Consumer Goods Ad_Hoc Insights

Codebasics Resume Project Challenge 4

Presented By : Kiran Kumar
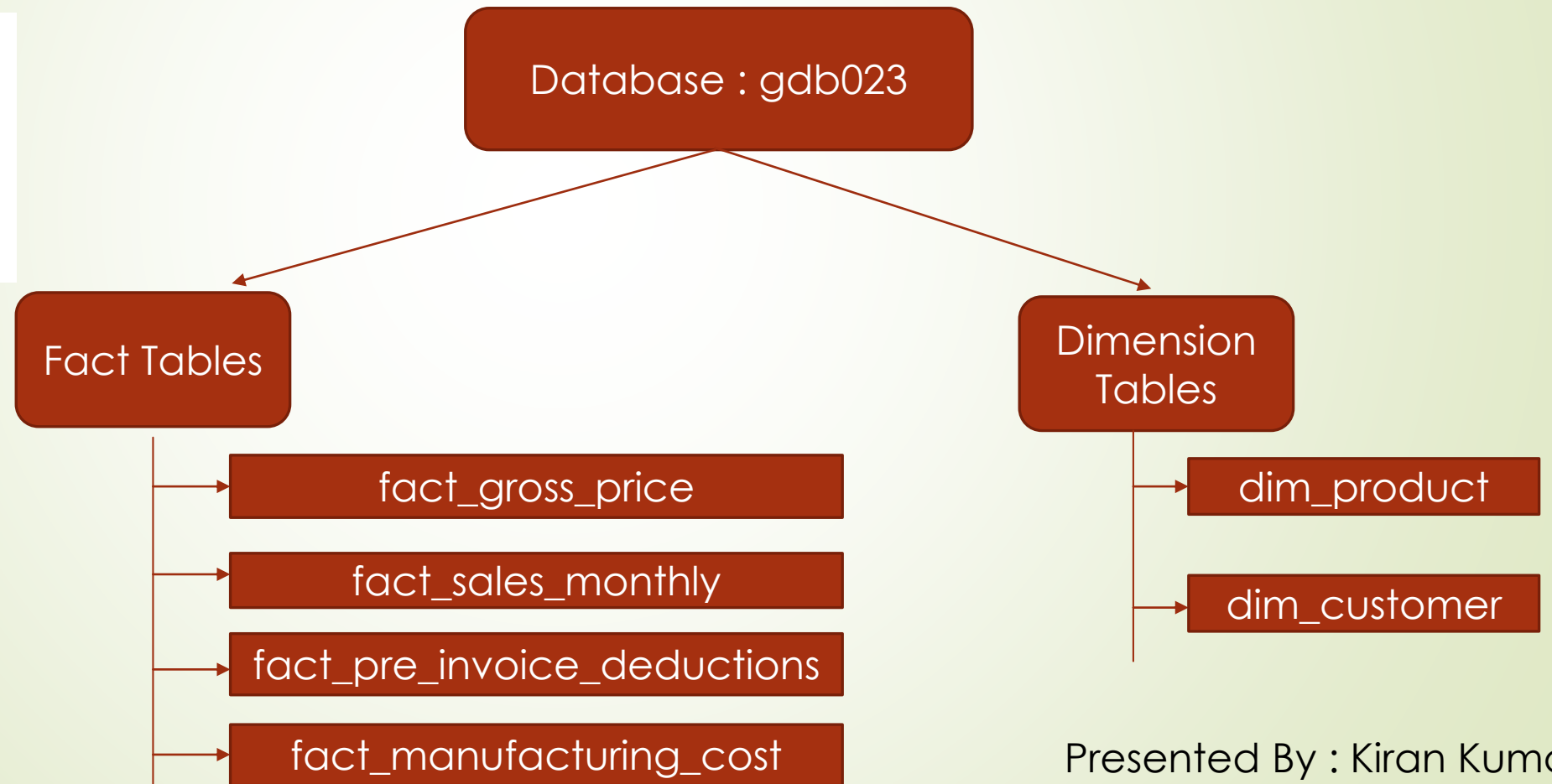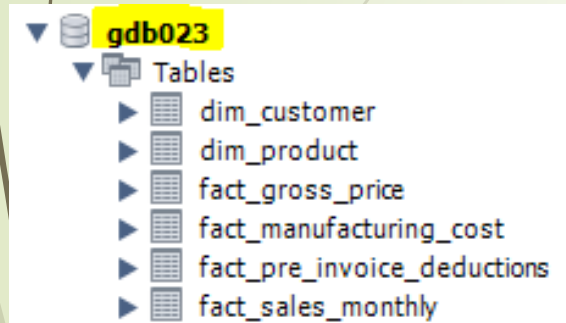
Problem Statement

➢ AtliQ Hardware's (an imaginary company) is one of the leading computer hardware producers in India and well expanded in other countries as well.

➢ However, the management noticed that they do not get enough insights to make quick and smart data-informed decisions. They want to expand their data analytics team by adding several junior data analysts.

➢ Tony Sharma, their data analytics director wanted to hire someone who is good at both tech and soft skills. Hence, he decided to conduct a SQL challenge which will help him understand both the skills.

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About the Project

> For our project, we will be working with a dataset that contains nearly 1 million records. Our prime focus will be on answering all ad-hoc requests using SQL queries.

gdb023

Tables
- dim_customer
- dim_product
- fact_gross_price
- fact_manufacturing_cost
- fact_pre_invoice_deductions
- fact_sales_monthly

Database : gdb023

Fact Tables

Dimension Tables

fact_gross_price

fact_sales_monthly

fact_pre_invoice_deductions

fact_manufacturing_cost

dim_product

dim_customer

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Ad_Hoc Request - 1

Question 1:

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

SQL Query

Output

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

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Query – 1 Visualization

market ● Australia ● Bangladesh ● India ● Indonesia ● Japan ● Newzealand ● Philiphines ● South Korea

Insights

➤ AtliQ Exclusive has a wide presence in the APAC region which includes countries such as India, Indonesia, Bangladesh, Australia, Japan, New Zealand, Philippines and South Korea.

➤ This expansive footprint underscores AtliQ Exclusive's strategic positioning and potential for growth within the diverse and dynamic APAC market.

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Ad_Hoc Request - 2

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 and percentage_chg.

Output

SQL Query

```
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 cte1.unique_products_2020, cte2.unique_products_2021,
round(((cte2.unique_products_2021-cte1.unique_products_2020)/cte1.unique_products_2020)*100,2)
as pct_chg from cte1, cte2;
```

| unique_products_2020	unique_products_2021	pct_chg
245	334	36.33

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Query – 2 Visualization

Unique Products 2020 Vs 2021

245

334

● unique_products_2020 ● unique_products_2021

Insights

➢ We can clearly see that there is a increase in the unique product count from FY 2020 to FY 2021.

➢ There is a increase of almost 36.33 % in unique product count which is a good sign for AtliQ Hardware.

➢ The rise in unique product count signifies AtliQ Hardware's commitment to diversifying its product portfolio.

➢ This growth can translate into increased brand visibility, customer loyalty, and market share for the company.
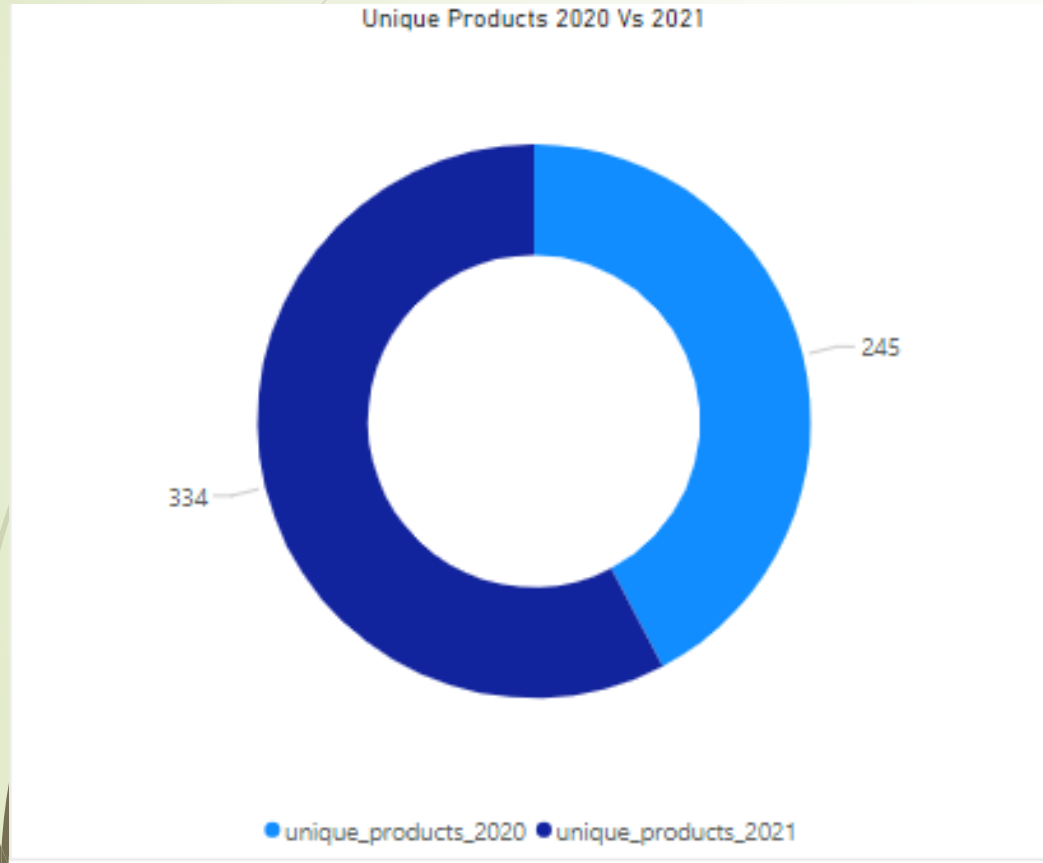
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Ad_Hoc Request - 3

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 and product_count.

SQL Query

Output

```
select distinct segment, count(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

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Query – 3 Visualization

Product code by segment

Insights

➢ "Notebook" segment has the highest product count with 129 products.

➢ At 129, Notebook was 1,333.33% higher than Networking, which had the lowest count of product at 9.

➢ By understanding how each segment contributes to the overall business, AtliQ Hardware can make informed decisions regarding resource allocation and strategic planning.
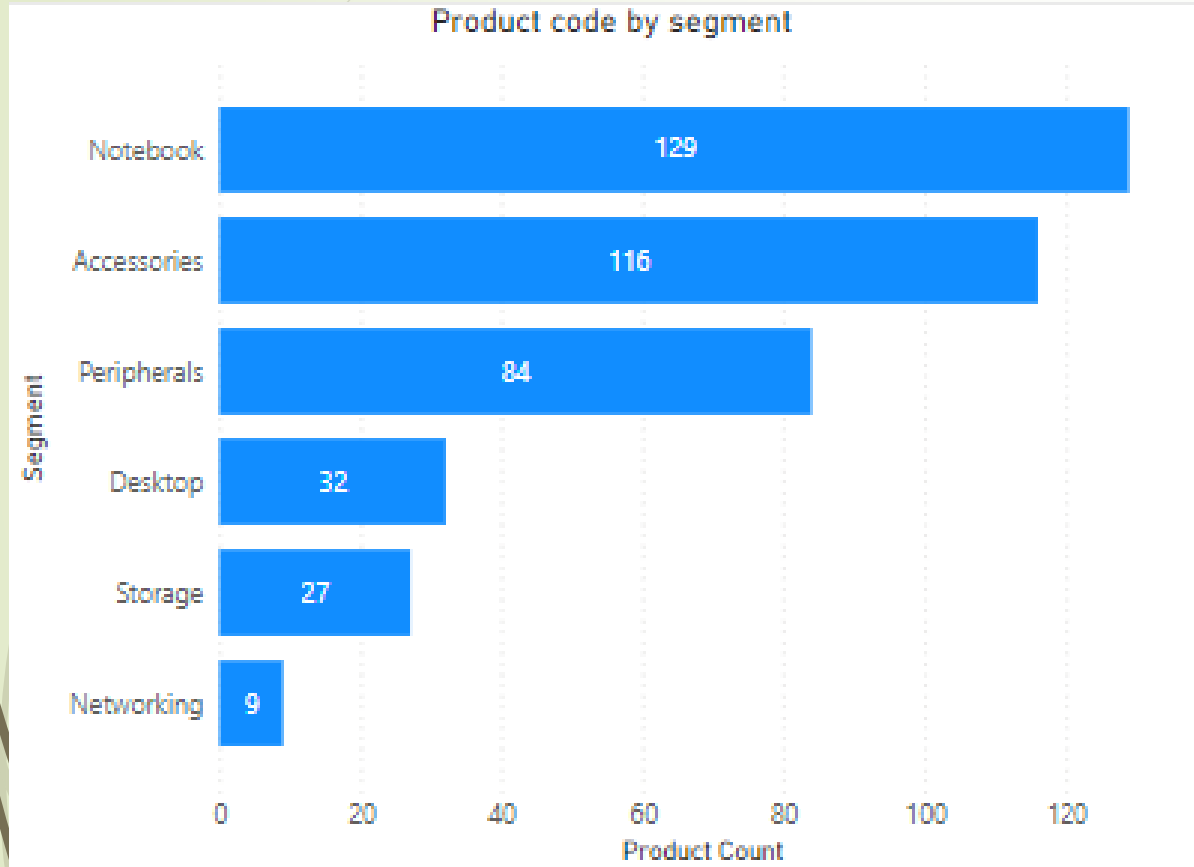
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Ad_Hoc Request - 4

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 and difference.

SQL Query

```
with cte1 as (
    select p.segment,
    count(distinct(case when fiscal_year = 2020 then f.product_code END)) as product_count_2020,
    count(distinct(case when fiscal_year = 2021 then f.product_code END)) as product_count_2021
    from dim_product p
    join fact_sales_monthly f
    on p.product_code = f.product_code
    group by p.segment
) select segment, product_count_2020, product_count_2021,
(product_count_2021-product_count_2020) as difference
from cte1 order by difference desc;
```
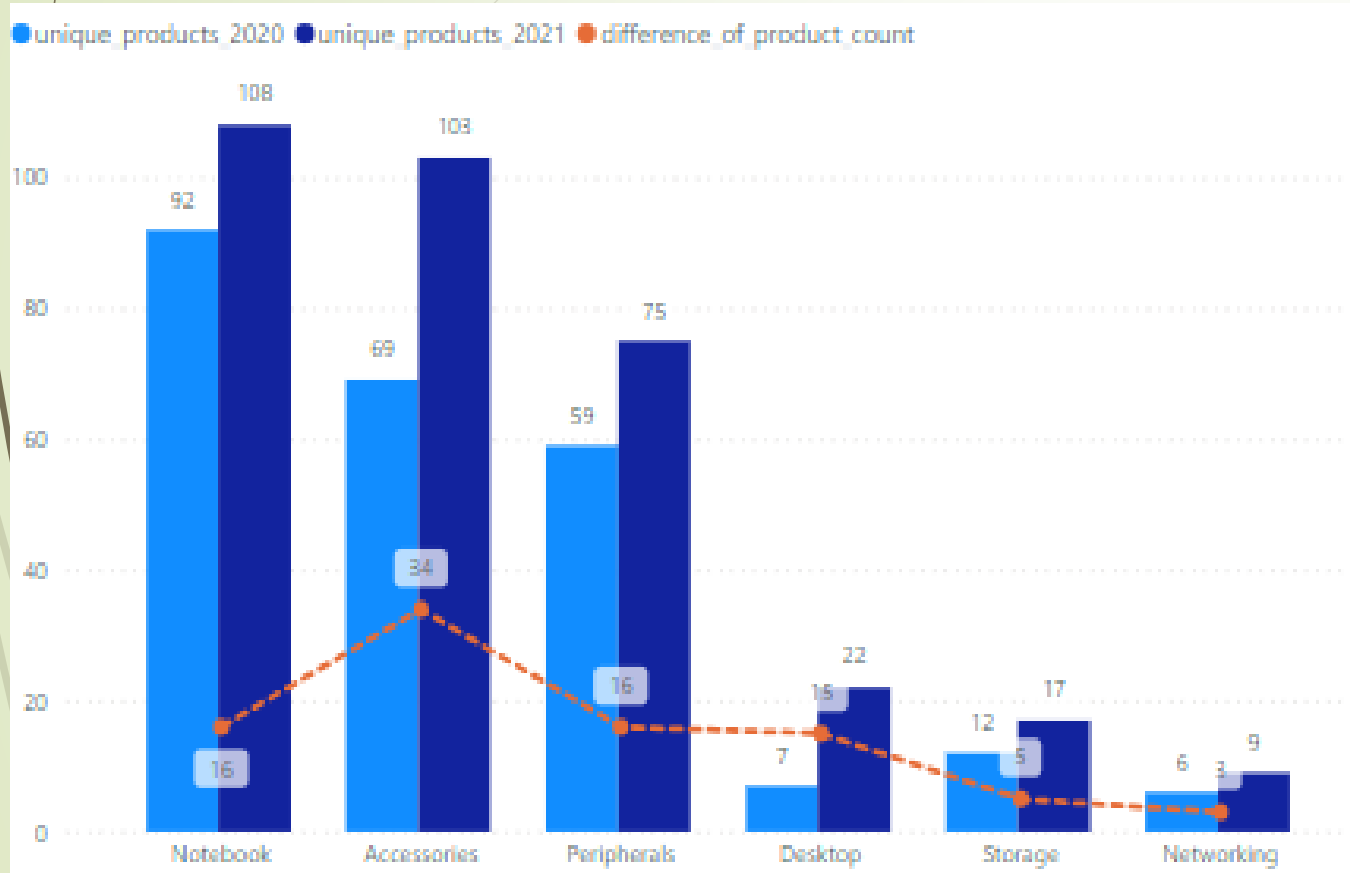
Output

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

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Query – 4 Visualization

Insights

➢ The "Accessories" category witnessed a significant increase in product count, with 34 more products added compared to FY 2020.

➢ In FY 2020, the "Notebook" category had the highest number of unique products at 92, marking a 1,433.33% increase over "Networking," which had the lowest unique products at 6.

➢ Overall, there was a consistent trend of increasing product diversity across various categories.

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Ad_Hoc Request - 5

Question 5:

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

SQL Query

```sql
select distinct p.product_code,p.product,f.manufacturing_cost from dim_product p
join fact_manufacturing_cost f
on p.product_code=f.product_code where f.manufacturing_cost IN(
    select max(manufacturing_cost) as max_cost from fact_manufacturing_cost
    union
    select min(manufacturing_cost) as min_cost from fact_manufacturing_cost
) order by manufacturing_cost desc;
```

Output

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

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Query – 5 Visualization

Product with highest manufacturing cost

$240.54
AQ HOME Allin1 Gen 2

Product with lowest manufacturing cost

$0.89
AQ Master wired x1 Ms

Insights

➢ The product "AQ HOME Allin1 Gen 2" has the maximum manufacturing cost with around $240.54.

➢ While the product "AQ Master wired x1 Ms" has the minimum manufacturing cost with around $0.89.

➢ Identifying products with high manufacturing costs, such as "AQ HOME Allin1 Gen 2" with $240.54, presents an opportunity for cost optimization initiatives. This could involve reassessing material sourcing, production processes, or supplier relationships to reduce expenses and improve profitability.

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Ad_Hoc Request - 6

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 and average_discount_percentage.

SQL Query

```sql
select c.customer_code,c.customer,round(avg(f.pre_invoice_discount_pct)*100,2) as avg_discount_pct

from dim_customer c join fact_pre_invoice_deductions f

on c.customer_code = f.customer_code where f.fiscal_year = 2021 and c.market = "India"

group by c.customer_code,c.customer order by avg_discount_pct 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

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Query – 6 Visualization

Avg discount pct of 5 top customers

27.53%
30.83%
30.38%
30.25%
30.28%

customer ● Flipkart ● Viveks ● Ezone ● Croma ● Vijay Sales

Insights

➢ "Flipkart" has the highest average pre-invoice discount with 30.83 %.

➢ While "Vijay Sales" has comparatively lower average discount percentage at 27.53%.

➢ This suggests that Flipkart may employ a competitive pricing strategy to attract customers by offering significant discounts on a wide range of products.
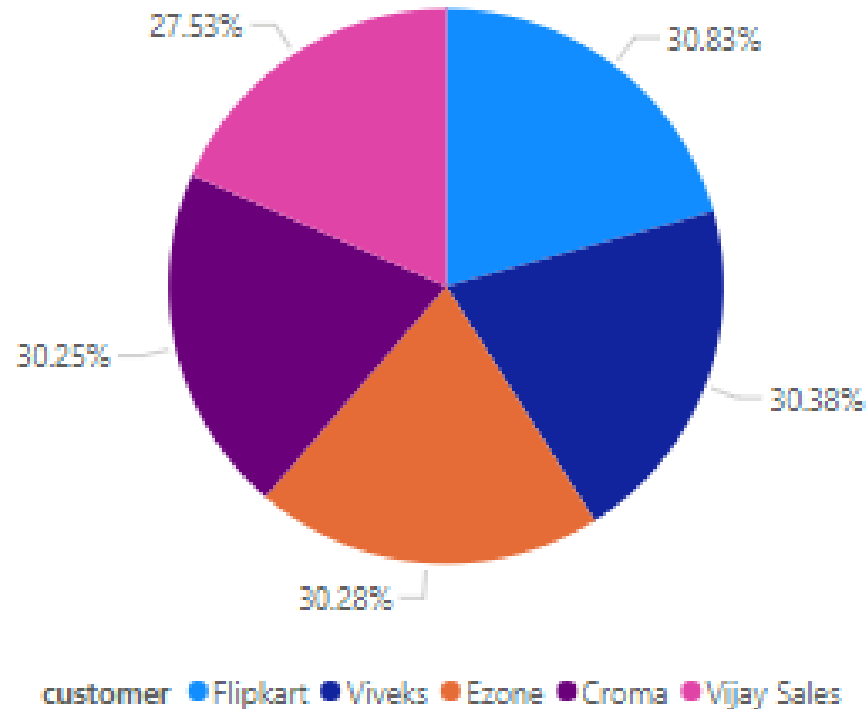
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Question 7:

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 and Gross sales Amount.

SQL Query

```sql
select monthname(f.date) as Month, f.fiscal_year,

round(sum((f.sold_quantity*g.gross_price)),2) as gross_price_total

from dim_customer c

join fact_sales_monthly f

on c.customer_code = f.customer_code

join fact_gross_price g

on f.product_code = g.product_code where c.customer = "Atliq Exclusive"

group by monthname(f.date),f.fiscal_year order by fiscal_year;
```

Output

Month	fiscal_year	gross_price_total
September	2020	9092670.34
October	2020	10378637.60
November	2020	15231894.97
December	2020	9755795.06
January	2020	9584951.94
February	2020	8083995.55
March	2020	766976.45
April	2020	800071.95
May	2020	1586964.48
June	2020	3429736.57
July	2020	5151815.40

Month	fiscal_year	gross_price_total
October	2021	21016218.21
November	2021	32247289.79
December	2021	20409063.18
January	2021	19570701.71
February	2021	15986603.89
March	2021	19149624.92
April	2021	11483530.30
May	2021	19204309.41
June	2021	15457579.66
July	2021	19044968.82
August	2021	11324548.34

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Query – 7 Visualization

Total gross sales in FY 2020

Total gross sales in FY 2021

Insights

➤ AtliQ Hardware witnessed approximately $32 million in FY 2021, specifically in the month of November, which marked the highest figure. Approximately $15 million was achieved in FY 2020 in the month of November.

➤ There is a steep decrease in gross sales in the months of March and April in both financial years.

➤ Identifying areas where operational processes can be optimized can lead to cost savings and enhanced competitiveness in the market.
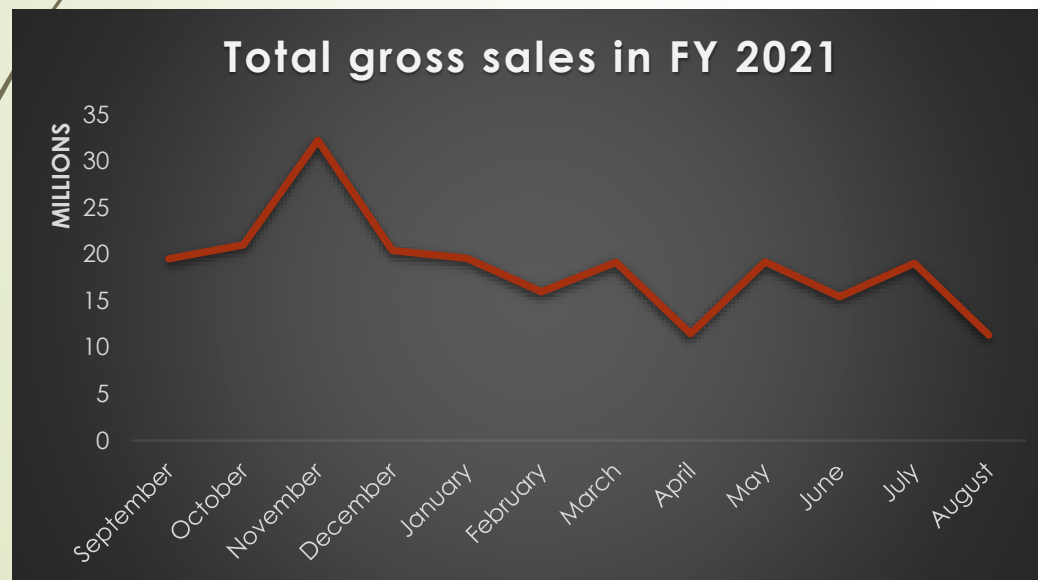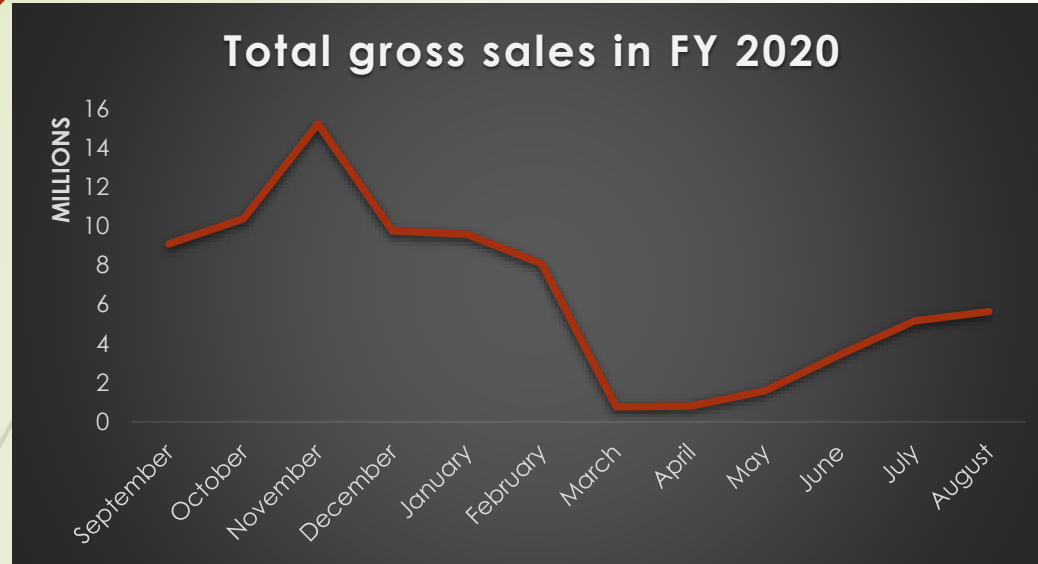
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Question 8:

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

SQL 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"
else "Q4"
end as Quarter,
sum(sold_quantity) as total_sales_qty
from fact_sales_monthly
where fiscal_year = 2020 group by Quarter
order by total_sales_qty desc;
```
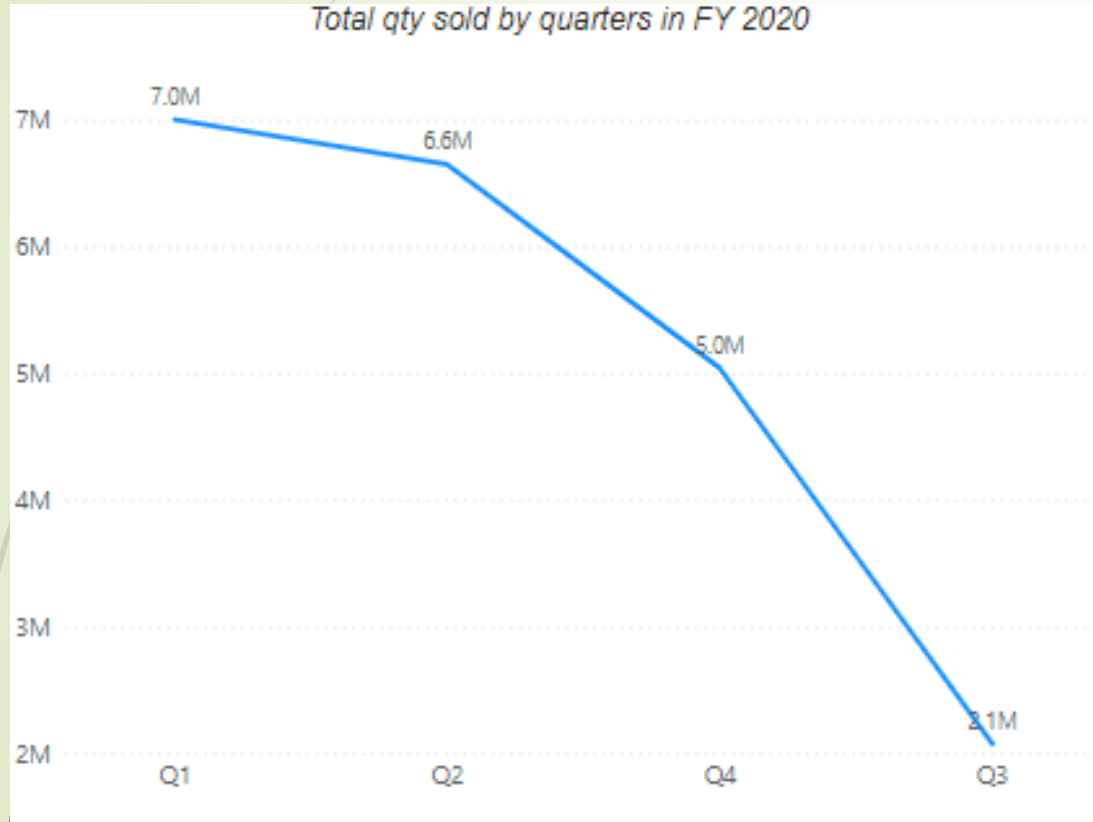
Output

Quarter	total_sales_qty
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

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Query – 8 Visualization

Total qty sold by quarters in FY 2020

Insights

➢ The maximum total quantity sold in fiscal year 2020 is in Quarter 1 with 7 million and the minimum quantity sold was in Quarter 3 with 2 millions.

➢ While Quarter 3 historically registers the lowest sales volume, it presents an opportunity for strategic intervention to bolster performance.

➢ This also suggests a degree of volatility in sales performance, with potential factors such as seasonal fluctuations, market dynamics, or internal operational factors.

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Ad_Hoc Request - 9

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 and percentage.

SQL Query

```
with cte1 as (select distinct c.channel,
round(sum((f.sold_quantity*g.gross_price)/1000000),2) as gross_sales_mln

from dim_customer c

join fact_sales_monthly f

on c.customer_code = f.customer_code

join fact_gross_price g

on g.product_code = f.product_code where f.fiscal_year = 2021

group by channel)

select channel, gross_sales_mln, round((gross_sales_mln)/(select sum(gross_sales_mln) from cte1)*100,2)

as gross_pct from cte1

group by channel

order by gross_sales_mln desc;
```

Output

channel	gross_sales_mln	gross_pct
Retailer	1924.17	73.22
Direct	406.69	15.48
Distributor	297.18	11.31

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Query – 9 Visualization

Gross price by channel

Insights

➤ The "Retailer" channel has accounted for the majority of the sales occupying almost 73% of gross sales.

➤ While the direct and distributor channel is occupying 15% and 11% of gross sales respectively.

➤ These insight enables businesses to optimize resource allocation, prioritize high-profit channels, and potentially reallocate resources from less profitable channels to maximize overall profitability.
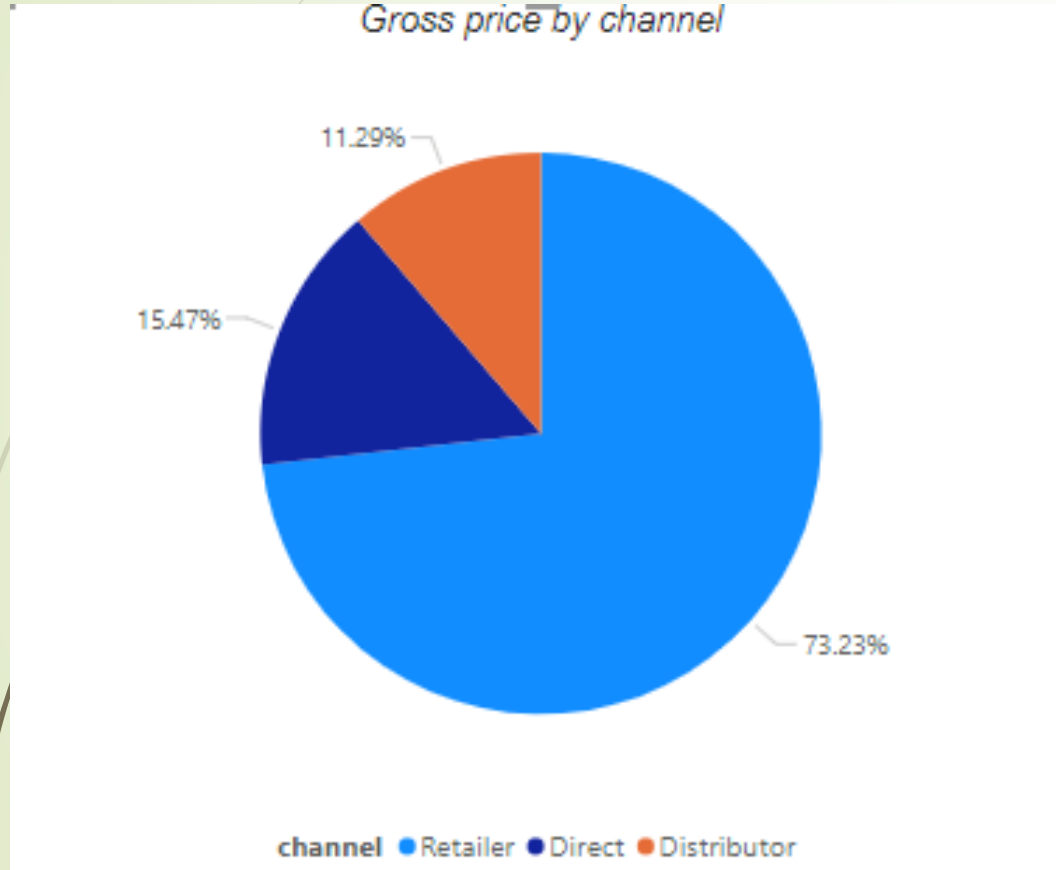
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Ad_Hoc Request - 10

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 and rank_order.

SQL Query

```sql
with x as (select distinct p.division, f.product_code, p.product, sum(f.sold_quantity) as total_sold_qty,
dense_rank() over(partition by division order by sum(f.sold_quantity) desc) as rank_
from dim_product p
join fact_sales_monthly f
on p.product_code = f.product_code
where f.fiscal_year = 2021 group by division, product_code, product)
select * from x where rank_ in (1,2,3) order by division, rank_;
```

Output

division	product_code	product	total_sold_qty	rank_
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

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Query – 10 Visualization

Top 3 sold products in N&S division

701373	688003	676245

710000
700000
690000
680000
670000
660000

AQ Pen Drive 2 IN 1   AQ Pen Drive DRC   AQ Pen Drive DRC

Top 3 sold products in P&A division

428498	419865	419471

430000
425000
420000
415000
410000

AQ Gamers Ms   AQ Maxima Ms   AQ Maxima Ms

Top 3 sold products in PC division

17434	17280	17275

17500
17400
17300
17200
17100

AQ Digit   AQ Velocity   AQ Digit

Insights

➢ AQ Pen Drive 2 in 1 (in N&S division)emerged as the best-selling item, followed by AQ Gamers Ms (in P&A division) and AQ Digit in (PC division).

➢ These products exhibit strong market demand and should be further analyzed for potential growth opportunities.

➢ Our efforts should focus on enhancing these products' value propositions to better align with consumer needs and preferences.
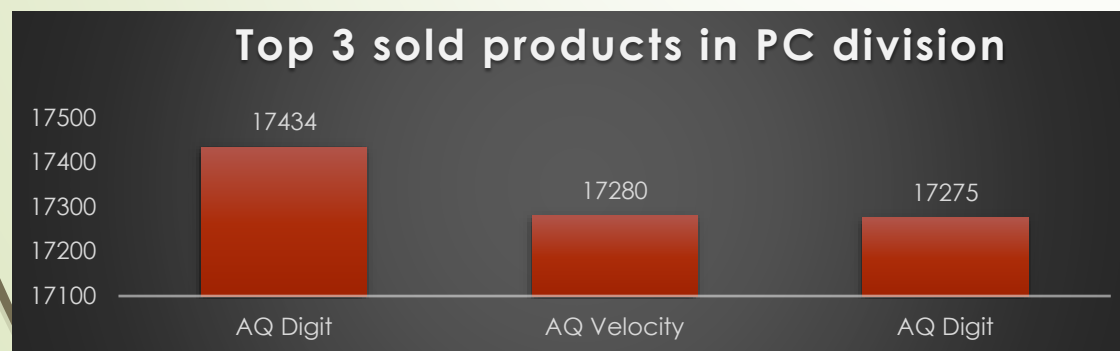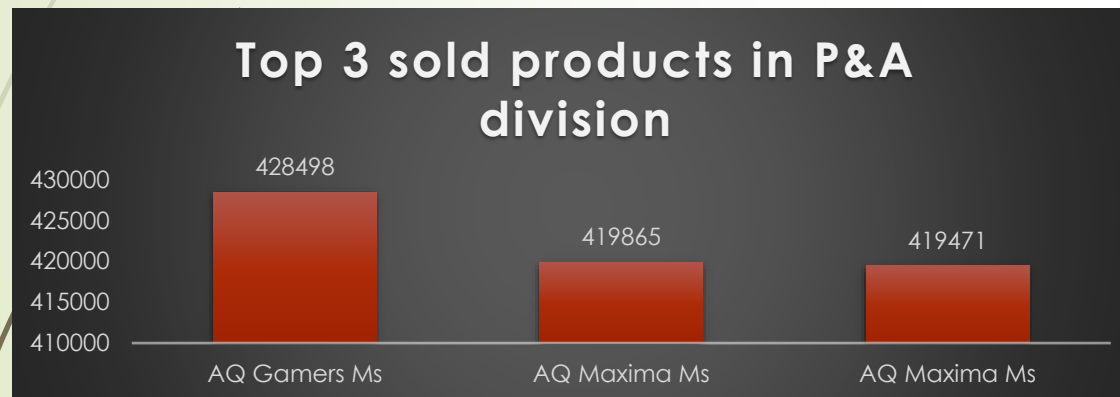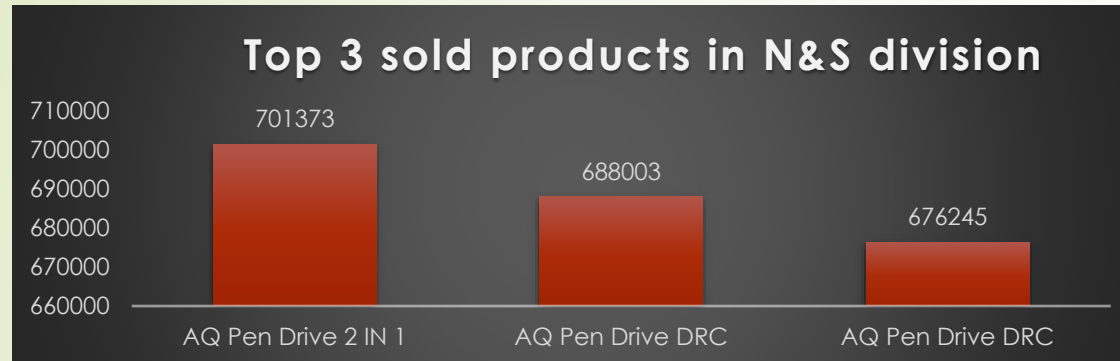
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