



AtliQ Hardware

Consumer Goods Ad-Hoc Insights

By Shelly Nagar



About Company

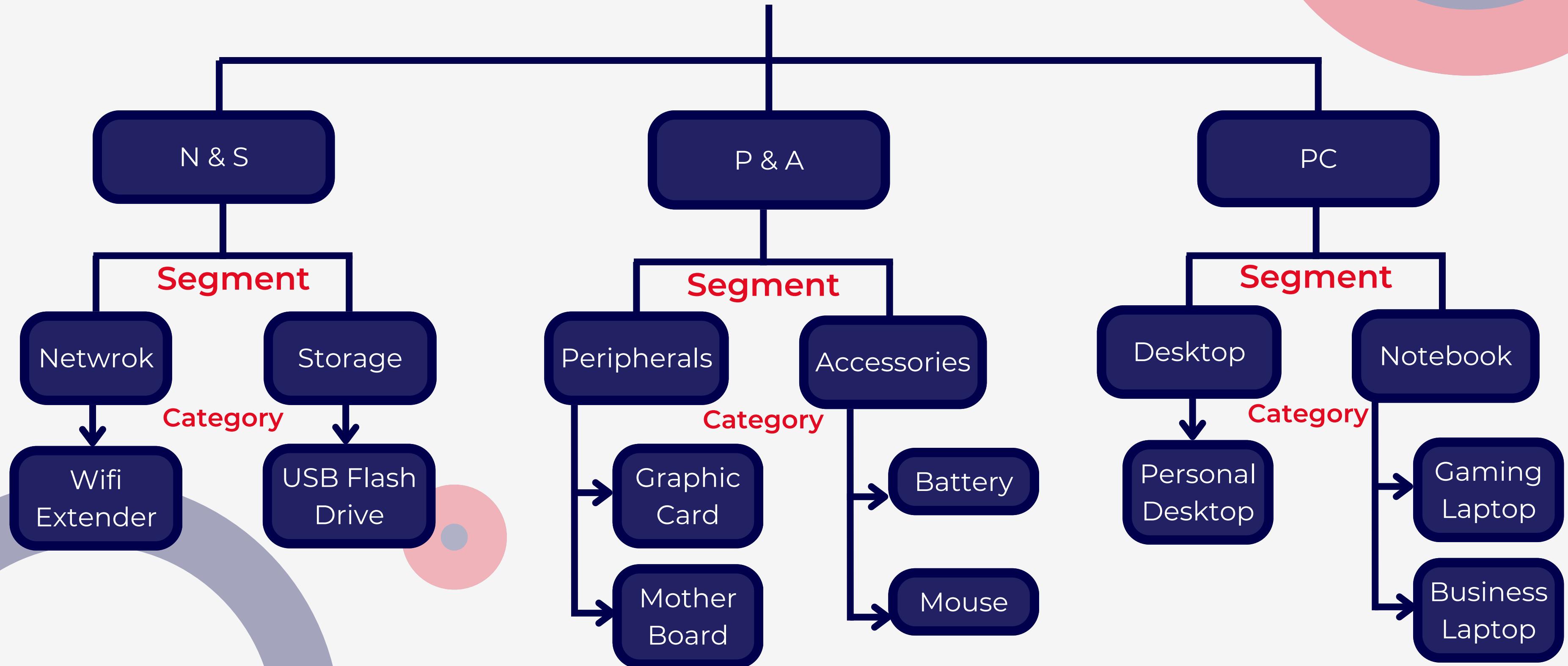
AtliQ Hardware (Imaginary Company) is a rapidly expanding global hardware manufacturing company, specializing in a diverse range of products, including mice, desktops, laptops, storage devices, and more in various variants like standard, plus, and premium.



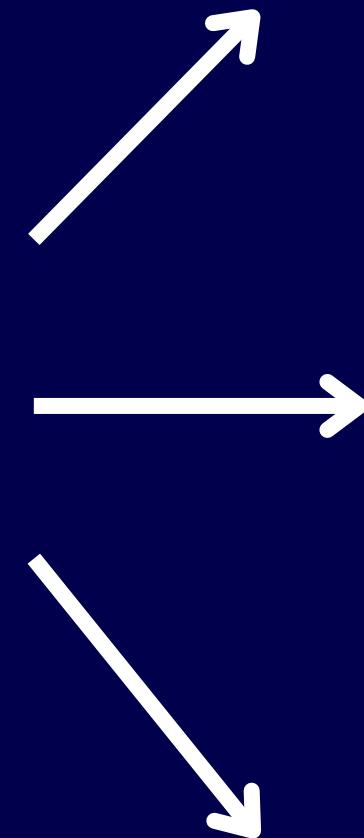
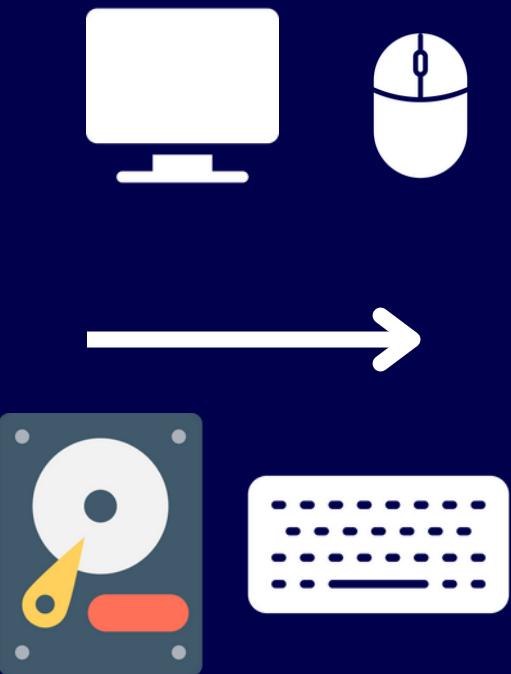


Product Classification

Division



Business Model



cromā

amazon

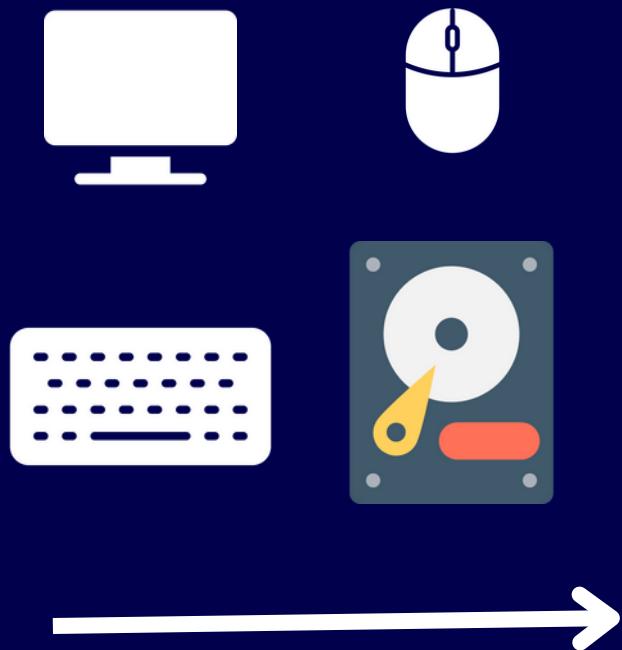
Flipkart





Business Model

Customer



Consumer



Platforms

Brick & Mortar

cromā

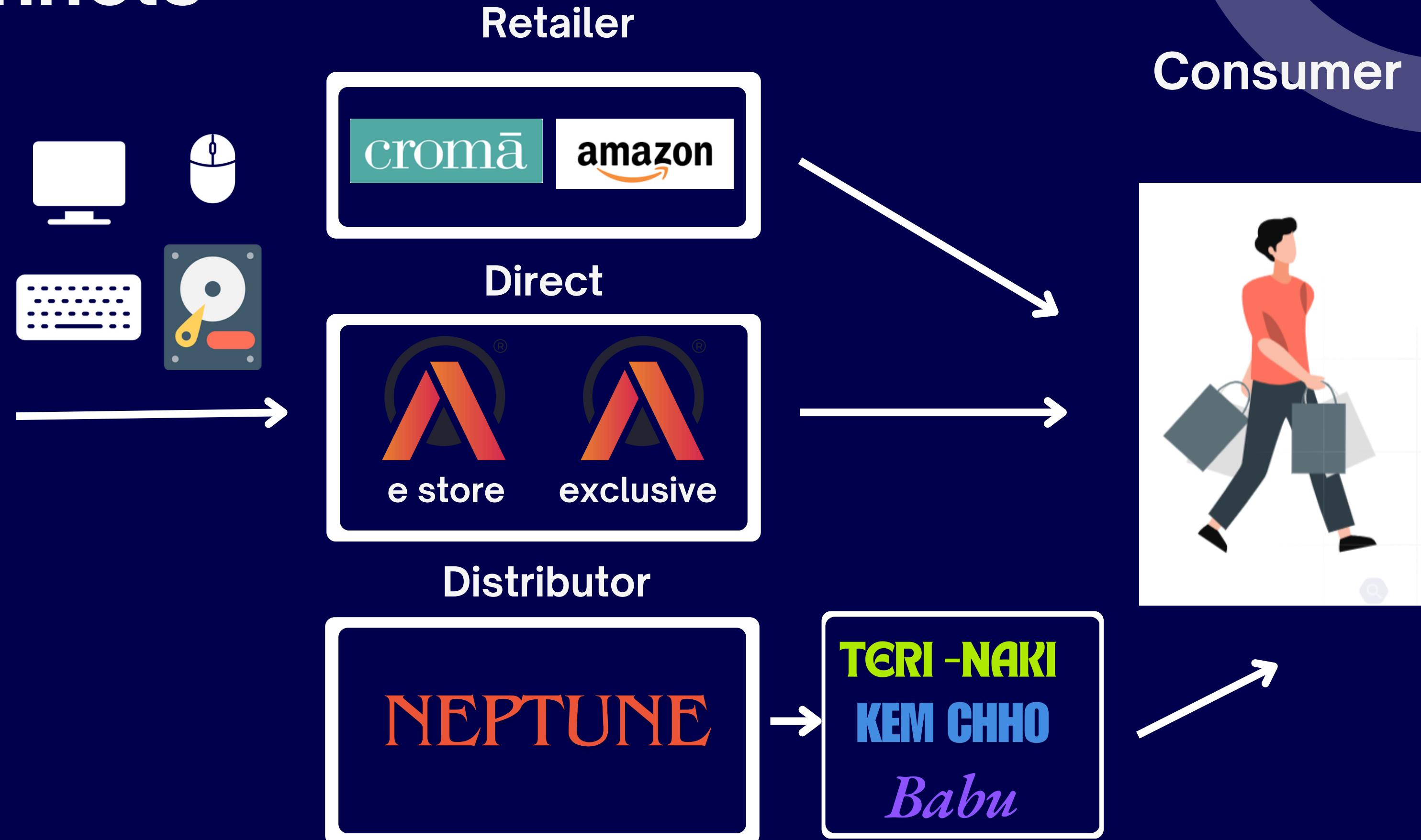


E - Commerce

amazon *Flipkart*



Channels





Problem Statement

The management team identified a critical need for deeper, more actionable insights to drive quick, data-informed decisions.

Recognizing this gap, they planned to expand the data analytics team by bringing on junior analysts capable of providing timely, strategic insights.



Approach

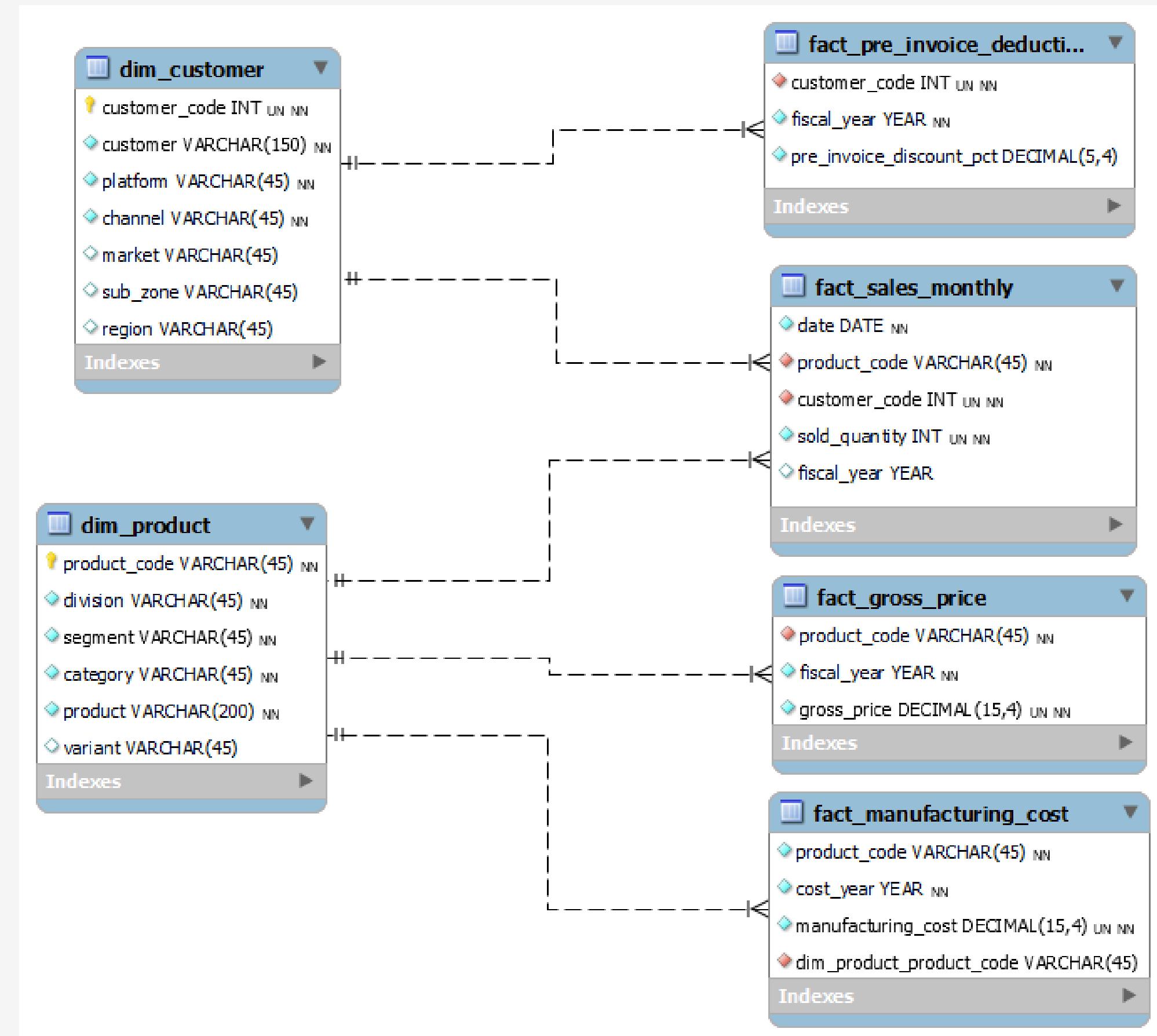
Imagine yourself as one of the Junior Analysts and tackle ad hoc requests provided by management to support management's key objectives.



Data Overview

dim_customer	contains customer-related data
dim_product	contains product-related data
fact_gross_price	contains gross price information for each product
fact_manufacturing_cost	contains the cost incurred in the production of each product
fact_pre_invoice_deductions	contains pre-invoice deductions information for each product
fact_sales_monthly	contains monthly sales data for each product

ERD (Entity Relationship Diagram)





Ad Hoc Requests

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

Query

```
select distinct(market) as market from dim_customer  
where customer = "Atliq Exclusive" and region = 'APAC';
```

Output

market
India
Indonesia
Japan
Philippines
South Korea
Australia
Newzealand
Bangladesh

Visual Representation





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

Query

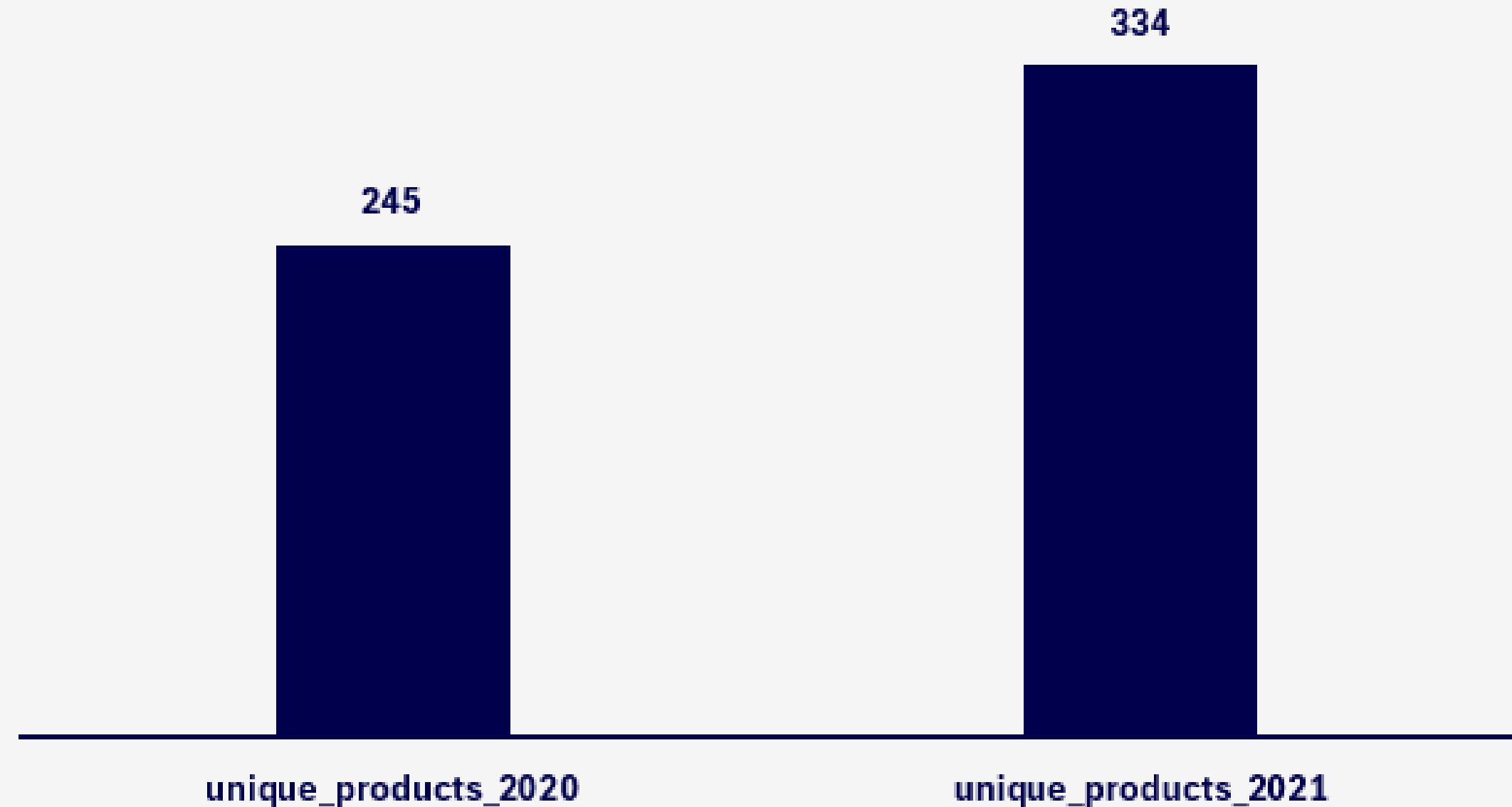
```
with cte1 as (
    select count(distinct product_code) as unique_products_2020
        from fact_sales_monthly
        where fiscal_year = 2020),
cte2 as (
    select count(distinct product_code) as unique_products_2021
        from fact_sales_monthly
        where fiscal_year = 2021)
select *,
    round ((unique_products_2021-unique_products_2020)*100/unique_products_2020 ,2) as percentage_chg
from cte1 cross join cte2;
```

Output

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

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

Visual Representation





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

Insights

1. Products with No Sales in 2021:

- **Segments Affected:**

- Batteries (1 product), Business Laptops (2), Gaming Laptops (2), Graphic Cards (4), and Personal Laptops (4) showed no sales in 2021.

- **Possible Reasons:**

- Obsolescence due to newer models, technological advancements, or shifting customer preferences.
- Potential stock issues or competition from better-performing products.

Action: Assess product lifecycle and evaluate if these items need to be updated or discontinued. Competitive analysis could reveal gaps or trends affecting these products.



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

Insights

2. New Product Introductions in 2021:

- **102 New Products across key segments:**
 - Business Laptops: 10 new products
 - Gaming Laptops: 5 new products
 - Peripherals: 19 new products (e.g., Keyboards, Mice)
 - Storage: 5 new products (External SSDs, HDDs)
 - Networking: 3 new Wi-Fi Extenders
- **Strategic Focus:**
 - Responding to high demand in gaming, business computing, and home office setups.
 - Expanding into peripherals and storage solutions to complement main products.

Action: Monitor sales and customer feedback for these new products. Explore cross-selling opportunities with complementary items (e.g., laptops + accessories).



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`

Insights

3. Strategic Takeaways:

- **Product Portfolio Expansion:** Aggressive diversification to capture high-growth markets like gaming and business laptops.
- **Market Alignment:** New products align with remote work, gaming, and data storage trends.
- Competition: Increased product range may lead to higher competition; continuous monitoring and differentiation strategies are key.

Action: Track performance of new products and refine marketing strategies to stay competitive.

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

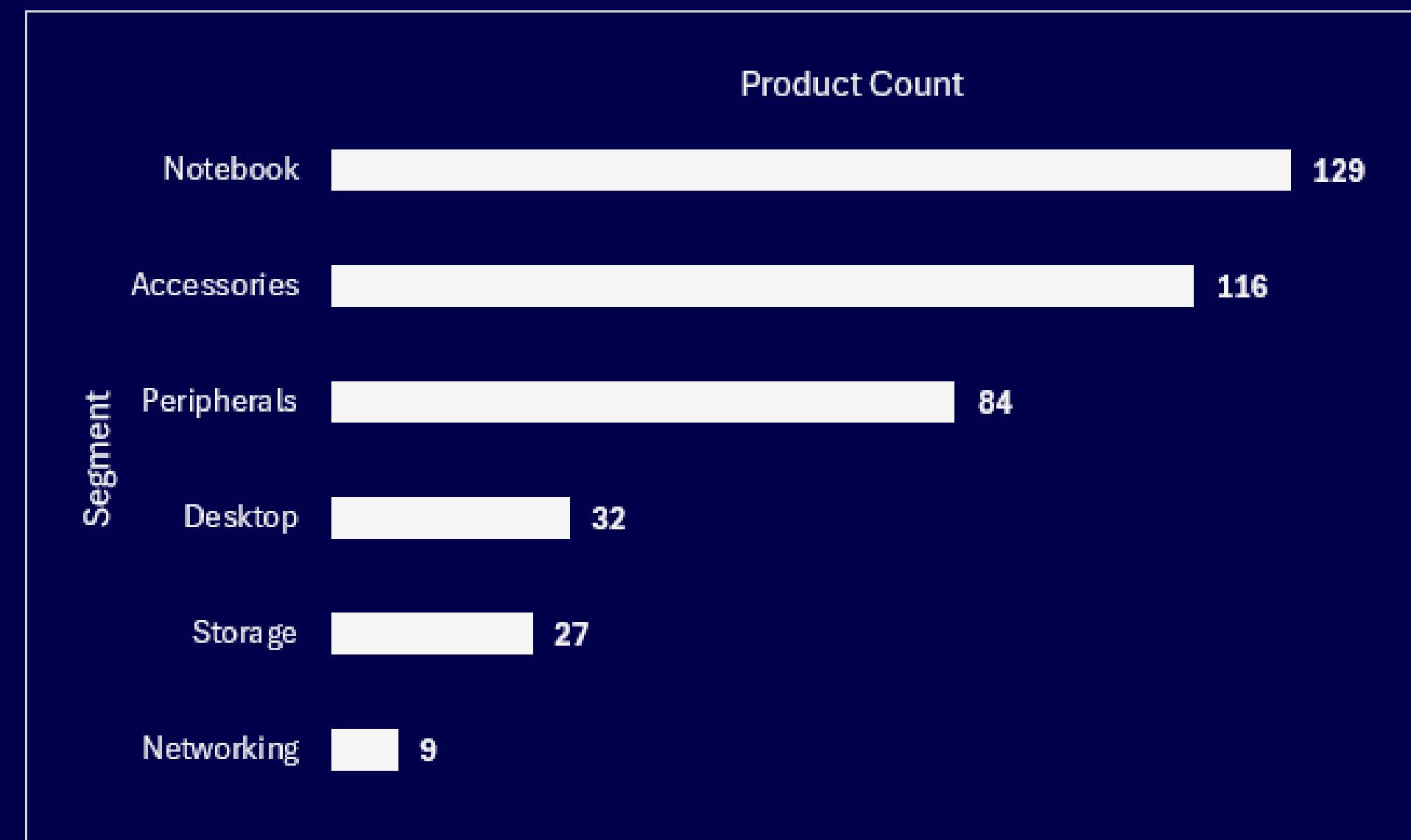
Query

```
select segment, count(distinct product_code) product_count from dim_product  
group by segment  
order by 2 DESC;
```

Output

segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9

Visual Representation





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

Insights

Product Count Insights by Segment

1. Top Product Segments:

- Notebook: 129 unique products
- Accessories: 116 unique products
- Peripherals: 84 unique products

Insight:

- Notebooks and Accessories lead in product variety, highlighting a focus on personal computing and complementary products, likely driven by strong market demand in these categories.

2. Moderate Product Segments:

- Desktop: 32 unique products
- Storage: 27 unique products

Insight:

The Desktop and Storage segments show a moderate range of offerings, suggesting a steady focus on personal computing and data storage needs.



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

Insights

3. Niche Product Segment:

- Networking: 9 unique products

Insight:

- The Networking segment has fewer products, indicating a more specialized focus, potentially catering to specific business or consumer needs for connectivity solutions.

Conclusion:

- The Notebook and Accessories segments dominate the product portfolio, reflecting high demand in personal computing and peripheral devices.
- Desktop and Storage segments offer a balanced mix, while Networking remains a niche category with fewer offerings.



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

Query

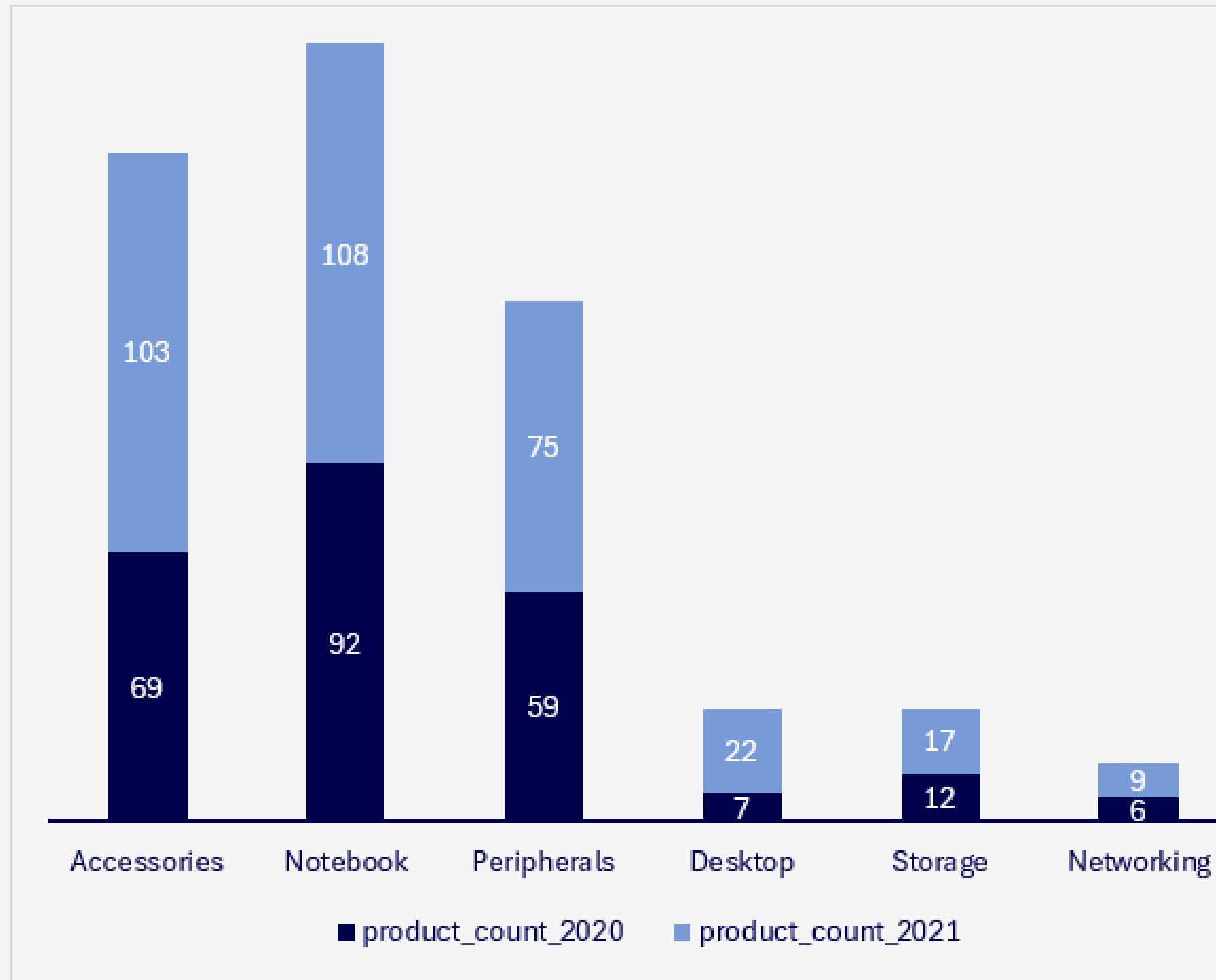
```
with cte1 as
  (select dp.segment, count(distinct f.product_code) as product_count_2020
   from fact_sales_monthly as f
   join dim_product as dp
   on f.product_code=dp.product_code
   where f.fiscal_year =2020
   group by dp.segment),
  cte2 as
  (select dp.segment, count(distinct f.product_code) as product_count_2021
   from fact_sales_monthly as f
   join dim_product as dp
   on f.product_code=dp.product_code
   where f.fiscal_year =2021
   group by dp.segment)
select t1.segment, product_count_2020, product_count_2021,
       (product_count_2021-product_count_2020) as difference
  from cte1 as t1
  join cte2 as t2
  on t1.segment =t2.segment
 order by 4 desc;
```

Output

segment	product_count_2020	product_count_2021	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

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

Visual Representation



Insights

- Accessories led with a 34-product increase, growing from 69 to 103.
- Notebook and Peripherals followed, each gaining 16 products.
- Desktop saw the highest relative growth (+15), tripling its product count from 7 to 22.
- Minimal growth observed in Storage (+5) and Networking (+3).

Overall:

- Accessories added 35 new products, the highest among segments.
- Notebook added 24 new products but had the most unsold items (8) in 2021..
- Desktop, Networking, and Storage had no unsold products, reflecting efficient inventory.



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

Query

```
CREATE DEFINER='root'@'localhost' PROCEDURE `products_high_low_manf_cost`(  
IN fiscal_year_param int)  
BEGIN  
    with cte1 as  
        (select dp.product_code, dp.product, fsm.fiscal_year,  
            sum(fsm.sold_quantity*fmc.manufacturing_cost) as total_manufacturing_cost  
        from fact_manufacturing_cost as fmc  
        join dim_product as dp  
        on fmc.product_code = dp.product_code  
        join fact_sales_monthly as fsm  
        on fsm.product_code = fmc.product_code and fsm.fiscal_year = fmc.cost_year  
        group by 1,2,3),  
    cte2 as  
        (select *,  
            dense_rank() over(partition by fiscal_year order by total_manufacturing_cost desc) as desc_r  
        from cte1)  
    select product_code, product, fiscal_year, total_manufacturing_cost from cte2  
    where  
        fiscal_year = fiscal_year_param  
        AND desc_r IN (  
            (SELECT MAX(desc_r) FROM cte2 WHERE fiscal_year = fiscal_year_param),  
            (SELECT MIN(desc_r) FROM cte2 WHERE fiscal_year = fiscal_year_param)  
        )  
    ORDER BY  
        total_manufacturing_cost DESC;  
END
```

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

Output

<code>product_code</code>	<code>product</code>	<code>fiscal_year</code>	<code>total_manufacturing_cost</code>
A7220160203	AQ Wi Power Dx2	2020	3196963.229
A3718150101	AQ LION x1	2020	9797.333

<code>product_code</code>	<code>product</code>	<code>fiscal_year</code>	<code>total_manufacturing_cost</code>
A1521150602	AQ Electron 3 3600 Desktop Processor	2021	4676049.966
A3718150101	AQ LION x1	2021	165123.2304



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.

Query

```
select c.customer_code,  
c.customer,  
round(avg(fd.pre_invoice_discount_pct*100),2) as average_discount_percentage  
from fact_pre_invoice_deductions as fd  
join dim_customer c  
on fd.customer_code = c.customer_code  
where fiscal_year= 2021 and market = "India"  
group by 1,2  
order by 3 desc  
limit 5;
```

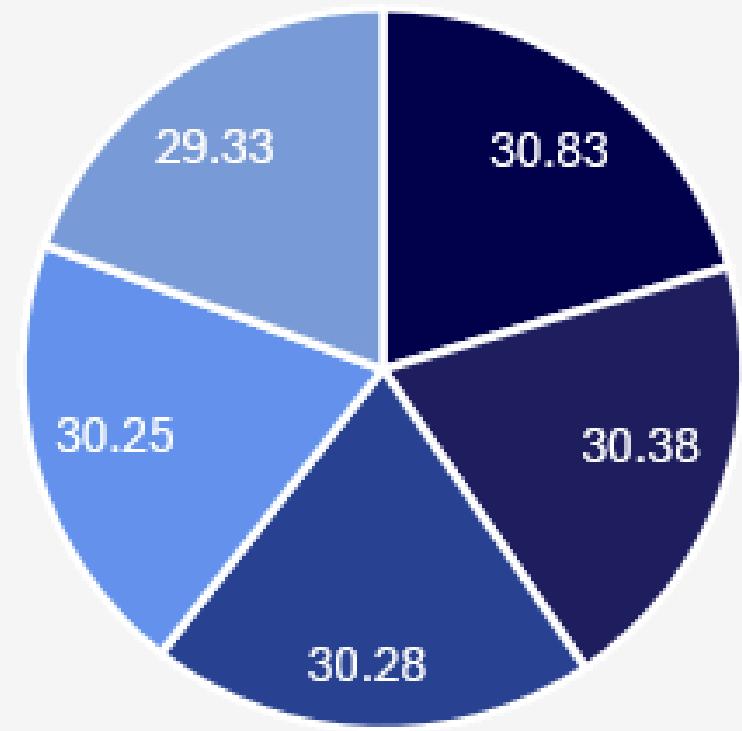
Output

customer_code	customer	average_discount_percentage
90002009	Flipkart	30.83
90002006	Viveks	30.38
90002003	Ezone	30.28
90002002	Croma	30.25
90002016	Amazon	29.33

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.

Visual Representation

average_discount_percentage



Insights

- Pre-invoice discounts are likely influenced by high order volumes, loyalty, and strategic partnerships, as major players like Flipkart and Amazon dominate the list.
- The presence of retail giants suggests competitive pricing strategies driven by market competition and negotiated contracts to maintain strong relationships in the Indian market.

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

Query

```
Select date_format(date, '%b') as month, fs. fiscal_year as Year,  
round(sum(fs.sold_quantity*fg.gross_price)/1000000,2) as gross_sales_mln  
from fact_sales_monthly fs  
join fact_gross_price fg  
on fs.product_code = fg.product_code and fs.fiscal_year = fg.fiscal_year  
join dim_customer as dc  
on fs.customer_code = dc.customer_code  
where dc.customer = "Atliq Exclusive"  
group by 1,2  
order by fs.fiscal_year;
```

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

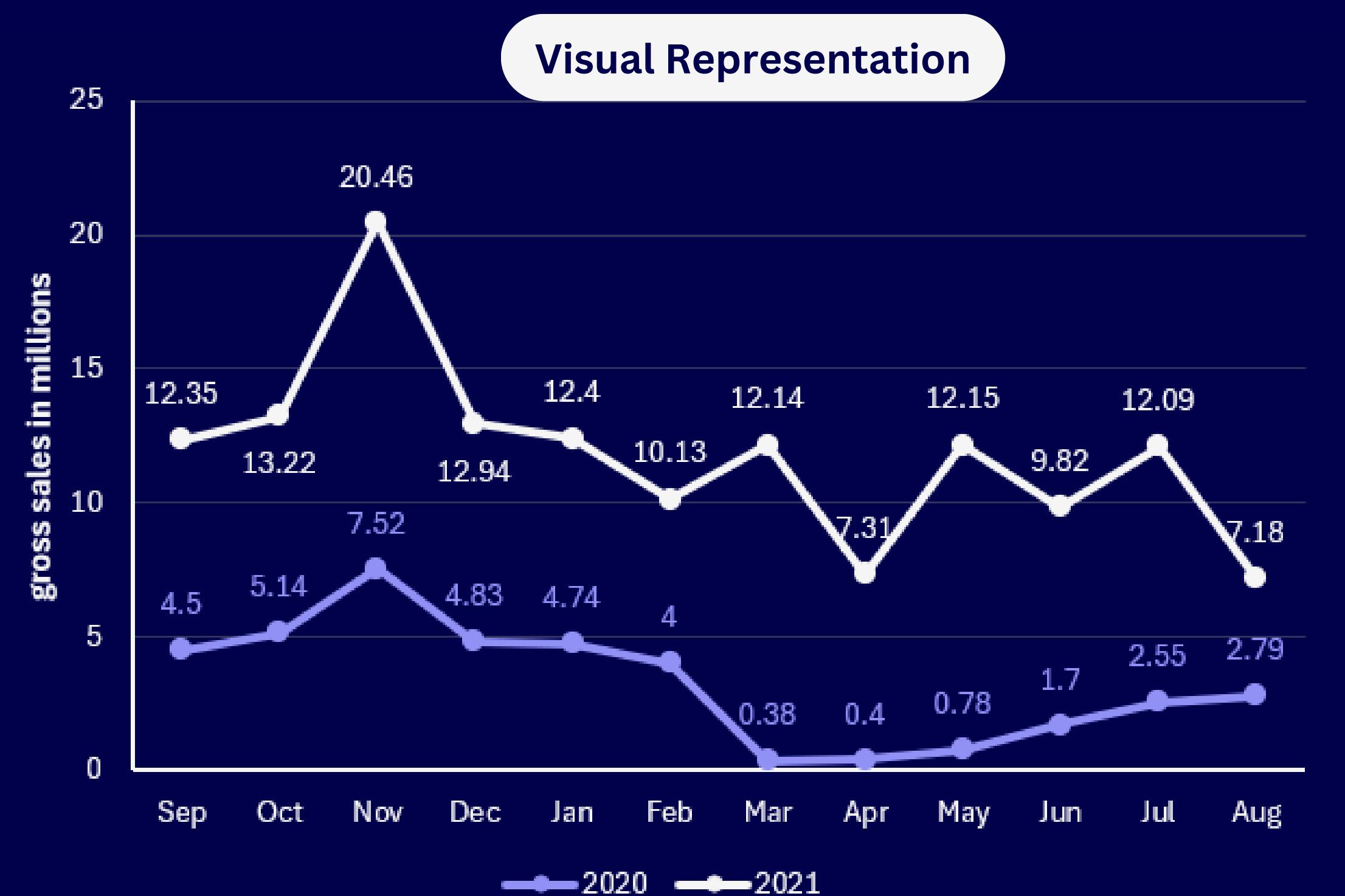
Output

month	Fiscal Year	gross_sales_mln
Sep	2020	4.50
Oct	2020	5.14
Nov	2020	7.52
Dec	2020	4.83
Jan	2020	4.74
Feb	2020	4.00
Mar	2020	0.38
Apr	2020	0.40
May	2020	0.78
Jun	2020	1.70
Jul	2020	2.55
Aug	2020	2.79

month	Fiscal Year	gross_sales_mln
Sep	2021	2.35
Oct	2021	3.22
Nov	2021	0.46
Dec	2021	2.94
Jan	2021	2.40
Feb	2021	0.13
Mar	2021	2.14
Apr	2021	7.31
May	2021	2.15
Jun	2021	9.82
Jul	2021	2.09
Aug	2021	7.18

Note: AtliQ Hardware's Fiscal year starts from current year september and end in august of following year.

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



Insights

1. Impact of COVID-19 (2020):

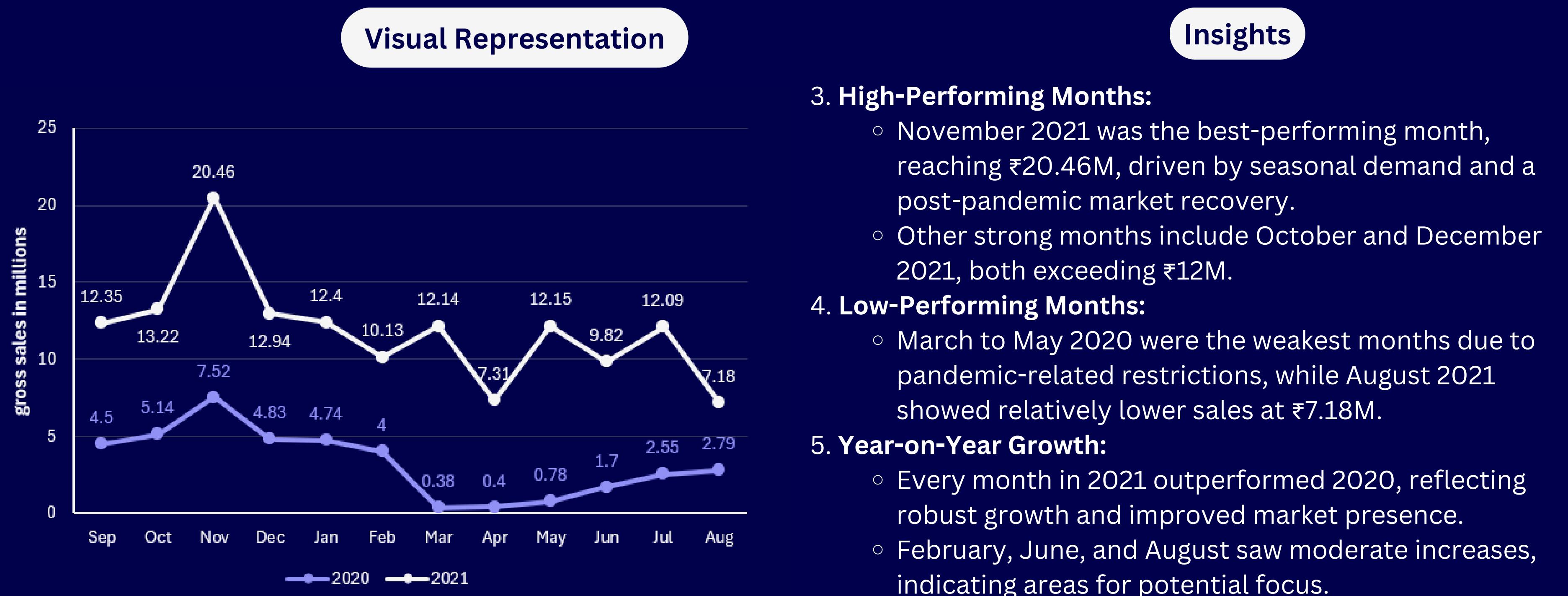
- March to May 2020 recorded the lowest sales (₹0.38M to ₹0.78M), likely due to the COVID-19 lockdowns and market disruptions.
- Recovery began in July 2020, with gradual improvements through the latter half of the year.

2. Post-COVID Growth (2021):

- Sales rebounded strongly in 2021, with every month outperforming its 2020 counterpart.
- March 2021 saw a dramatic recovery to ₹12.14M, reflecting a return to normalcy and stronger demand.

Note: AtliQ Hardware's Fiscal year starts from current year september and end in august of following year.

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



Note: AtliQ Hardware's Fiscal year starts from current year september and end in august of following year.

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.

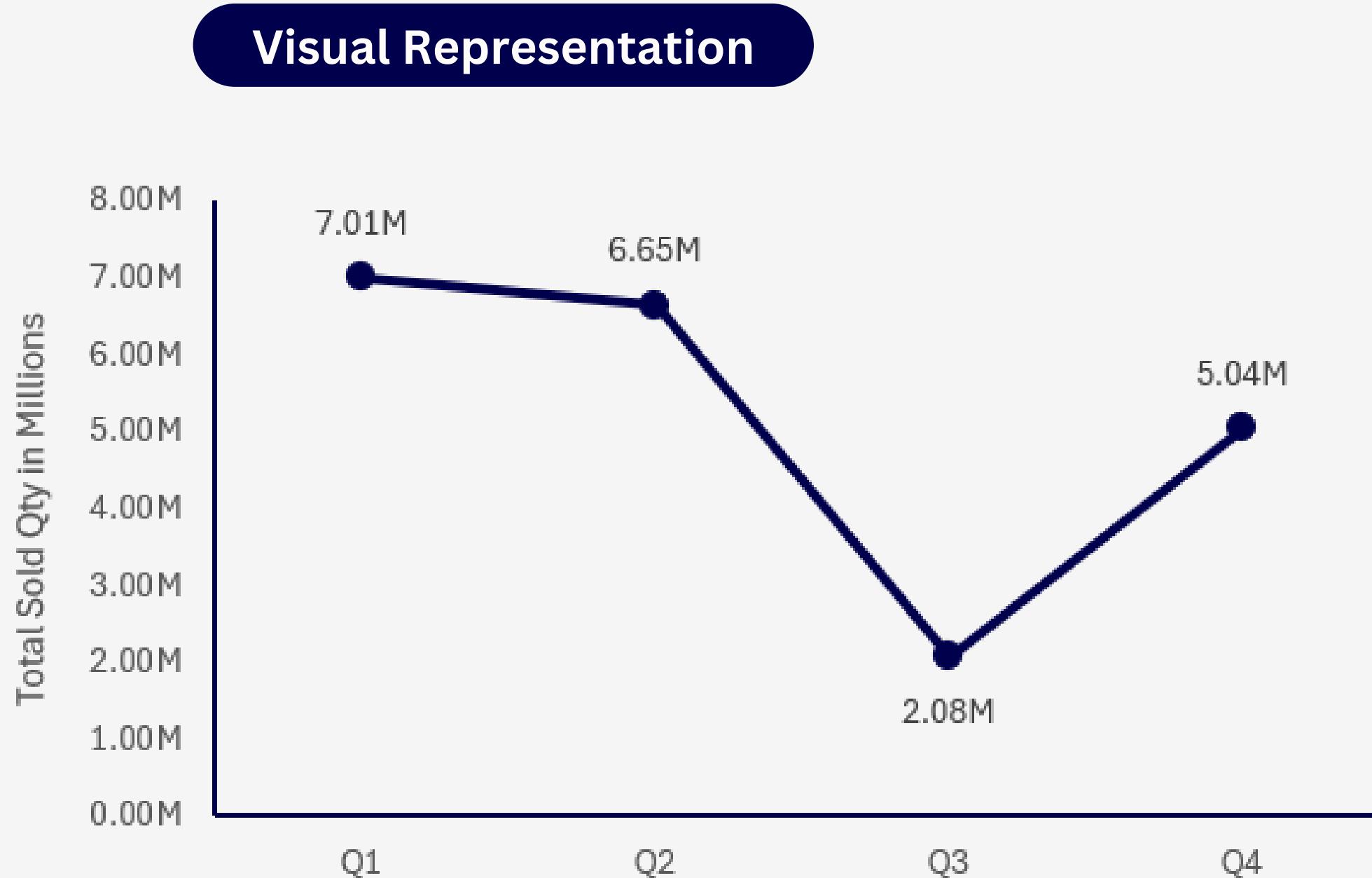
Query

```
select concat("Q", ceil(month(date_add(date,interval 4 month))/3)) as quater,  
sum(sold_quantity) as total_sold_quantity  
from fact_sales_monthly  
where fiscal_year= 2020  
group by 1  
order by 2 desc;
```

Output

quater	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

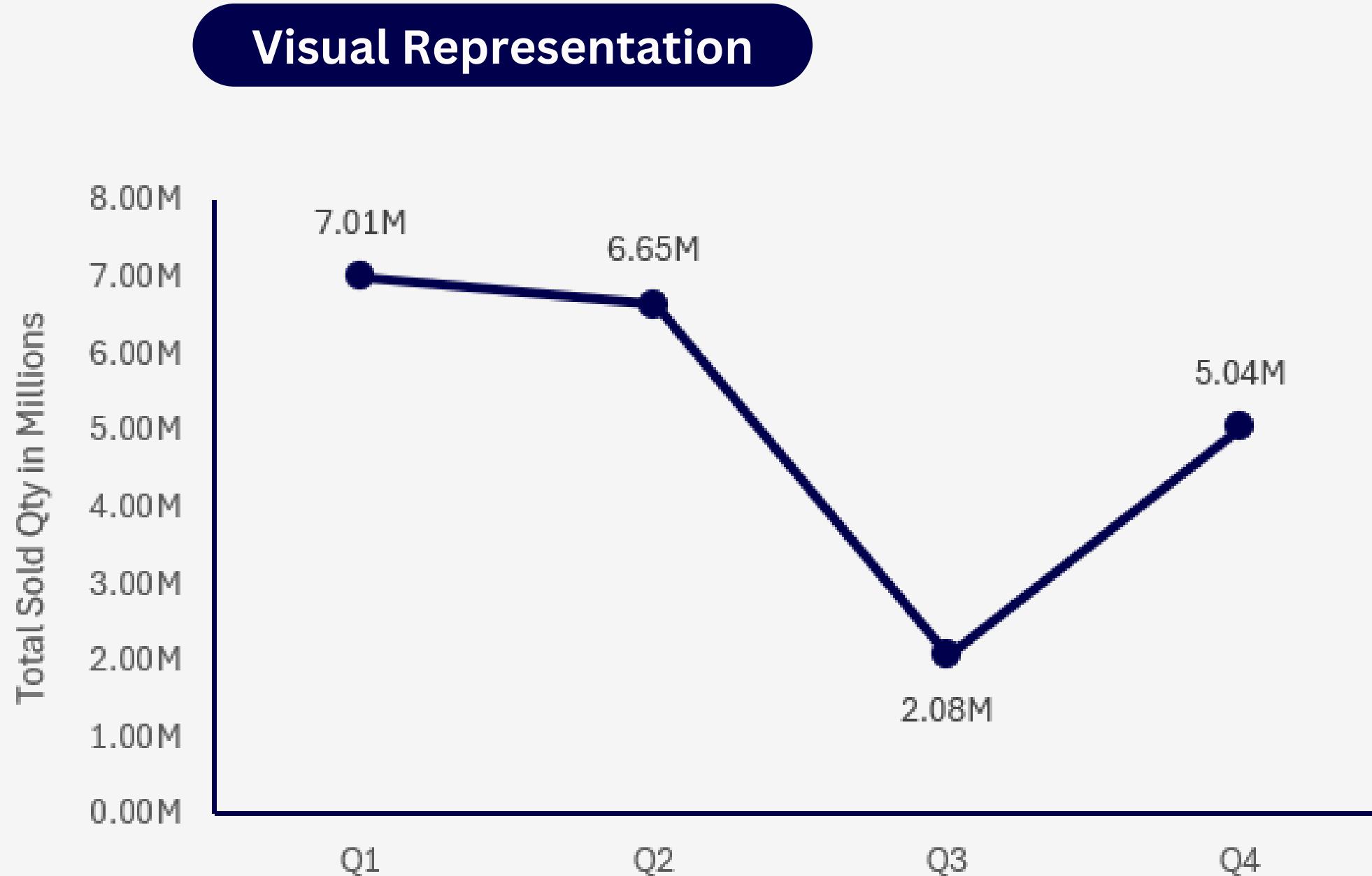
8. In which quarter of 2020, got the maximum total_sold_quantity? The final output contains these fields sorted by the total_sold_quantity: Quarter, total_sold_quantity.



Insights

- **Highest Sales in Q1 (Sep-Dec 2019):**
 - Q1 (Sep-Dec 2019) achieved the highest total sold quantity at 7.01M, marking the most successful quarter of 2020.
 - This could be attributed to strong sales performance at the start of the fiscal year, likely driven by pre-holiday and seasonal demand.
- **Decline in Q2 (Jan-Mar 2020):**
 - Q2 (Jan-Mar 2020) followed closely with 6.65M, but this quarter saw a slight dip in comparison to Q1, possibly due to early impacts of the COVID-19 pandemic and reduced consumer spending.

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.



- Insights**
- **Impact of COVID-19 on Q3 & Q4:**
 - Q3 (Apr-Jun 2020) recorded the lowest sales at 2.08M, likely due to COVID-19 lockdowns and the resulting market slowdown.
 - Q4 (Jul-Aug 2020) saw a partial recovery with 5.04M, but still remained lower than the previous quarters, as the market was slowly recovering from the pandemic's peak.
 - **Observation:**
 - The impact of COVID-19 is evident in Q3, where sales dropped significantly suggesting inventory management and supply chain disruptions played a role, but the company managed a recovery in Q4.
 - Optimizing inventory and improving supply chain resilience would be key to sustaining growth.

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

Query

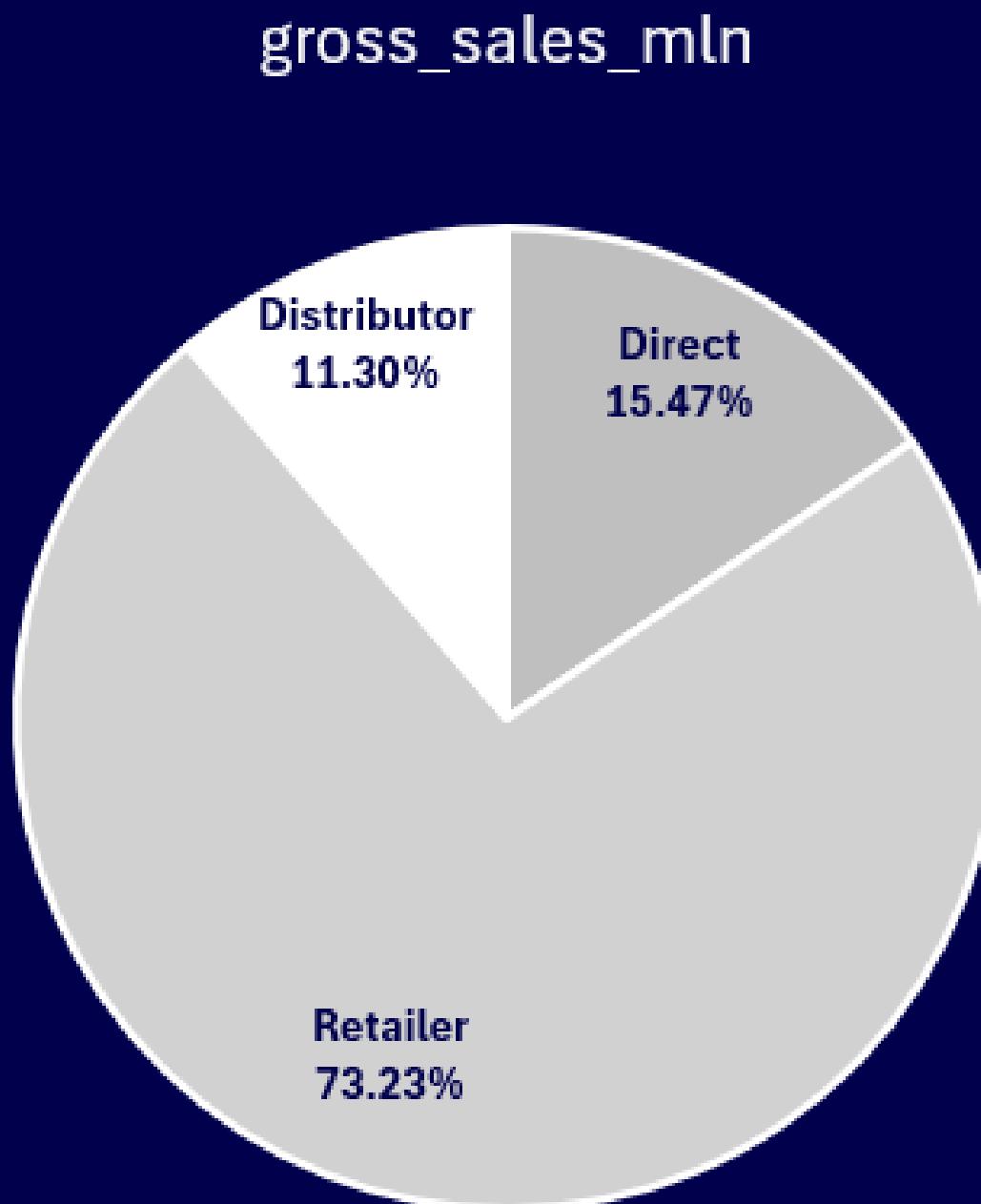
```
with cte1 as
(select dc.channel ,
round(sum(gross_price*sold_quantity)/1000000,2) as gross_sales_mln
from fact_sales_monthly fs
join dim_customer dc
on fs.customer_code = dc.customer_code
join fact_gross_price fg
on fs.product_code = fg.product_code and fs.fiscal_year = fg.fiscal_year
where fs.fiscal_year = 2021
group by 1)
select *, round((gross_sales_mln*100/sum(gross_sales_mln) over()),2) as percentage
from cte1;
```

Output

channel	gross_sales_mln	percentage
Direct	257.53	15.47
Retailer	1219.08	73.23
Distributor	188.03	11.3

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

Visual Representation



Insights

The Retailer channel's dominance reflects its critical role in driving revenue, while Direct and Distributor channels provide supplementary support.

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

Query

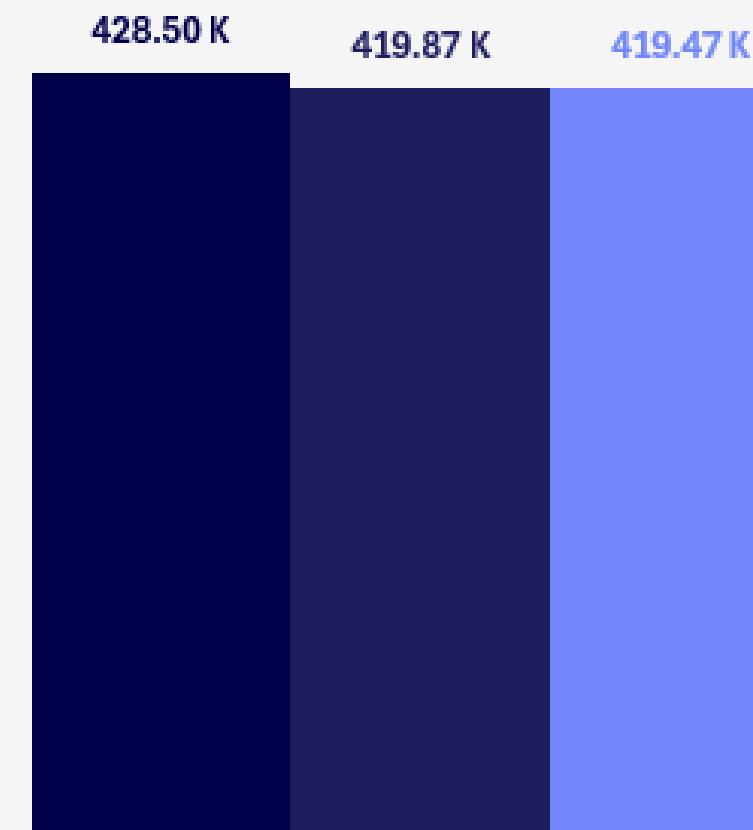
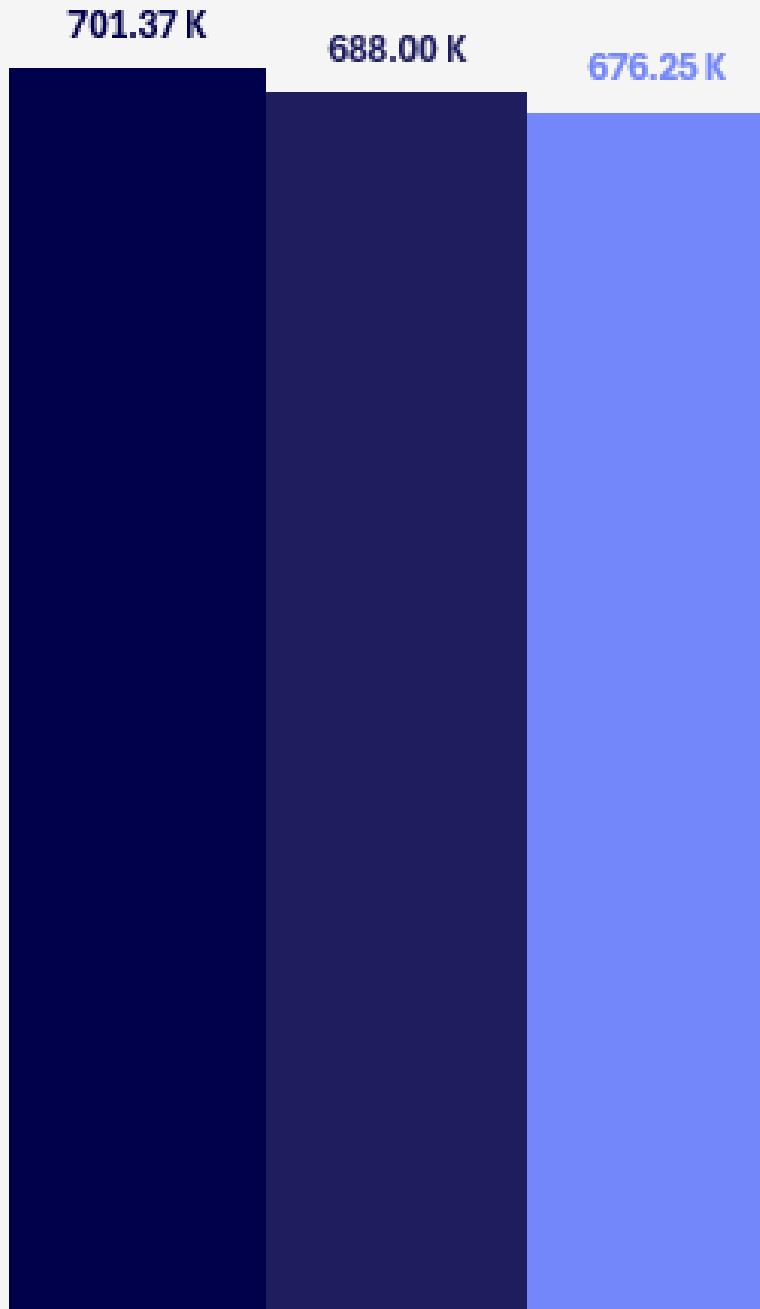
```
with cte1 as
  (select division, dp.product_code, dp.product, variant, sum(sold_quantity) as total_sold_quantity
   from fact_sales_monthly as fs
   join dim_product as dp
   on fs.product_code = dp.product_code
   where fiscal_year = 2021
   group by 1,2,3,4),
  cte2 as
  (select *, dense_rank() over(partition by division order by total_sold_quantity desc) as rank_order
   from cte1)
 select * from cte2 where rank_order<4;
```

Output

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

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`

Visual Representation



Insights

N & S Division:

All top 3 products comes under USB Flash Drive category indicating per drives domination,

P & A Division:

All top 3 products comes under Mouse category indicating strong sales in gaming and standard mice.

PC Division:

All top 3 products comes under Personal Laptop category with similar performance across products.



AQ Pen Drive 2 IN 1 (Premium)	AQ Pen Drive DRC	AQ Pen Drive DRC (Premium)
AQ Gamers Ms (Standard 2)	AQ Maxima Ms (Standard 1)	AQ Maxima Ms (Plus)

N & S P & A PC

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`

Insights

Suggestions:

- **Focus on Pen Drives (N & S):**
 - Pen Drives are a key product category. Consider expanding product variants and marketing campaigns to leverage the strong sales trend.
 - Evaluate product bundling or promotional offers to increase sales further in this high-demand category.
- **Enhance Gaming & Standard Mice (P & A):**
 - Gaming and standard mice continue to be in demand. Focus on premium variants or new designs to cater to evolving consumer preferences in this category.
- **Improve Marketing for PC Accessories:**
 - Although PC accessories have a smaller sales volume, they present an opportunity for growth. Consider targeted marketing or collaborations to boost sales in this segment.



AtliQ Hardware

Thank You

By Shelly Nagar



<https://www.linkedin.com/in/shellynagar/>



<https://github.com/shellynagar27>



<https://codebasics.io/portfolio/Shelly-Nagar>



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