Ad-Hoc Insights Consumer goods

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Dataset and model

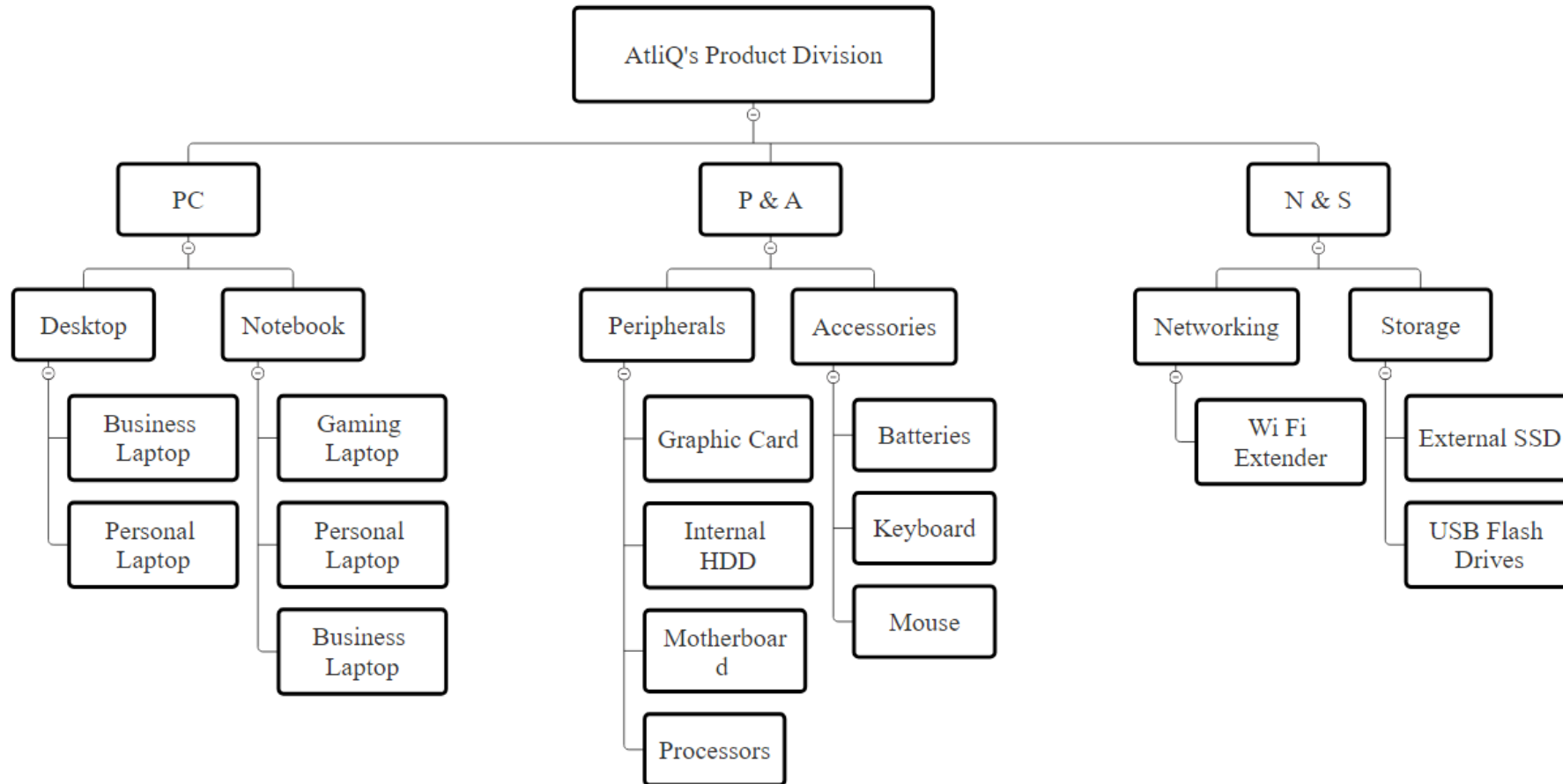Ad-hoc requests, outputs and insights

Recommendations

Company Overview

- AtliQ Hardwares (imaginary company) is one of the leading computer hardware producers in India and well expanded in other countries too.

Markets

Product Line

Problem Statement

Management noticed a lack of insights for quick, smart data-informed decisions.

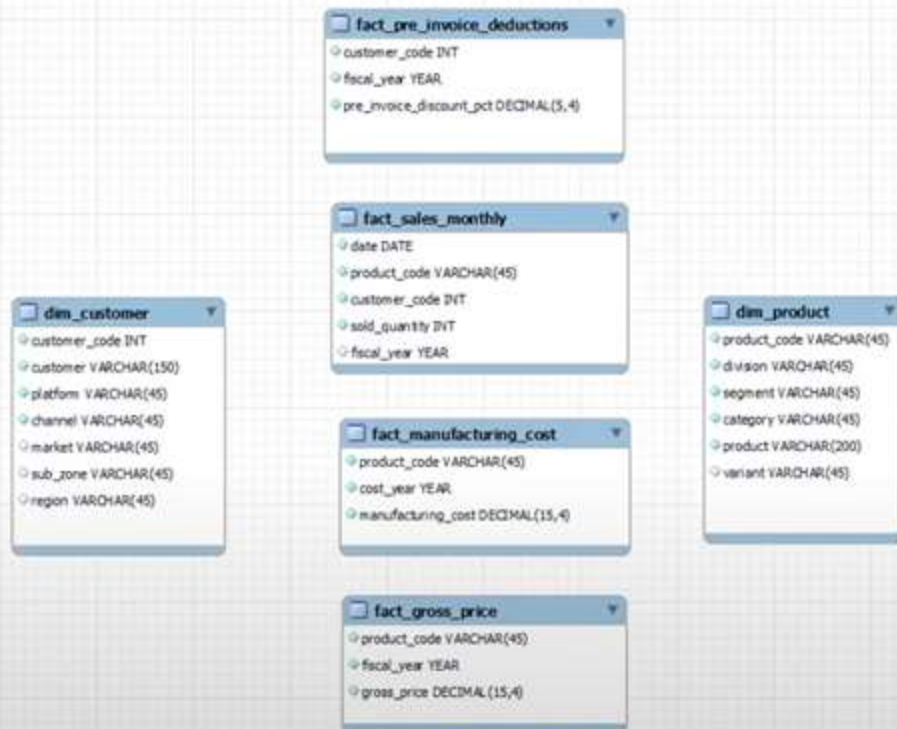Decision made to expand the data analytics team with several junior data analysts.

Tony Sharma, the data analytics director, seeks candidates with strong tech and soft skills.

To evaluate these skills, Tony decided to conduct a SQL challenge.

Data Sets

Ad-hoc requests , output and insights

Request 1 :

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

Input :

```
select
        distinct market
    from dim_customer
    where customer = "AtliQ exclusive"
    and
    region = "APAC"
    ;
```

Output :

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Insight :

In the APAC Region Most Gross sales are coming from INDIA and Least sales are coming from JAPAN

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

Input :

```
with cte1 as (
select count(distinct product_code) as unique_product_2020
from fact_sales_monthly
where fiscal_year = 2020
),
cte2 as (
select count(distinct product_code) as unique_product_2021
from fact_sales_monthly
where fiscal_year = 2021
)
select
    unique_product_2020,
    unique_product_2021,
    (unique_product_2021-unique_product_2020)*100/unique_product_2020 as pct_change
from cte1
cross join cte2
;
```

Output :

unique_products_2021	unique_products_2020	percentage_chg
334	245	36.33

Sum of unique_products_2020 ● Sum of unique_products_2021
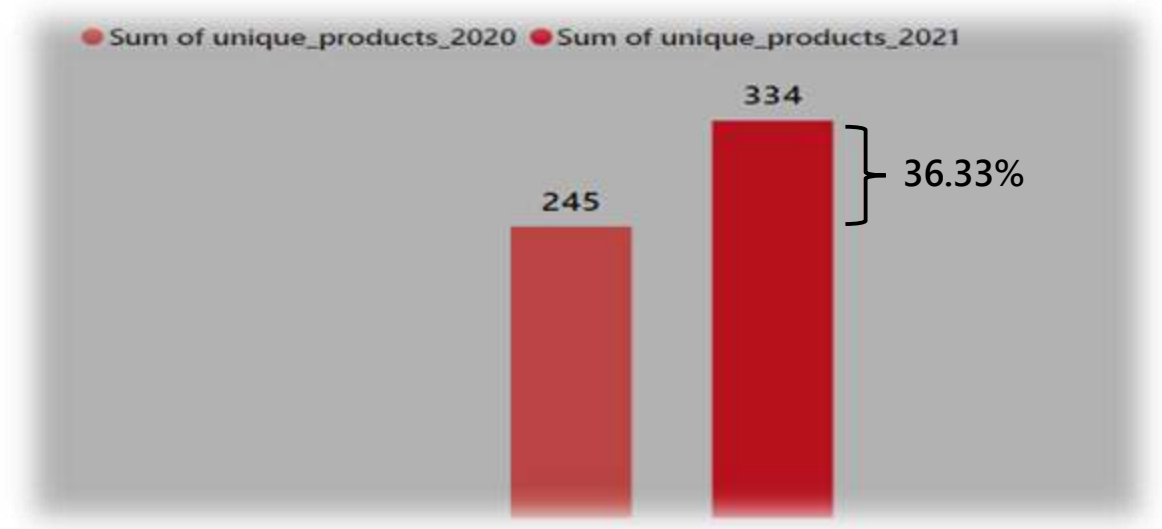
Insight :

The Increase was 36.33%, So we can say that the demand and production both increased in the Fiscal Year 2021

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

Input :

```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
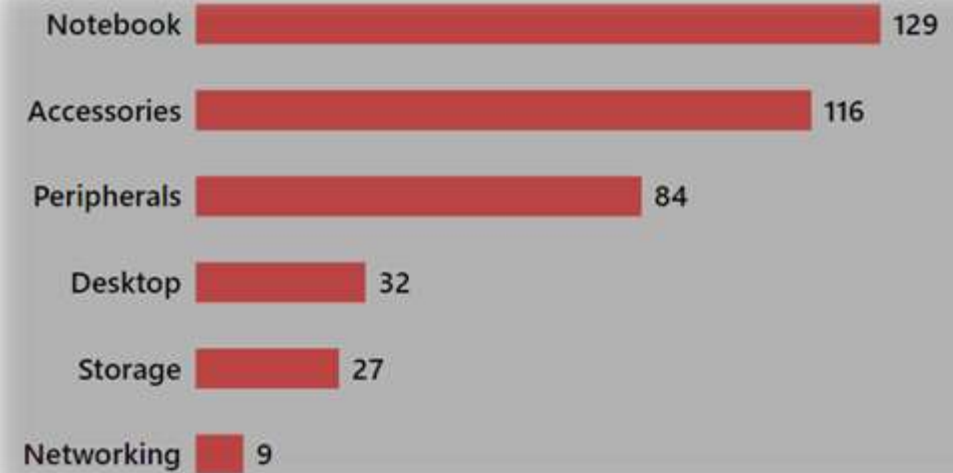
Insight :

1. AtliQ shines in Notebooks, Accessories, and Peripherals segment, accounting for a whopping 82.87% of product variety.

2. Desktops, Storage, and Networking currently hold a minor share (17.13%) of AtliQ's product portfolio.

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

Input :

```sql
with unique_products as(
    select
        p.segment,
        count(distinct(case when fiscal_year = 2020 then s.product_code end)) as product_count_2020,
        count(distinct(case when fiscal_year = 2021 then s.Product_code end)) as product_count_2021
    from fact_sales_monthly s
    join dim_product p
        on s.product_code = p.product_code
    group by p.segment
    )
select
    *,
    product_count_2021-product_count_2020 as difference
from unique_products
order by difference desc
;
```

Output :

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
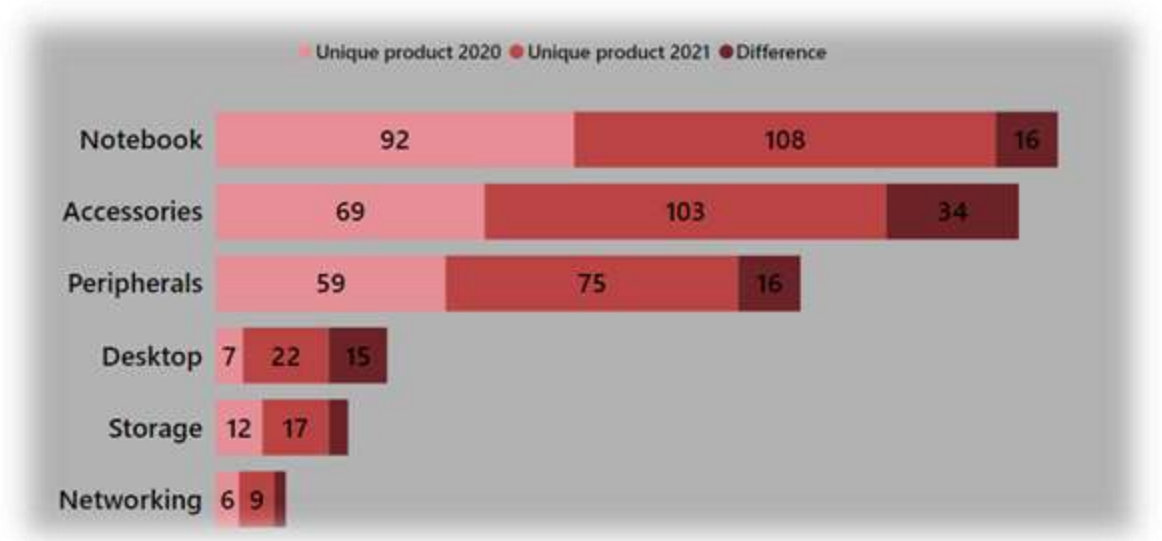
Insight :

1. Production and Demand both increased for the Segments of Accessories and Notebook.
2. Storage and Networking didn't show any effective growth.

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

Input :

```sql
(select
    p.product_code,
    p.product,
    m.manufacturing_cost
from dim_product p
join fact_manufacturing_cost m
    on p.product_code = m.product_code
order by m.manufacturing_cost desc
limit 1)
union
  (select
    p.product_code,
    p.product,
    m.manufacturing_cost
from dim_product p
join fact_manufacturing_cost m
    on p.product_code = m.product_code
order by m.manufacturing_cost asc
limit 1)
;
```

Output :

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

Highest Manufacturing Cost Product

$240.54
Personal Desktop
(A6120110206)
AQ Home Allin 1
Gen 2

$0.89
Mouse
(A2118150101)
AQ Master wired
x1 Ms

Lowest Manufacturing Cost Product

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

Input :

```sql
with cte1 as(
SELECT
      *
from fact_pre_invoice_deductions
join dim_customer c
    using (customer_code)
where fiscal_year = 2021
and c. market = 'india'
)
select
   customer_code,
   customer,
   concat(round(avg(pre_invoice_discount_pct)*100,2),"%") as avg_discount_pct
from cte1
group by customer_code, customer
order by avg(pre_invoice_discount_pct)*100 desc
limit 5
;
```

Output :

customer_code	customer	avg_discount_pct
90002009	Flipkart	30.83%
90002006	Viveks	30.38%
90002003	Ezone	30.28%
90002002	Croma	30.25%
90002016	Amazon	29.33%
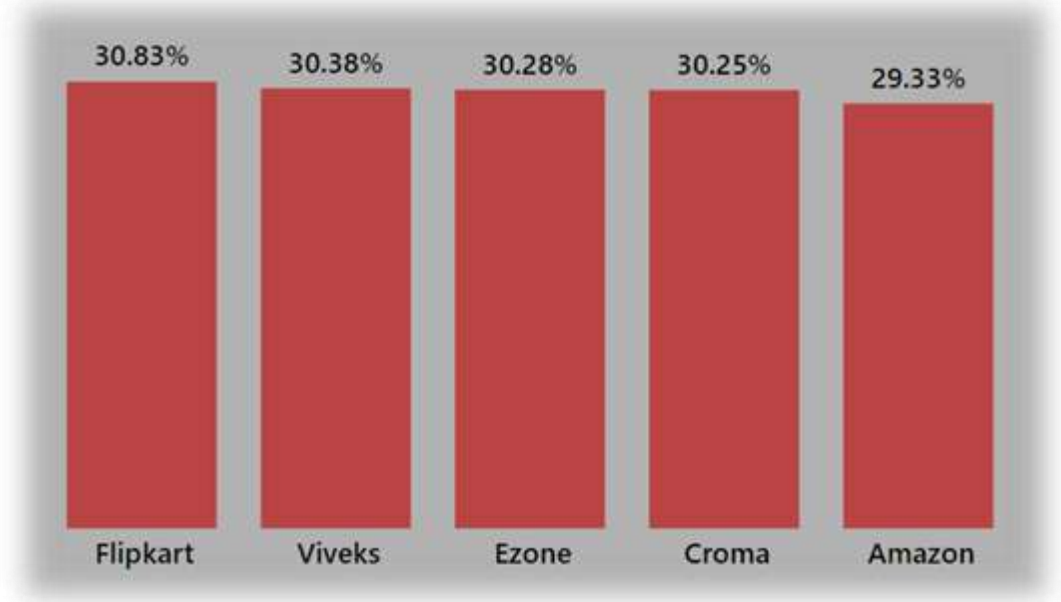
Insight :

1. The Maximum average pre-invoice discount was given to Flipkart.
2. The least average pre-invoice discount was given to Amazon.

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

Input :

```sql
Select
    monthname(s.date) as Month ,
    s.fiscal_year as Year,
    round(sum(sold_quantity*gross_price),2) as Gross_sales_mln
from fact_sales_monthly s
join fact_gross_price g
    on s.product_code = g.product_code
join dim_customer c
    on s.customer_code = c.customer_code
where customer = "AtliQ Exclusive"
group by month, year
order by year asc
;
```

Output :

Month	Year	Gross_sales
► September	2020	9.09
October	2020	10.38
November	2020	15.23
December	2020	9.76
January	2020	9.58
February	2020	8.08
March	2020	0.77
April	2020	0.80
May	2020	1.59
June	2020	3.43
July	2020	5.15
August	2020	5.64
September	2021	19.53
October	2021	21.02
November	2021	32.25
December	2021	20.41
January	2021	19.57
February	2021	15.99
March	2021	19.15
April	2021	11.48
May	2021	19.20
June	2021	15.46
July	2021	19.04
August	2021	11.32

0.77
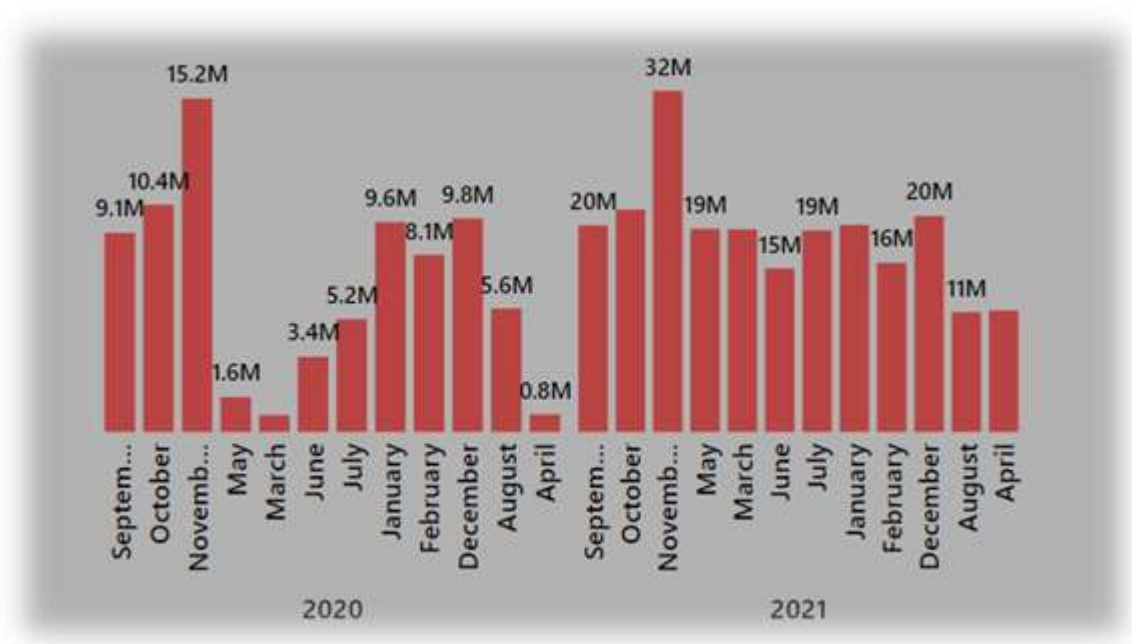
Insight :

1. March, April, May recorded the lowest sales in 2020, likely due to the COVID-19 pandemic. Sales began to recover after June 2020.

2. November generated the highest sales for 2020, with around 15.23 million.

3. Sales figures in 2021 show significant growth compared to 2020.

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

Input :

```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"
          when month (date) in (6,7,8) then "Q4"
      end) as Quarter,
      sum(sold_quantity) as total_sold_qty
    from fact_sales_monthly
    where fiscal_year = 2020
    group by Quarter
    order by total_sold_qty desc
    ;
```

Output :

Quarter	total_sold_qty
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087
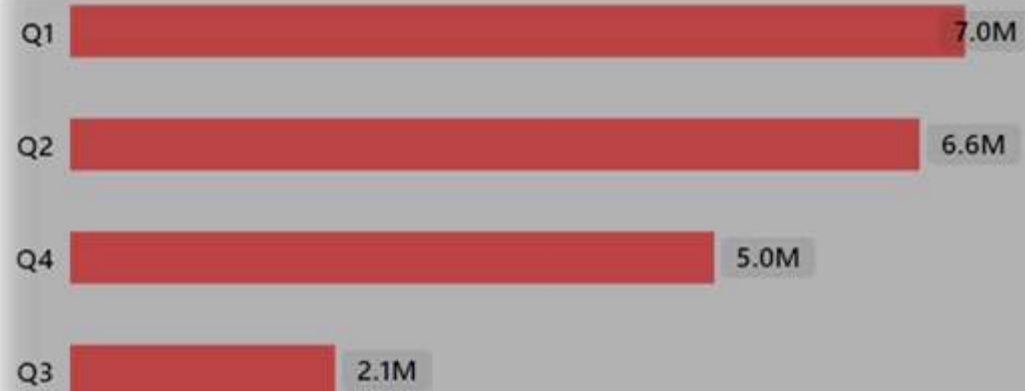
Insight :

1. Q1 (2020) saw the highest sales volume, reaching around 7 million units, indicating strong performance early in the year.

2. AtliQ experienced a significant decline in sales during Q3 (March, April, May) due to the COVID- 19 pandemic, reflecting challenging market conditions.
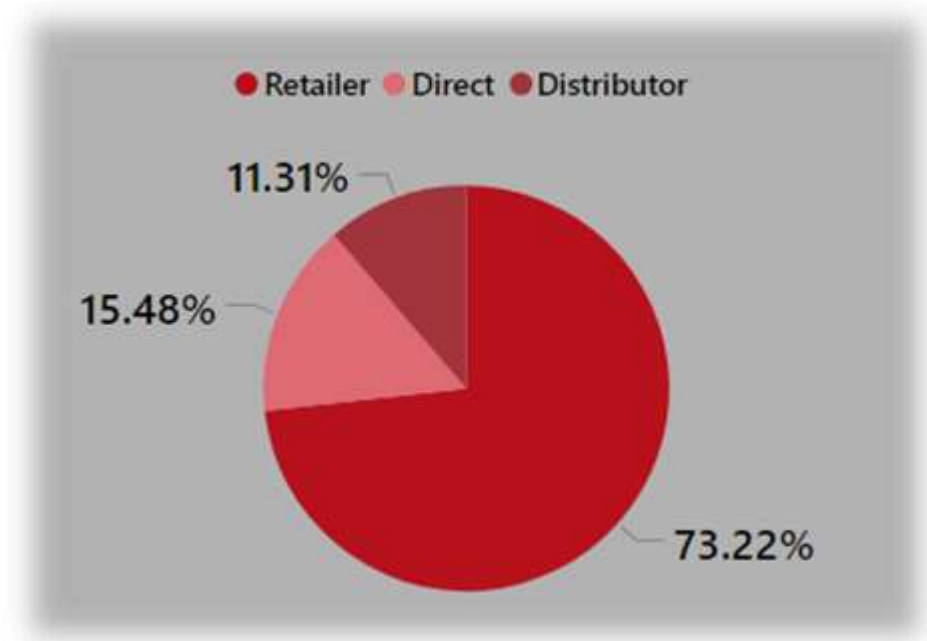
Request 9 :

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

Input :

```
with cte1 as (
        select
            c.channel,
            round(sum((s.sold_quantity*g.gross_price)/1000000),2) as gross_sales_mln
            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
    where s.fiscal_year = 2021
    group by c.channel
    )
    select
        *,
        concat(round(gross_sales_mln*100/ (select sum(gross_sales_mln) from cte1),2)," %") as pct_contribution
    from cte1
    order by pct_contribution desc
    ;
```

Output :

channel	gross_sales_mln	pct_contribution
Retailer	1924.17	73.22 %
Direct	406.69	15.48 %
Distributor	297.18	11.31 %

Insight :

1. The majority of AtliQ's sales come from retailers, accounting for a substantial 73.22% of the total gross sales.

2. Direct and distributor channel together contributes only 26.79% .

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

Input :

```sql
with cte1 as(
    select
        p.division,
        s.product_code,
        concat(p.product," (", p.variant,")") as product,
        sum(s.sold_quantity) as total_sold_qty,
        rank() over(partition by p.division order by sum(s.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 p.division, s.product_code, p.product
)
select
     *
from cte1
where rank_order in (1,2,3)
order by division, rank_order asc
;
```

Output :

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 :

1. In the N & S division, pen drives dominate the top three spots, showcasing their popularity and high sales performance.

2. The P & A division's top three products are exclusively mouse,

3. The PC division's bestsellers are all personal laptops.

Recommendations

1. Focus on desktops, Storage, and Networking segment

2. Emphasizes multi-channel marketing

3. Combine pricing strategies with attractive promotions.

4. Continuously improve based on customer feedback.

5. Invest in sales team training for improved performance.

Thank You!