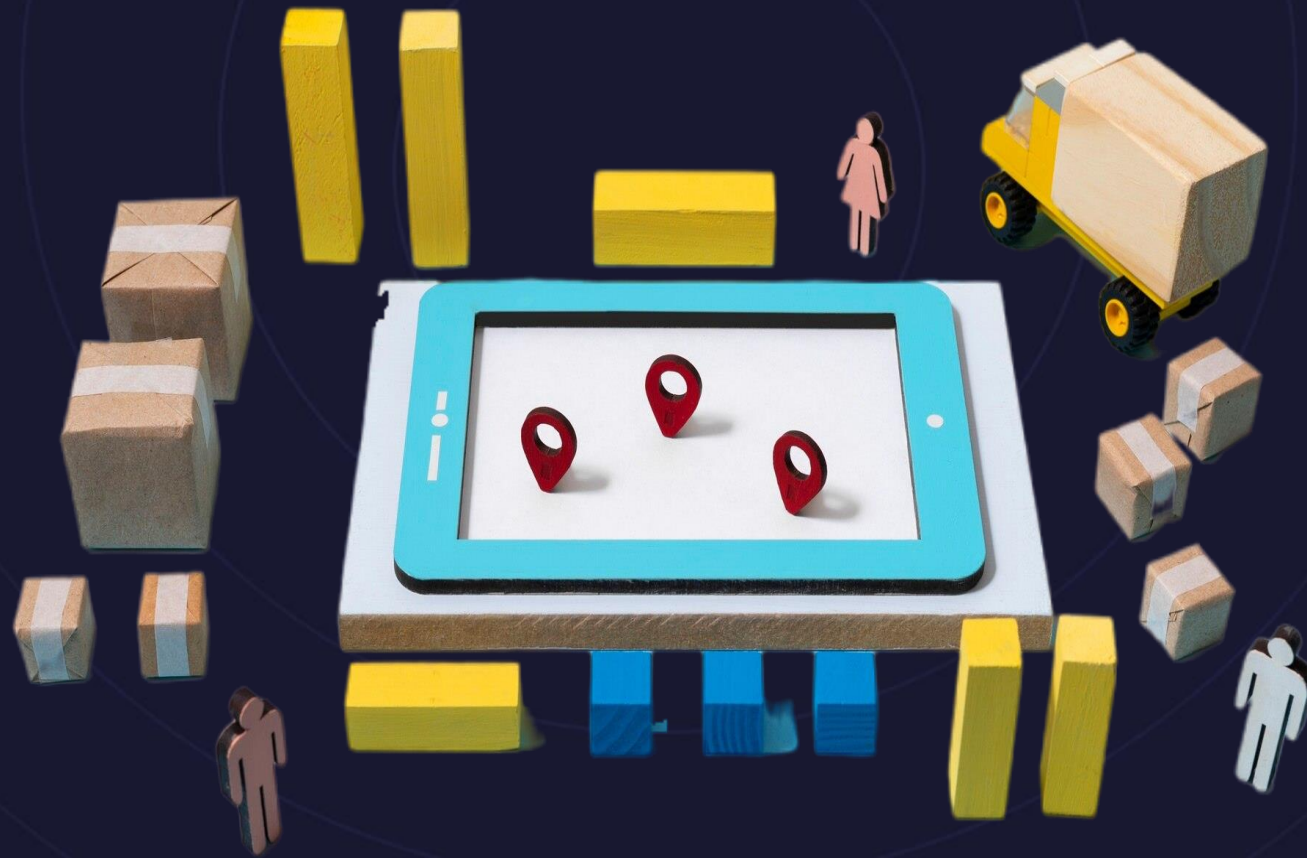# Executive Insights Through SQL: Customer, Product, and Sales Analysis for
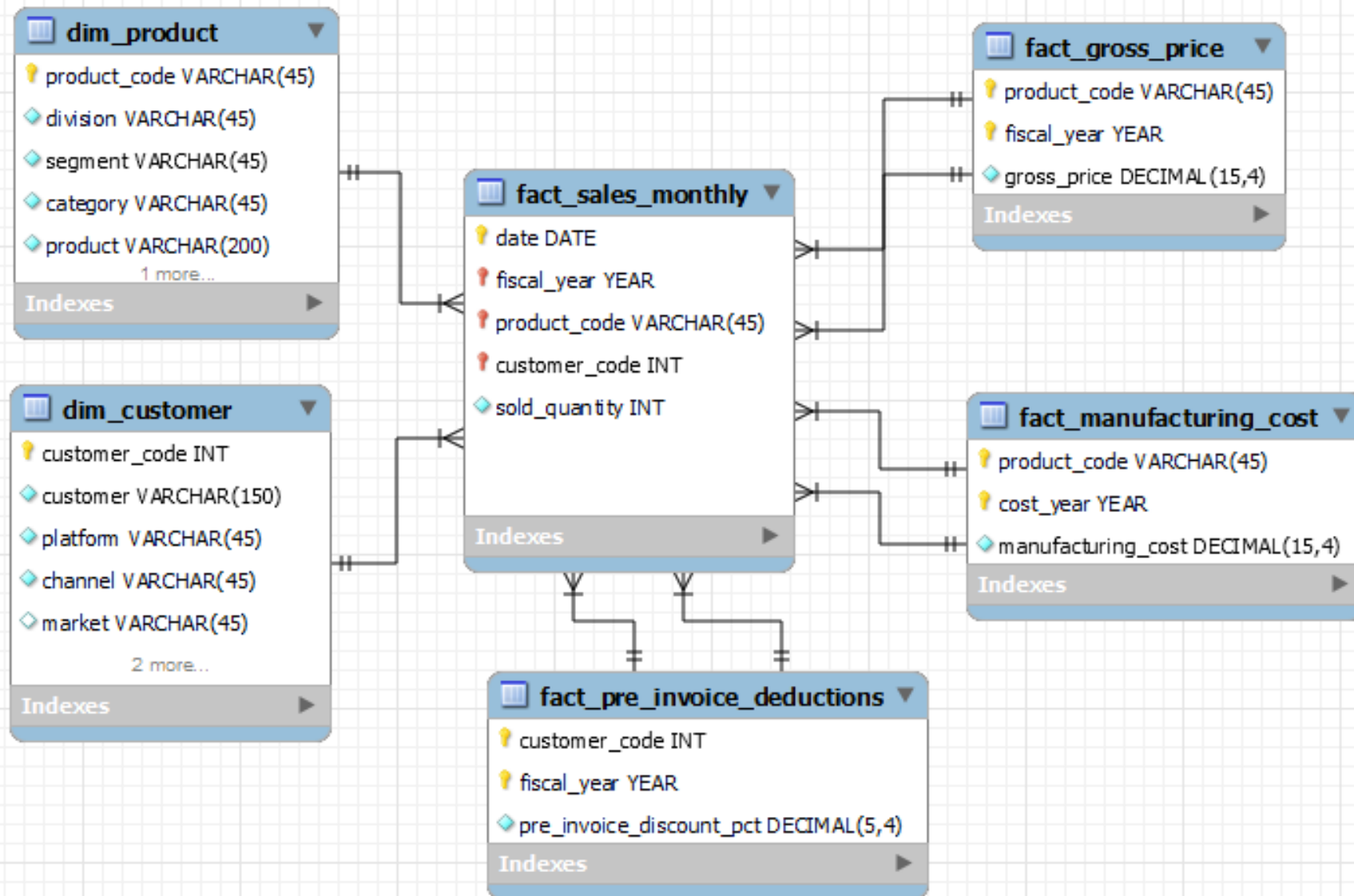
AtliQ Hardware

Project Overview

➢ **Domain:** Consumer Goods

➢ **Function:** Executive Management

➢ **Company:** Atliq Hardware's (imaginary company)

➢ **Challenge:** Codebasics's Resume Challenge 4

Data Model

Ad-hoc Request 1.

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

SQL Query ➡️

Task - 1

```sql
SELECT
    customer_code, customer, market
FROM
    dim_customer
WHERE
    customer = 'AtliQ Exclusive'
        AND region = 'APAC';
```

Query Result

customer_code	customer	market
70002017	Atliq Exclusive	India
70003181	Atliq Exclusive	Indonesia
70004069	Atliq Exclusive	Japan
70006157	Atliq Exclusive	Philiphines
70007198	Atliq Exclusive	South Korea
70008169	Atliq Exclusive	Australia
70009133	Atliq Exclusive	Newzeland
70010047	Atliq Exclusive	Bangladesh
90002011	Atliq Exclusive	India

Insights and Recommendation

✓ Diverse Market Presence: Atliq Exclusive operates across multiple APAC countries, indicating a strong market presence.

✓ Regional Focus: Significant focus on major APAC economies like India, Japan, and Australia.

✓ Recommendation: Strengthen market strategies in key APAC countries to leverage their diverse market dynamics.

AtliQ Exclusive's Locations in APAC Region
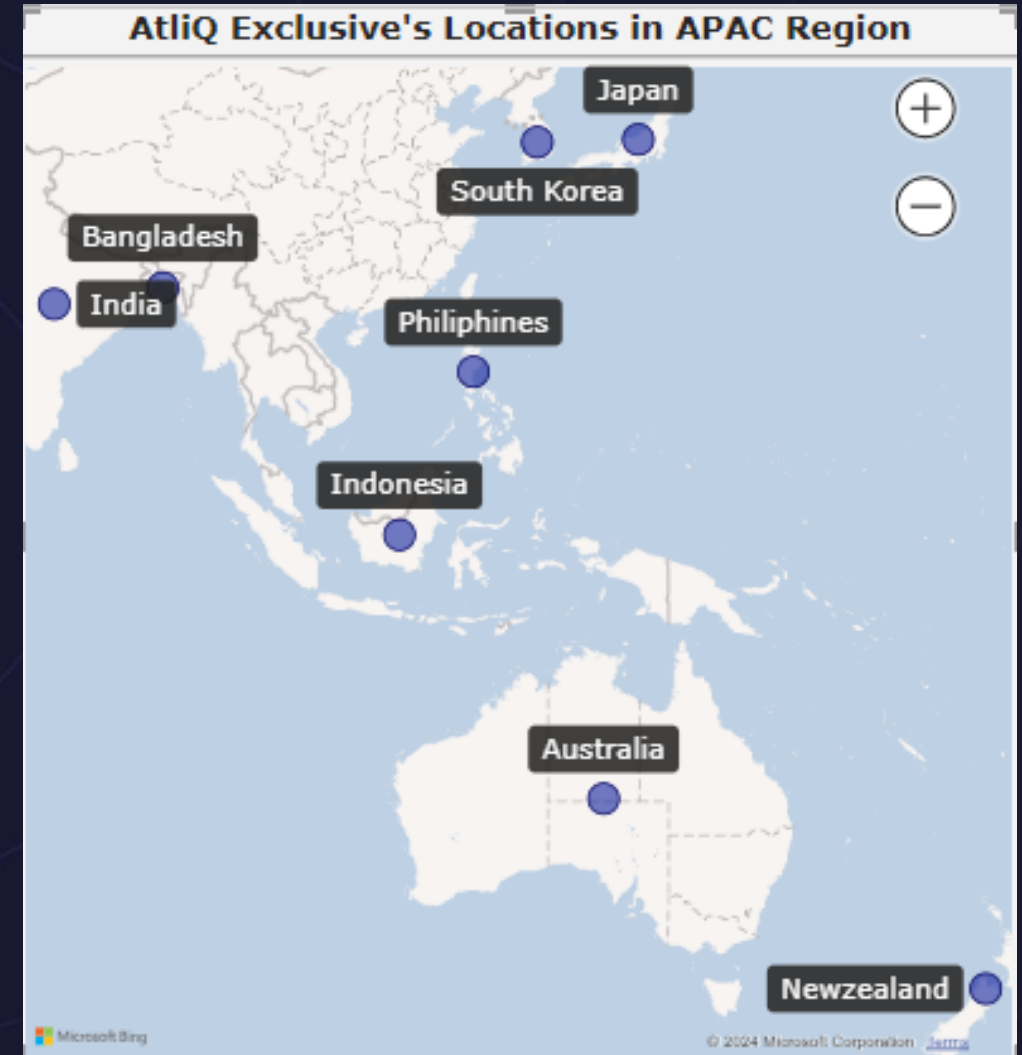
Ad-hoc Request 2.

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 Query →

```
Task - 2

WITH cte1 as
(SELECT
    Count(distinct product_code) as
unique_products_2020
FROM
    fact_sales_monthly
WHERE
    fiscal_year =2020),
cte2 as
(SELECT
        Count(distinct product_code) as
unique_products_2021
    FROM
        fact_sales_monthly
    WHERE
        fiscal_year =2021)
SELECT
    unique_products_2020,
    unique_products_2021,
    ROUND(ABS(unique_products_2020-
unique_products_2021)*100/unique_products_2020,2)
as percentage_chg
FROM cte1
CROSS JOIN cte2;
```

Query Result

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

Insights and Recommendation

- ✓ **Significant Product Increase** : Unique products increased by 36.33% from 2020 to 2021, indicating product range expansion.

- ✓ **Competitive Advantage** : Expanded product lineup enhances competitive advantage.

- ✓ **Recommendation** : Continue diversifying the product portfolio to meet diverse customer needs and stay competitive.

Products 2021
334 ✓
Last Year: 245
(+36.33%)

Ad-hoc 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 and product_count.

SQL Query →

Task - 3

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

Query Result

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

Insights and Recommendation

- ✓ **Top Segments by Variety** : Notebook and Accessories segments have the highest number of unique products.
- ✓ **Growth Opportunities** : Lower counts in Networking and Storage suggest potential for future expansion.
- ✓ **Recommendation** : Focus on expanding product offerings in lower-count segments to capture more market share.

Segment wise distribution of Products
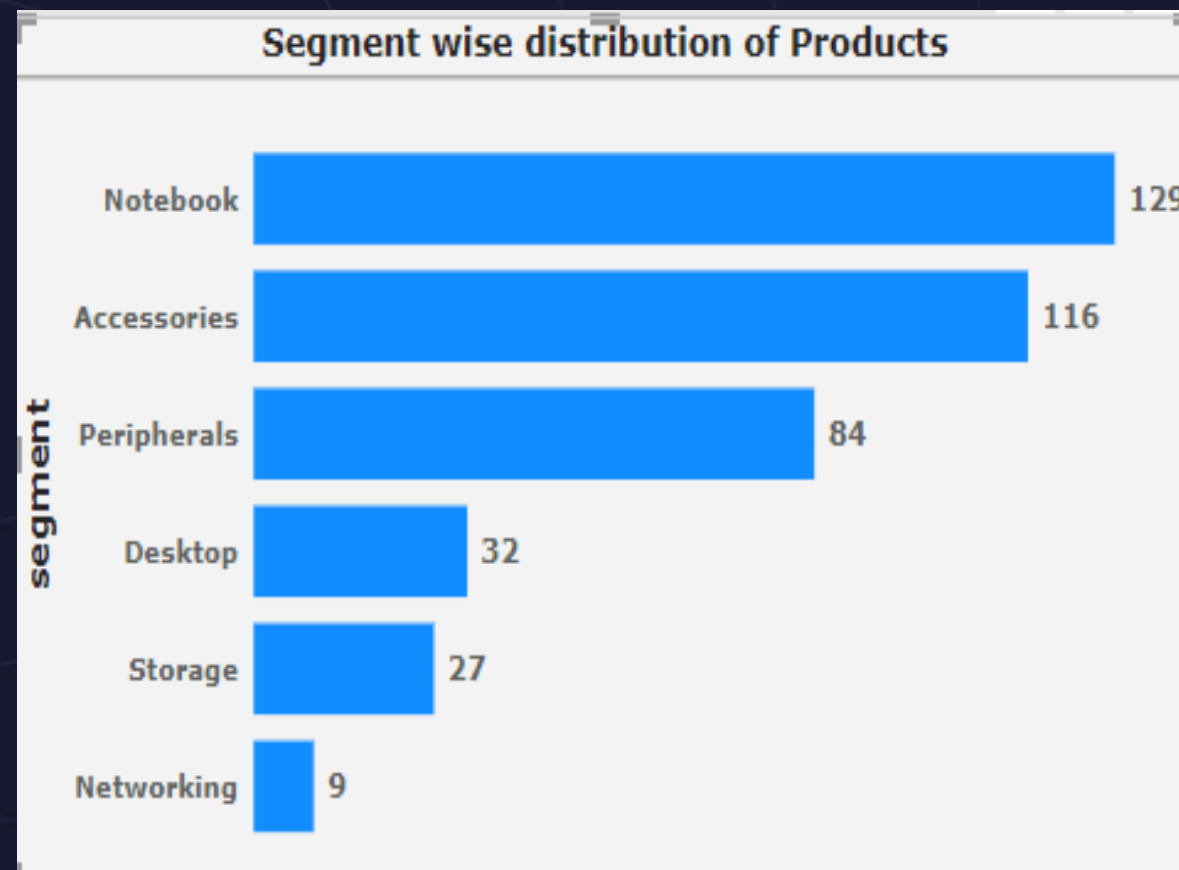
Ad-hoc Request 4.

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 →

Task - 4

```sql
WITH cte1 AS
(
  SELECT
      p.segment,
      Count(distinct s.product_code) AS
unique_products_2020
  FROM
      fact_sales_monthly s
  JOIN dim_product p
  ON p.product_code=s.product_code
  WHERE
      fiscal_year =2020
  GROUP BY p.segment
),
cte2 AS
(
  SELECT
      p.segment,
      Count(distinct s.product_code) as
unique_products_2021
  FROM
  fact_sales_monthly s
  JOIN dim_product p
  on p.product_code=s.product_code
  WHERE
      fiscal_year =2021
  GROUP BY p.segment
)
SELECT
  cte1.segment,
      cte1.unique_products_2020,
      cte2.unique_products_2021,
      ABS(unique_products_2020-unique_products_2021)
AS difference
FROM cte1
JOIN cte2
ON cte1.segment=cte2.segment
ORDER BY difference DESC
;
```

Query Result

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 and Recommendation

- ✓ **Highest Growth Segment**: Accessories saw the most significant increase in unique products (34).
- ✓ **Recommendation** : Invest further in the Accessories segment and continue supporting the other segments to capitalize on their positive trends.

Segment-Wise Product Trends: FY 2020 vs FY 2021 with Difference Line
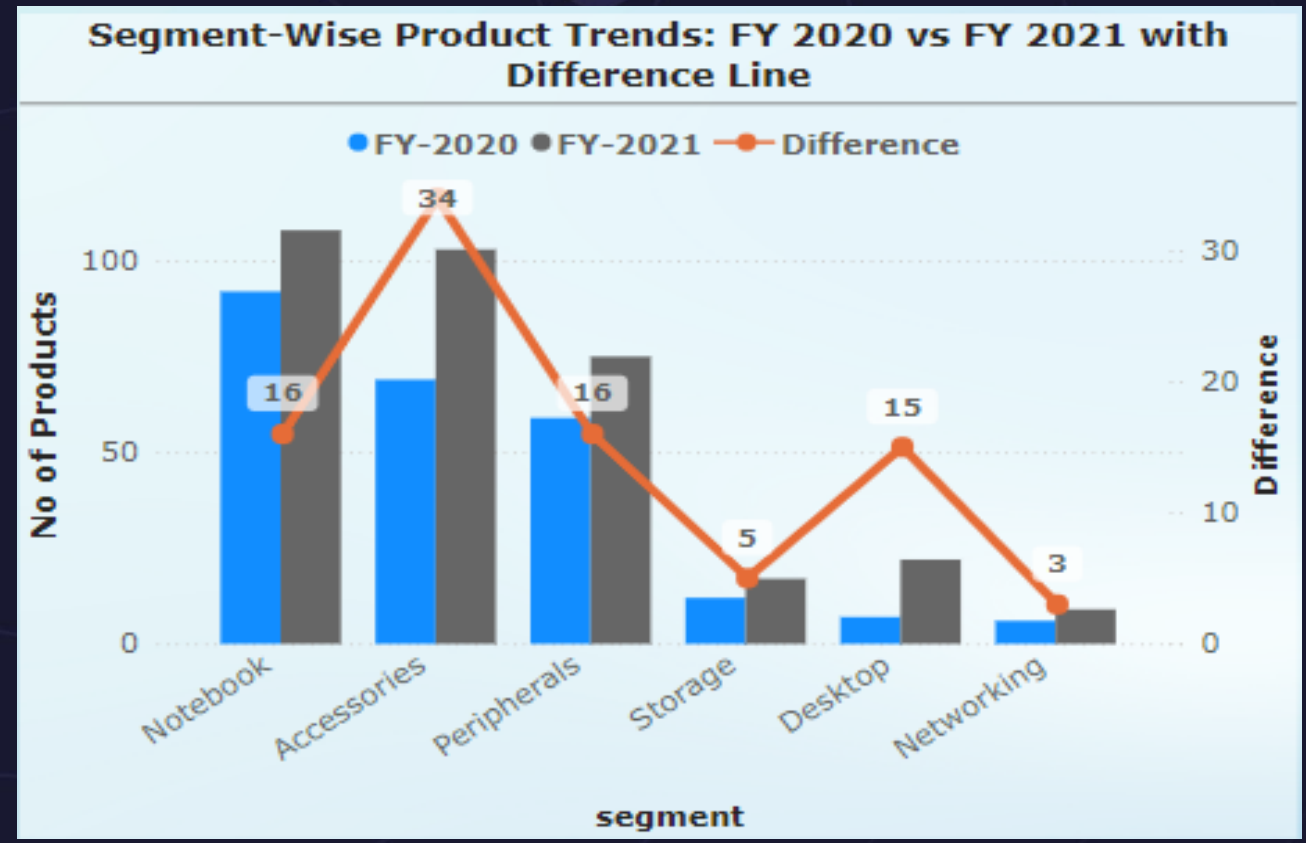
Ad-hoc Request 5.

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 →

```
Task - 5

-- Subquery to get the highest manufacturing cost
product
(SELECT
    dp.product_code,
    dp.product,
    fmc.manufacturing_cost
FROM
    dim_product dp
JOIN
    fact_manufacturing_cost fmc
ON
    dp.product_code = fmc.product_code
ORDER BY
    fmc.manufacturing_cost DESC
LIMIT 1)

UNION ALL

-- Subquery to get the lowest manufacturing cost
product
(SELECT
    dp.product_code,
    dp.product,
    fmc.manufacturing_cost
FROM
    dim_product dp
JOIN
    fact_manufacturing_cost fmc
ON
    dp.product_code = fmc.product_code
ORDER BY
    fmc.manufacturing_cost ASC
LIMIT 1);
```
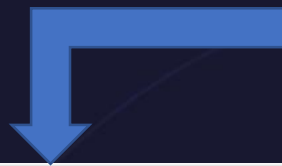
Query Result

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

Insights and Recommendation

✓ **Cost Disparity** : There is a substantial difference between the highest and lowest manufacturing costs, which may indicate a diverse range of product complexities and production requirements

✓ **Cost Optimization** : High manufacturing costs indicate potential for cost reduction opportunities.

✓ **Recommendation** : Analyze and optimize manufacturing processes to reduce costs for high-cost products

Products with Min and Max Manufacturing Cost

Product	Manufacturing Cost
AQ HOME Allin1 Gen 2	240.54
AQ Master wired x1 Ms	0.89

Ad-hoc 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, and average_discount_percentage.

SQL Query →

Task - 6

```sql
SELECT
    c.customer_code,
    c.customer,
    AVG(d.pre_invoice_discount_pct) AS
average_discount_percentage
FROM
    fact_pre_invoice_deductions d
        JOIN
    dim_customer c ON c.customer_code =
d.customer_code
WHERE
    d.fiscal_year = 2021
        AND c.market = 'INDIA'
GROUP BY customer_code , customer
ORDER BY average_discount_percentage DESC
LIMIT 5;
```

Query Result

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 and Recommendation

- ✓ **High Discount Leaders** : Top customers like Flipkart, Viveks, and Ezone receive high average discounts, above 30%.

- ✓ **Competitive Discounting** : Competitive discounting environment in the Indian market.

- ✓ **Recommendation** : Tailor discount strategies to balance between attracting top customers and maintaining profitability.

Top 5 Customers by Avg Discount

customer	Average Discount
Flipkart	30.83%
Viveks	30.38%
Ezone	30.28%
Croma	30.25%
Amazon	29.33%

Ad-hoc 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 and Gross sales Amount

SQL Query →

```
                              Task - 7
SELECT
    s.date,
    s.fiscal_year,
    ROUND(SUM(s.sold_quantity * g.gross_price) /
1000000,
              2) AS gross_sales_amount_mln
FROM
    fact_sales_monthly s
        JOIN
    fact_gross_price g ON s.product_code =
g.product_code
        AND s.fiscal_year = g.fiscal_year
        JOIN
    dim_customer c ON c.customer_code =
s.customer_code
WHERE
    c.customer = 'AtliQ Exclusive'
GROUP BY date, fiscal_year;
```

date	fiscal_year	gross_sales_amount_mln
2019-09-01	2020	4.50
2019-10-01	2020	5.14
2019-11-01	2020	7.52
2019-12-01	2020	4.83
2020-01-01	2020	4.74
2020-02-01	2020	4.00
2020-03-01	2020	0.38
2020-04-01	2020	0.40
2020-05-01	2020	0.78
2020-06-01	2020	1.70

Insights and Recommendation

✓ **High-Performing Months** : October and November showed peak sales, while March 2020 had the lowest sales.

✓ **Seasonal Trends** : Significant fluctuations in sales indicate varying demand patterns.

✓ **Recommendation** : Plan promotions and inventory adjustments based on high-performing periods and address reasons for low sales in early 2020.

Monthly Gross Sales Trend
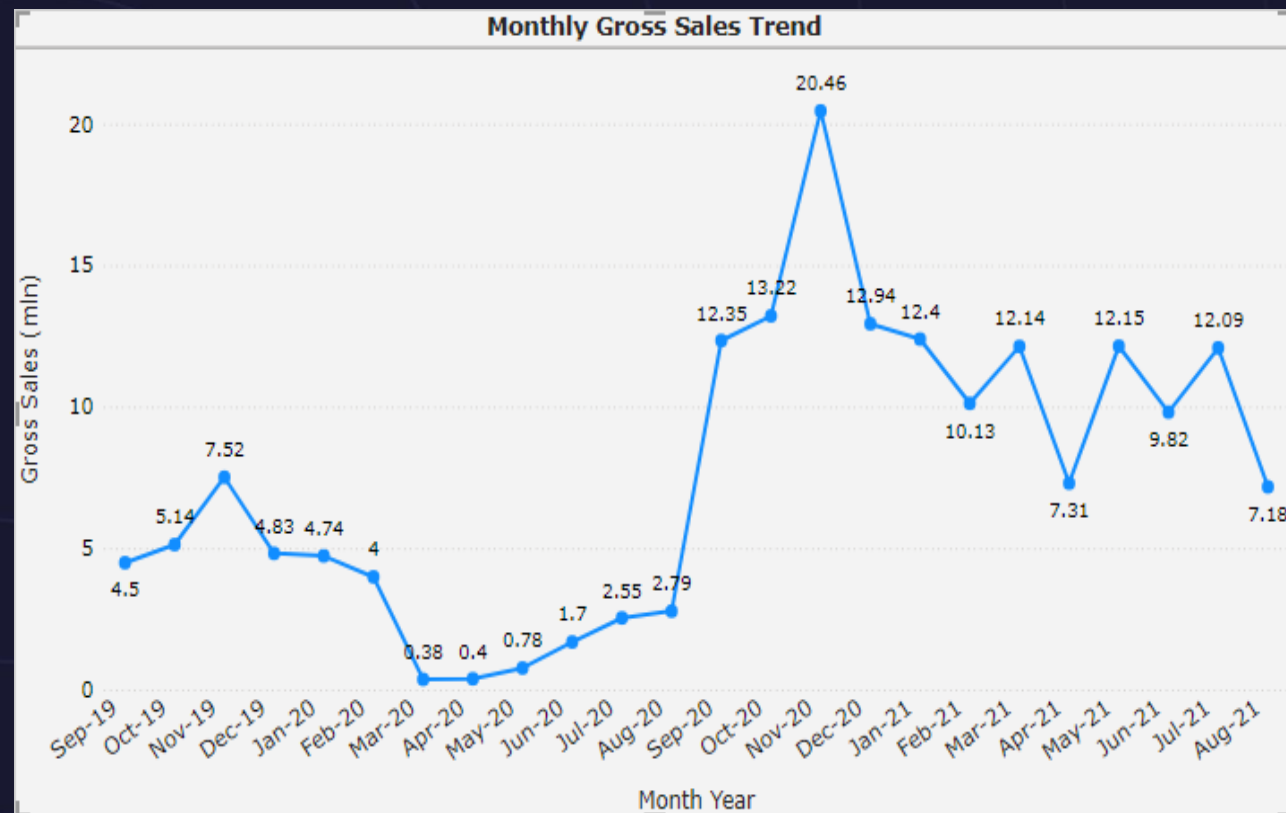
Ad-hoc Request 8.

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

SQL Query →

Task - 8

```sql
SELECT
    GET_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;
```

Query Result

quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

Insights and Recommendation

✓ **Top Quarter** : Q1 2020 had the highest total sold quantity, while Q3 2020 had the lowest.

✓ **Quarterly Trends** : Strong performance in Q1 and significant drop in Q3 suggest potential market challenges or seasonality effects.

✓ **Recommendation** : Analyze Q1 strategies for replication and investigate Q3 performance issues to improve future sales.

Total Sold Quantity by Quarter for Fiscal Year 2020

- Q1 — 7.0M
- Q2 — 6.6M
- Q4 — 5.0M
- Q3 — 2.1M

Quarter
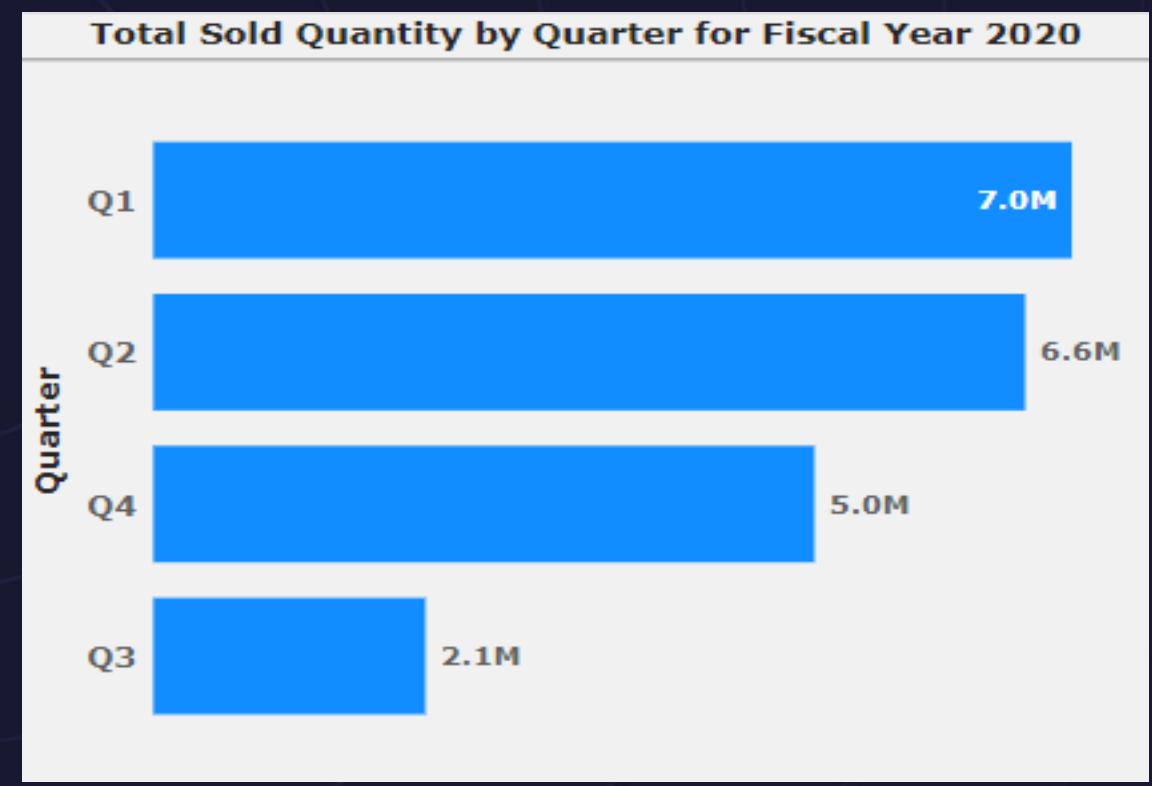
Ad-hoc Request 9.

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

```
Task - 9

WITH cte1 AS
(SELECT
    c.channel,
    ROUND(SUM(s.sold_quantity * g.gross_price) / 1000000,
            2) AS gross_sales_amount_mln
FROM
    fact_sales_monthly s
        JOIN
    fact_gross_price g ON s.product_code = g.product_code
        AND s.fiscal_year = g.fiscal_year
        JOIN
    dim_customer c ON c.customer_code = s.customer_code
WHERE
    s.fiscal_year = 2021
GROUP BY channel
)

SELECT
  channel,
    gross_sales_amount_mln,
    gross_sales_amount_mln*100/sum(gross_sales_amount_mln) over() as percentage
FROM
  cte1
ORDER BY gross_sales_amount_mln DESC;
```

channel	gross_sales_amount_mln	percentage
Retailer	1219.08	73.233852
Direct	257.53	15.470612
Distributor	188.03	11.295535

Insights and Recommendation

✓ **Dominant Channel** : Retailer channel contributed 73.23% of total gross sales, far exceeding other channels.

✓ **Contribution Distribution** : Retailer channel's contribution is significantly higher compared to Direct and Distributor channels.

✓ **Recommendation** : Strengthen retailer partnerships and explore ways to boost sales through Direct and Distributor channels.

Gross Sales by Channel for Fiscal Year 2021

● Retailer ● Direct ● Distributor

188.03 (11.3%)

257.53 (15.47%)

1219.08 (73.23%)
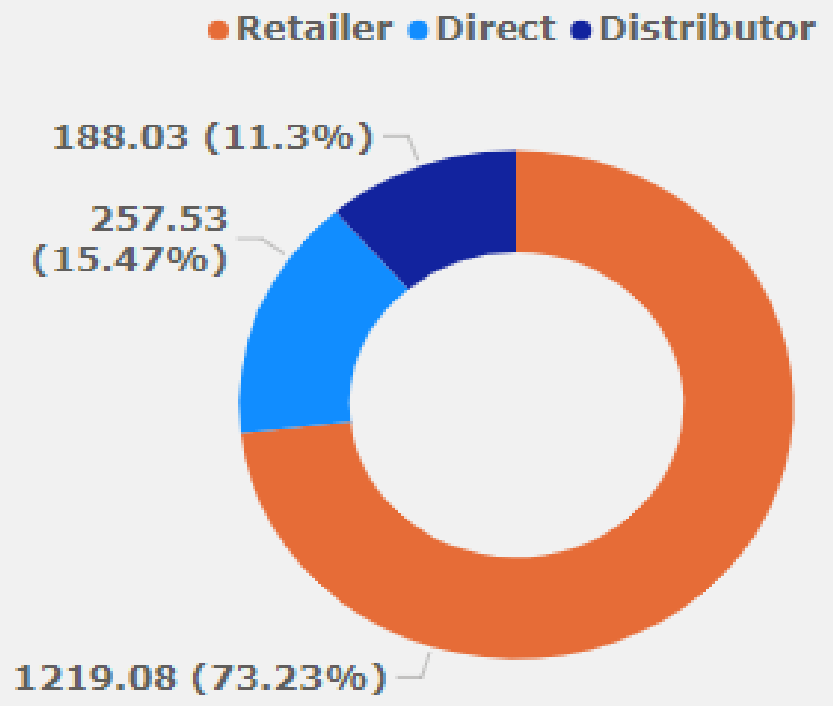
Ad-hoc Request 10.

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 →

```
                                    Task - 10

WITH cte1 AS
(
SELECT
    p.division,
    s.product_code,
    p.product,
    SUM(s.sold_quantity) AS total_sold_quantity
FROM
    fact_sales_monthly s
        JOIN
    dim_product p ON p.product_code = s.product_code
GROUP BY product_code , product , division
),
cte2 AS
(
  SELECT
    *,
    dense_rank()  over (partition by division order by total_sold_quantity desc) as
rank_order
  FROM
    cte1
)
SELECT
    division,
    product_code,
    product,
    total_sold_quantity,
    rank_order
FROM
    cte2
WHERE
    rank_order <= 3;
```

Query Result

division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	1159222	1
N & S	A6818160201	AQ Pen Drive DRC	1128104	2
N & S	A6419160301	AQ Clx1	729696	3
P & A	A2319150302	AQ Gamers Ms	683634	1
P & A	A2219150204	AQ Master wireless x1 Ms	682321	2
P & A	A2319150306	AQ Gamers Ms	681531	3
PC	A4218110202	AQ Digit	26012	1
PC	A4319110306	AQ Velocity	25978	2
PC	A4118110107	AQ Aspiron	25963	3

Insights and Recommendation

✓ **Top Products** : AQ Pen Drive products lead in the N & S division, AQ Gamers Ms in the P & A division, and AQ Digit in the PC division.

✓ **Product Ranking** : Different divisions have varied top performers, indicating diverse product preferences.

✓ **Recommendation** : Focus on promoting and stocking top-performing products in each division to maximize sales.

Top 3 Products in each Division by Quantity

Division	Product	Sold Quantity	Rank
N & S	AQ Pen Drive 2 IN 1	1159222	1
P & A	AQ Gamers Ms	1365165	1
PC	AQ Digit	26012	1
N & S	AQ Pen Drive DRC	1128104	2
P & A	AQ Master wireless x1 Ms	682321	2
PC	AQ Velocity	25978	2
N & S	AQ Clx1	729696	3
PC	AQ Aspiron	25963	3

Overall Summary and Recommendations

- ✓ **Strong Market Presence**: Atliq Exclusive has a diverse APAC market presence and should leverage it.
- ✓ **Product Expansion**: Significant increase in unique products indicates a successful diversification strategy.
- ✓ **Segment Focus**: High product variety in Notebook and Accessories segments suggests a comprehensive approach, with growth opportunities in lower-count segments.
- ✓ **Cost Management**: Significant cost disparity highlights the need for manufacturing cost optimization.
- ✓ **Channel Strategy**: The Retailer channel's dominant contribution underscores the importance of strengthening retailer relationships.
- ✓ **Sales Performance**: November and December 2020 were high-performing months, while early 2020 saw low sales. Focus on high-performing periods and address issues behind low sales.

Recommendations

- ❖ Strengthen market strategies in key APAC regions.
- ❖ Continue expanding the product portfolio to meet diverse needs.
- ❖ Invest in the growing Desktop and Storage segments and address declines in specific areas.
- ❖ Optimize manufacturing processes to reduce costs for high-cost products.
- ❖ Tailor discount strategies to maintain profitability while attracting top customers.
- ❖ Focus on promoting high-performing months and address reasons for low sales in early 2020 to improve future performance.

THANK YOU

For Power BI Dashboard ,Scan the QR Code given here :

Power BI