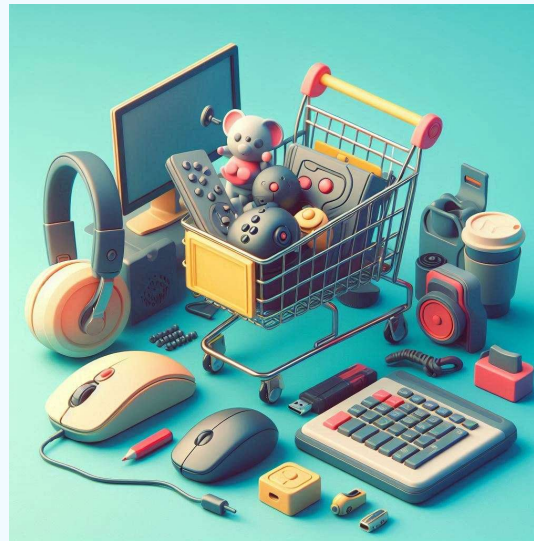




## Consumer Goods Ad\_Hoc Insights



**Challenge :-4 Provide Insights to Management in Consumer Goods Domain**

**Presented by :- Gagandeep Kaur Bhatti**



## Agenda

### 1. Company Overview

Strategic context, business model, and organizational structure

### 2. Data Summary and Model

Data architecture, key metrics, and analytical framework overview

### 3. Ad Hoc Insights Using SQL

Custom queries, data exploration, and key findings from database analysis

### 4. Visual Analytics Using Power BI

Interactive dashboards, trend analysis, and performance visualizations

### 5. Key Insights from Visuals

Data-driven recommendations and strategic takeaways



## AtliQ Hardware Overview



**Domain: Consumer Goods**

**Function: Executive Management**

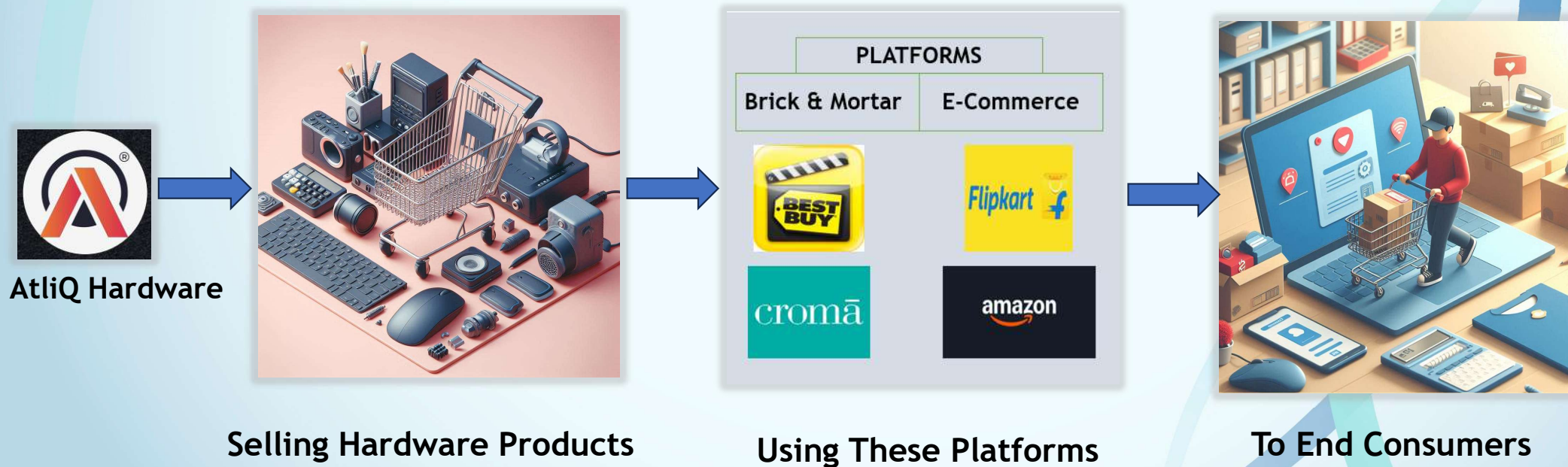
**AtliQ Hardware** is a technology-driven manufacturer and distributor of computer hardware, operating globally across multiple regions including APAC, EU, NA, and LATAM. The company offers a wide range of products such as laptops, desktops, peripherals, accessories, storage devices, and networking equipment. AtliQ Hardware leverages both **Brick & Mortar** and **E-Commerce** platforms, with distribution channels including **Retailers, Distributors, and Direct Sales**. The fiscal year for AtliQ Hardware begins in September and ends in August.

➤ **AtliQ Hardware serves two main types of customers:**

- **Retail Stores:** Physical shops like Best Buy and Croma.
- **Online Platforms:** Big e-commerce sites like Flipkart and Amazon.

By selling through both stores and online platforms, AtliQ Hardware reaches more customers and strengthens its market presence.

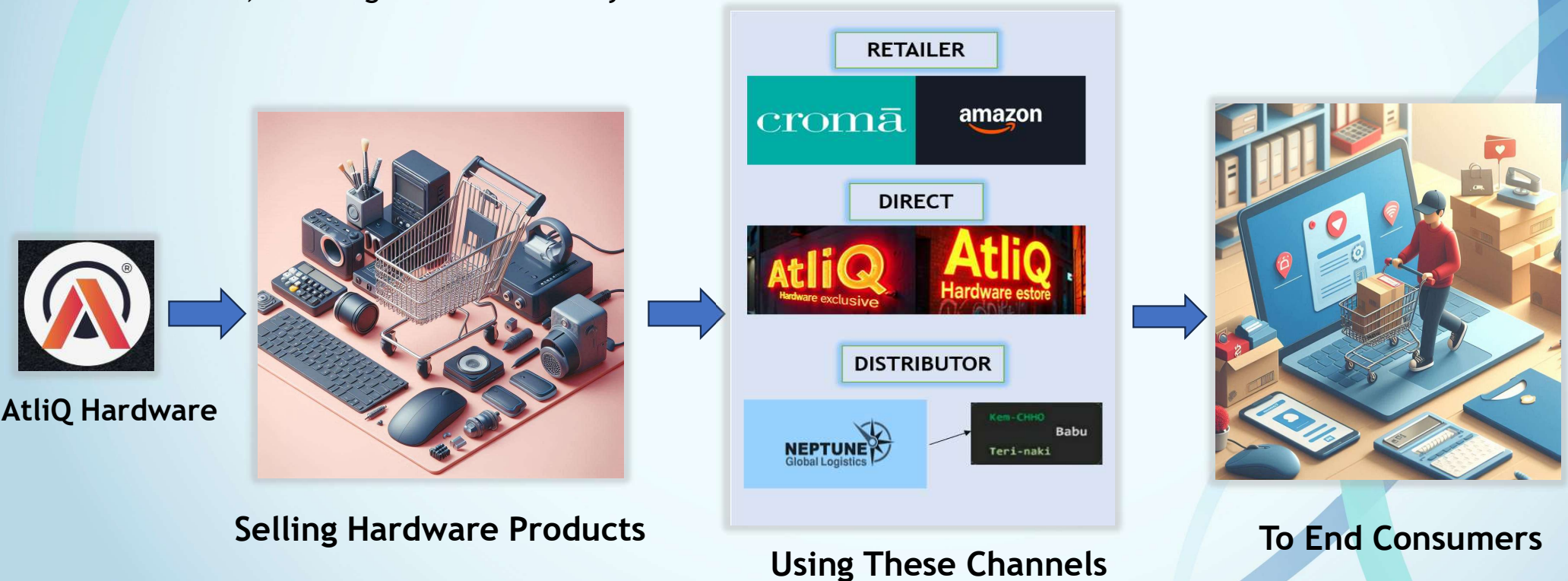
➤ **Product Distribution Flow**





➤ **AtliQ Hardware sells its products through three main channels:**

- **Retailer Channel:** AtliQ works with popular retailers like Croma, Amazon, and Best Buy to reach a large number of customers.
- **Direct Channel:** Customers can buy directly from AtliQ through the AtliQ Exclusive stores and the AtliQ E-store, offering a convenient and customized shopping experience.
- **Distributor Channel:** Distributors like Neptune and Sage help deliver AtliQ products to stores across various cities, ensuring wider availability.



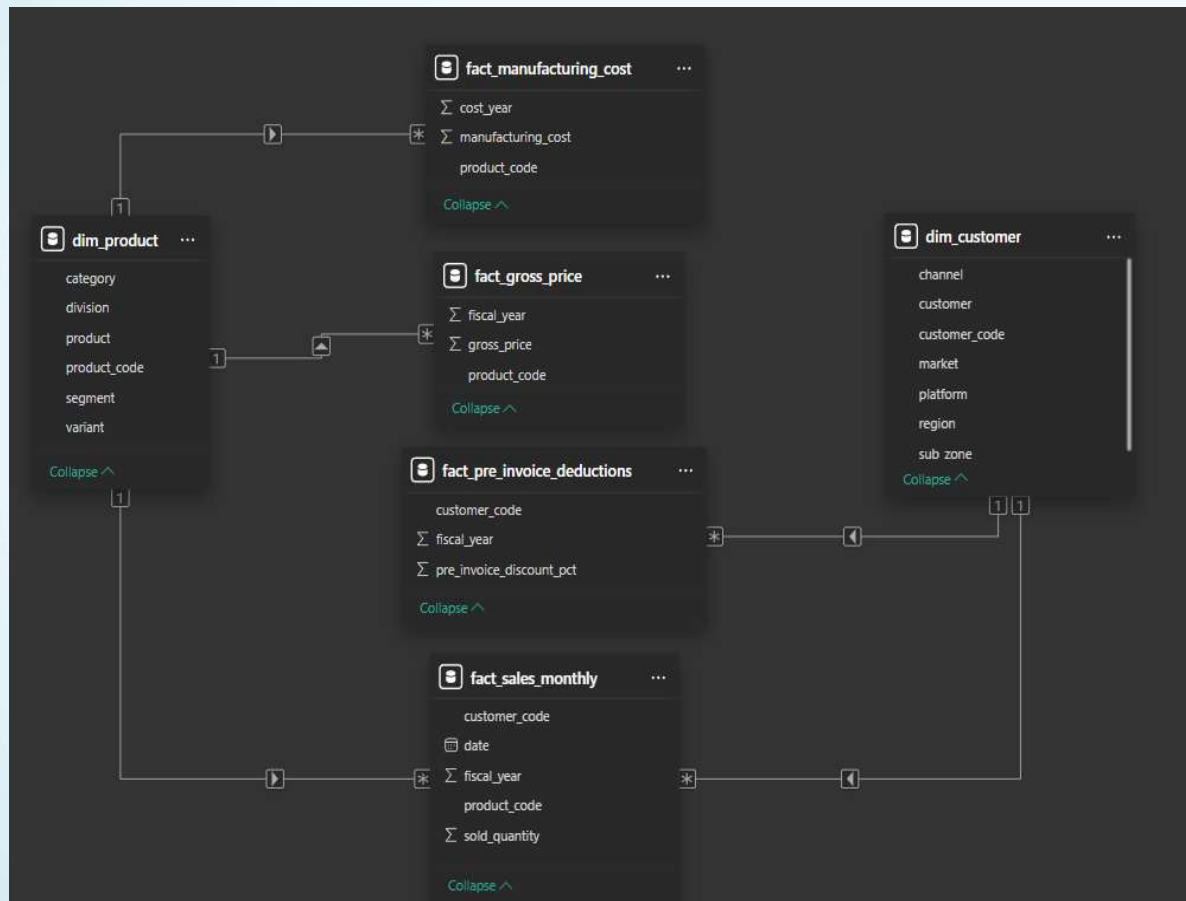


## Database Summary

The data warehouse named **atliq\_hardware\_db (gdb023)** consists of six essential tables:

Table Name	Purpose
dim_customer	Contains customer details and segmentation
dim_product	Contains product hierarchy and classification
fact_gross_price	Captures product prices before deductions
fact_manufacturing_cost	Records production costs per product
fact_pre_invoice_deductions	Includes pre-invoice discount percentages
fact_sales_monthly	Tracks monthly sales performance

# DATA MODEL





## Business Objectives

### ❖ **Optimize Product Portfolio**

Identify high and low performing products by comparing gross margin (gross price - manufacturing cost) and sold quantity.

### ❖ **Regional Sales Analysis**

Evaluate which regions, sub-zones, and platforms contribute most to revenue.

### ❖ **Channel Performance Insights**

Understand the effectiveness of distribution channels (Direct vs. Retailers vs. Distributors).

### ❖ **Customer Segmentation**

Categorize customers based on sales volume and discount behavior for targeted marketing and loyalty programs.

### ❖ **Forecasting & Trend Identification**

Analyze monthly sales trends across fiscal years to forecast demand and improve production planning.



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

```
SELECT
    market
FROM dim_customer
WHERE region = "APAC" AND
    customer = "Atliq Exclusive"
GROUP BY market
ORDER BY market;
```

Result Grid		Filter Rows:
	market	
▶	Australia	
	Bangladesh	
	India	
	Indonesia	
	Japan	
	Newzealand	
	Philiphines	
	South Korea	



The image displays a map titled “Markets for Atliq Exclusive in APAC Region” highlights the countries where Atliq Exclusive operates.

- ❑ 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

```
WITH unique_2020 AS (  
    SELECT COUNT(DISTINCT product_code) AS unique_products_2020  
    FROM fact_sales_monthly  
    WHERE fiscal_year = 2020  
)  
,  
unique_2021 AS (  
    SELECT COUNT(DISTINCT product_code) AS unique_products_2021  
    FROM fact_sales_monthly  
    WHERE fiscal_year = 2021  
)  
SELECT  
    u20.unique_products_2020,  
    u21.unique_products_2021,  
    ROUND(  
        ((u21.unique_products_2021 - u20.unique_products_2020) * 100.0) / u20.unique_products_2020,2) AS percentage_chg  
FROM unique_2020 u20  
CROSS JOIN unique_2021 u21;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
	unique_products_2020	unique_products_2021	percentage_chg
▶	245	334	36.33

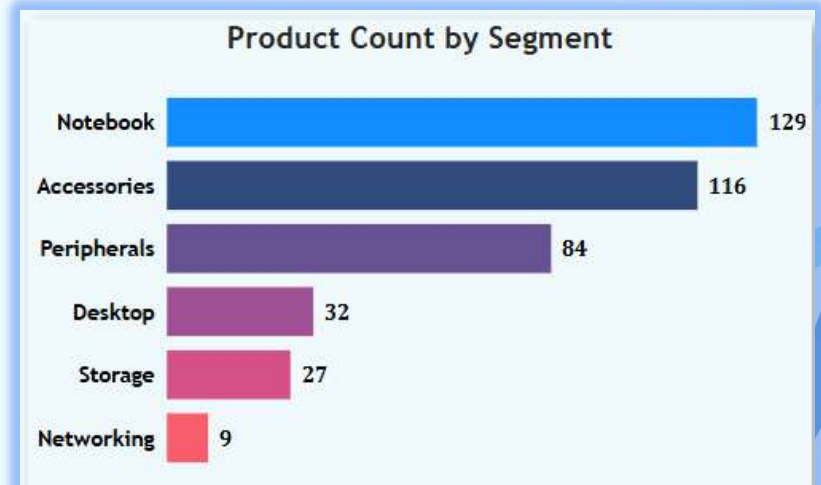


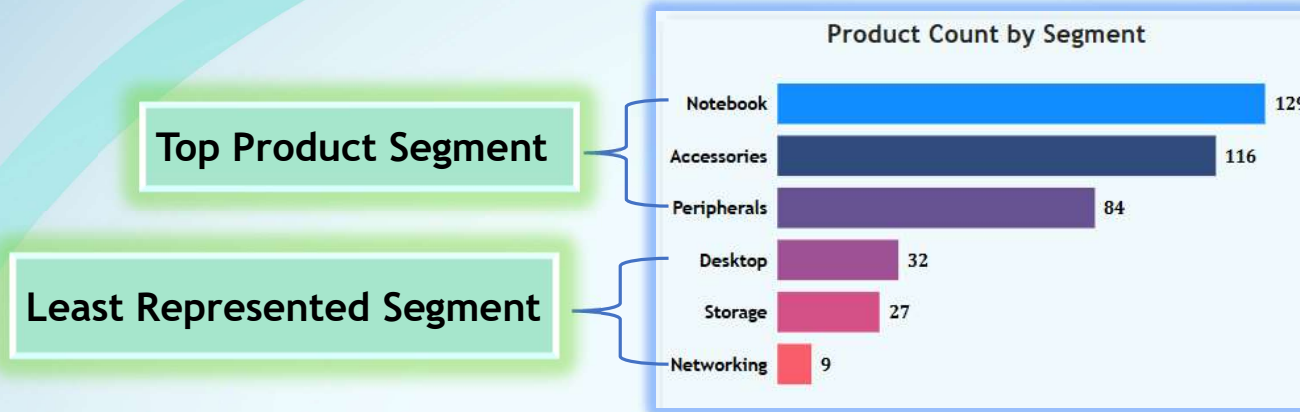
Atliq Exclusive increased its product variety significantly in 2021, selling **89 more unique products** than in 2020 — a **36% growth**. This suggests a strategy of **product diversification** or **expanded market reach**.

- ❖ 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

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

Result Grid		
Filter Rows:		
	segment	product_cnt
▶	Notebook	129
	Accessories	116
	Peripherals	84
	Desktop	32
	Storage	27
	Networking	9





- ❖ **Top Product Segment:**  
Notebook leads with 129 products, followed by Accessories (116) and Peripherals (84).
  - ❖ **Least Represented Segments:**  
Networking (9) and Storage (27) have the fewest products, indicating lower focus or limited offerings in these categories.
- 💡 **Suggestion:**
- ❖ **Expand Lower Segments:** Consider diversifying and growing product lines in Networking and Storage segments. These are critical in the tech ecosystem and represent untapped market potential.
  - ❖ **Leverage Leading Segments:** Maintain innovation and promotion in Notebooks and Accessories to continue capitalizing on their existing strong presence.

- ❖ 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

```
WITH unique_product AS
(
  SELECT
    b.segment AS segment,
    COUNT(DISTINCT
      (CASE
        WHEN fiscal_year = 2020 THEN a.product_code END)) AS product_count_2020,
    COUNT(DISTINCT
      (CASE
        WHEN fiscal_year = 2021 THEN a.product_code END)) AS product_count_2021
  FROM fact_sales_monthly AS a
  INNER JOIN dim_product AS b
  ON a.product_code = b.product_code
  GROUP BY b.segment
)
SELECT segment, product_count_2020, product_count_2021, (product_count_2021-product_count_2020) AS difference
FROM unique_product
ORDER BY difference DESC;
```

segment	product_cnt_2020	product_cnt_2021	diifference
Accessories	69	103	34
Notebook	92	108	16
Peripherals	59	75	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3

segment	product_cnt_2020	product_cnt_2021	diifference
Accessories	69	103	34
Desktop	7	22	15
Networking	6	9	3
Notebook	92	108	16
Peripherals	59	75	16
Storage	12	17	5



segment	product_cnt_2020	product_cnt_2021	diifference
Accessories	69	103	34
Notebook	92	108	16
Peripherals	59	75	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3

❖ All segments increased product counts in 2021 compared to 2020.

❖ Top growth was in:

Accessories: +34 products

Notebook and Peripherals: +16 each

Desktop: grew from 7 to 22 (+15)

#### 💡 Suggestion:

- Keep investing in **Accessories** - it showed the biggest growth and strong demand.
- **Desktop segment** had significant percentage growth (more than 3x) - explore more opportunities here.
- **Networking** had the lowest increase - consider **product development or marketing focus** to grow this underrepresented area.

- ❖ Get the products that have the highest and lowest manufacturing costs. The final output should contain these fields, product\_code, product & manufacturing\_cost

```
SELECT
    p.product_code,
    p.product,
    m.manufacturing_cost
FROM dim_product p
JOIN fact_manufacturing_cost m
    USING(product_code)
WHERE ROUND(m.manufacturing_cost, 2) = (
    SELECT ROUND(MAX(manufacturing_cost), 2)
    FROM fact_manufacturing_cost
)
OR ROUND(m.manufacturing_cost, 2) = (
    SELECT ROUND(MIN(manufacturing_cost), 2)
    FROM fact_manufacturing_cost
)
GROUP BY p.product_code, p.product, m.manufacturing_cost;
```

product_code	product	manufacturing_cost
A2118150101	AQ Master wired x1 Ms	0.8920
A6120110206	AQ HOME Allin1 Gen 2	240.5364



AQ Master wired x1 Ms

0.89



AQ HOME Allin1 Gen 2

240.54

▲ Highest Manufacturing Cost Product:

- Product: AQ HOME Allin1 Gen 2
- Cost: 241.43

▼ Lowest Manufacturing Cost Product:

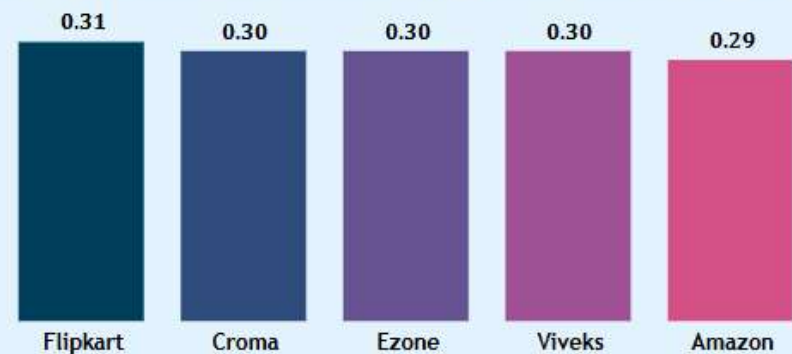
- Product: AQ Master wired x1 Ms
- Cost: ₹0.89

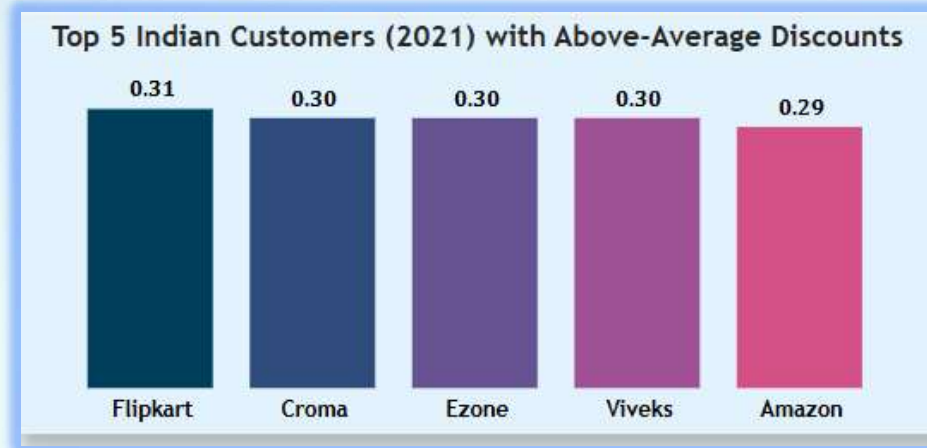
- ❖ Generate a report which contains the top 5 customers who received an average high pre\_invoice\_discount\_pct for the fiscal year 2021 and in the Indian market. The final output contains these fields, customer\_code, customer, average\_discount\_percentage

```
SELECT
    customer_code,
    customer,
    ROUND(AVG(pre_invoice_discount_pct),2) AS avg_discount
FROM dim_customer c
JOIN fact_pre_invoice_deductions p
    USING(customer_code)
WHERE market = "India" AND
    fiscal_year = 2021 AND
    ROUND(pre_invoice_discount_pct,2) > (
SELECT ROUND(AVG(pre_invoice_discount_pct),2)
FROM fact_pre_invoice_deductions
WHERE fiscal_year = 2021)
GROUP BY customer_code , customer
ORDER BY avg_discount DESC
LIMIT 5;
```

	customer_code	customer	avg_discount
▶	90002009	Flipkart	0.31
	90002002	Croma	0.30
	90002003	Ezone	0.30
	90002006	Viveks	0.30
	90002016	Amazon	0.29

Top 5 Indian Customers (2021) with Above-Average Discounts





- **Top 5 Indian customers** in 2021 received **higher-than-average discounts**.
- **Flipkart** got the **highest average discount** at 31%.
- Other top customers like **Croma, Ezone, Viveks**, and **Amazon** also received discounts close to 30%.
- These companies likely contributed **high sales volume**, which helped them **negotiate better deals**.

- ❖ 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

```
WITH x AS (  
    SELECT  
        customer_code,  
        customer  
    FROM dim_customer  
    WHERE customer = "Atliq Exclusive"  
) ,  
y AS (  
    SELECT  
        s.*,  
        gross_price * sold_quantity AS gross_sales_amount  
    FROM fact_sales_monthly s  
    JOIN fact_gross_price g  
        USING(product_code, fiscal_year)  
)  
SELECT  
    CONCAT(MONTHNAME(y.date), ' ', YEAR(y.date)) AS 'Month',  
    y.fiscal_year,  
    ROUND(SUM(y.gross_sales_amount),2) AS gross_sales_amount  
FROM y  
JOIN x  
    USING(customer_code)  
GROUP BY y.date, y.fiscal_year  
ORDER BY fiscal_year;
```

Month	fiscal_year	gross_sales_amount
September 2019	2020	4496259.67
October 2019	2020	5135902.35
November 2019	2020	7522892.56
December 2019	2020	4830404.73
January 2020	2020	4740600.16
February 2020	2020	3996227.77
March 2020	2020	378770.97
April 2020	2020	395035.35
May 2020	2020	783813.42
June 2020	2020	1695216.60
July 2020	2020	2551159.16
August 2020	2020	2786648.26
September 2020	2021	12353509.79
October 2020	2021	13218636.20
November 2020	2021	20464999.10
December 2020	2021	12944659.65
January 2021	2021	12399392.98
February 2021	2021	10129735.57
March 2021	2021	12144061.25
April 2021	2021	7311999.95
May 2021	2021	12150225.01
June 2021	2021	9824521.01
July 2021	2021	12092346.32
August 2021	2021	7178707.59





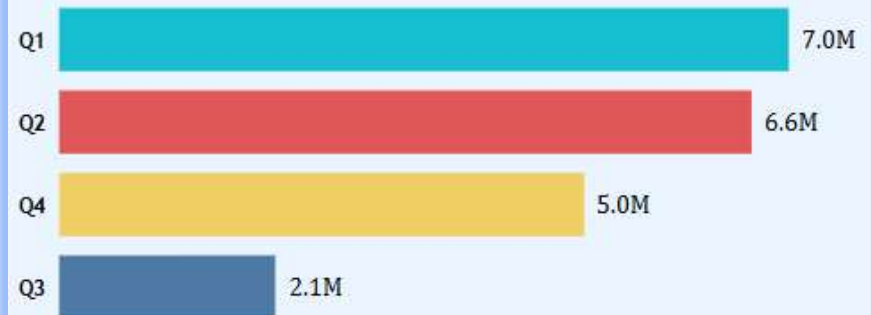
- **2021 Outperformed 2020:** Every month in 2021 had much higher gross sales than 2020.
- **Peak in November 2021:** Sales hit the highest point in November 2021 at 20M, likely due to festive shopping (e.g., Diwali).
- **Zero Sales in Early 2020 (Mar-Apr):** March and April 2020 show 0 sales, possibly due to the **COVID-19** lockdown.
- **Stable Growth in 2021:** Sales remained consistently strong throughout 2021, fluctuating between 10M and 20M.
- **Low Activity in 2020:** Sales stayed under 8M in most months in 2020, showing a weak performance overall.

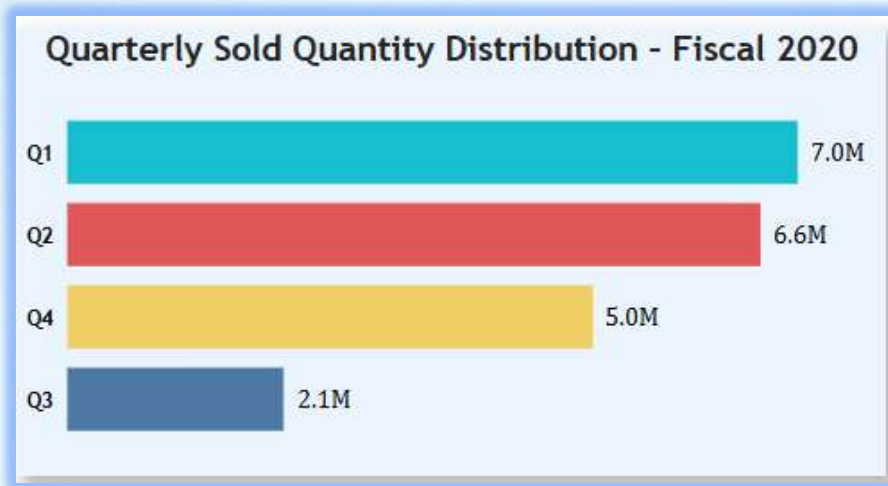
- ❖ In which quarter of 2020, got the maximum total\_sold\_quantity? The final output contains these fields Quarter & total\_sold\_quantity sorted by the total\_sold\_quantity,

```
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'
    ELSE '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 Grid		
Filter Rows:		
	quarter	total_sold_quantity
▶	Q1	7005619
	Q2	6649642
	Q4	5042541
	Q3	2075087

Quarterly Sold Quantity Distribution - Fiscal 2020



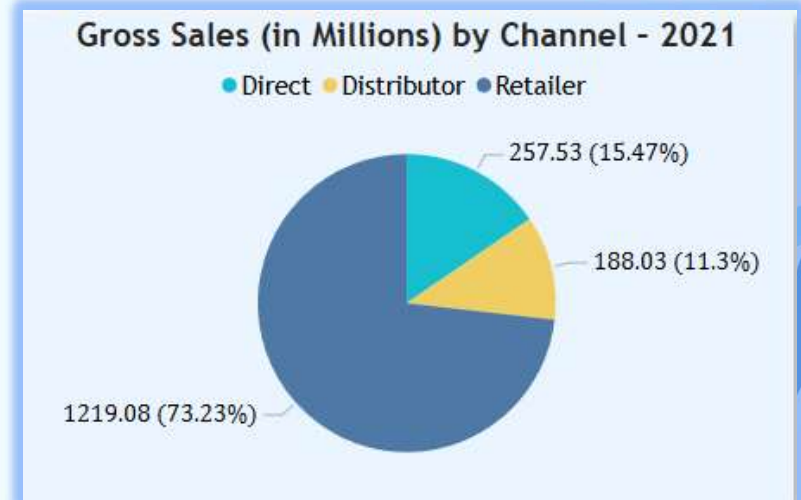


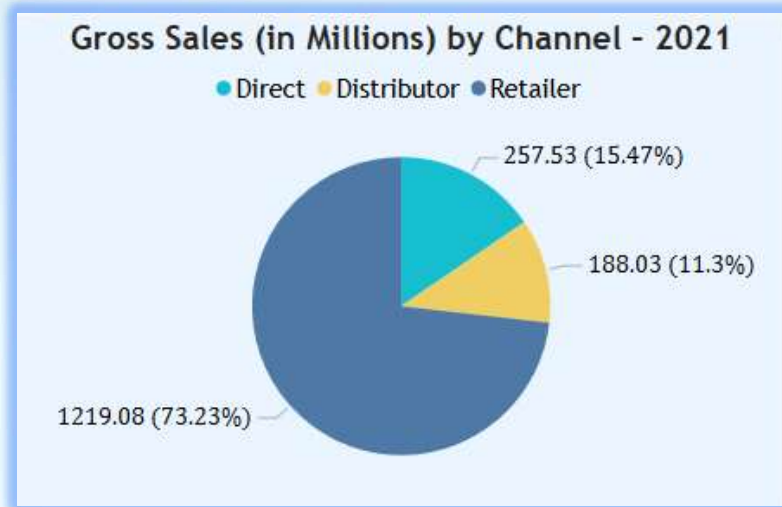
- **Q3 crashed** - Only 2.1M units, way below other quarters
- **Strong start** - Q1 and Q2 were the best performers (7.0M and 6.6M)
- **Decent recovery** - Q4 bounced back to 5.0M units
- **Front-heavy year** - Most sales happened in first half
- **Bottom line:** Started strong, hit a major low in Q3, then partially recovered.

- ❖ 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

```
WITH x AS (  
  SELECT  
    channel,  
    ROUND(SUM(gross_price * sold_quantity)/1000000,2) AS gross_sales_mln  
  FROM dim_customer c  
  JOIN fact_sales_monthly s  
    USING(customer_code)  
  JOIN fact_gross_price g  
    USING(product_code, fiscal_year)  
  WHERE fiscal_year = 2021  
  GROUP BY channel  
)  
SELECT  
  channel,  
  gross_sales_mln,  
  ROUND(gross_sales_mln * 100 / SUM(gross_sales_mln) OVER (), 2) AS percentage  
FROM x  
ORDER BY gross_sales_mln DESC;
```

Result Grid	Filter Rows:	Export:
channel	gross_sales_mln	percentage
▶ Retailer	1219.08	73.23
Direct	257.53	15.47
Distributor	188.03	11.30





- **Retailer dominates** - 73% of sales (\$1.2B) come through retail partners
- **Direct sales growing** - 15% (\$258M) suggests decent direct-to-consumer presence
- **Distributors smallest** - Only 11% (\$188M) of total sales
- **Total revenue: \$1.66B**
- **Bottom line:** Heavy reliance on retail channel, with direct sales as secondary focus and distributors playing a minor role.



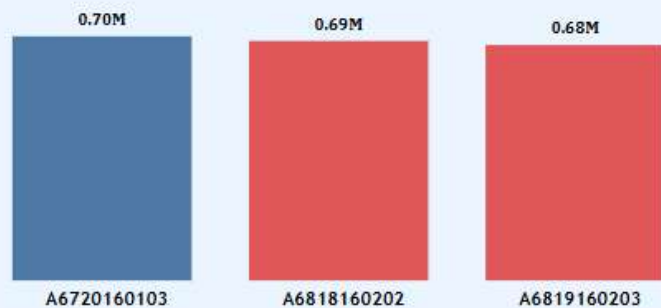
- ❖ Get the Top 3 products in each division that have a high total\_sold\_quantity in the fiscal\_year 2021? The final output contains these fields, division, product\_code, product, total\_sold\_quantity & rank\_order

```
WITH x AS (
  SELECT
    division,
    product_code,
    product,
    SUM(sold_quantity) AS total_sold_quantity
  FROM dim_product p
  JOIN fact_sales_monthly s
    USING(product_code)
  WHERE fiscal_year = 2021
  GROUP BY division , product_code , product
),
y 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 x
)
SELECT
  *
FROM y
WHERE rank_order <= 3 ;
```

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

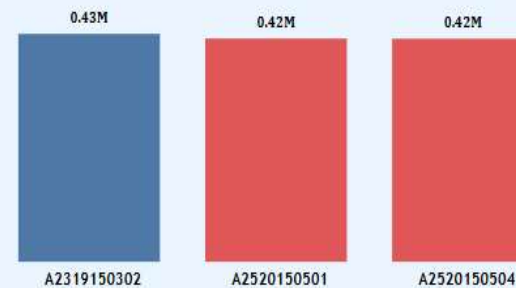
### Top Ranked Products in N & S Division (by Sales Volume)

● AQ Pen Drive 2 IN 1 ● AQ Pen Drive DRC



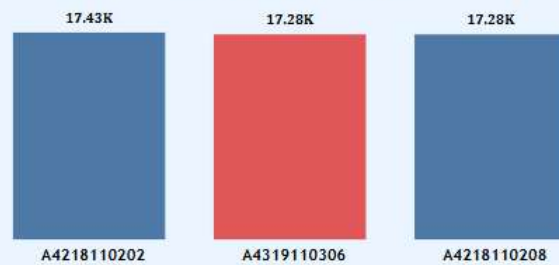
### Top Ranked Products in P & A Division (by Sales Volume)

● AQ Gamers Ms ● AQ Maxima Ms



### Top Ranked Products in PC Division (by Sales Volume)

● AQ Digit ● AQ Velocity



Result Grid					
		Filter Rows:		Export:	Wrap Cell Content:
	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

- **N & S Division dominates** - Top 3 products all 600K+ units
- **P & A strong second** - Around 420K units each for top performers
- **PC Division trails** - Only ~17K units for top products
- **Clear division hierarchy** - N & S >> P & A >> PC in sales volume
- **AQ Pen Drive 2 IN 1 is overall #1** - 701K units across all divisions
- **Bottom line:** Massive performance gap between divisions - N & S sells 40x more than PC division's best products.



# Thank You!



For your time and attention

Special thanks to the entire [Codebasics team](#) for providing this amazing challenge opportunity.

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*Questions & Discussion*