Provide Insights to Management in Consumer Goods Domain

Objective

- AtliqHardware (fictitious corporation) is one ofthe major computer hardware manufacturers in India, with a strong presence in other nations.
- Nevertheless,the management did note thatthey do not have sufficientinsights to make prompt, wise, and data-informed judgments.
- Plan to expand the data analytics team by adding junior data analysts.
- To assess candidates, Data analytics director, TonySharma plans to conduct aSQL challenge to evaluate both tech and soft skills.
- The company seeks insights for 10 ad hoc requests.

Company Details

Atliq Hardware is a computer hardware and accessory manufacturer.

Division	Segment	Category
N & S	Storage	External Solid State Drives
		USB Flash Drives
	Networking	WI-Fi Extender
P & A	Peripherals	Graphic Card
		Internal HDD
		MotherBoard
		Processors
	Accessories	Batteries
		Keyboard
		Mouse
PC	Notebook	Personal Laptop
		Business Laptop
		Gaming Laptop
	Desktop	Personal Desktop
		Business Laptop

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"
GROUP BY market
ORDER BY market;
```

Result:-

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

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: -

```
WITH unique_products_2020 AS (
SELECT COUNT(DISTINCT product_code) AS unique_product_2020
FROM fact_sales_monthly
WHERE fiscal_year = 2020
),

unique_products_2021 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,
    ROUND((unique_product_2021 - unique_product_2020) * 100 / unique_product_2020,
2) AS percentage_chg
FROM unique_products_2020,
unique_products_2021;
```

Result:-

unique_product_2020	unique_product_2021	percentage_chg
245	334	36.33

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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: -

```
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

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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 unique_product_2020 AS(
SELECT
    p.segment,
    COUNT(DISTINCT s.product_code) AS product_count_2020
FROM fact_sales_monthly s
JOIN dim_product p
    ON s.product_code = p.product_code
WHERE fiscal_year = 2020
GROUP BY segment
),

unique_product_2021 AS (
    SELECT
        p.segment,
        COUNT(DISTINCT s.product_code) AS product_count_2021
    FROM fact_sales_monthly s
    JOIN dim_product p
        ON s.product_code = p.product_code
    WHERE fiscal_year = 2021
    GROUP BY segment
)

SELECT
    unique_product_2020.segment,
    unique_product_2020.product_count_2020,
    unique_product_2021.product_count_2021,
    unique_product_2021.product_count_2021 -
unique_product_2020.product_count_2020 AS difference
FROM unique_product_2020,
unique_product_2021
WHERE unique_product_2020.segment = unique_product_2021.segment
ORDER BY difference DESC;
```

Result:-

segment	product_count_2020	product_count_2021	difference
Accessories	69	103	34

segment	product_count_2020	product_count_2021	difference
Notebook	92	108	16
Peripherals	59	75	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3

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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: -

```
SELECT
    m.product_code,
    p.product,
    m.manufacturing_cost
FROM fact_manufacturing_cost m
JOIN dim_product p
    ON m.product_code = p.product_code
WHERE m.manufacturing_cost IN (
    SELECT MAX(manufacturing_cost)
    FROM fact_manufacturing_cost
    UNION
    SELECT MIN(manufacturing_cost)
    FROM fact_manufacturing_cost
)
ORDER BY manufacturing_cost DESC;
```

Result:-

product_code	product	manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	240.5364
A2118150101	AQ Master wired x1 Ms	0.892

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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: -

```
SELECT
    pre.customer_code,
    c.customer,
    AVG(pre.pre_invoice_discount_pct) AS average_discount_percentage
FROM gdb023.fact_pre_invoice_deductions pre
JOIN gdb023.dim_customer c
    ON pre.customer_code = c.customer_code
WHERE c.market = 'India'
    AND pre.fiscal_year = 2021
GROUP BY 1,2
ORDER BY 3 DESC
LIMIT 5;
```

Result:-

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933

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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: -

```
SELECT
    CONCAT(MONTHNAME(s.date), '_', YEAR(s.date)) AS 'Month',
    s.fiscal_year,
    ROUND(SUM(G.gross_price*s.sold_quantity)/1000000, 2) AS Gross_sales_Amount_mln
```

```
FROM fact_sales_monthly s
JOIN dim_customer c
    ON s.customer_code = c.customer_code
JOIN fact_gross_price G
    ON s.product_code = G.product_code
WHERE c.customer = 'Atliq Exclusive'
GROUP BY  Month, s.fiscal_year
ORDER BY s.fiscal_year ;
```

Result:-

Month	fiscal_year	Gross_sales_Amount_mln
September_2019	2020	9.09
October_2019	2020	10.38
November_2019	2020	15.23
December_2019	2020	9.76
January_2020	2020	9.58
February_2020	2020	8.08
March_2020	2020	0.77
April_2020	2020	0.8
May_2020	2020	1.59
June_2020	2020	3.43
July_2020	2020	5.15
August_2020	2020	5.64
September_2020	2021	19.53
October_2020	2021	21.02
November_2020	2021	32.25
December_2020	2021	20.41
January_2021	2021	19.57
February_2021	2021	15.99
March_2021	2021	19.15
April_2021	2021	11.48
May_2021	2021	19.2

Month	fiscal_year	Gross_sales_Amount_mln
June_2021	2021	15.46
July_2021	2021	19.04
August_2021	2021	11.32

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: -

```
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_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY quarter
ORDER BY total_sold_quantity DESC;
```

Result:-

quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

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 gross_sales AS (
SELECT
    c.channel,
    s.fiscal_year,
    (s.sold_quantity * g.gross_price) AS net_sales
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 s.fiscal_year = 2021
)
SELECT
    channel,
    ROUND(SUM(net_sales) / 1000000, 2) AS gross_sales_mln,
    ROUND(SUM(net_sales) / SUM(SUM(net_sales)) OVER() * 100,2) AS percentage
FROM gross_sales
GROUP BY channel
ORDER BY percentage DESC;
```

Result:-

channel	gross_sales_mln	percentage
Retailer	1924.17	73.22
Direct	406.69	15.47
Distributor	297.18	11.31

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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: -

```
WITH total_sold AS (
SELECT
    p.division,
    s.product_code,
    p.product,
    SUM(s.sold_quantity) AS total_sold_quantity,
    RANK() OVER(partition BY p.division ORDER BY SUM(s.sold_quantity) DESC) AS
rank_order
```

```
FROM fact_sales_monthly s
JOIN dim_product p
    ON s.product_code = p.product_code
WHERE s.fiscal_year = 2021
GROUP BY p.division, s.product_code, p.product
ORDER BY p.division, total_sold_quantity DESC
)
SELECT *
FROM total_sold
WHERE rank_order <= 3;
```

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