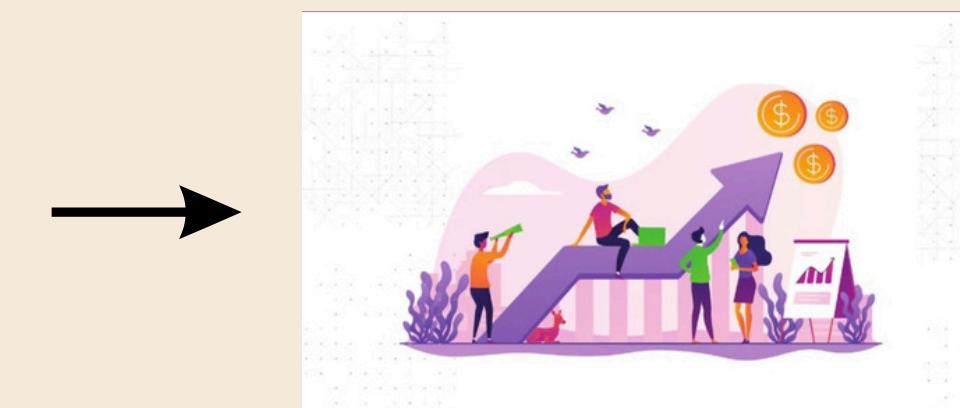
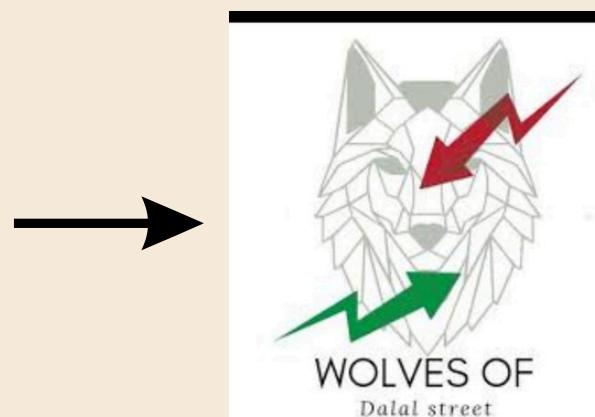
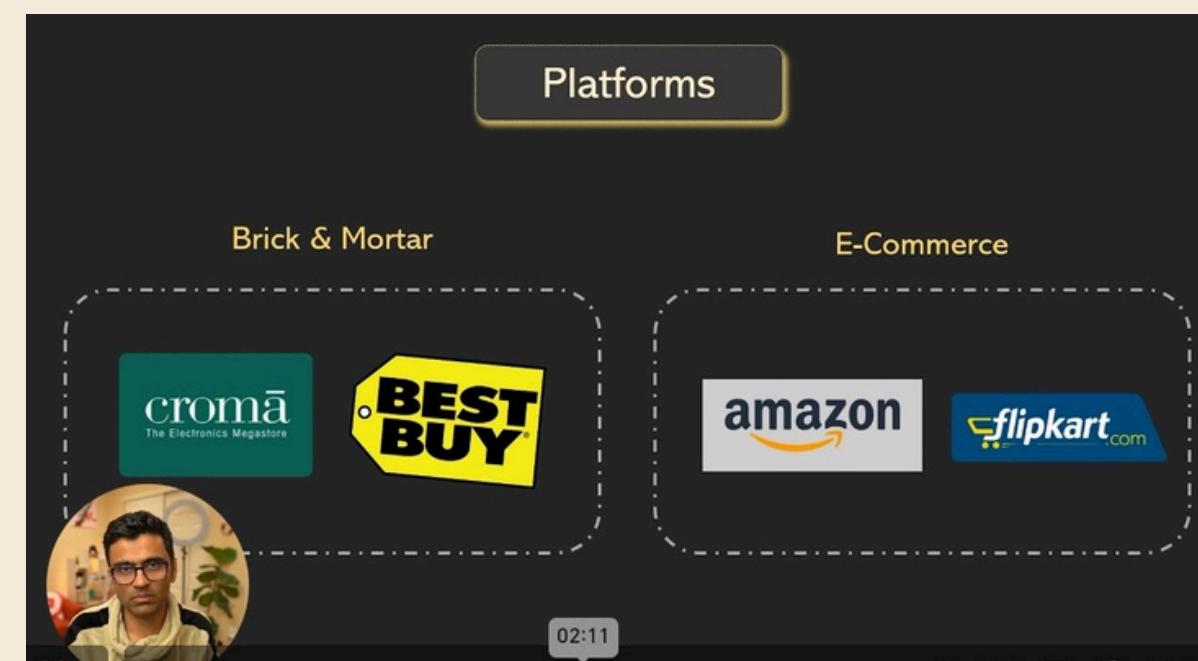
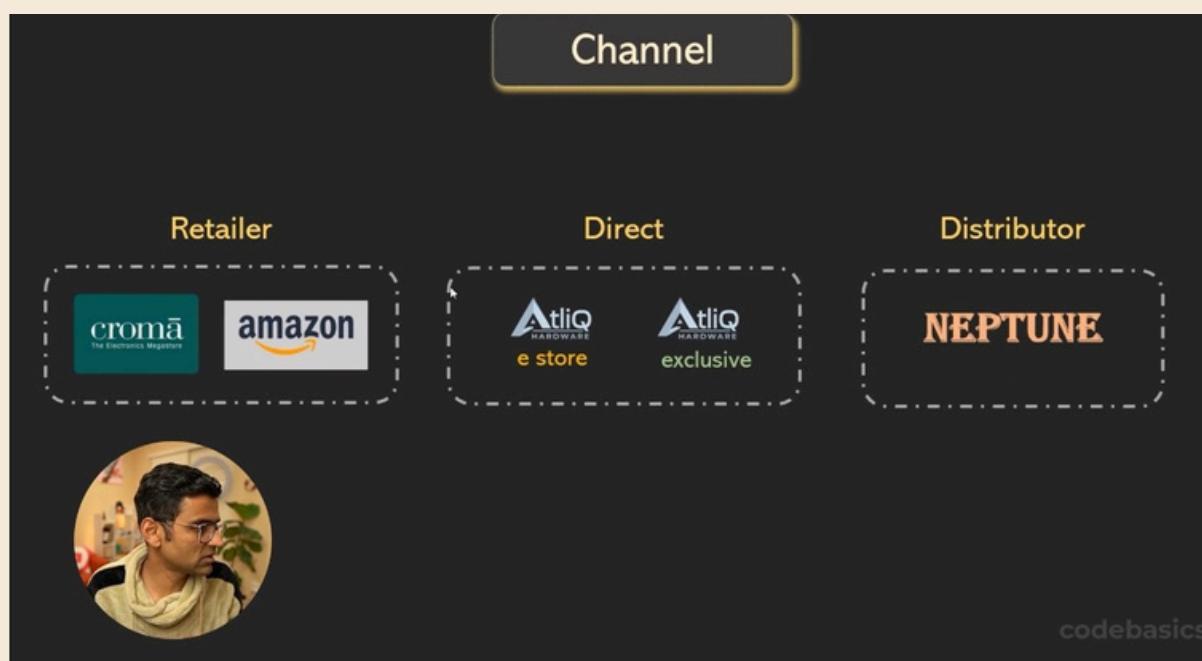
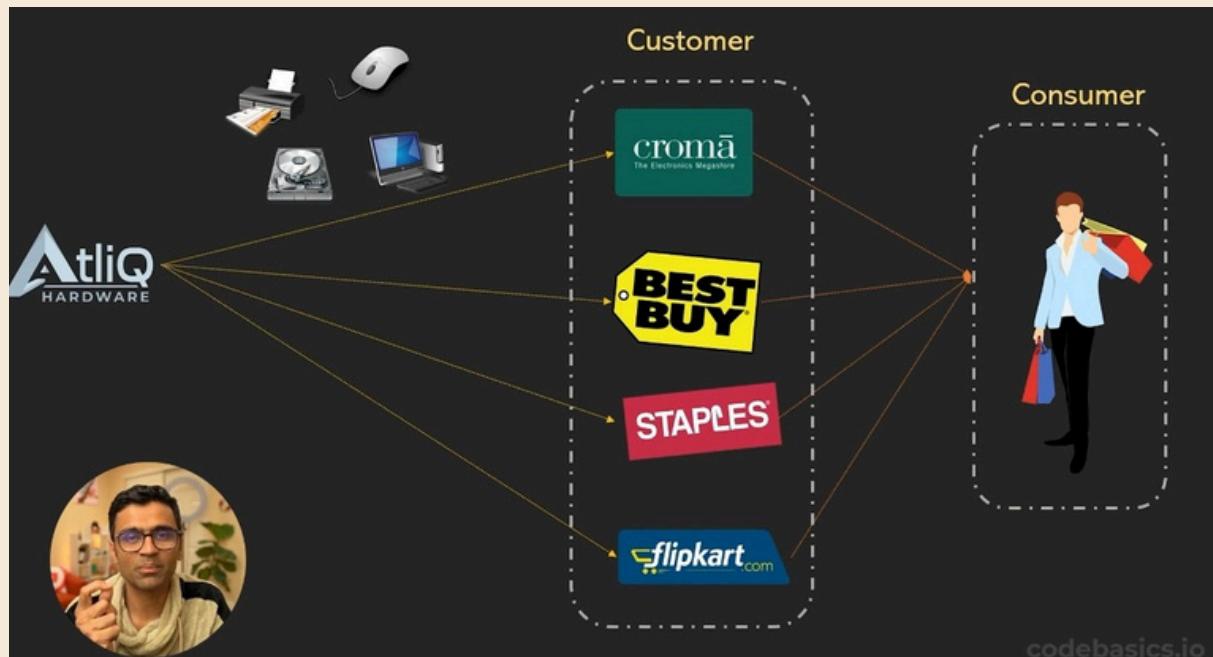


# BIRTH OF ATLIQ HARDWARES

Problem statement:



# Atliq's Business Model



# INTRODUCTION :

In today's competitive market, data is vital for understanding customer behavior, optimizing operations, and boosting sales. For Atliq Hardwares, sales data reveals key insights into preferences and operational efficiencies. Data analytics helps understand market demand and sales patterns.

By analyzing sales data, computer retailers can identify popular products, predict trends, and improve stock management. Understanding customer behavior allows for targeted marketing and upselling complementary products. Efficient data use streamlines inventory and pricing, making data-driven strategies essential for staying competitive in the tech industry.

Peter, can you please provide report for FY 2021 and Q4 for Croma customer?



Wanda Mishra - Product Owner

Sure, Wanda!



Peter Pandey - Junior Data Analyst

```
SELECT * FROM dim_customer WHERE customer like "%croma%" AND market="india";
```

```
-- sales transaction data from fact_sales_monthly table for that customer(croma: 90002002) in the fiscal_year 2021
```

```
    SELECT * FROM fact_sales_monthly
        WHERE
            customer_code=90002002 AND
            YEAR(DATE_ADD(date, INTERVAL 4 MONTH))=2021
        ORDER BY date asc
        LIMIT 100000;
```

```
-- function 'get_fiscal_year' to get fiscal year by passing the date
```

```
CREATE FUNCTION `get_fiscal_year`(calendar_date DATE)
    RETURNS int
    DETERMINISTIC
    BEGIN
        DECLARE fiscal_year INT;
        SET fiscal_year = YEAR(DATE_ADD(calendar_date, INTERVAL 4 MONTH));
        RETURN fiscal_year;
    END
```

```
-- Replacing the function created in the step:b
```

```
    SELECT * FROM fact_sales_monthly
        WHERE
            customer_code=90002002 AND
            get_fiscal_year(date)=2021
        ORDER BY date asc
        LIMIT 100000;
```

	date	product_code	customer_code	sold_quantity
1	2021-06-01	A0118150101	90002002	205
2	2021-06-01	A0118150102	90002002	78
3	2021-06-01	A0118150103	90002002	48
4	2021-06-01	A0118150104	90002002	126
5	2021-06-01	A0219150201	90002002	40
6	2021-06-01	A0219150202	90002002	102
7	2021-06-01	A0220150203	90002002	31
8	2021-06-01	A0320150301	90002002	91
9	2021-06-01	A0321150302	90002002	70
10	2021-06-01	A0321150303	90002002	145
11	2021-06-01	A0418150103	90002002	108
12	2021-06-01	A0418150104	90002002	76
13	2021-06-01	A0418150105	90002002	84
14	2021-06-01	A0418150106	90002002	114

# Gross Sales Report: Monthly Product Transactions



Sure, Wanda!



```

--- product information
SELECT s.date, s.product_code, p.product, p.variant, s.sold_quantity
FROM fact_sales_monthly s
JOIN dim_product p
ON s.product_code=p.product_code
WHERE
customer_code=90002002 AND
get_fiscal_year(date)=2021
LIMIT 1000000;

-- Performing join with 'fact_gross_price' table with the above query and generating required fields
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;

```

date	product_code	product	variant	sold_quantity	gross_price	gross_price
2020-09-01	A0118150101	AQ Dracula HDD – 3.5 Inch SATA 6 Gb/s 5...	Standard	202	19.0573	3849.57
2020-09-01	A0118150102	AQ Dracula HDD – 3.5 Inch SATA 6 Gb/s 5...	Plus	162	21.4565	3475.95
2020-09-01	A0118150103	AQ Dracula HDD – 3.5 Inch SATA 6 Gb/s 5...	Premium	193	21.7795	4203.44
2020-09-01	A0118150104	AQ Dracula HDD – 3.5 Inch SATA 6 Gb/s 5...	Premium Plus	146	22.9729	3354.04
2020-09-01	A0219150201	AQ WereWolf NAS Internal Hard Drive HDD...	Standard	149	23.6987	3531.11
2020-09-01	A0219150202	AQ WereWolf NAS Internal Hard Drive HDD...	Plus	107	24.7312	2646.24
2020-09-01	A0220150203	AQ WereWolf NAS Internal Hard Drive HDD...	Premium	123	23.6154	2904.69
2020-09-01	A0320150301	AQ Zion Saga	Standard	146	23.7223	3463.46
2020-09-01	A0321150302	AQ Zion Saga	Plus	236	27.1027	6396.24
2020-09-01	A0321150303	AQ Zion Saga	Premium	137	28.0059	3836.81
2020-09-01	A0418150103	AQ Mforce Gen X	Standard 3	23	19.5235	449.04
2020-09-01	A0418150104	AQ Mforce Gen X	Plus 1	82	19.9239	1633.76
2020-09-01	A0418150105	AQ Mforce Gen X	Plus 2	86	20.0766	1726.59
2020-09-01	A0418150106	AQ Mforce Gen X	Plus 3	48	19.9365	956.95
2020-09-01	A0519150201	AQ Mforce Gen Y	Standard 1	138	22.3984	3090.98
2020-09-01	A0519150202	AQ Mforce Gen Y	Standard 2	72	24.9298	1794.95
2020-09-01	A0519150203	AQ Mforce Gen Y	Standard 3	38	26.5871	1010.31
2020-09-01	A0519150204	AQ Mforce Gen Y	Plus 1	149	26.1081	3890.11
2020-09-01	A0519150205	AQ Mforce Gen Y	Plus 2	29	29.7008	861.32
2020-09-01	A0519150206	AQ Mforce Gen Y	Plus 3	28	31.2439	874.83
2020-09-01	A0519150207	AQ Mforce Gen Y	Premium 1	171	32.4427	5547.70

## Market Badge:

Write a stored proc that can retrieve market badge. i.e. if total sold quantity > 5 million that market is considered "Gold" else "Silver"



Sure, Wanda!



```
CREATE PROCEDURE `get_market_badge`(
    IN in_market VARCHAR(45),
    IN in_fiscal_year YEAR,
    OUT out_level VARCHAR(45)
)
BEGIN
DECLARE qty INT DEFAULT 0;

# Default market is India
IF in_market = "" THEN
    SET in_market="India";
END IF;

# Retrieve total sold quantity for a given market in a given year
SELECT
    SUM(s.sold_quantity) INTO qty
    FROM fact_sales_monthly s
    JOIN dim_customer c
    ON s.customer_code=c.customer_code
    WHERE
        get_fiscal_year(s.date)=in_fiscal_year AND
        c.market=in_market;

# Determine Gold vs Silver status
IF qty > 5000000 THEN
    SET out_level = 'Gold';
ELSE
    SET out_level = 'Silver';
END IF;
END
```

The screenshot shows the MySQL Workbench interface with the following steps and results:

- 1 • set @out\_badge = '0';
- 2 • call gdb041.get\_market\_badge('usa', 2020, @out\_badge);
- 3 • select @out\_badge;
- 4

Result Grid:

@out_badge
Silver

Get top 5 market by net sales in fiscal year 2021



Peter Pandey - Junior Data Analyst

```
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

-- 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

-- 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
```

Sure, Wanda!



Wanda Mishra - Product Owner

market	net_sales_mln
India	210.67
USA	132.05
South Korea	64.01
Canada	45.89
United Kingdom	44.73

Retrieve the top 2 markets in every region by their gross sales amount in FY=2021



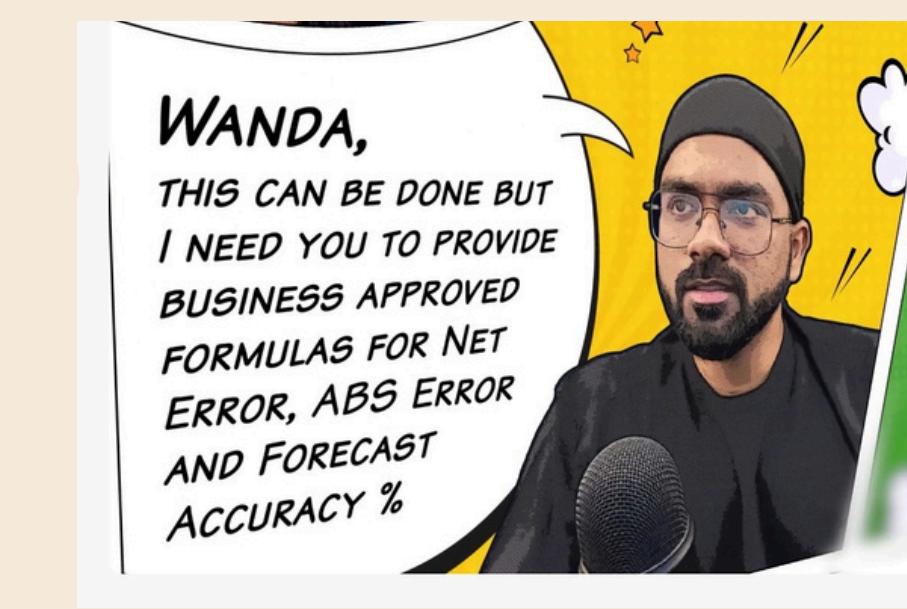
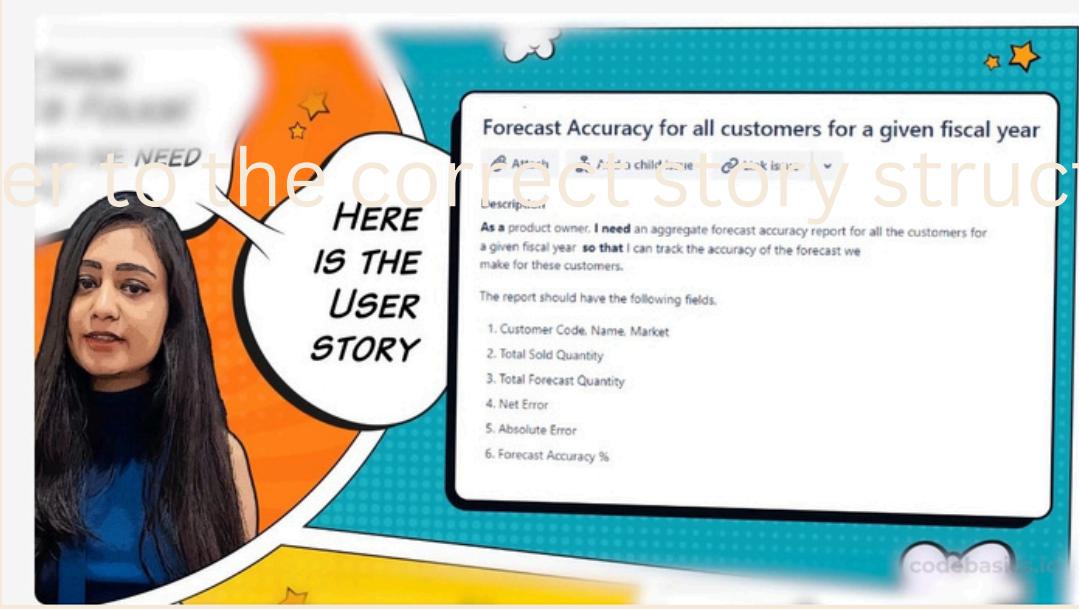
Sure, Wanda!



```
with cte1 as (
    select
        c.market,
        c.region,
        round(sum(gross_price_total)/1000000,2) as gross_sales_mln
    from gross_sales s
    join dim_customer c
    on c.customer_code=s.customer_code
    where fiscal_year=2021
    group by market
    order by gross_sales_mln desc
),
cte2 as (
    select *,
    dense_rank() over(partition by region order by gross_sales_mln desc) as drnk
    from cte1
)
select * from cte2 where drnk<=2
```

	market	region	gross_sales_mln	rnk
▶	India	APAC	455.05	1
	South Korea	APAC	131.86	2
	United Kingdom	EU	78.11	1
	France	EU	67.62	2
	Mexico	LATAM	2.30	1
	Brazil	LATAM	2.14	2
	USA	NA	264.46	1
	Canada	NA	89.78	2

# Problem Statement:



I will create a **HELPER TABLE** that will make my SQL query much easier to write for generating forecast accuracy reports.



```
create table fact_act_est
(
    select
        s.date as date,
        s.fiscal_year as fiscal_year,
        s.product_code as product_code,
        s.customer_code as customer_code,
        s.sold_quantity as sold_quantity,
        f.forecast_quantity as forecast_quantity
    from
        fact_sales_monthly s
    left join fact_forecast_monthly f
    using (date, customer_code, product_code)
)
union
(
    select
        f.date as date,
        f.fiscal_year as fiscal_year,
        f.product_code as product_code,
        f.customer_code as customer_code,
        s.sold_quantity as sold_quantity,
        f.forecast_quantity as forecast_quantity
    from
        fact_forecast_monthly f
    left join fact_sales_monthly s
    using (date, customer_code, product_code)
);

update fact_act_est
set sold_quantity = 0
where sold_quantity is null;

update fact_act_est
set forecast_quantity = 0
where forecast_quantity is null;
```

	date	fiscal_year	product_code	customer_code	sold_quantity	forecast_quantity
2017-09-01	2018	A0118150101	70002017	51	18	
2017-09-01	2018	A0118150101	70002018	77	11	
2017-09-01	2018	A0118150101	70003181	17	9	
2017-09-01	2018	A0118150101	70003182	6	6	
2017-09-01	2018	A0118150101	70006157	5	5	
2017-09-01	2018	A0118150101	70006158	7	6	
2017-09-01	2018	A0118150101	70007198	29	4	
2017-09-01	2018	A0118150101	70007199	34	7	
2017-09-01	2018	A0118150101	70008169	22	7	
2017-09-01	2018	A0118150101	70008170	5	8	
2017-09-01	2018	A0118150101	70011193	10	5	
2017-09-01	2018	A0118150101	70011194	4	7	
2017-09-01	2018	A0118150101	70012042	0	0	
2017-09-01	2018	A0118150101	70012043	0	0	0
2017-09-01	2018	A0118150101	70013125	1	2	
2017-09-01	2018	A0118150101	70013126	1	2	
2017-09-01	2018	A0118150101	70016178	1	0	
2017-09-01	2018	A0118150101	70022085	20	12	

# Forecast Accuracy Report for 2021



Sure, Wanda!



Wanda Mishra - Product Owner

```

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;
,
```

customer_code	total_sold_qty	total_forecast_qty	net_err	net_err_pct	abs_err	abs_err_pct	customer	market	forecast_accuracy
70006158	136991	155044	18053	11.6438	88917	57.3495	Atliq e Store	Philippines	42.6505
90010046	55532	58644	3112	5.3066	33716	57.4927	Amazon	Bangladesh	42.5073
90023030	127854	140248	12394	8.8372	82588	58.8871	Amazon	Canada	41.1129
70008170	178182	192586	14404	7.4793	113708	59.0427	Atliq e Store	Australia	40.9573
90023026	85944	143041	57097	39.9165	85555	59.8115	Relief	Canada	40.1885
90005161	68017	94196	26179	27.7921	56441	59.9187	Zone	Pakistan	40.0813
70011194	106020	115390	9370	8.1203	69596	60.3137	Atliq e Store	France	39.6863
90023024	83292	145672	62380	42.8222	89462	61.4133	Sage	Canada	38.5867
90014140	36344	62794	26450	42.1219	38602	61.4740	Radio Popular	Netherlands	38.5260
90008166	115804	200228	84424	42.1639	123118	61.4889	Sound	Australia	38.5111
90010044	36764	63634	26870	42.2259	39240	61.6651	Surface Stores	Bangladesh	38.3349

# Project Outcomes

## 1. Gross Sales Report for FY 2021:

- The total gross sales for FY 2021 were successfully calculated and aggregated across various regions and markets.
- Key insights showed growth/decline trends across different markets, providing an overall view of company performance.

## 2. Market Badge:

- The "Market Badge" metric provided an efficient way to categorize markets by their performance. Top-performing markets were awarded a higher badge, allowing for a quick evaluation of their success.
- This helped identify key markets that exceeded or fell short of expectations, aiding in resource allocation and strategic planning.

## 3. Top Market by Region and Gross Sales:

- The top markets were identified based on gross sales in different regions, providing valuable information on which regions performed better or worse.
- The comparison between regions helped identify which areas required more focus, support, or new strategies to increase sales.
- This allowed for a granular understanding of market dynamics, enabling better regional strategies.

## 4. Helper Table for Generating Forecast Accuracy:

- A helper table was created to track and compare actual sales versus forecasted sales, facilitating the calculation of forecast accuracy.
- The data from this table was crucial in identifying discrepancies between planned sales and actual sales performance, highlighting areas where forecasting methods need improvement.

## 5. Forecast Accuracy for 2021:

- The overall forecast accuracy for FY 2021 was calculated using the generated helper table.
- The accuracy percentage helped identify gaps between projections and actual outcomes, providing a foundation for improving forecasting methods and adjusting future targets.
- This analysis helped optimize the company's demand planning and inventory management by aligning expectations more closely with actual sales.

## Conclusions:

- Your usage of CTEs, stored procedures, and views not only optimized the process of handling complex queries but also enhanced the overall efficiency of data analysis.
- The insights generated from the gross sales report, regional performance, and forecast accuracy provided actionable recommendations for improving business operations.
- Identifying top markets and analyzing forecast accuracy led to key strategic decisions for resource allocation and inventory management for future fiscal years.

These outcomes reflect a comprehensive understanding of sales performance, forecasting gaps, and market dynamics for FY 2021.



Thank you for your  
teachings