AtliQ Hardware business Insights

Domain: Consumer Goods   *Function: Executive Management*

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Problem Statement

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

However, the management noticed that they do not get enough insights to make quick and smart data-informed decisions.
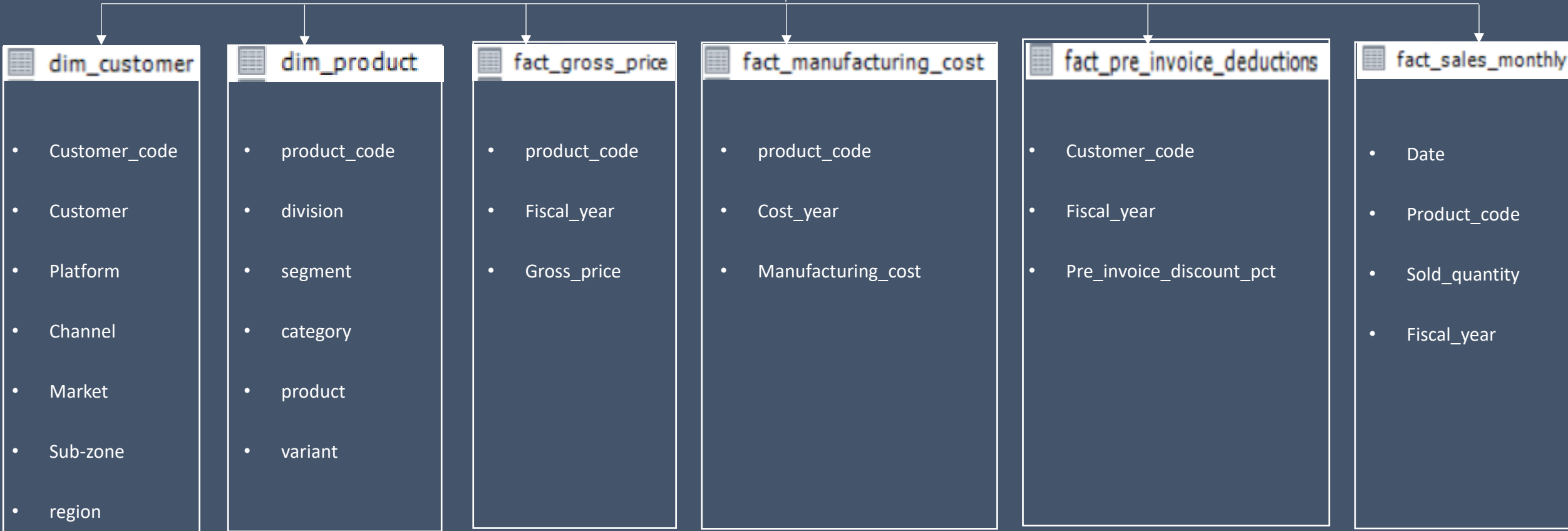
SQL database is provided to analyze and find answers of below Question:

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

2. What is the percentage of unique product increase in 2021 vs. 2020?

3. Provide a report with all the unique product counts for each segment.

4. Which segment had the most increase in unique products in 2021 vs 2020?

5. Get the products that have the highest and lowest manufacturing costs.

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

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.

8. In which quarter of 2020, got the maximum total_sold_quantity?

9. Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution?

10. Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021?

Input Data

SQL database file is provided
With below tables

atliq_hardware_db.sql

dim_customer

- Customer_code
- Customer
- Platform
- Channel
- Market
- Sub-zone
- region

dim_product

- product_code
- division
- segment
- category
- product
- variant

fact_gross_price

- product_code
- Fiscal_year
- Gross_price

fact_manufacturing_cost

- product_code
- Cost_year
- Manufacturing_cost

fact_pre_invoice_deductions

- Customer_code
- Fiscal_year
- Pre_invoice_discount_pct

fact_sales_monthly

- Date
- Product_code
- Sold_quantity
- Fiscal_year

Requirement:
- *List of market in which customer "Atliq Exclusive" Operates its business in the APAC region*

SQL Query:

```
SELECT
    customer,
    market,
    region
FROM
    dim_customer
WHERE
    customer = 'Atliq Exclusive'
    AND region = 'APAC'

;
```

Result:

customer	market	region
Atliq Exclusive	India	APAC
Atliq Exclusive	Indonesia	APAC
Atliq Exclusive	Japan	APAC
Atliq Exclusive	Philiphines	APAC
Atliq Exclusive	South Korea	APAC
Atliq Exclusive	Australia	APAC
Atliq Exclusive	Newzealand	APAC
Atliq Exclusive	Bangladesh	APAC
Atliq Exclusive	India	APAC

Requirement:
- *List of market in which customer "Atliq Exclusive" Operates its business in the APAC region*

Store Procedure:
- *Created store procedure in case more insights required about different customer and different region*

Call stored procedure gdb023.Customer_Operation_region — □ ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

customer_name Flipkart [IN] varchar(150)

region NA [IN] varchar(45)

Execute   Cancel

customer
Atliq Exclusive
Atliq e Store
Neptune
Synthetic
Novus
Sage
Leader
Zone
Taobao
Reliance Digital
Croma
Ezone
Vijay Sales
Lotus
Viveks

region
APAC
EU
NA
LATAM

Requirement-02

Requirement:

• *What is the percentage of unique product increase in 2021 vs. 2020?*

SQL Query:

```sql
#cte1 created to get unique products sold in 2020
WITH cte1 AS (SELECT product_code,
SUM(sold_quantity) AS qty_sold_2020,
fiscal_year
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY product_code),
#cte2 created to get unique products sold in 2021
cte2 AS (SELECT product_code,
SUM(sold_quantity) AS qty_sold_2021,
fiscal_year
FROM fact_sales_monthly
WHERE fiscal_year = 2021
GROUP BY product_code)
#cte1 & cte2 Joined to get 2020 vs 2021 unique product sales% comparisson
SELECT a.product_code,
dp.product,
a.qty_sold_2020,
b.qty_sold_2021,
ROUND(
    ((b.qty_sold_2021-a.qty_sold_2020)/b.qty_sold_2021)*100,2)
            AS perc_change
FROM cte1 a
JOIN cte2 b
    USING(product_code)
JOIN dim_product dp
    USING(product_code)
ORDER BY perc_change DESC
;
```

Result:

product_code	product	qty_sold_2020	qty_sold_2021	perc_change
A3920150305	AQ LION x3	2011	34835	94.23
A3920150302	AQ LION x3	2041	34858	94.14
A3819150204	AQ LION x2	2042	34590	94.10
A3819150203	AQ LION x2	2045	34609	94.09
A4020150402	AQ Mx NB	2059	34553	94.04
A3920150301	AQ LION x3	2069	34628	94.03
A3920150304	AQ LION x3	2007	33523	94.01
A3818150201	AQ LION x2	2079	34392	93.95
A3920150303	AQ LION x3	2119	34885	93.93
A3718150103	AQ LION x1	2077	34175	93.92
A3718150105	AQ LION x1	2074	34080	93.91
A3819150205	AQ LION x2	2148	35290	93.91
A4020150401	AQ Mx NB	2101	34427	93.90
A3718150102	AQ LION x1	2087	34022	93.87
A3818150202	AQ LION x2	2150	34914	93.84
A3718150101	AQ LION x1	2114	34204	93.82
A6018110104	AQ Home Allin1	355	2359	84.95
A6018110103	AQ Home Allin1	373	2335	84.03
A6018110102	AQ Home Allin1	374	2300	83.74
A6018110105	AQ Home Allin1	379	2307	83.57

Requirement:

- *Provide a report with all the unique product counts for each segment.*

SQL Query:

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

Result:

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

Requirement:

- *Which segment had the most increase in unique products in 2021 vs 2020?*

SQL Query:

```sql
#cte1 created to get product count segment wise in 2020
WITH cte1 AS (SELECT segment,
COUNT(DISTINCT dp.product_code) AS product_count_2020
FROM dim_product dp
JOIN fact_sales_monthly fsm
    USING(product_code)
WHERE fsm.fiscal_year = 2020
GROUP BY segment
),
#cte2 created to get product count segment wise in 2021
cte2 AS (
SELECT segment,
COUNT(DISTINCT dp.product_code) AS product_count_2021
FROM dim_product dp
JOIN fact_sales_monthly fsm
    USING(product_code)
WHERE fsm.fiscal_year = 2021
GROUP BY segment
)
#cte1 & cte2 joined to get difference in product count by segment
SELECT a.segment,
a.product_count_2020,
b.product_count_2021,
(b.product_count_2021 - a.product_count_2020) AS difference
FROM cte1 a
JOIN cte2 b
    USING(segment)
ORDER BY difference DESC;
```

Result:

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

Top segment which have increased unique product count in FY2021 as compared to FY2020

Requirement:

- *Get the products that have the highest and lowest manufacturing costs.*

SQL Query:

```sql
#cte1 for Manufacturing cost of product in 2020
WITH cte1 AS (SELECT dp.product_code,
    dp.product,
    fmc.manufacturing_cost AS manufacturing_cost_2020
FROM dim_product dp
JOIN fact_manufacturing_cost fmc
    USING(product_code)
WHERE cost_year = 2020),
#cte2 for Manufacturing cost of product in 2021
cte2 AS (SELECT dp.product_code,
    dp.product,
    fmc.manufacturing_cost AS manufacturing_cost_2021
FROM dim_product dp
JOIN fact_manufacturing_cost fmc
    USING(product_code)
WHERE cost_year = 2021)
#cte1 & cte2 joined for to get manufacturing cost in 2020 and 2021 in one table
SELECT
    a.product_code,
    a.product,
    ROUND(a.manufacturing_cost_2020,2) AS manufacturing_cost_2020,
    ROUND(b.manufacturing_cost_2021,2) AS manufacturing_cost_2021
FROM cte1 a
JOIN cte2 b
    USING(product_code)
ORDER BY
    a.manufacturing_cost_2020 DESC,
    b.manufacturing_cost_2021 DESC
LIMIT 10;
```

Result:

- *Top 10 product by manufacturing cost in 2020 and 2021*

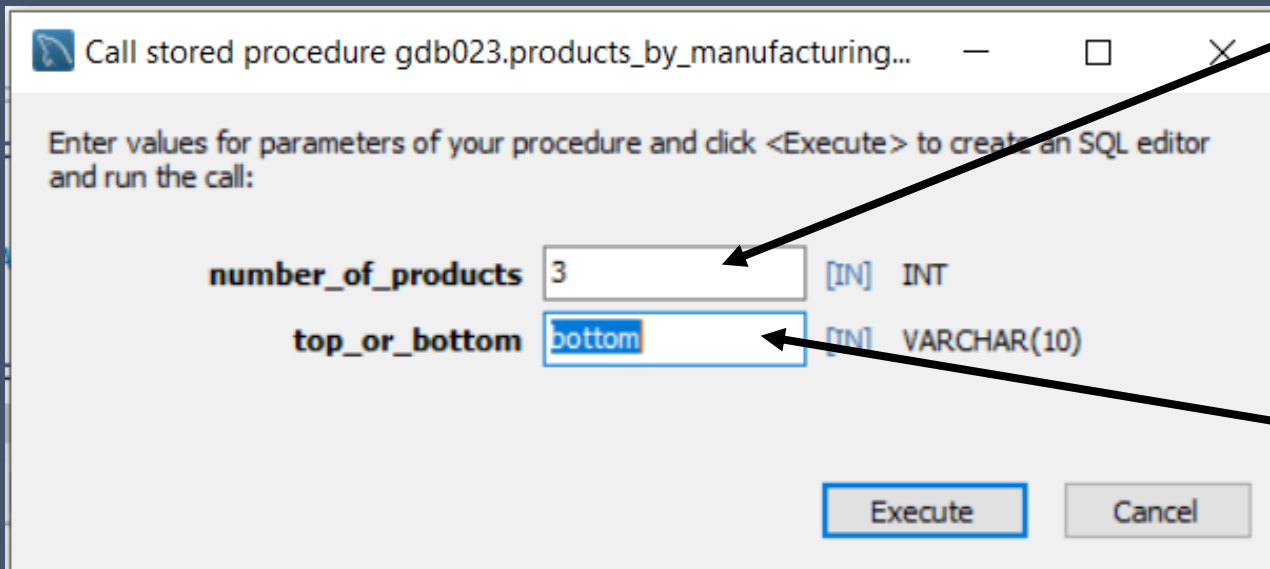| product_code	product	manufacturing_cost_2020	manufacturing_cost_2021
A6018110103	AQ Home Allin1	224.84	229.43
A6018110101	AQ Home Allin1	219.88	229.04
A6018110104	AQ Home Allin1	219.77	231.34
A6018110102	AQ Home Allin1	215.37	229.12
A6018110105	AQ Home Allin1	214.31	232.95
A6019110107	AQ Home Allin1	210.28	233.64
A6018110106	AQ Home Allin1	210.14	233.49
A5621110407	AQ Smash 1	186.39	188.28
A5621110403	AQ Smash 1	183.36	185.21
A5620110402	AQ Smash 1	183.06	184.90

Requirement:

- *Get the products that have the highest and lowest manufacturing costs*

Store Procedure:
- *Created store procedure in case more insights Top & Bottom 3,5,10 etc products*

Number of products to see

Call stored procedure gdb023.products_by_manufacturing... — □ ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

number_of_products	3	[IN] INT
top_or_bottom	bottom	[IN] VARCHAR(10)

Execute   Cancel

products to be displayed from top or bottom order based on manufacturing cost

Requirement:

- *Generate a report which contains the top 5 customers who received an average high pre invoice discount percentage for the fiscal year 2021 and in the Indian market*

SQL Query:

```sql
SELECT
    dc.customer_code,
    dc.customer,
    dc.market,
    AVG(pre_invoice_discount_pct)*100 AS average_discount_percentage

FROM
    fact_pre_invoice_deductions fpid
JOIN
    dim_customer dc
    USING(customer_code)
WHERE
    fpid.fiscal_year = 2021
    AND dc.market ='India'
GROUP BY
    dc.customer_code,
    dc.customer
ORDER BY
    average_discount_percentage DESC
LIMIT 5;
```

Result:

- *Top 5 customers in India by discount percentage in FY2021*

customer_code	customer	market	average_discount_percentage
90002009	Flipkart	India	30.83000000
90002006	Viveks	India	30.38000000
90002003	Ezone	India	30.28000000
90002002	Croma	India	30.25000000
90002016	Amazon	India	29.33000000

Requirement:

- *Generate a report which contains the top 5 customers who received an average high pre invoice discount percentage for the fiscal year 2021 and in the Indian market*

Store Procedure:
- *Created store procedure in case more insights required about different market, another FY and top or bottom N number of customers*

FY2020 or FY2021

	market
▶	Australia
	Austria
	Bangladesh
	Brazil
	Canada
	Chile
	China
	Columbia
	France
	Germany
	India
	Indonesia
	Italy
	Japan
	Mexico
	Netherlands
	Newzealand
	Norway
	Pakistan
	Philiphines

Call stored procedure gdb023.Customer_by_pre_invoice_d...   — □ ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

fiscal_year	2020	[IN]	INT
market	Australia	[IN]	VARCHAR(45)
top_or_bottom	bottom	[IN]	VARCHAR(100)
number_of_customer	10	[IN]	INT

Execute   Cancel

customer to be displayed from top or bottom order based on pre invoice discount percentage

Number of products to see

Requirement-07

Requirement:

- *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.*

SQL Query:

```sql
SELECT
    MONTHNAME(date) AS Month,
    YEAR(date) AS year,
    dc.customer,
    ROUND(SUM(fgp.gross_price*fsm.sold_quantity)/1000000,1) AS gross_sales_amount_in_mln
FROM
    fact_sales_monthly fsm
JOIN
    fact_gross_price fgp
    USING(product_code)
JOIN
    dim_customer dc
    USING(customer_code)
WHERE
    dc.customer = 'Atliq Exclusive'
GROUP BY
    Year,
    Month,
    dc.customer
ORDER BY
    gross_sales_amount_in_mln DESC
;
```

Result:

Month	year	customer	gross_sales_amount_in_mln
November	2020	Atliq Exclusive	32.2
October	2020	Atliq Exclusive	21.0
December	2020	Atliq Exclusive	20.4
January	2021	Atliq Exclusive	19.6
September	2020	Atliq Exclusive	19.5
May	2021	Atliq Exclusive	19.2
March	2021	Atliq Exclusive	19.1
July	2021	Atliq Exclusive	19.0
February	2021	Atliq Exclusive	16.0
June	2021	Atliq Exclusive	15.5
November	2019	Atliq Exclusive	15.2
April	2021	Atliq Exclusive	11.5
August	2021	Atliq Exclusive	11.3
October	2019	Atliq Exclusive	10.4
December	2019	Atliq Exclusive	9.8
January	2020	Atliq Exclusive	9.6
September	2019	Atliq Exclusive	9.1
February	2020	Atliq Exclusive	8.1
August	2020	Atliq Exclusive	5.6
July	2020	Atliq Exclusive	5.2

Requirement:

- *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.*

Store Procedure:
- *Created store procedure in case more insights required about different customer and top or bottom N number of records*

customer
Atliq Exclusive
Atliq e Store
Neptune
Synthetic
Novus
Sage
Leader
Zone
Taobao
Reliance Digital
Croma
Ezone
Vijay Sales
Lotus
Viveks

Call stored procedure gdb023.Gross_sales_amount_by_mo... — □ ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

customer_name	Flipkart	[IN]	VARCHAR(150)
calendar_year	2020	[IN]	INT
top_or_bottom	Top	[IN]	VARCHAR(10)
records	5	[IN]	INT

Execute   Cancel

Calendar year : 2019,2020 or 2021

customer to be displayed from top or bottom order based on gross sales amount monthly calendar year 2019,2020 or 2021

Number of products to see

Extra store procedure for gross sales amount by different criteria, such as:

- *Customer*
- *Customer_code*
- *Platform*
- *Channel*
- *Market*
- *Sub-Zone*
- *Region*

Call stored procedure gdb023.gross_sales_amount_by_diff...   —   □   ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

criterias `customer`   [IN]   VARCHAR(50)

Execute   Cancel

Result: Based on customer

aggregation_column	gross_sales_amount_in_mln	percentage_of_total
Amazon	551.97	14.87
Atliq e Store	348.61	9.39
Atliq Exclusive	303.93	8.19
Flipkart	135.34	3.65
Sage	126.23	3.40
Leader	119.26	3.21
Ebay	98.00	2.64
Neptune	78.77	2.12
Electricalsocity	72.71	1.96
Synthetic	69.35	1.87

Result: Based on platform

aggregation_column	gross_sales_amount_in_mln	percentage_of_total
Brick & Mortar	2557.52	68.90
E-Commerce	1154.19	31.10

Result: Based on channel

aggregation_column	gross_sales_amount_in_mln	percentage_of_total
Retailer	2690.56	72.49
Direct	601.71	16.21
Distributor	419.45	11.30

Requirement:

- *In which quarter of 2020, got the maximum total_sold_quantity?*

SQL Query:

```sql
#cte1 prepared to create Fiscal quarter column
WITH cte1 AS (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'
    ELSE 'wrong date'
END AS fiscal_quarter
FROM
    fact_sales_monthly fsm
JOIN
    dim_customer dc
    USING(customer_code)
)
SELECT
    customer,
    fiscal_year,
    fiscal_quarter,
    SUM(sold_quantity) AS total_sold_quantity
FROM
    cte1
WHERE
    fiscal_year = 2020 AND
    customer = 'Atliq Exclusive'
GROUP BY
    customer,
    fiscal_quarter
ORDER BY
    total_sold_quantity DESC
;
```

Result:

customer	fiscal_year	fiscal_quarter	total_sold_quantity
Atliq Exclusive	2020	Q1	666712
Atliq Exclusive	2020	Q2	528317
Atliq Exclusive	2020	Q4	270912
Atliq Exclusive	2020	Q3	65600

Requirement:

- *In which quarter of 2020, got the maximum total_sold_quantity?*

Store Procedure:
- *Created store procedure in case more insights required about different customer and different fiscal year*

customer
Atliq Exclusive
Atliq e Store
Neptune
Synthetic
Novus
Sage
Leader
Zone
Taobao
Reliance Digital
Croma
Ezone
Vijay Sales
Lotus
Viveks

Call stored procedure gdb023.total_sales_qty_by_fy_and_c...

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

customer_name Amazon   [IN] VARCHAR(150)
fiscal_year 2021   [IN] INT

Fiscal year : 2020 or 2021

Execute   Cancel

Requirement:

- *Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution?*

SQL Query:

```sql
SELECT
    dc.channel,
    ROUND(SUM(fgp.gross_price*fsm.sold_quantity)/1000000,2) AS gross_sales_amount_in_mln,
    ROUND(100 * SUM(fgp.gross_price * fsm.sold_quantity) /
        SUM(SUM(fgp.gross_price * fsm.sold_quantity)) OVER (), 2) AS percentage_of_total
FROM
    fact_sales_monthly fsm
JOIN
    fact_gross_price fgp
        USING(product_code)
JOIN
    dim_customer dc
        USING(customer_code)
WHERE
    fsm.fiscal_year = 2021
GROUP BY
    dc.channel
ORDER BY
    gross_sales_amount_in_mln DESC
;
```

Result:

channel	gross_sales_amount_in_mln	percentage_of_total
Retailer	1924.17	73.22
Direct	406.69	15.47
Distributor	297.18	11.31

Store procedure:
Store procedure created to use different fiscal year

Call stored procedure gdb023.gross_sales_amount_by_cha...   —   □   ✕

Enter values for parameters of your procedure and click <Execute> to create an SQL editor and run the call:

fiscal_year 2020   [IN]   INT

Execute   Cancel

Requirement:

- *Get the Top 3 products in each division that have a high total sold quantity in the fiscal year 2021?*

SQL Query:

```sql
WITH cte1 AS (
    SELECT
        dp.division,
        dp.product_code,
        dp.product,
        SUM(fsm.sold_quantity) AS total_sold_quantity
    FROM
        dim_product dp
    JOIN
        fact_sales_monthly fsm USING(product_code)
    WHERE
        fsm.fiscal_year = '2021'
    GROUP BY dp.division, dp.product_code, dp.product),
#cte2 prepared to give rank to products based on total sold quantity by division
cte2 AS (
    SELECT
        division,
        product_code,
        product,
        total_sold_quantity,
        DENSE_RANK() OVER(PARTITION BY division ORDER BY total_sold_quantity DESC) AS rank_order
    FROM cte1)
#products filtered by rank
SELECT
    division,
    product_code,
    product,
    total_sold_quantity,
    rank_order
FROM cte2
WHERE rank_order <= 3
ORDER BY division, rank_order;
```

Result:

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

Store procedure:
Store procedure created to use different fiscal year