Consumer Goods Ad-hoc Insights Using SQL

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AtliQ Technologies

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Company Overview

AtliQ Hardware (an imaginary company) is one of the leading computer hardware manufacturers in India, with a strong presence in international markets as well.

The company specializes in the production and sales of high-quality computer peripherals, including **PCs, keyboards, mice**, and other related components.

Known for its commitment to quality and innovation, AtliQ Hardware has earned a reputation for delivering reliable and efficient hardware solutions to a wide range of customers.

Problem Statement

AtliQ Hardware's management has identified a critical gap in data insights, which is hindering their ability to make quick, data-driven decisions. As the volume of data has increased over time, the size of Excel files has grown significantly, leading to performance issues. These issues have resulted in delays, inefficiencies, and difficulty in handling large datasets.

To address this challenge, the Product Manager has tasked the Data Analytics team with generating **ad-hoc reports** across key departments — **Finance, Sales, and Supply Chain** — to ensure timely access to actionable insights and improve decision-making processes.

Project Overview

This project aims to analyze and derive valuable insights from the provided dataset using SQL queries effectively. The dataset encompasses key business domains including **Sales, Products, Customers,** and **Market data** for *AtliQ Hardware*.

The primary objective is to address specific business inquiries related to:
Sales Reporting
Market Analysis
Customer Performance Analysis
Supply Chain Forecasting

Through this analysis, the project seeks to support **data-driven decision-making** and enhance **operational efficiency** across various departments of AtliQ Hardware.

Understanding Of Dataset

Table Name	Information
dim_customer	Contain customer related data
dim_product	Contain product related data
Fact_gross_monthly	Contain gross price information for each product
Fact_manufacturing_cost	Contain the cost incurred in the production of each product
Fact_pre_invoice_sales	Contain Pre invoice deduction information for each product
Fact_sales_monthly	Contain monthly sales data for each product

1) Generate a report of individual product sales aggregated on a monthly basis at the product code level for **Chroma India** customer for **FY-2021**. This report will help in tracking product-wise sales and support further product analytics in Excel

Input Query

```
SELECT
        s.date,
        s.product_code,
        p.product,
        p.variant,
        s.sold_quantity,
        g.gross_price,
        ROUND(s.sold_quantity*g.gross_price,2) as gross_price_total
FROM fact_sales_monthly s
JOIN dim_product p
        ON s.product_code=p.product_code
JOIN fact_gross_price g
        ON g.fiscal_year=get_fiscal_year(s.date)
        AND g.product_code=s.product_code
WHERE
        customer_code=90002002 AND
        get_fiscal_year(s.date)=2021
LIMIT 1000000;
```

Output

1	date	product_code	product	variant	sold_quan	gross_price	gross_price_total
2	01-09-2020	A0118150101	AQ Dracula HDD â€“ 3	Standard	202	19.0573	3849.57
3	01-10-2020	A0118150101	AQ Dracula HDD â€“ 3	Standard	95	19.0573	1810.44
4	01-12-2020	A0118150101	AQ Dracula HDD â€“ 3	Standard	113	19.0573	2153.47
5	01-01-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	182	19.0573	3468.43
6	01-02-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	208	19.0573	3963.92
7	01-04-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	199	19.0573	3792.4
8	01-05-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	58	19.0573	1105.32
9	01-06-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	205	19.0573	3906.75
10	01-08-2021	A0118150101	AQ Dracula HDD â€“ 3	Standard	88	19.0573	1677.04
11	01-09-2020	A0118150102	AQ Dracula HDD â€“ 3	Plus	162	21.4565	3475.95
12	01-10-2020	A0118150102	AQ Dracula HDD â€“ 3	Plus	237	21.4565	5085.19
13	01-12-2020	A0118150102	AQ Dracula HDD â€“ 3	Plus	172	21.4565	3690.52
14	01-01-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	121	21.4565	2596.24
15	01-02-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	77	21.4565	1652.15
16	01-04-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	247	21.4565	5299.76
17	01-05-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	135	21.4565	2896.63
18	01-06-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	78	21.4565	1673.61
19	01-08-2021	A0118150102	AQ Dracula HDD â€“ 3	Plus	196	21.4565	4205.47
20	01-09-2020	A0118150103	AQ Dracula HDD â€“ 3	Premium	193	21.7795	4203.44

2) Generate a monthly gross sales report for **Croma India** covering **all available years**. The report will be used for further sales analytics in Excel.

Input Query

```
SELECT
        s.date,
        SUM(ROUND(s.sold_quantity*g.gross_price,2)) as monthly_sales
FROM fact_sales_monthly s
JOIN fact_gross_price g
        ON g.fiscal_year=get_fiscal_year(s.date) AND g.product_code=s.product_code
WHERE
        customer_code=90002002
GROUP BY date;
```

Output

1	date	monthly_sales
2	01-09-2017	122407.57
3	01-10-2017	162687.56
4	01-12-2017	245673.84
5	01-01-2018	127574.73
6	01-02-2018	144799.54
7	01-04-2018	130643.92
8	01-05-2018	139165.06
9	01-06-2018	125735.36
10	01-08-2018	125409.9
11	01-09-2018	343337.14
12	01-10-2018	440562.1
13	01-12-2018	653944.72
14	01-01-2019	359025.06
15	01-02-2019	356607.19
16	01-04-2019	379549.74
17	01-05-2019	340152.29
18	01-06-2019	343792.08
19	01-08-2019	338108.87
20	01-09-2019	808250.42

3) Create a report that displays the top-performing markets based on their net sales figures.
The report should include the fields: **Rank**, **Market**, and **Net Sales**, sorted in descending order of net sales.

Input Query

```sql
SELECT
        market,
        round(sum(net_sales)/1000000,2) as net_sales_mln
FROM gdb0041.net_sales
where fiscal_year=2021
group by market
order by net_sales_mln desc
limit 5
```

```sql
/* Stored proc to get top n markets by net sales
for a given year */

CREATE PROCEDURE `get_top_n_markets_by_net_sales`(
            in_fiscal_year INT,
            in_top_n INT
    )
    BEGIN
            SELECT
                    market,
                    round(sum(net_sales)/1000000,2) as net_sales_mln
            FROM net_sales
            where fiscal_year=in_fiscal_year
            group by market
            order by net_sales_mln desc
            limit in_top_n;
    END
```

Output

	market	net_sales_mln
1		
2	India	210.67
3	USA	132.05
4	South Korea	64.01
5	Canada	45.89
6	United Kingdom	44.73
7		

Key Observations:
1) India leads with 210.67M, accounting for the highest net sales.
2) USA follows with 132.05M.
3) South Korea is third at 64.01M.
4) Canada and United Kingdom trail with 45.89M and 44.73M respectively.

Possible Actions:
1) Focus more on India and USA to **maximize revenue**.

2) Investigate reasons behind **low sales** in Canada and UK — potential areas for improvement or new strategie

4) Generate a report listing the **Top N Customers** based on their **Net Sales** performance across various markets. The report should display the fields: **Rank**, **Customer**, and **Net Sales**, sorted in descending order of sales value.

Input Query

```sql
select
        customer,
        round(sum(net_sales)/1000000,2) as net_sales_mln
from net_sales s
join dim_customer c
on s.customer_code=c.customer_code
where s.fiscal_year= 2021
and s.market= "India"
group by customer
order by net_sales_mln desc
limit 5;
```

```sql
/* stored procedure that takes market, fiscal_year
and top n as an input and returns top n customers by
net sales in that given fiscal year and market */

CREATE PROCEDURE `get_top_n_customers_by_net_sales`(
        in_market VARCHAR(45),
        in_fiscal_year INT,
        in_top_n INT
    )
    BEGIN
        select
                customer,
                round(sum(net_sales)/1000000,2) as net_sales_mln
        from net_sales s
        join dim_customer c
            on s.customer_code=c.customer_code
        where
        s.fiscal_year=in_fiscal_year
        and s.market=in_market
        group by customer
        order by net_sales_mln desc
        limit in_top_n;
    END
```

Output

	A	B
1	customer	net_sales_mln
2	Amazon	30
3	Atliq Exclusive	23.98
4	Flipkart	12.96
5	Electricalsocity	12.31
6	Propel	11.86
7		

Key Observations:

1) Amazon is the top customer, contributing 30M in net sales.
2) Atliq Exclusive follows closely with 23.98M.
3) Flipkart, Electricalsocity, and Propel contribute moderate sales between 11M–13M.

Actionable Insights:

1) Strengthen the relationship with **Amazon** — it's your biggest revenue driver.
2) Explore growth opportunities with **Flipkart and Electricalsocity**, as they already show strong potential.
3) Investigate if **Propel** has growth constraints or hidden potential — it's the lowest among the top 5.

5) Find out the **top 3 products** from **each division** based on the **total quantity sold** in a given year. The report should include fields such as **Division, Product,** and **Total Quantity Sold,** ranked within each division.

Input Query

```sql
with cte1 as
        ( select
              p.division,
              p.product,
              sum(sold_quantity) as total_qty
            from fact_sales_monthly s
            join dim_product p
            on p.product_code=s.product_code
            where fiscal_year=2021
            group by p.product),
           cte2 as
            (select
                  *,
                  dense_rank() over (partition by division order by total_qty desc) as drnk
            from cte1)

    select * from cte2 where drnk<=3
```

```sql
/* Stored procedure for the Find out top N
products from each division by total quantity sold
in a given year */

CREATE PROCEDURE `get_top_n_products_per_division_by_qty_sold`(
            in_fiscal_year INT,
            in_top_n INT
    )
    BEGIN
        with cte1 as (
          select
                      p.division,
                      p.product,
                      sum(sold_quantity) as total_qty
                  from fact_sales_monthly s
                  join dim_product p
                      on p.product_code=s.product_code
                  where fiscal_year=in_fiscal_year
                  group by p.product),
            cte2 as (
          select
                       *,
                       dense_rank() over (partition by division order by total_qty desc) as drnk
                  from cte1)
        select * from cte2 where drnk <= in_top_n;
    END
```

Output

	A	B	C	D
1	division	product	total_qty	drnk
2	N & S	AQ Pen Drive DRC	2034569	1
3	N & S	AQ Digit SSD	1240149	2
4	N & S	AQ Clx1	1238683	3
5	P & A	AQ Gamers Ms	2477098	1
6	P & A	AQ Maxima Ms	2461991	2
7	P & A	AQ Master wireless x1 Ms	2448784	3
8	PC	AQ Digit	135092	1
9	PC	AQ Gen Y	135031	2
10	PC	AQ Elite	134431	3
11				

Key Observations:

1) **P & A Division** leads in product volumes across the board.
2) **PC Division** has significantly **lower volumes,** but consistent performance across its products.
3) **Drnk** (rank within division) aligns with total quantity — showing internal ranking logic is accurate

Actionable Insight:-

1) Scale production and marketing for high-performing **P & A division** products like AQ Gamers Ms.
2) Reposition mid-tier products in **N & S division** to close performance gaps.
3) Investigate and revamp **PC division** offerings due to consistently low sales across all products.

6) Generate a report to evaluate forecast accuracy for each customer for fiscal year 2021 by comparing forecasted and actual sales quantities. The report should include customer details, total sold and forecast quantities, error values, and forecast accuracy percentage

Input Query

```
with forecast_err_table as (
            select
                 s.customer_code as customer_code,
                 c.customer as customer_name,
                 c.market as market,
                 sum(s.sold_quantity) as total_sold_qty,
                 sum(s.forecast_quantity) as total_forecast_qty,
                 sum(s.forecast_quantity-s.sold_quantity) as net_error,
                 round(sum(s.forecast_quantity-s.sold_quantity)*100/sum(s.forecast_quantity),1) as net_error_pct,
                 sum(abs(s.forecast_quantity-s.sold_quantity)) as abs_error,
                 round(sum(abs(s.forecast_quantity-sold_quantity))*100/sum(s.forecast_quantity),2) as abs_error_pct
            from fact_act_est s
            join dim_customer c
            on s.customer_code = c.customer_code
            where s.fiscal_year=2021
            group by customer_code
    )
    select
            *,
            if (abs_error_pct > 100, 0, 100.0 - abs_error_pct) as forecast_accuracy
    from forecast_err_table
        order by forecast_accuracy desc;
```

Output

customer_code	customer_name	market	total_sold_qty	total_forecast_qty	net_error	net_error_pct	abs_error	abs_error_pct	forecast_accuracy
90013120	Coolblue	Italy	109547	133532	23985	18	70467	52.77	47.23
70010048	Atliq e Store	Banglades	119439	142010	22571	15.9	75711	53.31	46.69
90023027	Costco	Canada	236189	279962	43773	15.6	149303	53.33	46.67
90023026	Relief	Canada	228988	273492	44504	16.3	146948	53.73	46.27
90017051	Forward Stores	Portugal	86823	118067	31244	26.5	63568	53.84	46.16
90017058	Mbit	Portugal	86860	110195	23335	21.2	59473	53.97	46.03
90023028	walmart	Canada	239081	283323	44242	15.6	153058	54.02	45.98
90023024	Sage	Canada	246397	287233	40836	14.2	155610	54.18	45.82
90015146	Mbit	Norway	147152	210507	63355	30.1	114189	54.24	45.76
90013124	Amazon	Italy	110898	136116	25218	18.5	73826	54.24	45.76
90017054	Flawless Stores	Portugal	84371	114698	30327	26.4	62483	54.48	45.52
70027208	Atliq e Store	Brazil	33713	47321	13608	28.8	25784	54.49	45.51
90015147	Chiptec	Norway	154897	223867	68970	30.8	122100	54.54	45.46
80001019	Neptune	China	1113979	1275248	161269	12.6	695779	54.56	45.44
90015144	Sound	Norway	160074	225637	65563	29.1	123257	54.63	45.37
90009130	Logic Stores	Newzealar	103290	110175	6885	6.2	60225	54.66	45.34
90015149	UniEuro	Norway	142086	212500	70414	33.1	116172	54.67	45.33
90021088	Electricalslytical	United Kin	224350	323689	99339	30.7	176975	54.67	45.33
90017050	Electricalsara Sto	Portugal	85272	114688	29416	25.6	62760	54.72	45.28

Get In Touch

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