Consumer goods analytics

Ad-Hoc Insights

ANUSHA BANDAPELLY

Agenda

Overview of the Company

AtliQ Hardware

AtliQ Hardware is a leading hardware company specializing in PCs, printers, mice, and computers with a global reach.

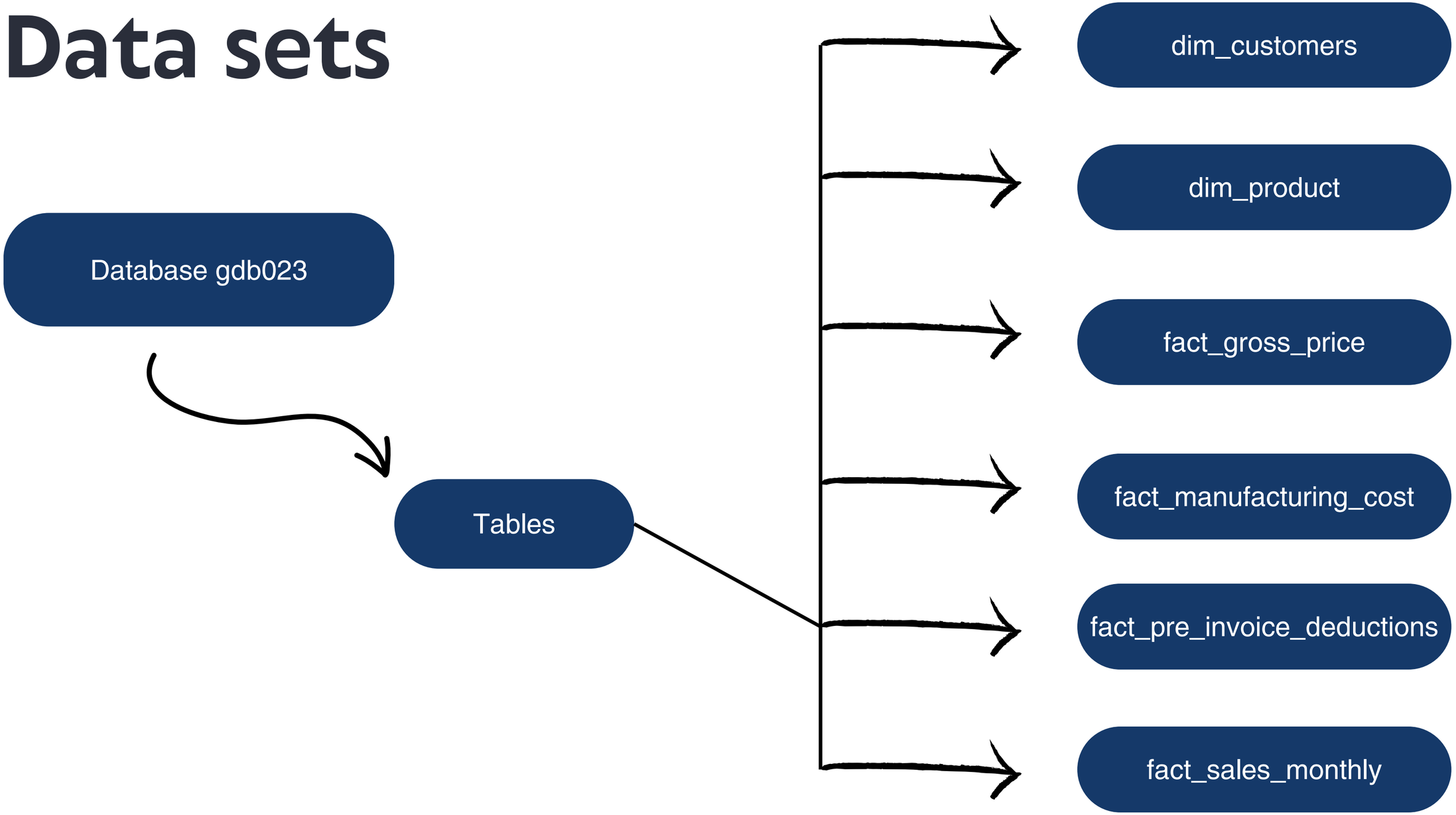
Problem Statement :

- AtliQ Hardware, a leading computer hardware producer, faced a critical challenge.
- The management noticed that they were missing crucial insights for strategic moves.
- They needed a quick and data-informed decisions to stay competitive in the ever-evolving market.

Objective :

- In this project, I will be working with a dataset related to consumer goods. The goal is to answer ten specific Ad-hoc requests using SQL queries.

Data sets


Database gdb023
Tables
dim_customers
dim_product
fact_gross_price
fact_manufacturing_cost
fact_pre_invoice_deductions
fact_sales_monthly

Question 1 :

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

SQL Query :

```
select distinct market
from dim_customer
where customer = "Atliq Exclusive" and
region = "APAC";
```

Output :

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

Insights :

AtliQ Exclusive has a presence in several countries across the APAC region, including India, Indonesia, Japan, The Phillippines, South Korea, Australia, New Zealand, and Bangladesh.

This reflects AtliQ's strong market presence and ability to adapt to diverse cultural and economic contexts within the APAC region.

Question 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 :

```
#2Q Using sub-queries :
select
    (select count(distinct product_code) from fact_sales_monthly
    where fiscal_year = 2020) as unique_products_2020 ,
    (select count(distinct product_code) from fact_sales_monthly
    where fiscal_year = 2021) as unique_products_2021,

    ((select count(distinct product_code) from fact_sales_monthly
    where fiscal_year = 2021)-(select count(distinct product_code)
    from fact_sales_monthly
    where fiscal_year = 2020))*100/(select count(distinct product_code)
    from fact_sales_monthly
    where fiscal_year = 2020) as percentage_chg;
```

Output :

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.3265

Duration / Fetch
6.797 sec / 0.000 sec

Question 2 :

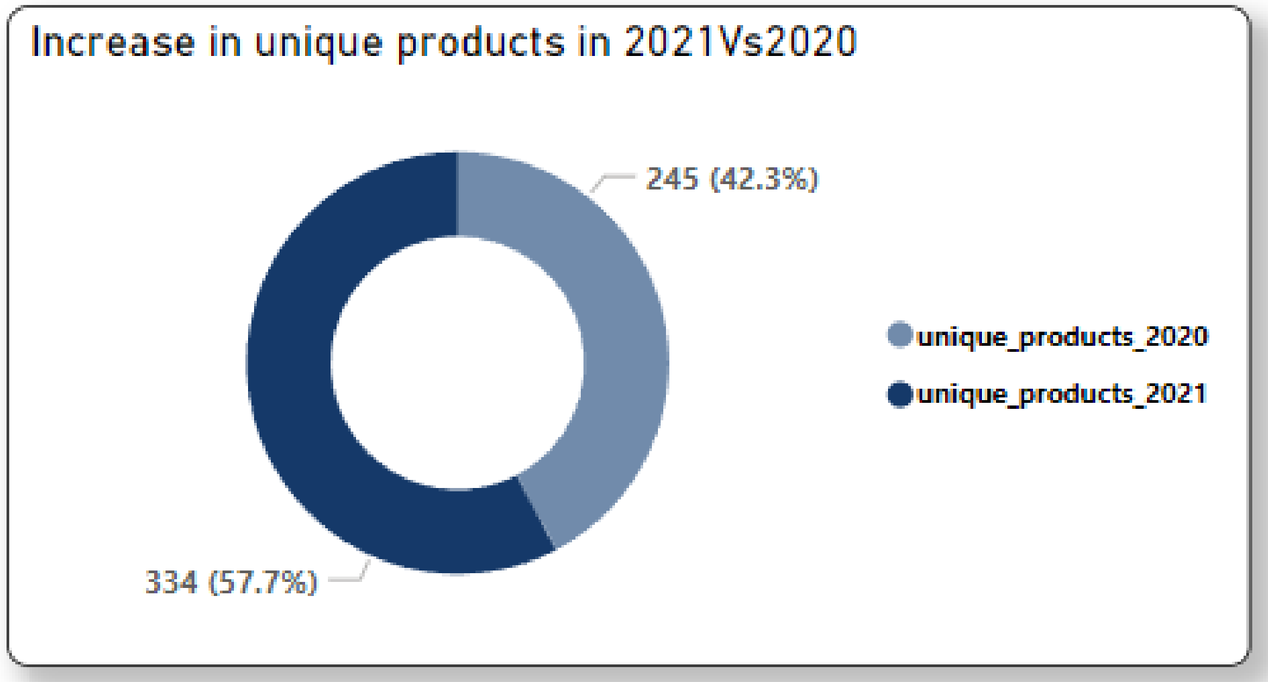
SQL Query :

```sql
# Using CTE :
with CTE_1 as
    (select fiscal_year,
    count(distinct product_code) as unique_products_2020
    from fact_sales_monthly
    where fiscal_year = 2020),

CTE_2 as
    (select fiscal_year ,
    count(distinct product_code) as unique_products_2021
    from fact_sales_monthly
    where fiscal_year = 2021)

select
    CTE_1.unique_products_2020, CTE_2.unique_products_2021,
    round(((CTE_2.unique_products_2021 - CTE_1.unique_products_2020)*100/CTE_1.unique_products_2020),2)
as percentage_chg from CTE_1,CTE_2
```

Output :

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.3265

Duration / Fetch
2.735 sec / 0.000 sec



Insights :

- In 2021, there were 334 unique products, up from 245 in 2020. This is a 36.33% increase.

- This growth shows that the product range is expanding and attracting more customers, and potentially increasing sales and revenue. It's a sign that the business is growing and adapting well to market changes.

Question 3 :

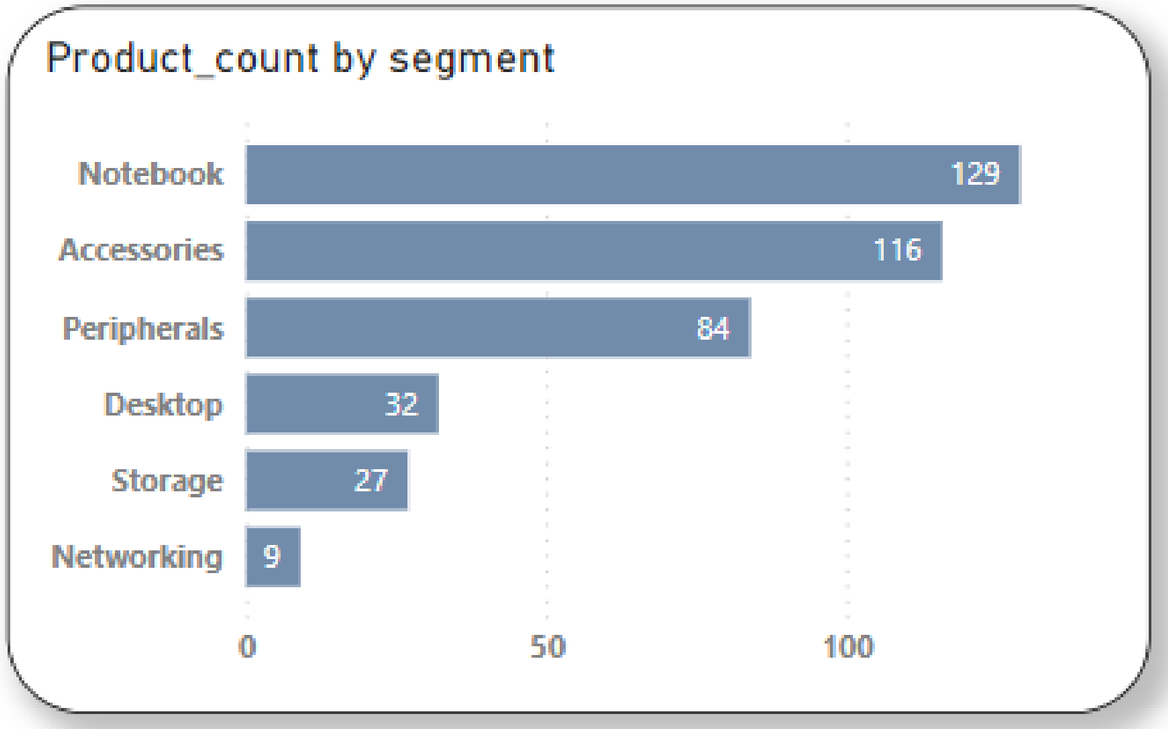
Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.
The final output contains 2 fields, segment, product_count

SQL Query :

```sql
select segment, count(distinct product_code) as product_count
from dim_product
group by segment
order by product_count desc;
```

Output :

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



Insights :

- Notebook and Accessories offer a wide range of options.
- Networking has fewer options.
- This variety helps meet different customer needs across segments.

Question 4 :

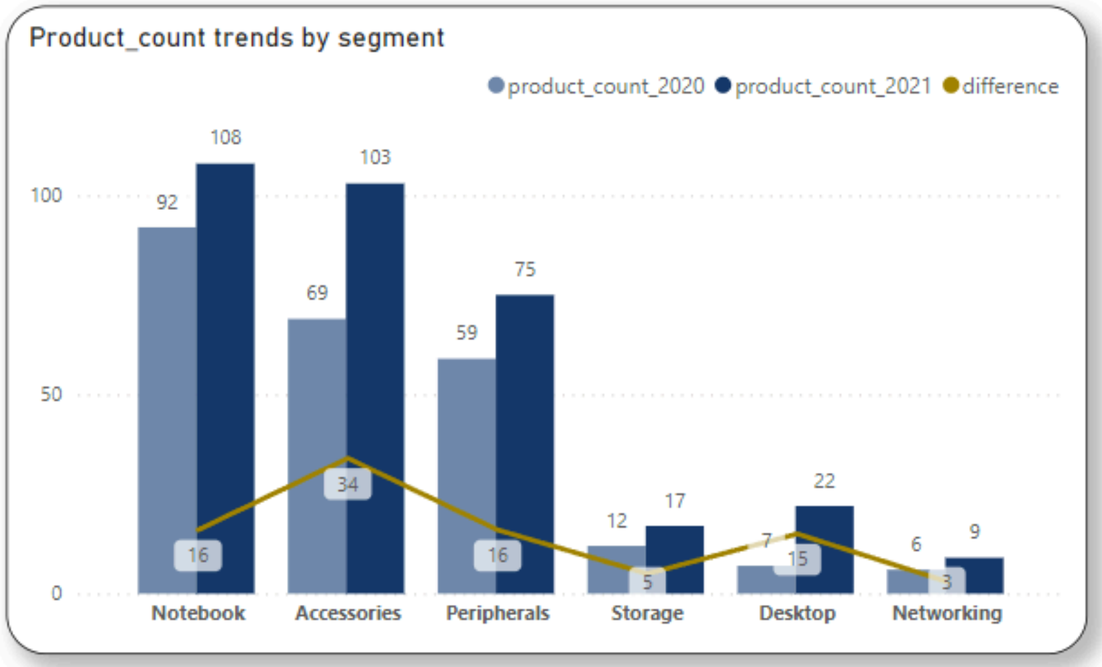
Follow-up: Which segment had the most increase in unique products in 2021 vs 2020? The final output contains these fields,
segment, product_count_2020, product_count_2021, difference.

SQL Query :

```
with x as
    (select p.segment,
    count(distinct s.product_code) as unique_products_2020
    from dim_product p
    join fact_sales_monthly s using(product_code)
    where fiscal_year = 2020 group by p.segment),

y as
    (select p.segment ,
    count(distinct s.product_code) as unique_products_2021
    from dim_product p
    join fact_sales_monthly s using(product_code)
    where fiscal_year = 2021
    group by p.segment)

select x.segment, unique_products_2020, unique_products_2021,
abs(x.unique_products_2020-y.unique_products_2021) as difference
from x join y on x.segment = y.segment
order by difference desc
```

Output :

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 Segment: Increased by 34 products in 2021 compared to 2020.
- Notebooks and Accessories segments are growing.
- This trend shows a strategy to meet more customer preferences.
- More product variety can improve market competitiveness and give customers more options.

Question 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 :

```
with highest_manu_cost as
    (select product_code, manufacturing_cost
    from fact_manufacturing_cost
    order by manufacturing_cost desc
    limit 1),
lowest_manu_cost as
    (select product_code, manufacturing_cost
    from fact_manufacturing_cost
    order by manufacturing_cost asc
    limit 1)

select p.product, hc.product_code, hc.manufacturing_cost
from highest_manu_cost hc
join dim_product p on hc.product_code = p.product_code
union all
select p.product, lc.product_code, lc.manufacturing_cost
from lowest_manu_cost lc
```

Output :

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

product_code	product	Sum of manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	240.54
A2118150101	AQ Master wired x1 Ms	0.89
Total		**241.43**

Insights :

- AQ HOME Allin Gen 2 has a relatively higher manufacturing cost of 240.54.
- In contrast, AQ Master wired x 1 Ms has a significantly lower manufacturing cost of 0.89.

Question 6 :

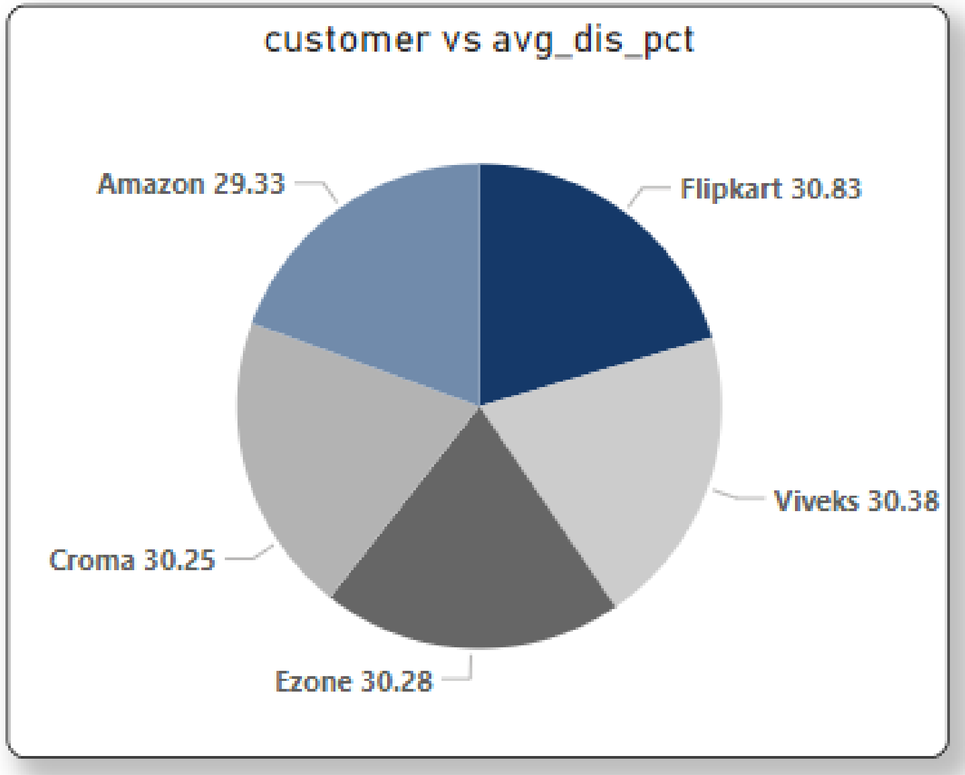
Generate a report which contains the top 5 customers who received an
average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market.
The final output contains these fields, customer_code, customer, average_discount_percentage.

SQL Query :

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

Output :

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



Insights :

- **Flipkart**: Highest average pre-invoice discount at 30.83%.
- **Amazon**: Lower average discount at 29.33%.
- Flipkart offers higher average discounts, potentially attracting cost-conscious shoppers.
- Amazon provides relatively lower discounts, indicating a different pricing strategy or a customer base less sensitive to discounts.
- These insights help in adjusting discount strategies and understanding customer preferences.

Question 7 :

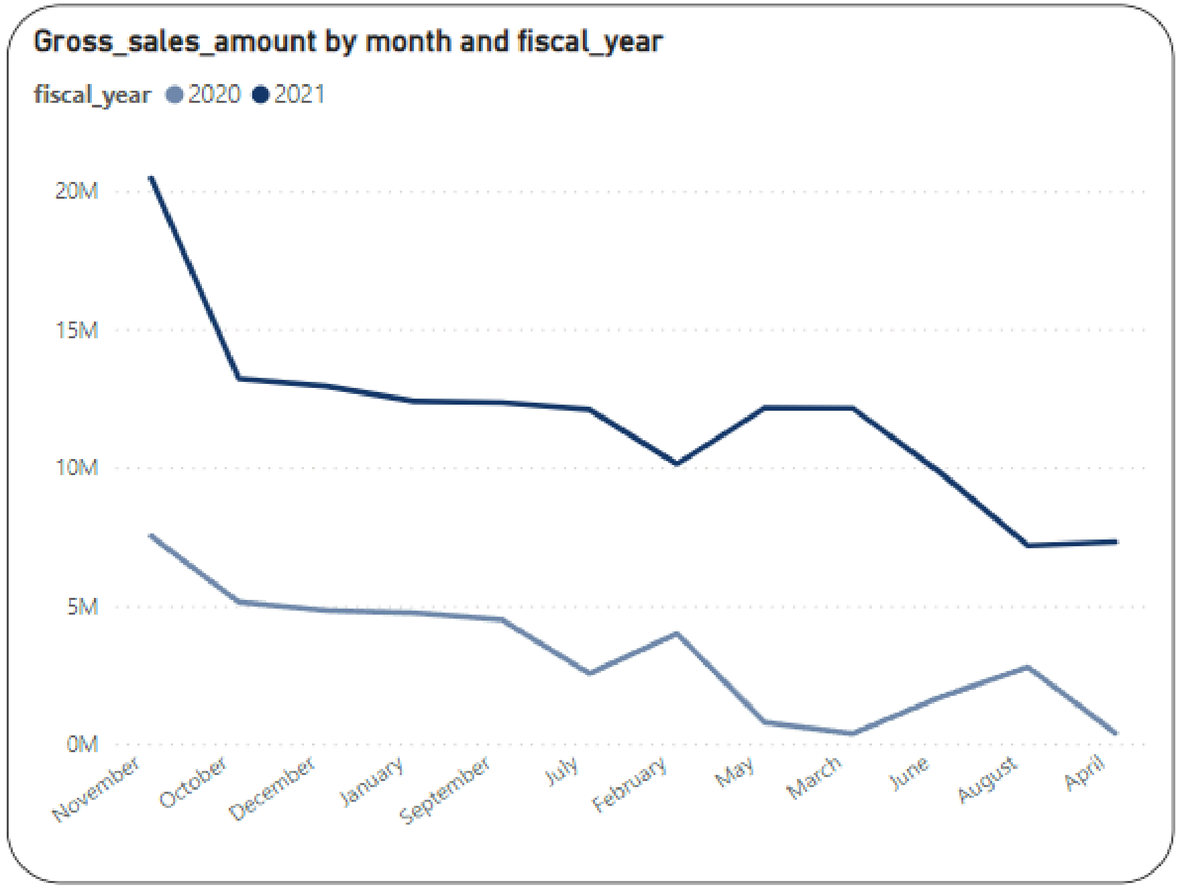
Get the complete report of the Gross sales amount for the customer “Atliq Exclusive” for each month . This analysis helps to get an idea of low and high-performing months and take strategic decisions. The final report contains these columns: Month ,Year ,Gross sales Amount.

SQL Query :

```sql
select monthname(s.date) as month, s.fiscal_year,
round(sum(g.gross_price*s.sold_quantity),2) as gross_sales_amount
from fact_sales_monthly s
join dim_customer c on c.customer_code = s.customer_code
join fact_gross_price g on g.product_code = s.product_code
and g.fiscal_year = s.fiscal_year
where customer = "Atliq Exclusive"
group by monthname(s.date) ,s.fiscal_year
order by s.fiscal_year;
```

Output :

month	fiscal_year	gross_sales_amount
September	2020	4496259.67
October	2020	5135902.35
November	2020	7522892.56
December	2020	4830404.73
January	2020	4740600.16
February	2020	3996227.77
March	2020	378770.97
April	2020	395035.35
May	2020	783813.42
June	2020	1695216.60
July	2020	2551159.16
August	2020	2786648.26
September	2021	12353509.79
October	2021	13218636.20
November	2021	20464999.10
December	2021	12944659.65
January	2021	12399392.98
February	2021	10129735.57
March	2021	12144061.25
April	2021	7311999.95
May	2021	12150225.01
June	2021	9824521.01
July	2021	12092346.32
August	2021	7178707.59



Insights :

- November 2021 had the highest gross sales.
- The fiscal year 2021 started with lower sales in September but saw a significant peak in November.
- Notable seasonality, with November consistently being a strong sales month.
- March and April in fiscal year 2020 had relatively low sales, but improved in fiscal year 2021.
- These insights can guide strategic decisions, such as focusing marketing efforts and inventory planning around the peak sales month and addressing potential challenges during lower sales months.

Question 8 :

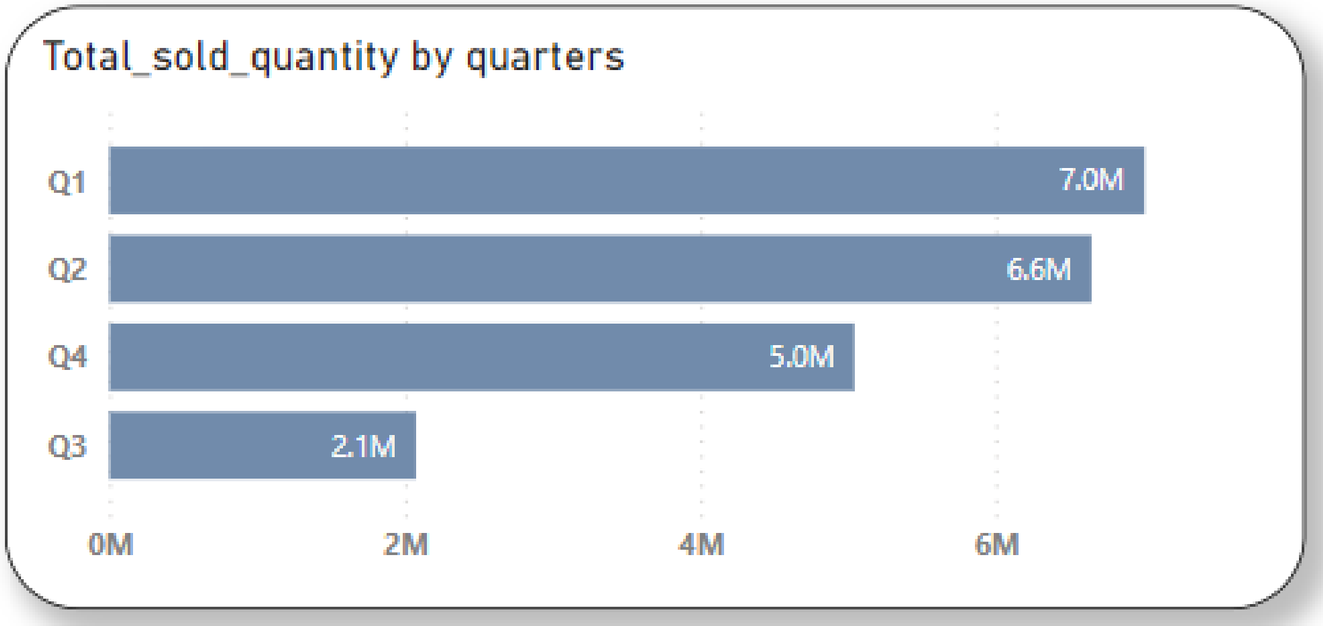
In which quarter of 2020, got the maximum total_sold_quantity?
The final output contains these fields sorted by the total_sold_quantity, Quarter, total_sold_quantity.

SQL Query :

```sql
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'
    else 'Q4'
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;
```

Output :

quarters	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087



Note :
Q1 (sep, oct, nov)
Q2 (Dec, Jan, Feb)
Q3(Mar, Apr, May)
Q4 (June, July, Aug)

Insights :

- The highest total quantity sold is in Q1, with 7,005,619 units.
- Sales show a seasonal pattern, with Q1 and Q2 having the highest sales and Q3 having the lowest.
- This information is useful for planning inventory and marketing strategies to match seasonal demand.

Question 9 :

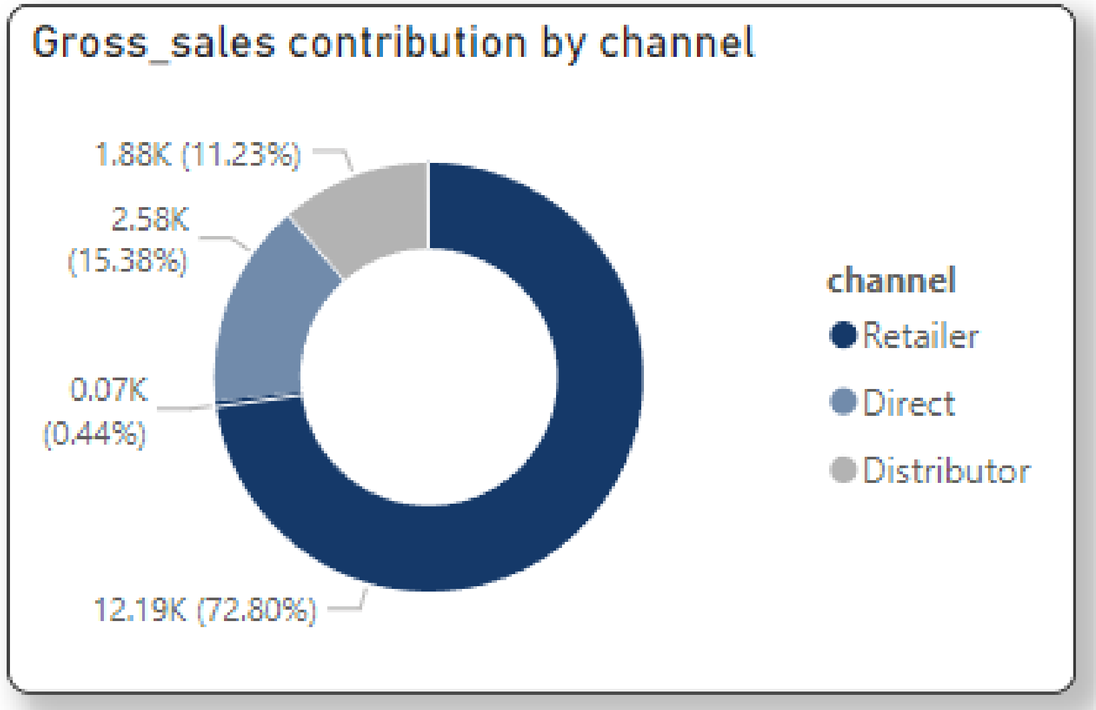
Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields,
Channel, gross_sales_mln ,percentage .

SQL Query :

```
WITH x as
    (select c.channel,
    round(sum(g.gross_price*s.sold_quantity)/100000,2) as gross_sales_mln
    from fact_sales_monthly s
    join dim_customer c on c.customer_code = s.customer_code
    join fact_gross_price g on g.product_code = s.product_code
    and g.fiscal_year = s.fiscal_year
    where s.fiscal_year = 2021
    group by c.channel)
    select channel, gross_sales_mln,
    round(gross_sales_mln/(select sum(gross_sales_mln) from x)*100,2)
    as percentage from x
    order by gross_sales_mln desc;
```

Output :

channel	gross_sales_mln	percentage
Retailer	12190.82	73.23
Direct	2575.32	15.47
Distributor	1880.26	11.30



Insights :

- The Retailer channel contributes 73.22% of gross sales, making it the primary revenue driver.
- The Direct channel accounts for 15.47% of gross sales.
- The Distributor channel makes up 11.30% of gross sales.
- This focus on the Retailer channel highlights its importance in overall sales.
- Opportunities for diversification and growth may be found in the Direct and Distributor channels to further maximize sales.

Question 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 :

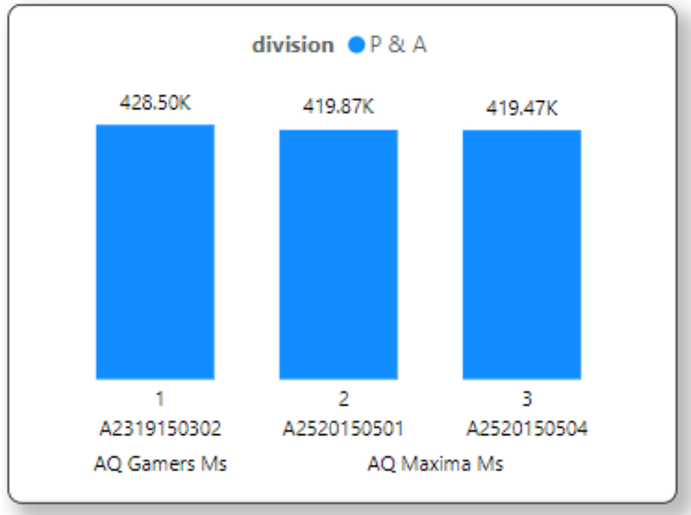
```sql
WITH RankedProducts AS (
    SELECT p.division, p.product_code, p.product,
        SUM(s.sold_quantity) AS total_sold_quantity,
        ROW_NUMBER() OVER (PARTITION BY p.division
        ORDER BY SUM(s.sold_quantity) DESC) AS rank_order
    FROM dim_product p
    JOIN fact_sales_monthly s using(product_code)
    WHERE s.fiscal_year = 2021
    GROUP BY
    p.division, p.product_code, p.product
)
SELECT division, product_code, product, total_sold_quantity,
rank_order
FROM RankedProducts
WHERE rank_order <= 3
ORDER BY division, rank_order;
```

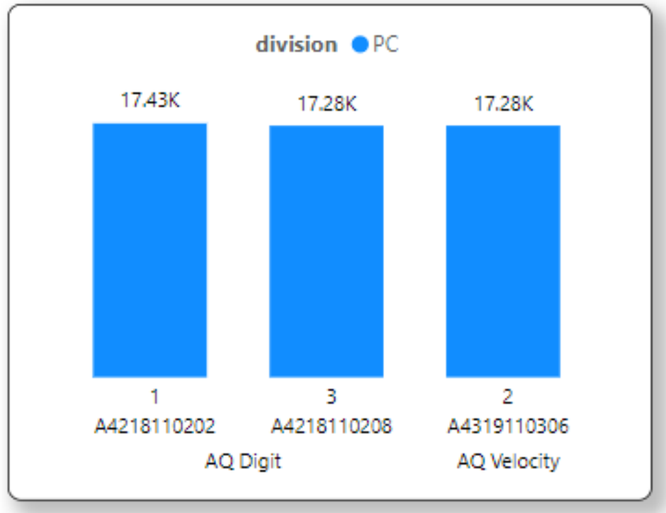
Output :

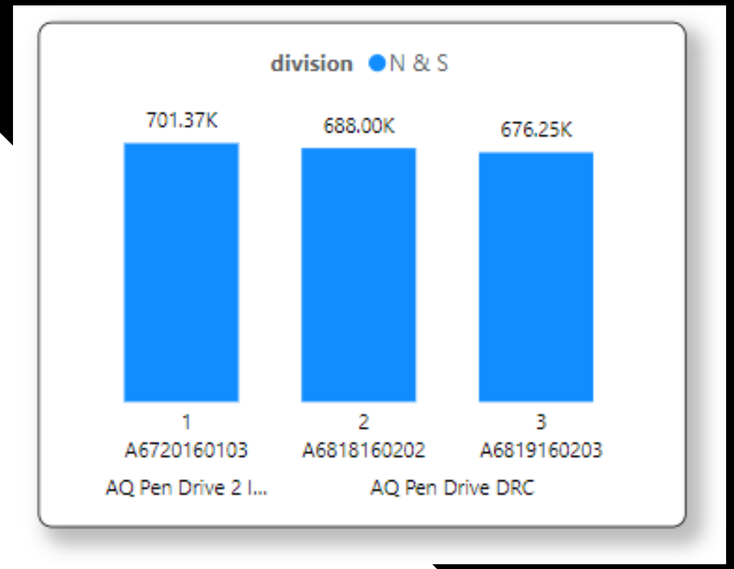
division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima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

Insights :

- The best-selling product in the “PC” division is AQ Digit , with two variants followed by AQ velocity.
- The division specializes in PC-related products, indicating a focus on the computing niche.
- Effficient inventory management is essential to meet customer demand.
- Ongoing branding and marketing efforts are important to maintain success.







Tools Used

MySql

Used for managing and analyzing large datasets with complex queries.

Power BI

Power BI

Utilized for creating visualization

Thank you