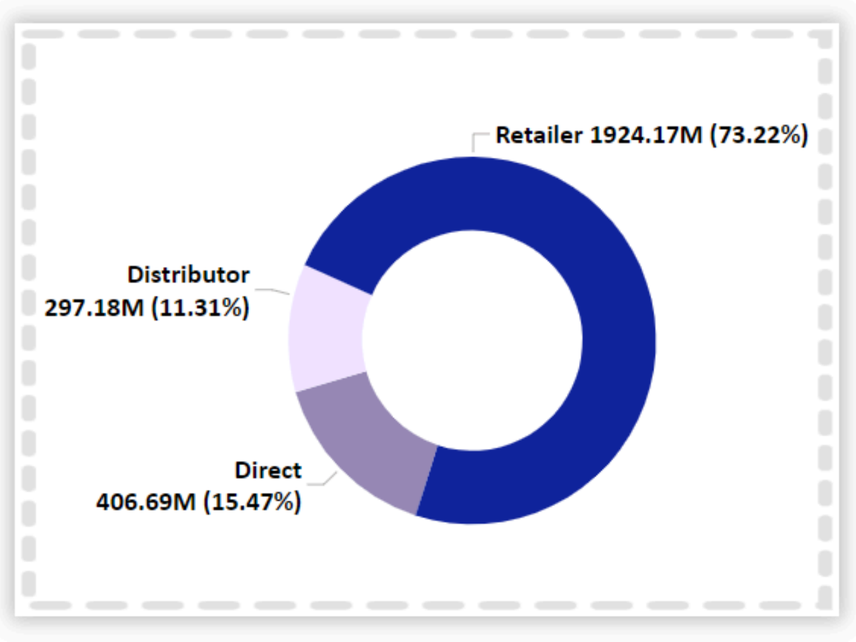
channel

gross_sales_mln

percentage

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

Gross sales and contribution percentages by Channels for FY 2021



Insight:

- 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 3products 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

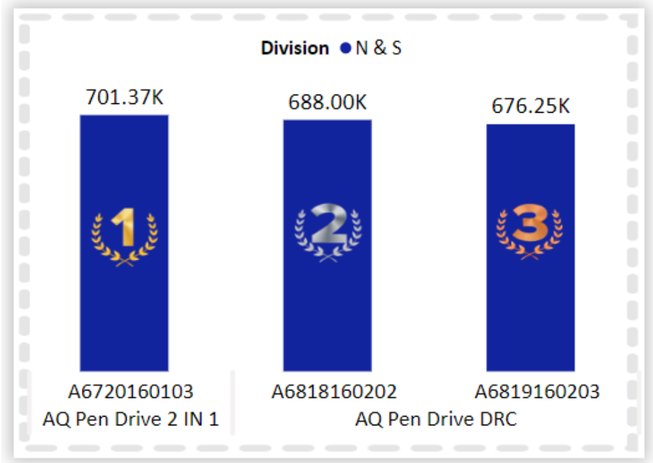
rank_order

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

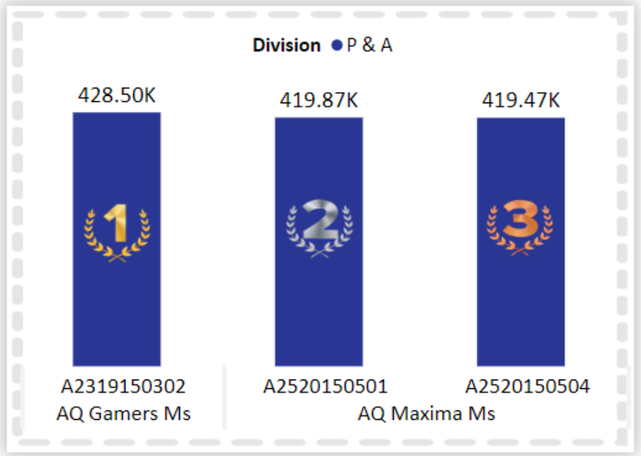
Insight:

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

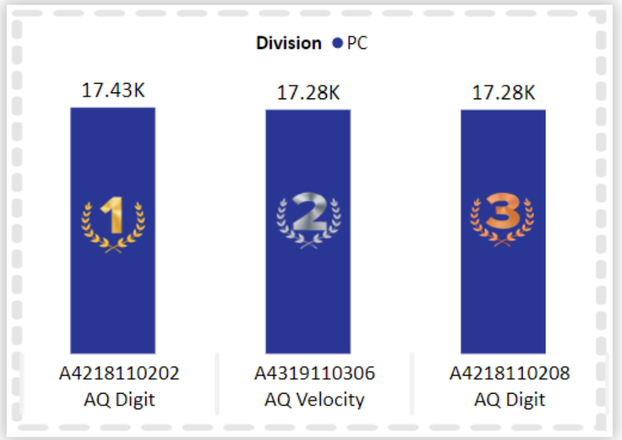
Top 3 highest-selling products by Division for FY 2021



Premium Plus Premium



Standard Blue Plus Red Premium Misty Green



Standard2 Standard1 Plus2

Conclusion

- Both demand and production have shown an overall increase, indicating strong market growth.
- Notebooks, accessories, and peripherals dominate the manufacturing segment, contributing 83% of total production, with accessories experiencing the highest production growth.
- Storage and networking segments show slower growth compared to other categories.
- Manufacturing costs vary significantly, with the lowest for the AQ Master wired x1 Ms mouse and the highest for the AQ Home Allin1 Gen2 desktop.
- Sales trends highlight November as the peak sales month, with March being the lowest. FY 2021 contributed the majority (73.8%) of gross sales.
- Quarter 1 of FY2020 led in overall units sold, with the "Retailer" channel driving 73.22% of total sales.
- Multiple divisions feature products with different variants consistently ranking among the top three in their respective categories.

Queries :

1. Provide the list of markets where customer "AtliqExclusive" operates its business in the APAC region.

```
SELECT market FROM dim_customer
WHERE customer = 'Atliq Exclusive' AND region = 'APAC'
GROUP BY market
ORDER BY market ;
```

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

Queries :

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

```
SELECT X.A AS unique_product_2020, Y.B AS unique_products_2021, ROUND((B-A)*100/A, 2) AS percentage_chg
FROM
     (
      (SELECT COUNT(DISTINCT(product_code)) AS A FROM fact_sales_monthly
      WHERE fiscal_year = 2020) X,
      (SELECT COUNT(DISTINCT(product_code)) AS B FROM fact_sales_monthly
      WHERE fiscal_year = 2021) Y
     )
```

unique_product_2020	unique_products_2021	percentage_chg
245	334	36.33

Queries :

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)) 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

Queries :

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

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

```
WITH CTE1 AS
    (SELECT P.segment AS A , COUNT(DISTINCT(FS.product_code)) AS B
    FROM dim_product P, fact_sales_monthly FS
    WHERE P.product_code = FS.product_code
    GROUP BY FS.fiscal_year, P.segment
    HAVING FS.fiscal_year = "2020"),
CTE2 AS
    (
    SELECT P.segment AS C , COUNT(DISTINCT(FS.product_code)) AS D
    FROM dim_product P, fact_sales_monthly FS
    WHERE P.product_code = FS.product_code
    GROUP BY FS.fiscal_year, P.segment
    HAVING FS.fiscal_year = "2021"
    )

SELECT CTE1.A AS segment,
       CTE1.B AS product_count_2020,
       CTE2.D AS product_count_2021,
       (CTE2.D-CTE1.B) AS difference
FROM CTE1, CTE2
WHERE CTE1.A = CTE2.C ;
```

Queries :

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

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

Queries :

6. Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021andin the Indian market. The final output contains these fields,

customer_code

customer

average_discount_percentage

```
WITH TBL1 AS
(SELECT customer_code AS A, AVG(pre_invoice_discount_pct) AS B
FROM fact_pre_invoice_deductions
WHERE fiscal_year = '2021'
GROUP BY customer_code),
     TBL2 AS
(SELECT customer_code AS C, customer AS D FROM dim_customer
WHERE market = 'India')

SELECT TBL2.C AS customer_code,
       TBL2.D AS customer,
       ROUND (TBL1.B, 4) AS average_discount_percentage
FROM TBL1 JOIN TBL2
ON TBL1.A = TBL2.C
ORDER BY average_discount_percentage 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

Queries :

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 CONCAT(MONTHNAME(FS.date), ' (', YEAR(FS.date), ')') AS 'Month', FS.fiscal_year,
       ROUND(SUM(G.gross_price*FS.sold_quantity), 2) AS Gross_sales_Amount
FROM fact_sales_monthly FS JOIN dim_customer C ON FS.customer_code = C.customer_code
                           JOIN fact_gross_price G ON FS.product_code = G.product_code
WHERE C.customer = 'Atliq Exclusive'
GROUP BY  Month, FS.fiscal_year
ORDER BY FS.fiscal_year ;
```

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

Queries :

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

Quarter

total_sold_quantity

```
SELECT
CASE
    WHEN date BETWEEN '2019-09-01' AND '2019-11-01' then 1
    WHEN date BETWEEN '2019-12-01' AND '2020-02-01' then 2
    WHEN date BETWEEN '2020-03-01' AND '2020-05-01' then 3
    WHEN date BETWEEN '2020-06-01' AND '2020-08-01' then 4
    END AS Quarters,
    SUM(sold_quantity) AS total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY Quarters
ORDER BY total_sold_quantity DESC;
```

Quarters	total_sold_quantity
1	7005619
2	6649642
4	5042541
3	2075087

Queries :

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 Output AS
(
SELECT C.channel,
       ROUND(SUM(G.gross_price*FS.sold_quantity/1000000), 2) AS Gross_sales_mln
FROM fact_sales_monthly FS JOIN dim_customer C ON FS.customer_code = C.customer_code
                           JOIN fact_gross_price G ON FS.product_code = G.product_code
WHERE FS.fiscal_year = 2021
GROUP BY channel
)
SELECT channel, CONCAT(Gross_sales_mln,' M') AS Gross_sales_mln ,
       CONCAT(ROUND(Gross_sales_mln*100/total , 2), ' %') AS percentage
FROM
(
(SELECT SUM(Gross_sales_mln) AS total FROM Output) A,
(SELECT * FROM Output) B
)
ORDER BY percentage DESC;
```

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

Queries :

10. Get the Top 3products 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

```
WITH Output1 AS
(
SELECT P.division,
       FS.product_code,
       P.product,
       SUM(FS.sold_quantity) AS Total_sold_quantity
FROM dim_product P JOIN fact_sales_monthly FS
ON P.product_code = FS.product_code
WHERE FS.fiscal_year = 2021
GROUP BY  FS.product_code, division, P.product
),
Output2 AS
(
SELECT division,
       product_code,
       product,
       Total_sold_quantity,
        RANK() OVER(PARTITION BY division ORDER BY Total_sold_quantity DESC) AS 'Rank_Order'
FROM Output1
)
 SELECT Output1.division,
        Output1.product_code,
        Output1.product,
        Output2.Total_sold_quantity,
        Output2.Rank_Order
 FROM Output1 JOIN Output2
 ON Output1.product_code = Output2.product_code
WHERE Output2.Rank_Order IN (1,2,3);
```

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

Thank You