AD - HOC BUSINESS ANALYSIS FOR ATLIQ HARDWARE

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Objectives

- Atliq Hardwares is a leading computer hardware company in India with a global presence.

- The management team lacks timely insights for quick, data-driven decisions.

- To strengthen the analytics function, they plan to hire junior data analysts.

- Tony Sharma, Director of Data Analytics, designed a SQL challenge to assess both technical and soft skills.

- The goal of this project is to solve 10 real-world ad-hoc business requests using SQL and present the insights effectively for executive-level decision-making.

Comapany Overview

Global Presence & Market Position

01.
- Atliq Hardwares is a leading computer hardware manufacturer based in India, operating successfully across 26 other countries.

- The company has built a reputation for delivering high-quality and reliable technology solutions to global markets.

Business Focus

02.
- Specializes in three major divisions:
  1.Peripherals & Accessories, 2.Networking & Storage, 3.PCs

- Trusted by 76 major customers, including Amazon, Neptune, Croma, and DigiMarket, for its consistent performance and innovation.

Problem Statement

Business Challenge

- Lack of timely and actionable insights for executive decision-making.
- Large data volume but limited analysis for quick strategies.

Team Expansion

- Plan to hire junior data analysts to strengthen analytics capability.
- Focus on candidates with both technical (SQL) and communication skills.

Project Purpose

- Solve *10 real-world ad-hoc business requests* using SQL.
- Present insights clearly to support data-driven decisions.

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" ;
```

Insights :

- Atliq Exclusive operates across 8 distinct markets in the APAC region, indicating a strong and diversified regional presence.
- This highlights its broad customer reach, useful for targeted regional strategies and market-specific planning.

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
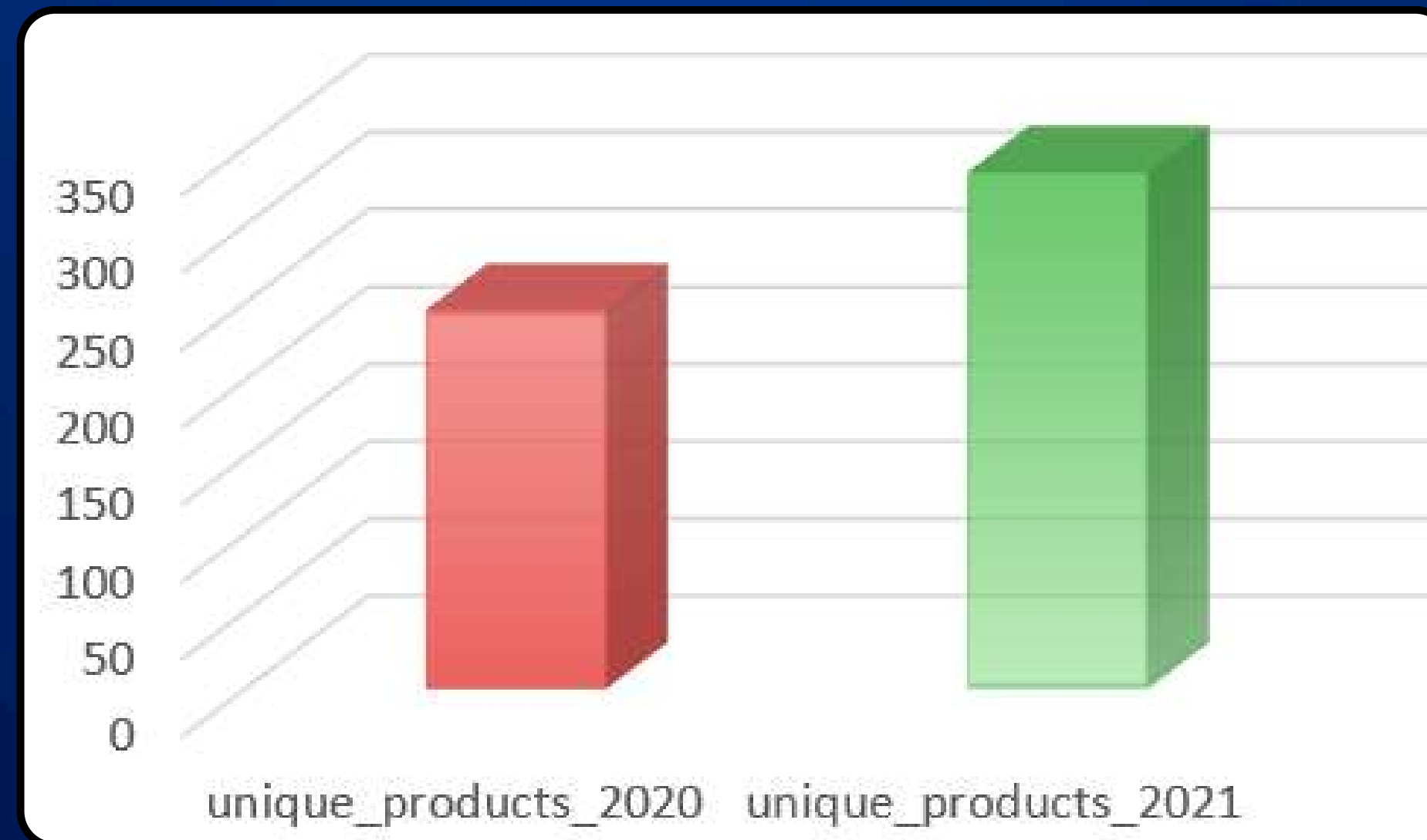
Query :

```
  with unique_2020 as (
select  count(distinct product_code) as unique_products_2020
 from fact_sales_monthly
 where fiscal_year = 2020),
unique_2021 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(100 *( unique_products_2021 - unique_products_2020 )/
unique_products_2020,  2) as pct_chg
from  unique_2021
cross  join unique_2020 ;
```

Insights :

Atliq Hardware saw a 36.33% increase in unique products, growing from 245 in 2020 to 334 in 2021

unique_products_2020	unique_products_2021	pct_chg
245	334	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
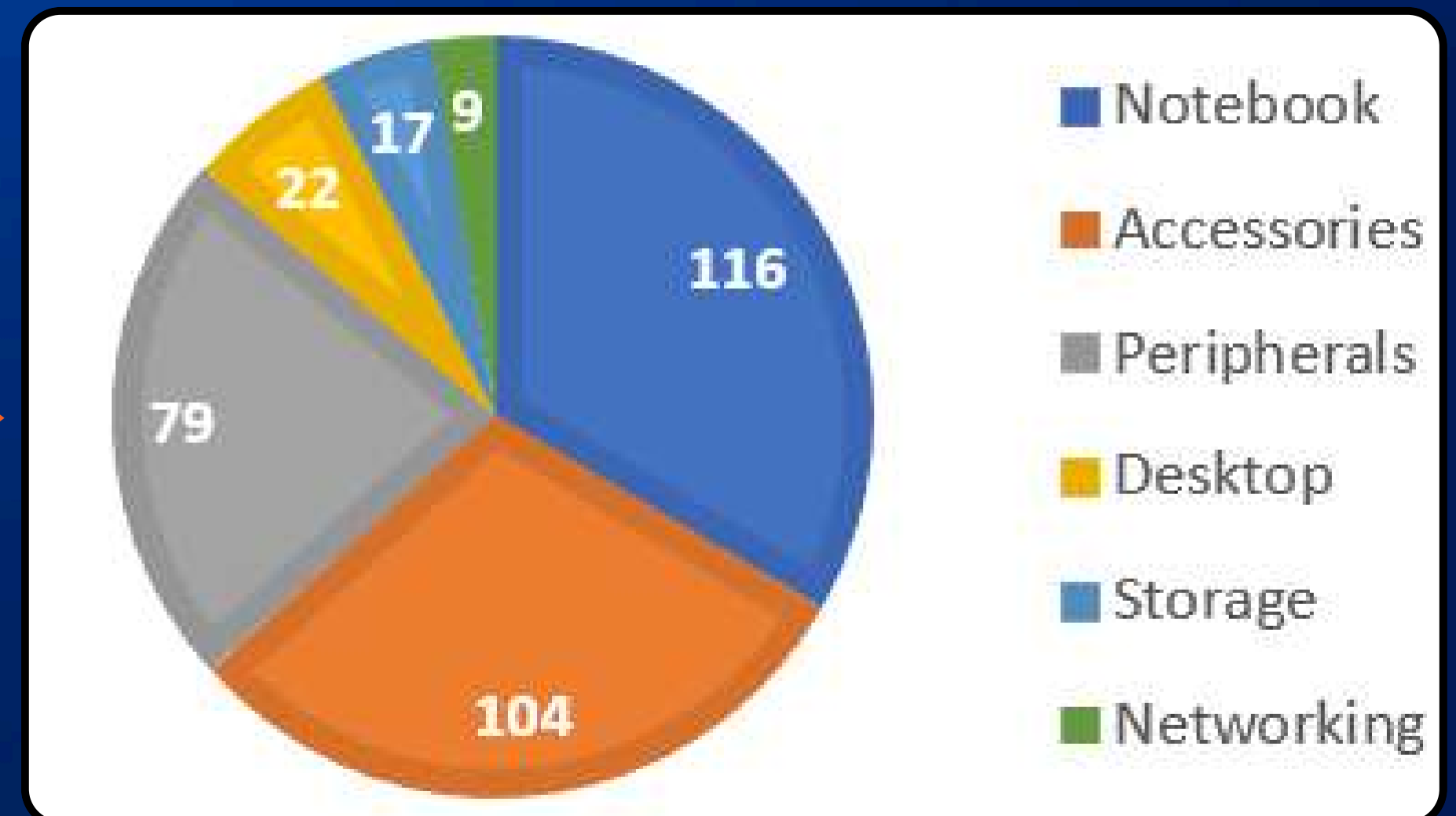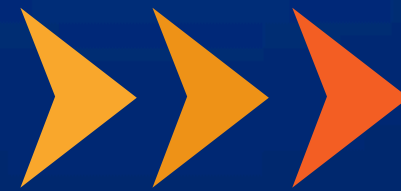
Query :

```
SELECT
 p.segment,
 COUNT(DISTINCT s.product_code) AS product_count
FROM
 fact_sales_monthly s
 JOIN dim_product p ON s.product_code =
p.product_code
GROUP BY  p.segment
ORDER BY  product_count DESC;
```

Request 3 :

- The Notebook and Accessories segments have the highest unique product counts, indicating strong focus areas.
- Networking and Storage have the least variety, highlighting potential for expansion.

segment	product_count
Notebook	116
Accessories	104
Peripherals	79
Desktop	22
Storage	17
Networking	9

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
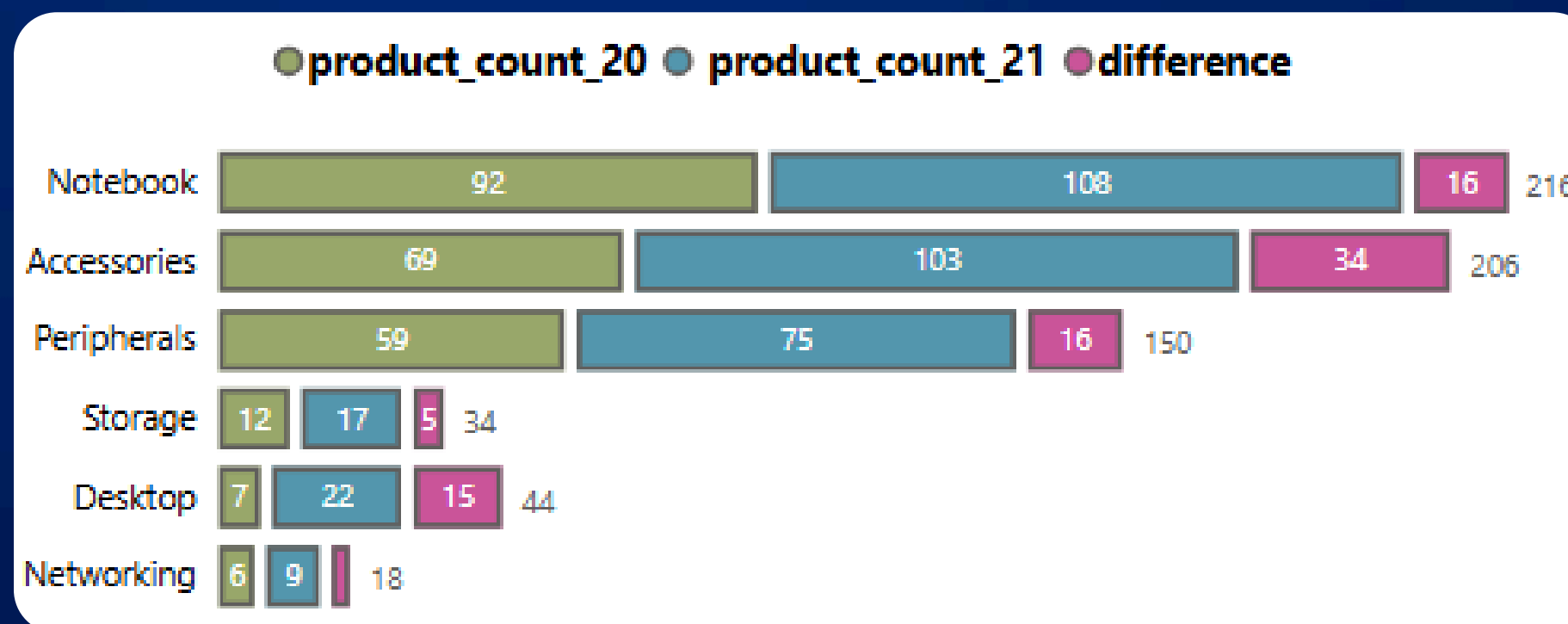
Query :
```
WITH f20 AS (
SELECT p.segment, COUNT(DISTINCT s.product_code) AS c20
  FROM fact_sales_monthly s
  JOIN dim_product p ON s.product_code = p.product_code
  WHERE fiscal_year = 2020
  GROUP BY p.segment),
f21 AS (
SELECT p.segment, COUNT(DISTINCT s.product_code) AS c21
  FROM fact_sales_monthly s
  JOIN dim_product p ON s.product_code = p.product_code
  WHERE fiscal_year = 2021
  GROUP BY p.segment)
SELECT f20.segment, c20 AS product_count_20,
c21 AS product_count_21, c21 - c20 AS difference
FROM f20
JOIN f21 ON f20.segment = f21.segment
ORDER BY difference DESC;
```

Insights :

- The Accessories segment saw the highest increase in unique products, with a growth of 34 products from 2020 to 2021.
- This highlights strong expansion and innovation potential in the Accessories category.

segment	product_count_20	product_count_21	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

● **product_count_20** ● **product_count_21** ● **difference**

Notebook	92	108	16	216
Accessories	69	103	34	206
Peripherals	59	75	16	150
Storage	12	17	5	34
Desktop	7	22	15	44
Networking	6	9		18

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 :

```
select p.product_code, product, manufacturing_cost
 from fact_manufacturing_cost mc
join dim_product p
on  mc.product_code = p.product_code
where
 manufacturing_cost = (select max(manufacturing_cost)
from fact_manufacturing_cost)
or
 manufacturing_cost = (select min(manufacturing_cost)
from fact_manufacturing_cost)
order by manufacturing_cost desc ;
```

Insights :

- Identifies products with the highest and lowest manufacturing costs to highlight extremes in production spending.
- Helps in analyzing pricing strategy and optimizing cost efficiency.

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

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 :

```
select c.customer_code, customer,
 round(avg(100 * pre_invoice_discount_pct), 2) as
average_discount_percentage
 from fact_pre_invoice_deductions pre
 join dim_customer c
 on pre.customer_code = c.customer_code
 where
  market = "india"  and fiscal_year = 2021
 group by customer_code
 order by  average_discount_percentage desc
  limit  5 ;
```
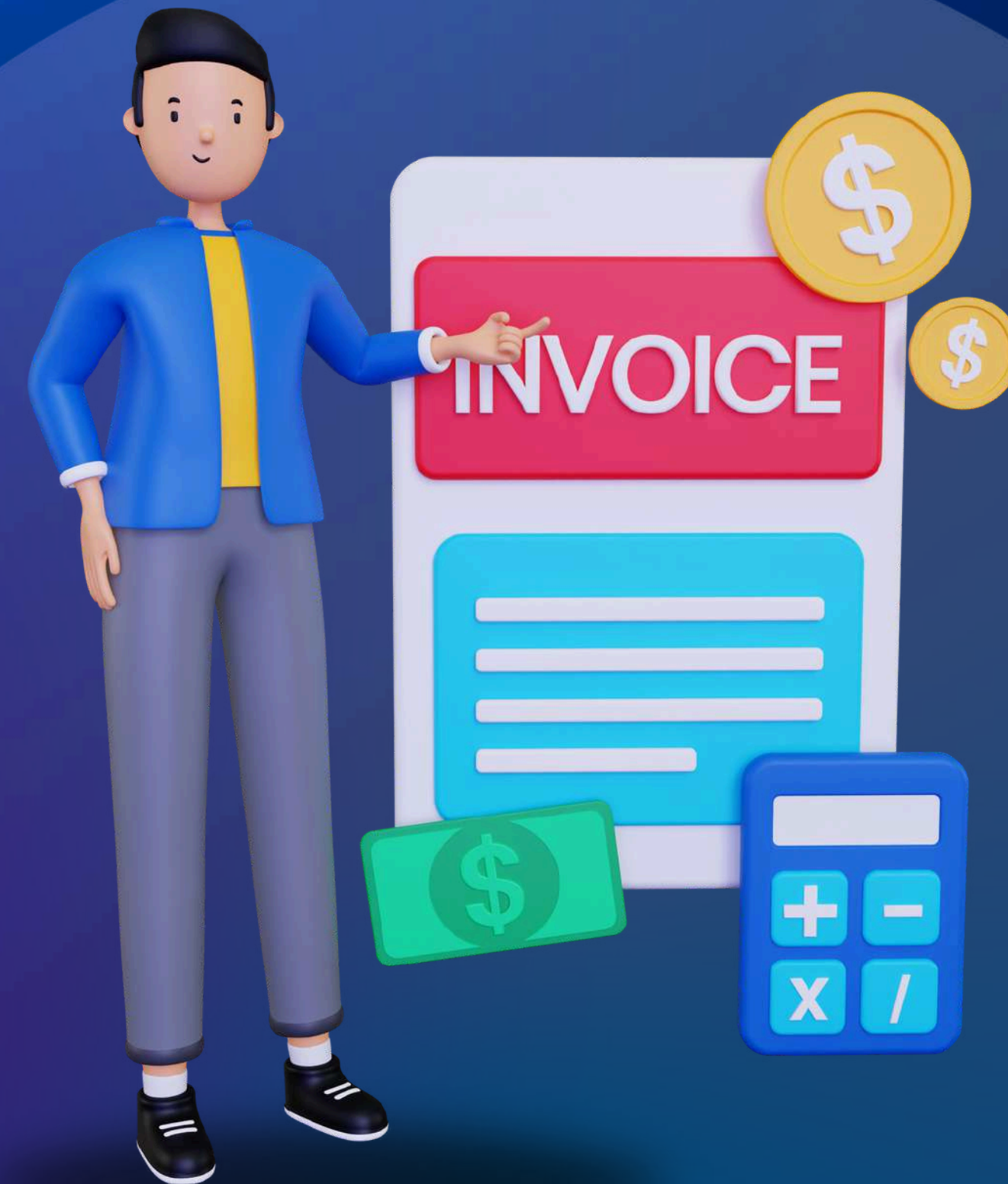
Insights :

- Flipkart received the highest average pre-invoice discount (30.83%) among top Indian customers in FY 2021, indicating strong negotiation or high-volume purchases.
- All top 5 customers had discounts near or above 30%, highlighting aggressive discounting in the market.

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

Flipkart	30.83
Viveks	30.38
Ezone	30.28
Croma	30.25
Amazon	29.33

average_discount_percentage
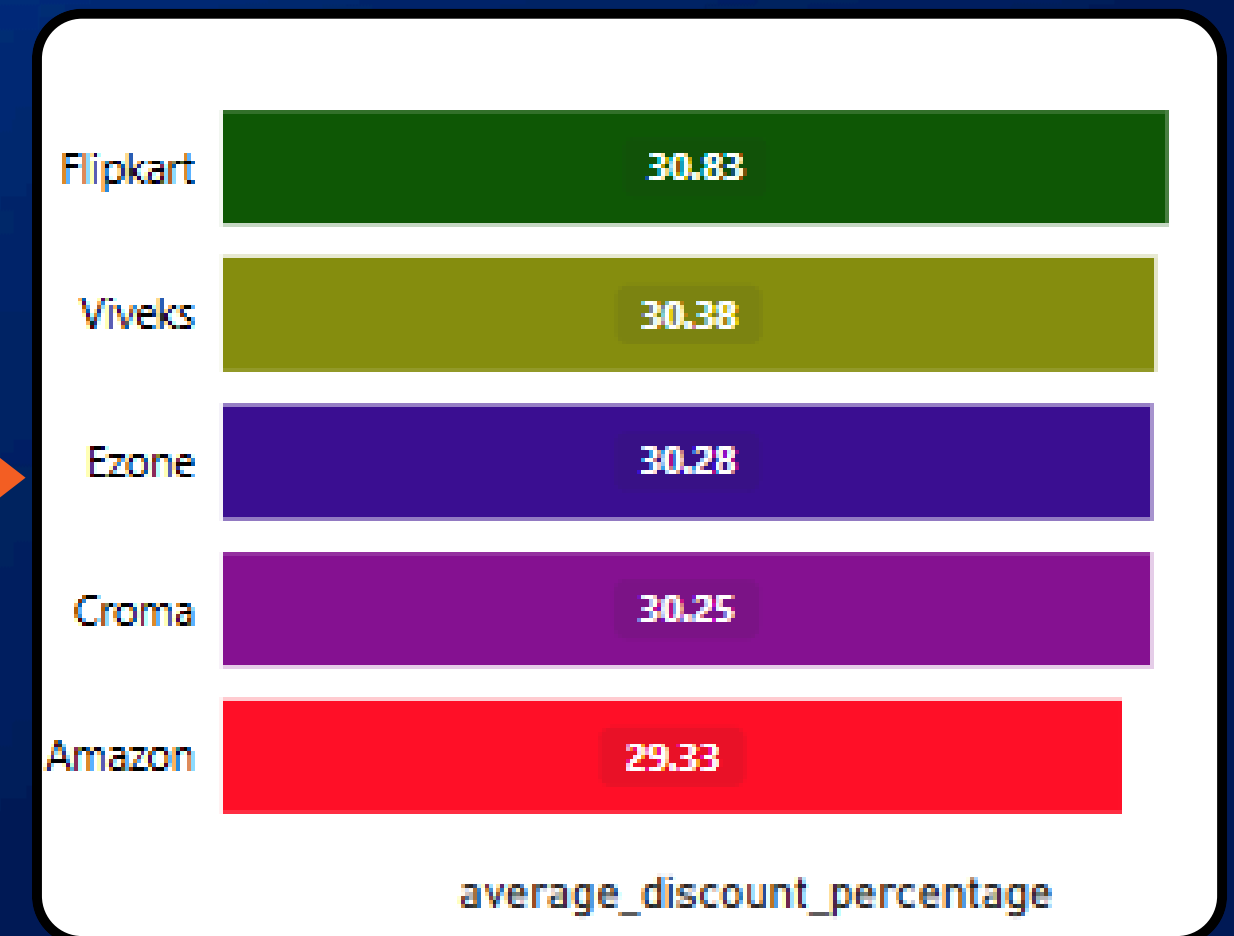
Request 7 :

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 month(date) as month, s.fiscal_year as year,
 round(sum(sold_quantity * gross_price),  0) as total_gross_price
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 s.customer_code = c.customer_code
 where customer = "atliq exclusive"
 group by  month, year
 order by   year
```

Insights :

- Gross sales for "Atliq Exclusive" saw a sharp rise in 2021, with November peaking at ₹2.04 Cr.
- Monthly sales in 2021 consistently outperformed 2020, indicating strong year-over-year growth.

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
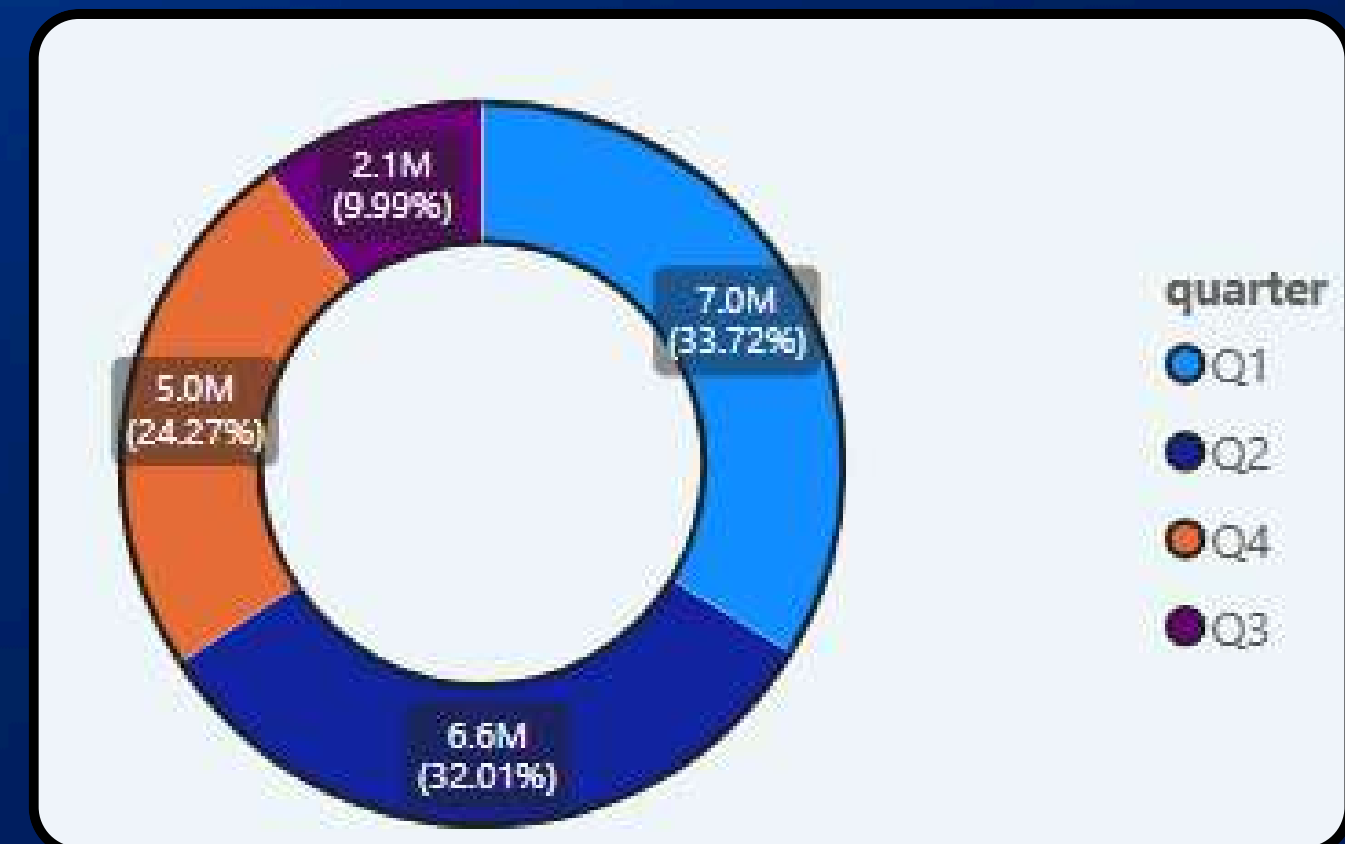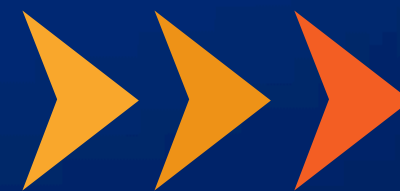
Query :

```
select case
 when month(date) in (9, 10, 11) then "Q1"
 when month(date) in(12, 1, 2) then "Q2"
 when month(date) in(3, 4, 5) then "Q3"
 when month(date) in (6, 7, 8) then "Q4" end as quarter,
 sum(sold_quantity) as sold_quantity
from fact_sales_monthly
where fiscal_year = 2020
group by quarter
order by sold_quantity desc
```

Insights :

- Q1 had the highest sales with 7 million units sold, contributing 33.72% of the annual sales.
- Q3 was the lowest performing quarter, accounting for just 9.97% of the total sales.

quarter	sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

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
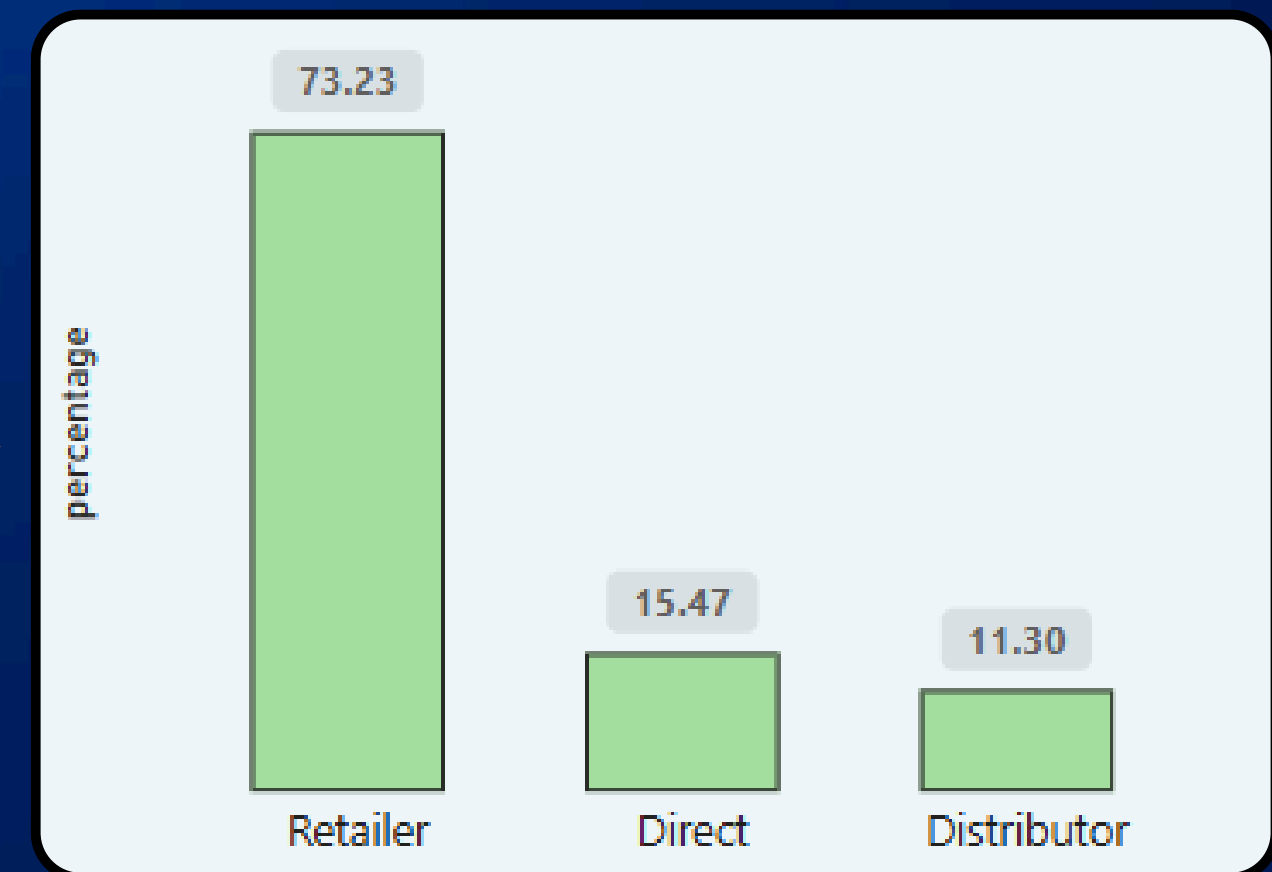
Query :

```
select c.channel,
 round(sum(sold_quantity * gross_price)/ 1000000, 2) as
gross_Price_mln, round(sum(sold_quantity *gross_price)* 100 /
sum(sum(sold_quantity * gross_price)) over(),  2) as percentage
from dim_customer c
 join fact_sales_monthly s
on c.customer_code = s.customer_code
 join fact_gross_price g
on s.product_code = g.product_code
 and s.fiscal_year = g.fiscal_year
where  s.fiscal_year = 2021
group by  c.channel
order by percentage desc
```

Insights :

- In FY 2021, the Retailer channel generated the highest gross sales of ₹1219.08 million, contributing 73.23% of total sales.
- Direct and Distributor channels followed with 15.47% and 11.30% contributions, respectively.

channel	gross_Price_mln	percentage
Retailer	1219.08	73.23
Direct	257.53	15.47
Distributor	188.03	11.30

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

Query :

```
with ranking as (
select division, p.product_code, product,
    sum(sold_quantity) as total_qty, dense_rank()
    over( partition by division order by
    sum(sold_quantity) desc) as   rank_order
  from dim_product p
  join fact_sales_monthly s
  on p.product_code = s.product_code
  where fiscal_year = 2021
  group by division, product_code)
select  *
  from ranking
  where rank_order <= 3
```

Insights :

- AQ Pen Drive 2 IN 1 was the top product in the N & S division with 7 lakh units sold in 2021.
- AQ Gamers Ms and AQ Digit were the best-selling products in the P & A and PC divisions, respectively.

division	product_code	product	total_qty	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

Recommendations

◆ **1. Focus on High-Growth Segments**

Identify and invest in segments that showed the highest increase in unique products from 2020 to 2021. These segments are likely experiencing growing demand and present opportunities for expansion.

◆ **2. Optimize Discount Strategies**

Top 5 customers in India received high average pre-invoice discounts in FY 2021. Review and refine the discount structure to ensure it's driving profitable sales, not just volume.

◆ **3. Strengthen High-Performing Channels**

The channel with the highest gross sales contribution in FY 2021 should be prioritized for strategic investments, marketing focus, and product availability to maximize revenue impact.