**AtliQ Hardware**

# Consumer Goods Ad-Hoc Insights

Presented By : Ayush Dongre

# Content

1) Company Overview
2) Problem Statement
3) Dataset and Model
4) Ad-hoc Requests, Outputs, and Insights
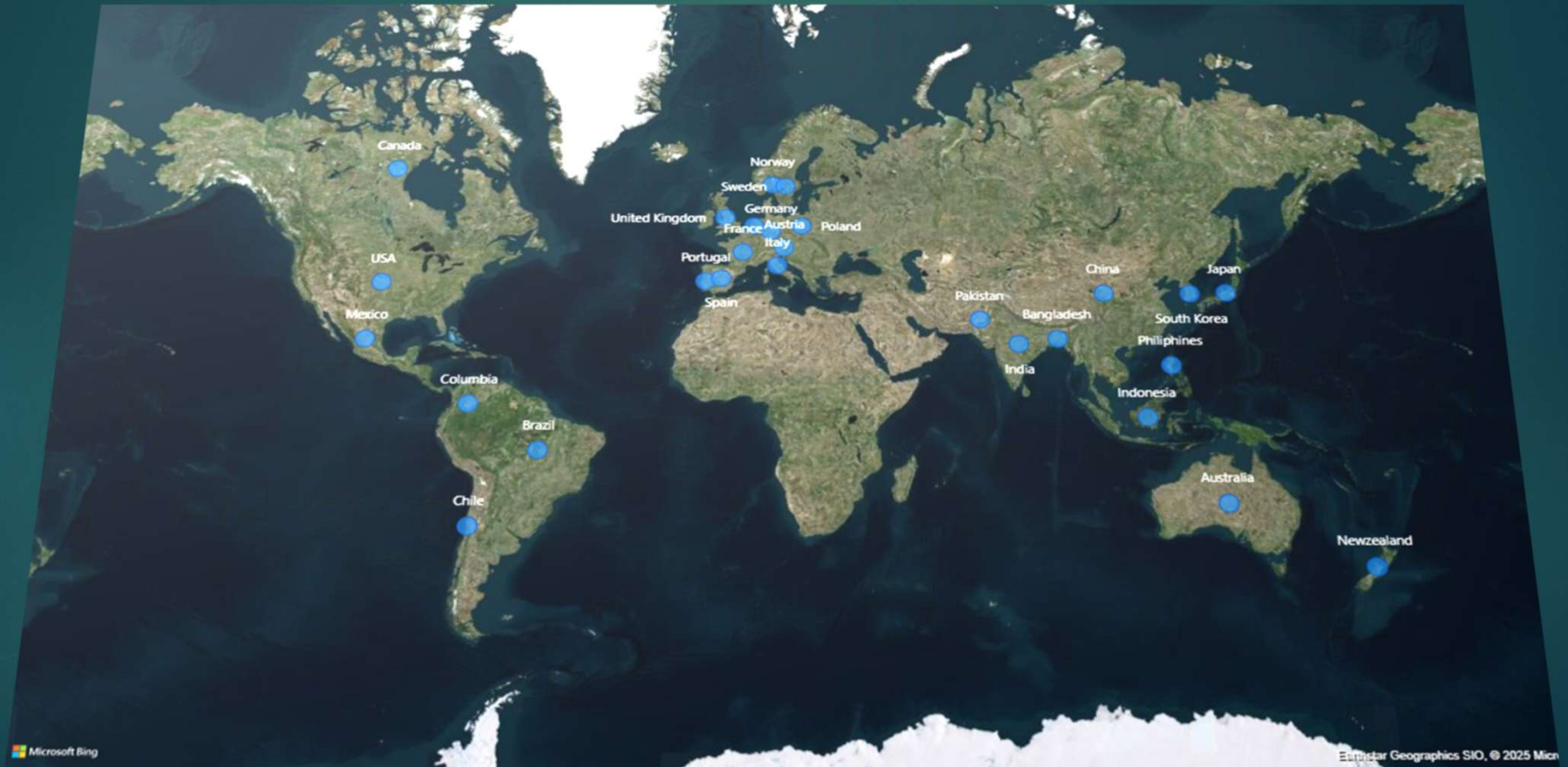5) Recommendations

# Company Overview

**AtliQ Hardware** is a leading producer of computer hardware in India, with a significant presence in international markets.
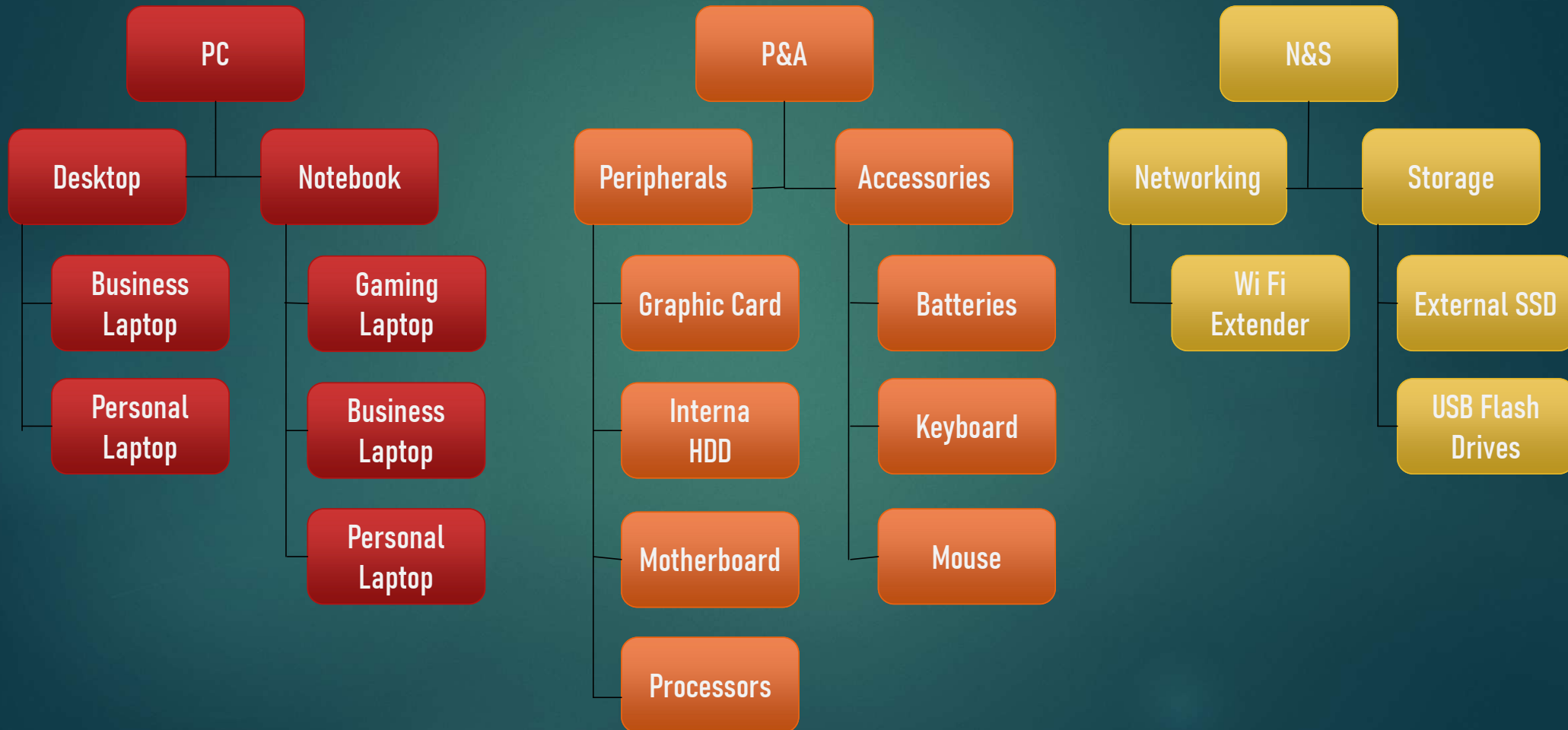
# Markets

# Product Line

**PC**
- Desktop
  - Business Laptop
  - Personal Laptop
- Notebook
  - Gaming Laptop
  - Business Laptop
  - Personal Laptop

**P&A**
- Peripherals
  - Graphic Card
  - Interna HDD
  - Motherboard
  - Processors
- Accessories
  - Batteries
  - Keyboard
  - Mouse

**N&S**
- Networking
  - Wi Fi Extender
- Storage
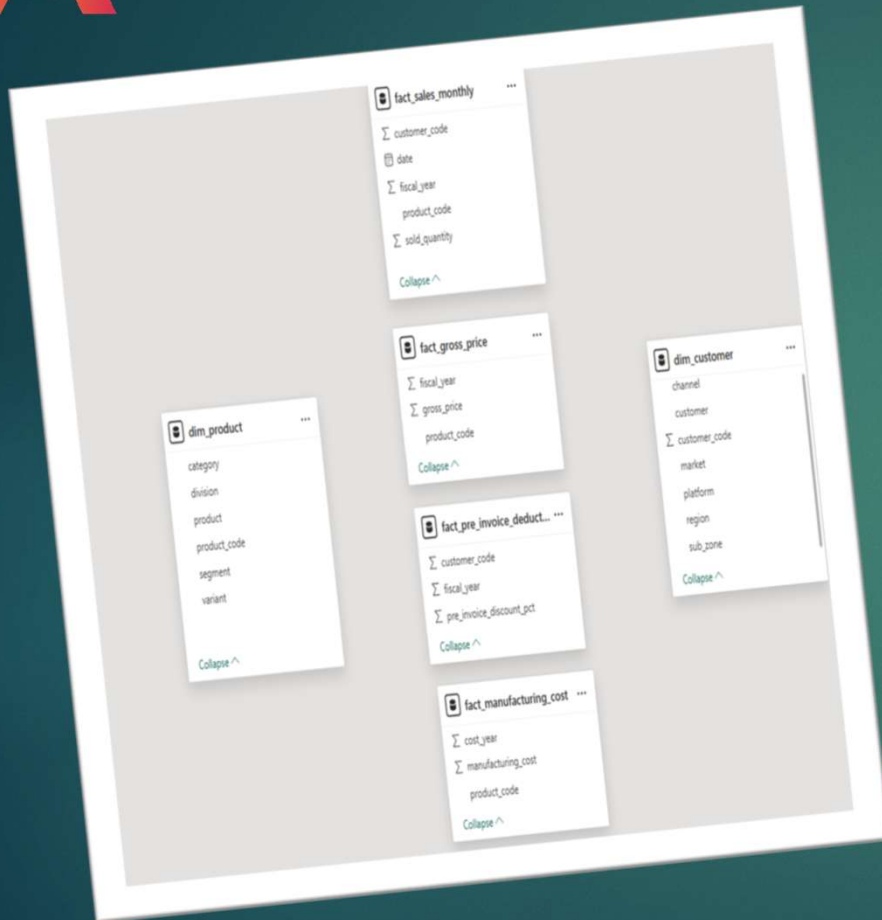  - External SSD
  - USB Flash Drives

# Problem Statement

- Management identified a gap in actionable insights required for quick, informed decision-making. As a solution, the team decided to expand the data analytics department by hiring junior analysts.
- Tony Sharma, Director of Data Analytics, prioritized candidates with strong technical expertise and communication skills. To assess their capabilities, he designed a comprehensive SQL challenge.

**fact_sales_monthly**
- Σ customer_code
- 📅 date
- Σ fiscal_year
- product_code
- Σ sold_quantity

Collapse ∧

**fact_gross_price**
- Σ fiscal_year
- Σ gross_price
- product_code

Collapse ∧

**dim_customer**
- channel
- customer
- Σ customer_code
- market
- platform
- region
- sub_zone

Collapse ∧

**dim_product**
- category
- division
- product
- product_code
- segment
- variant

Collapse ∧

**fact_pre_invoice_deduct...**
- Σ customer_code
- Σ fiscal_year
- Σ pre_invoice_discount_pct

Collapse ∧

**fact_manufacturing_cost**
- Σ cost_year
- Σ manufacturing_cost
- product_code

Collapse ∧

## Codebasics SQL Challenge

**Requests:**

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? The final output contains these fields,
   - unique_products_2020
   - unique_products_2021
   - percentage_chg

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

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

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

codebasics.io

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

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

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

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

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

codebasics.io

   - product
   - total_sold_quantity
   - rank_order

# Ad-hoc Requests, Outputs, and Insights

**Request 1**

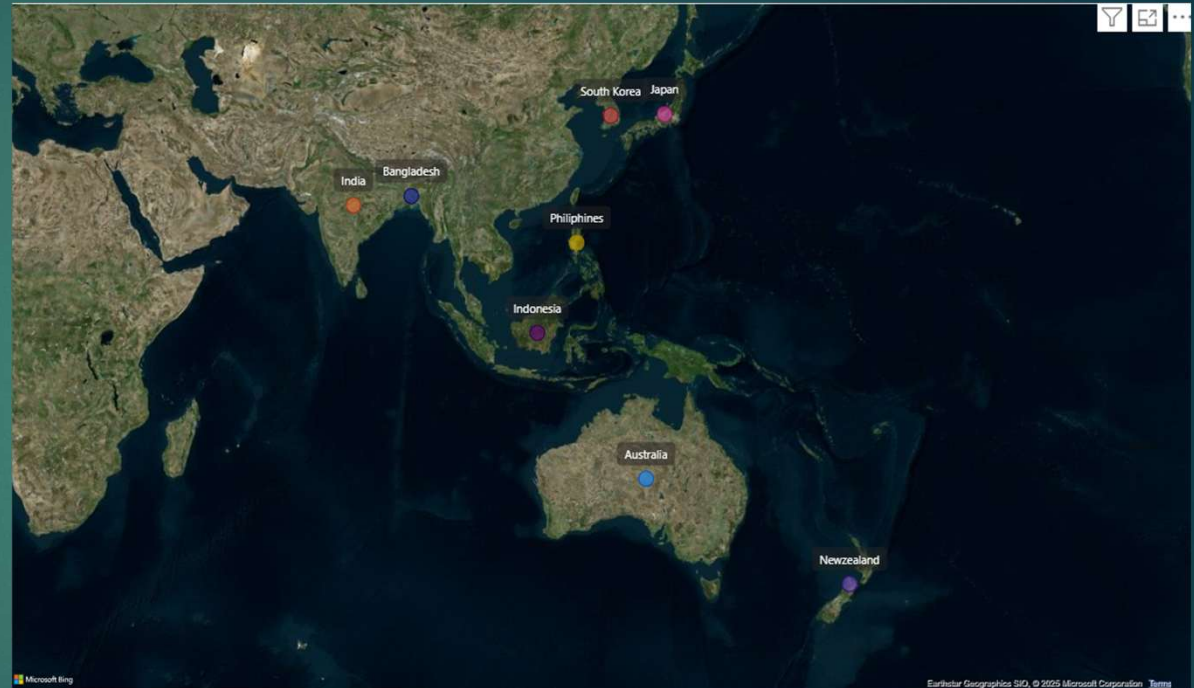Provide the list of markets in which customer "AtliQ Exclusive" operates its business in the APAC region.

**Input**

```
SELECT
        distinct(market)
FROM dim_customer
WHERE  customer = "Atliq Exclusive"
              AND region=" APAC" ;
```

| market |
|---|
| India |
| Indonesia |
| Japan |
| Philipines |
| South Korea |
| Australia |
| Newzealand |
| Bangladesh |



**Insight :**

AtliQ Exclusive has a strong foothold in the APAC region, operating across eight countries and establishing itself as a prominent player in the market.

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

Input

```
WITH unique_products_2020 AS (SELECT COUNT(DISTINCT(product_code)) AS unique_products_2020
                                     FROM fact_gross_price
                                     WHERE fiscal_year=2020),
     unique_products_2021 AS (SELECT COUNT(DISTINCT(product_code)) AS unique_products_2021
                                     FROM fact_gross_price
                                     WHERE fiscal_year=2021)
SELECT  *,
        ROUND((unique_products_2021-unique_products_2020)*100/unique_products_2020,2) AS pct_increase
FROM unique_products_2020CROSS
JOIN unique_products_2021 ;
```
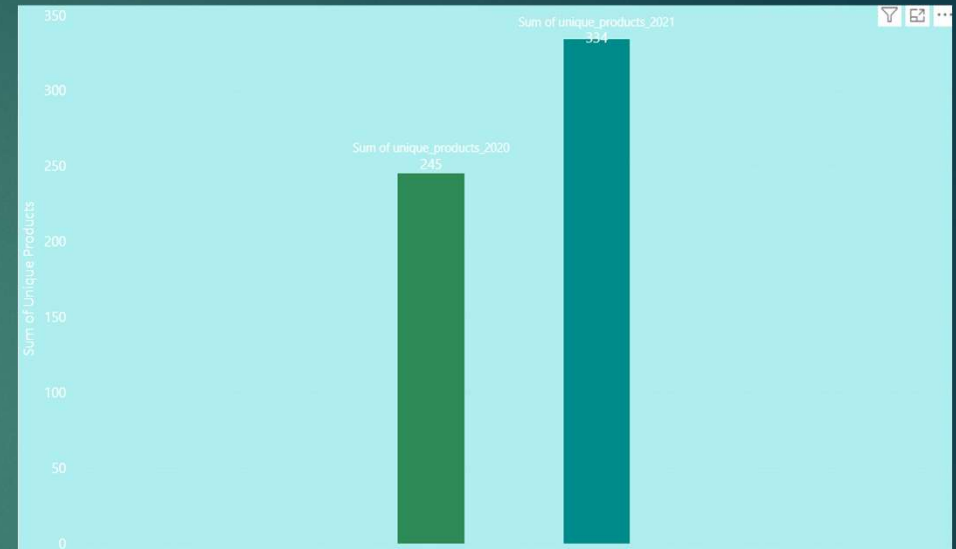
| unique_products_2020 | unique_products_2021 | pct_increase |
|---|---|---|
| 245 | 334 | 36.33 |



## Insight :

- The count of unique products rose from 245 in 2020 to 334 in 2021, reflecting a growth of 36.33%.
- This notable growth highlights the company's commitment to innovation and addressing a diverse range of customer needs.

**Request 3**

Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.
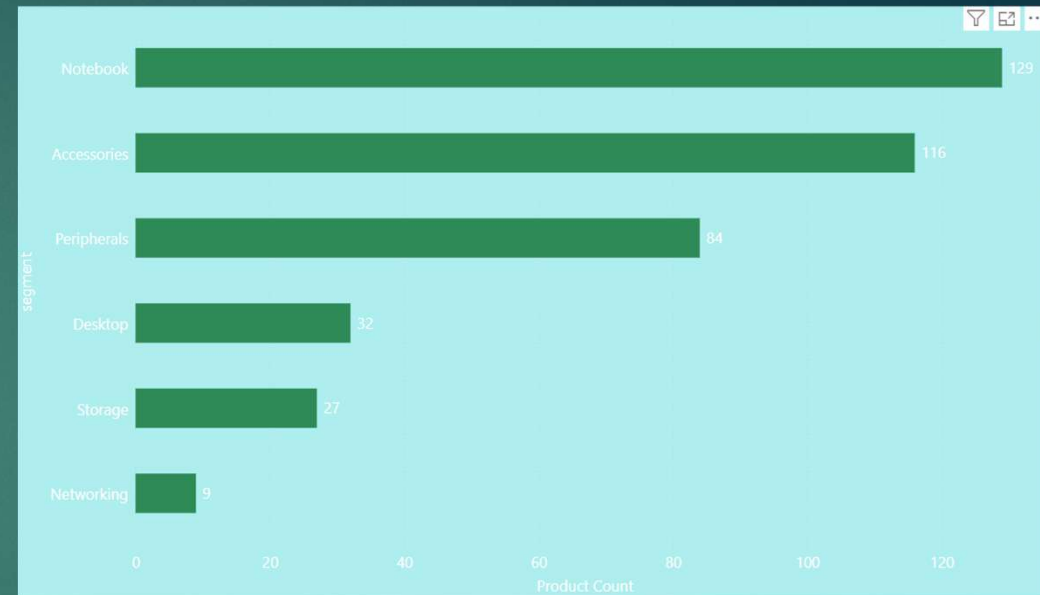
**Input**

```sql
SELECT segment,
        COUNT(DISTINCT(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 |



## Insight :

- AtliQ excels in the Notebooks, Accessories, and Peripherals segment, contributing an impressive 82.87% to the product variety.
- In the Desktops, Storage, and Networking segment, AtliQ should prioritize products that align with evolving customer preferences and market trends.

Follow-up: Which segment had the most increase in unique products in 2021 vs 2020?

**Input**

```
WITH products_2020 AS ( SELECT p.segment,
                               COUNT(DISTINCT g.product_code) AS product_count_20
                        FROM dim_product p
                        JOIN fact_gross_price g
                             ON p.product_code = g.product_code
                        WHERE g.fiscal_year = 2020
                        GROUP BY p.segment),
     products_2021 AS ( SELECT a.segment,
                               COUNT(DISTINCT b.product_code) AS product_count_21
                        FROM dim_product a
                        JOIN fact_gross_price b
                             ON a.product_code = b.product_code
                        WHERE b.fiscal_year = 2021
                        GROUP BY a.segment)
SELECT c.segment,   c.product_count_20,   d.product_count_21,
       d.product_count_21 – c.product_count_20 AS difference
FROM products_2020 c
JOIN products_2021 d ON c.segment = d.segment
ORDER BY difference DESC;
```
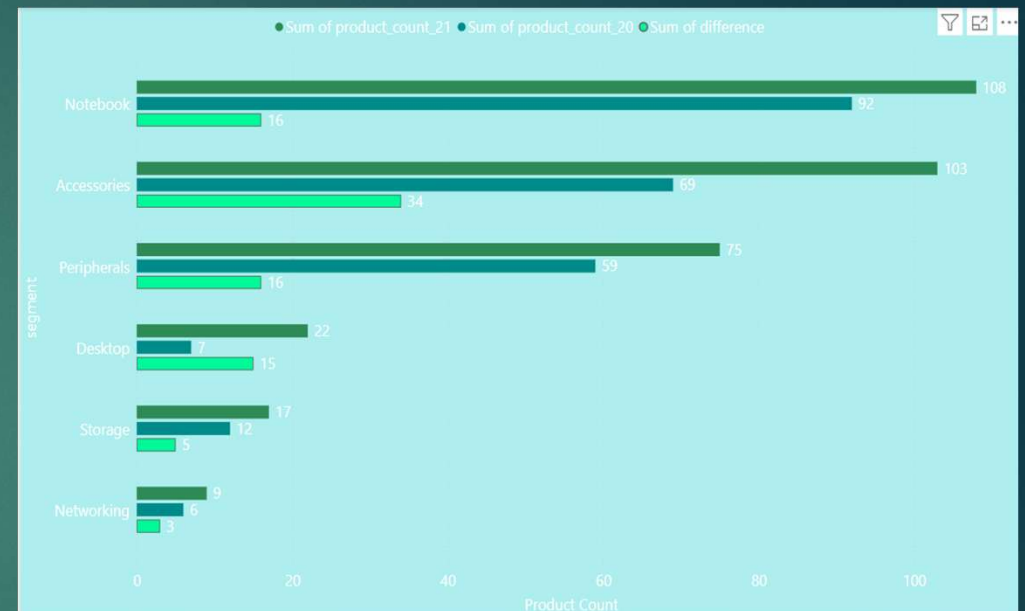
| segment | product_count_20 | product_count_21 | difference |
|---|---|---|---|
| ▶ Accessories | 69 | 103 | 34 |
| Notebook | 92 | 108 | 16 |
| Peripherals | 59 | 75 | 16 |
| Desktop | 7 | 22 | 15 |
| Storage | 12 | 17 | 5 |
| Networking | 6 | 9 | 3 |



## Insight :

- Accessories experienced the highest growth in product additions from 2020 to 2021, with 34 new products introduced.
- Desktop product production saw a remarkable surge, growing by approximately 214% during the same period.
- The Storage and Networking segments showed the lowest increase in new product production between 2020 and 2021.

**Request 5**

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

**Input**

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

| product_code | product | Min/Max Manufacturing Cost |
|---|---|---|
| A2118150101 | AQ Master wired x1 Ms | 0.89 |
| A6120110206 | AQ HOME Allin1 Gen 2 | 240.54 |

## Insight :

Product AQ Master wired x1 Ms has lowest manufacturing cost while AQ HOME Allin1 Gen 2 has highest manufacturing cost.

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.

**Input**

```
SELECT c.customer_code,
        c.customer,
        Concat(ROUND(p.pre_invoice_discount_pct*100,2), " %") AS avg_discount_pct
FROM dim_customer c
JOIN fact_pre_invoice_deductions p
    ON c.customer_code=p.customer_code
WHERE p.fiscal_year=2021 AND c.market="India"
ORDER BY p.pre_invoice_discount_pct DESC
LIMIT 5;

#since we have only 1 pre_invoice_discount_for a whole year there is no need to
#use AVG function at all since we want to calculate only for fiscal_year 2021
```

**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 % |
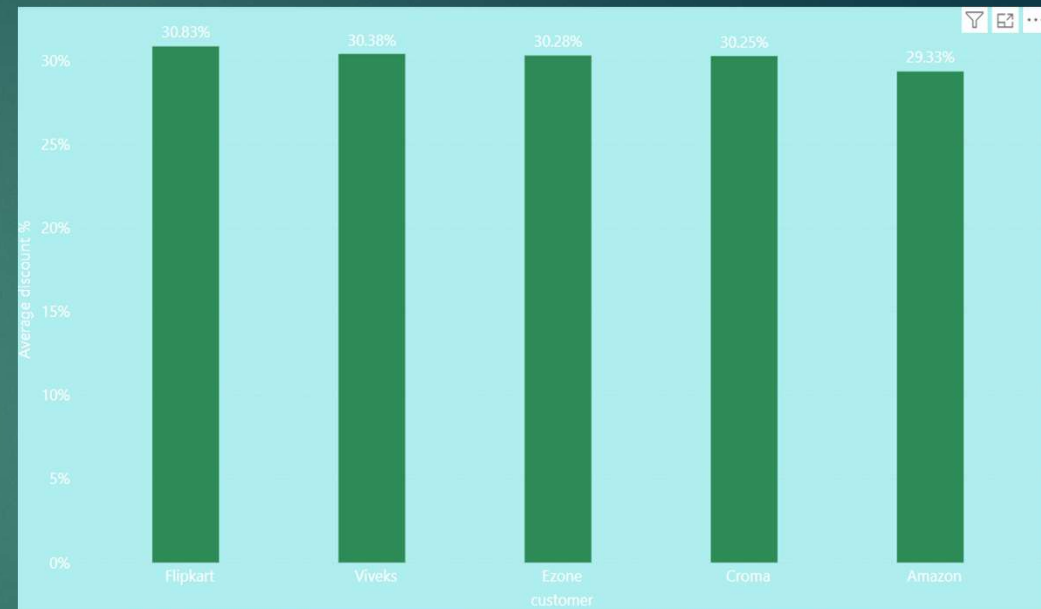
## Insight :

- Flipkart tops the list with the highest average discount rate of 30.83%.
- AtliQ has maintained fairly consistent discount rates for its top 5 customers, ranging narrowly between 29.33% and 30.83%.

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.

**Input**

```sql
WITH CTE AS (SELECT MONTHNAME(s.date) As month,
                    YEAR(s.date) AS year,
                    ROUND(SUM(g.gross_price*s.sold_quantity)/1000000,2) AS gross_sales
            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
                AND s.fiscal_year=g.fiscal_year
            WHERE c.customer="Atliq Exclusive"
            GROUP BY month,year)
SELECT month,
       year,
       gross_sales AS gross_sales_mln
FROM CTE;
```

| month | year | gross_sales_mln |
|-------|------|-----------------|
| September | 2019 | 4.50 |
| October | 2019 | 5.14 |
| November | 2019 | 7.52 |
| December | 2019 | 4.83 |
| January | 2020 | 4.74 |
| February | 2020 | 4.00 |
| March | 2020 | 0.38 |
| April | 2020 | 0.40 |
| May | 2020 | 0.78 |
| June | 2020 | 1.70 |
| July | 2020 | 2.55 |
| August | 2020 | 2.79 |
| September | 2020 | 12.35 |
| October | 2020 | 13.22 |
| November | 2020 | 20.46 |
| December | 2020 | 12.94 |
| January | 2021 | 12.40 |
| February | 2021 | 10.13 |
| March | 2021 | 12.14 |
| April | 2021 | 7.31 |
| May | 2021 | 12.15 |
| June | 2021 | 9.82 |
| July | 2021 | 12.09 |
| August | 2021 | 7.18 |
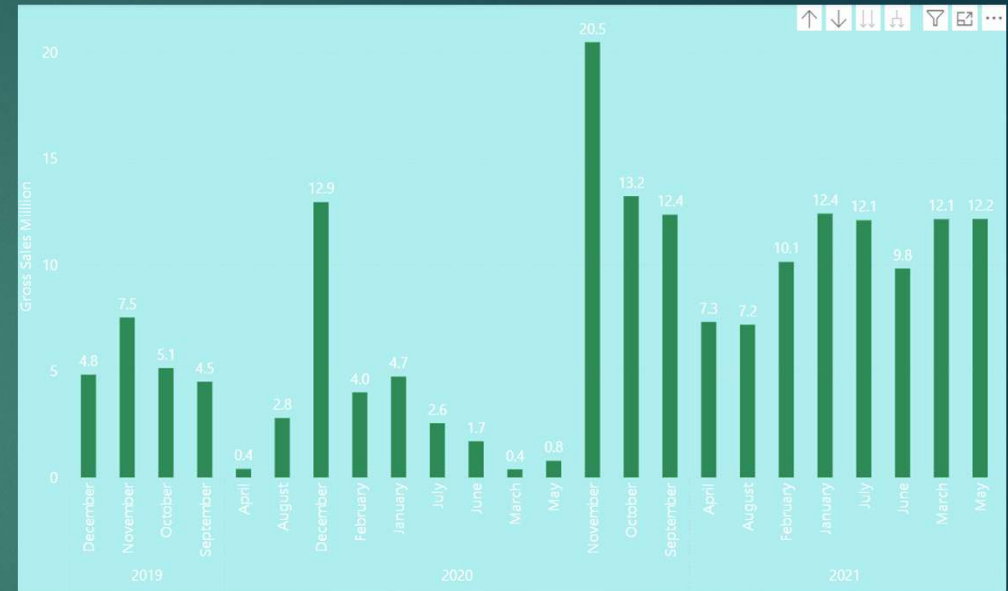
## Insight :

- In 2020, sales were significantly impacted by the COVID-19 pandemic, with the lowest figures recorded in March, April, and May. Recovery began in June, and November marked the highest sales of the year, at 20.5 million.
- Sales in 2021 were less diverse compared to 2019 and 2020, ranging between 7.2 million and 12.4 million.

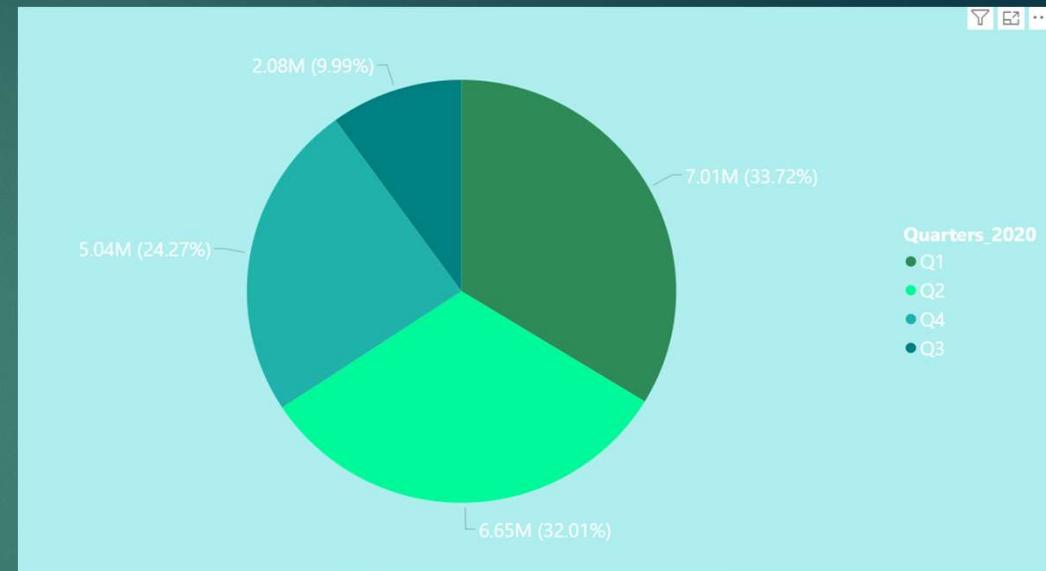In which quarter of 2020, got the maximum total_sold_quantity?

**Input**

```sql
SELECT CONCAT("Q" ,CEILING(MONTH(DATE_ADD(date, INTERVAL 4 MONTH))/3)) AS Quarters_2020,
            SUM(sold_quantity) AS total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year=2020
GROUP BY Quarters_2020
ORDER BY total_sold_quantity DESC;
```

| Quarters_2020 | total_sold_quantity |
|---------------|---------------------|
| Q1 | 7005619 |
| Q2 | 6649642 |
| Q4 | 5042541 |
| Q3 | 2075087 |

Pie chart — Quarters_2020:
- 7.01M (33.72%)
- 6.65M (32.01%)
- 5.04M (24.27%)
- 2.08M (9.99%)

Legend: Q1, Q2, Q4, Q3

## Insight :

- In Q1 of 2020, sales peaked at approximately 7 million units, signaling a strong start to the year.
- AtliQ faced a notable drop in sales during Q3 (March, April, May), likely as a result of the COVID-19 pandemic, which mirrored the tough market conditions and changing consumer behaviors at the time.

**Request 9**

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

**Input**

```sql
WITH channel_gross_sales AS (SELECT c.channel,
                                    ROUND(SUM(g.gross_price*s.sold_quantity)/1000000,2) AS gross_sales_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
                                  AND s.fiscal_year=g.fiscal_year
                             WHERE s.fiscal_year=2021
                             GROUP BY c.channel)
SELECT *,
       CONCAT(ROUND(gross_sales_mln*100/SUM(gross_sales_mln) OVER(),2), " %") AS percentage_contribution
FROM channel_gross_sales
ORDER BY gross_sales_mln DESC;
```
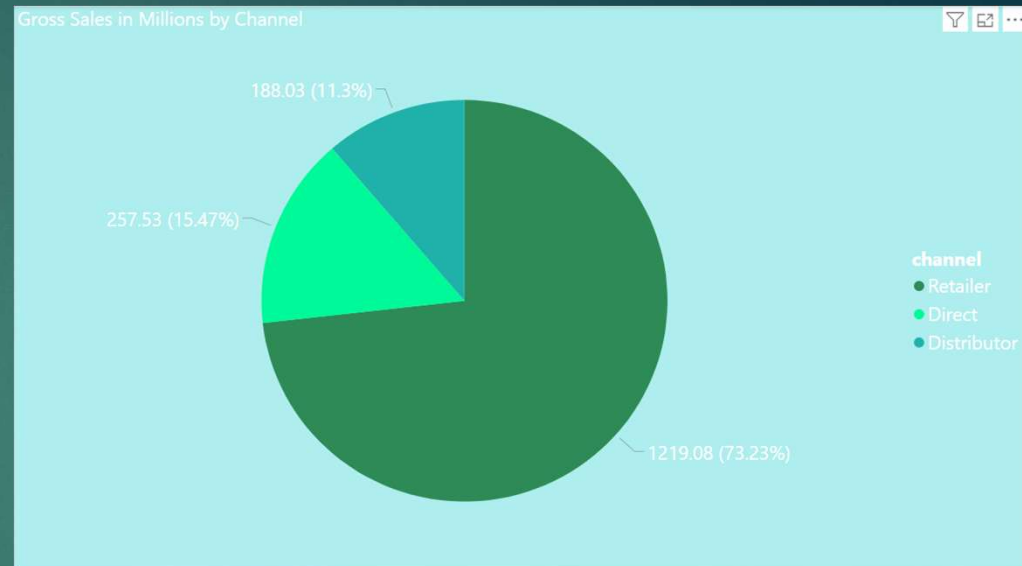
Gross Sales in Millions by Channel

| channel | gross_sales_mln | percentage_contribution |
|---------|-----------------|-------------------------|
| Retailer | 1219.08 | 73.23 % |
| Direct | 257.53 | 15.47 % |
| Distributor | 188.03 | 11.30 % |

188.03 (11.3%)

257.53 (15.47%)

1219.08 (73.23%)

channel
● Retailer
● Direct
● Distributor

## Insight :

- Retailers are the primary source of AtliQ's sales, contributing a significant 73.23% of the total gross sales.
- The combined contribution of direct and distributor channels amounts to just 26.77% of the total sales.

Get the Top 3 products in each division that have a high total_sold- _quantity in the fiscal_year 2021?

**Input**

```
WITH CTE1 AS (SELECT division,
                      product_code,
                      CONCAT(product, " | " ,variant) AS product_variant,
                      SUM(sold_quantity) AS total_sold_quantity
              FROM dim_product
              JOIN fact_sales_monthly
                   USING (product_code)
              WHERE fiscal_year=2021
              GROUP BY division, product_code, product_variant),
     CTE2 AS (SELECT *,
                     RANK() OVER(partition by division order by total_sold_quantity DESC) AS rank_order
              FROM CTE1)
SELECT *
FROM CTE2
WHERE rank_order <=3;
```

| division | product_code | product_variant | total_sold_quantity | rank_order |
|---|---|---|---|---|
| N & S | A6720160103 | AQ Pen Drive 2 IN 1 \| Premium | 701373 | 1 |
| N & S | A6818160202 | AQ Pen Drive DRC \| Plus | 688003 | 2 |
| N & S | A6819160203 | AQ Pen Drive DRC \| Premium | 676245 | 3 |
| P & A | A2319150302 | AQ Gamers Ms \| Standard 2 | 428498 | 1 |
| P & A | A2520150501 | AQ Maxima Ms \| Standard 1 | 419865 | 2 |
| P & A | A2520150504 | AQ Maxima Ms \| Plus 2 | 419471 | 3 |
| PC | A4218110202 | AQ Digit \| Standard Blue | 17434 | 1 |
| PC | A4319110306 | AQ Velocity \| Plus Red | 17280 | 2 |
| PC | A4218110208 | AQ Digit \| Premium Misty Green | 17275 | 3 |
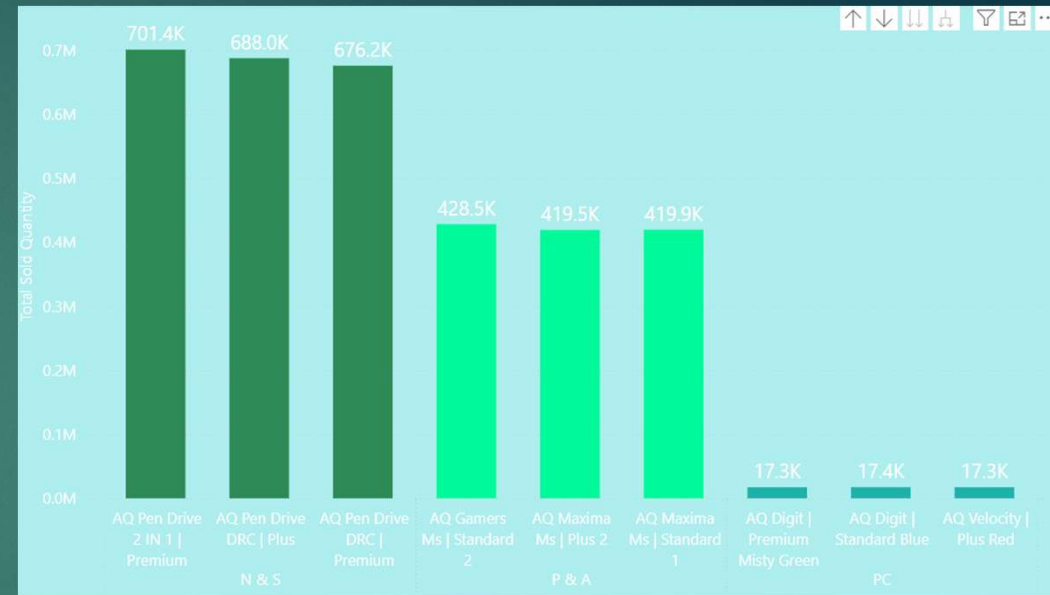


## Insight :

- In the N & S division, pen drives occupy the top three positions, highlighting their strong popularity and impressive sales performance.
- The top three products in the P & A division are all mice, indicating a clear demand for these devices.
- Personal laptops are the bestsellers in the PC division, dominating the sales in this category.

# Recommendations

1. Focus on desktops, storage, and networking segments to maximize revenue potential.
2. Implement multi-channel marketing strategies to enhance market penetration.
3. Combine competitive pricing with promotional campaigns to attract customers.
4. Leverage customer feedback to improve products and services continuously.
5. Invest in comprehensive sales team training to enhance performance and drive results.