

PROJECT PRESENTATION ON ATLIQ HARDWARE: ENHANCING DECISION - MAKING WITH SQL - DRIVEN ANALYTICS

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PROBLEM STATEMENT:

Atliq Hardwares, a leading computer hardware manufacturer in India with an expanding presence in global markets, faces challenges in making timely, data-informed decisions. Despite having substantial data across various domains—Sales, Finance, Supply Chain, and Marketing—management struggles to extract actionable insights that can drive quick, informed decision-making. To address this, Atliq Hardwares aims to expand its data analytics team by hiring junior data analysts who not only have strong technical skills in data management and analysis but also excel in communication and problem-solving, enabling them to translate complex data into actionable insights for the executive team.

To assess the candidates' technical aptitude and soft skills, Tony Sharma, the Director of Data Analytics, has designed a SQL challenge that evaluates both these areas. The challenge will involve analyzing a dataset from Atliq Hardwares' sales, customer, and inventory systems to extract meaningful insights, build queries that support data-driven decisions, and clearly communicate findings with the goal of improving decision-making processes at the executive level.



PROJECT GOAL:

The goal of this SQL challenge is to assess the candidates' ability to:

1. Analyze data efficiently using SQL, including querying large datasets, performing aggregations, joins, and subqueries.
2. Extract key insights from raw data that will help the company improve sales performance, supply chain efficiency, and overall business strategy.
3. Develop meaningful reports or visualizations that present the findings in a clear, concise, and actionable manner.
4. Demonstrate strong problem-solving abilities in addressing real-world business questions.
5. Effectively communicate technical findings to non-technical stakeholders (executives) through clear explanations and insights, showcasing both technical proficiency and soft skills.

AD HOC REQUEST 1:

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

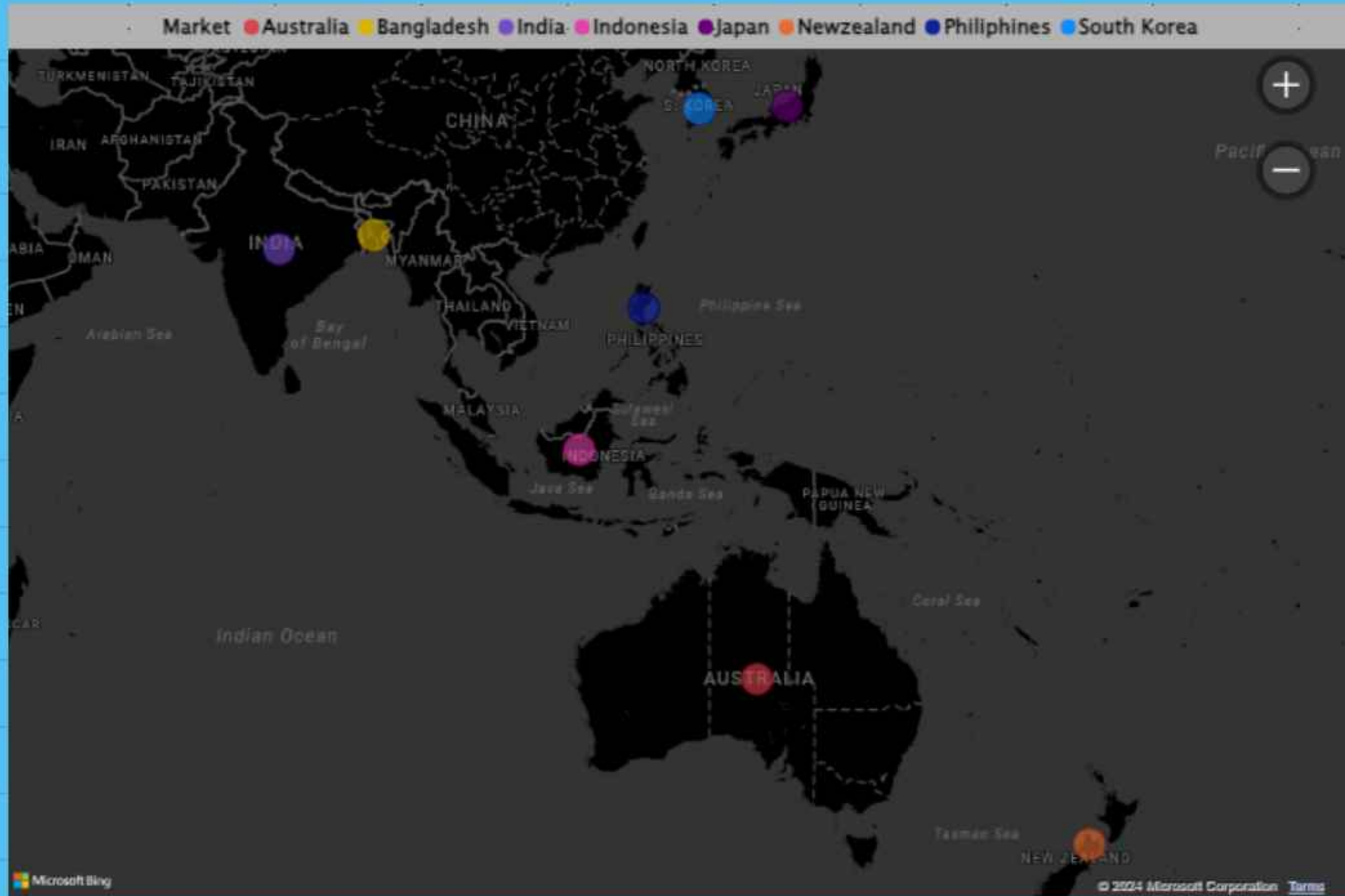
SQL QUERY:

```
select distinct market
from dim_customer
where customer = "Atliq Exclusive"
and region = "APAC"
```

OUTPUT:

market
India
Indonesia
Japan
Philippines
South Korea
Australia
Newzealand
Bangladesh

VISUAL 1:



INSIGHTS:

Atliq Exclusive has established a commanding presence across the Asia-Pacific region, with operations in India, Indonesia, Japan, the Philippines, South Korea, Australia, New Zealand, and Bangladesh. This widespread footprint highlights the company's strong market position and its ability to thrive in diverse cultural and economic environments. Atliq Exclusive's success in the APAC region showcases its adaptability and commitment to meeting the unique needs of each market while maintaining a unified global vision.

AD HOC REQUEST 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

SQL QUERY:

```
with x as
(select count(distinct product_code) as unique_products_2020
from fact_sales_monthly
where fiscal_year = 2020),

y as
(select count(distinct product_code) as unique_products_2021
from fact_sales_monthly
where fiscal_year = 2021)

select x.unique_products_2020, y.unique_products_2021,
round(((y.unique_products_2021 - x.unique_products_2020) / x.unique_products_2020) * 100,2)
as percentage_chg
from x,y
```

OUTPUT:

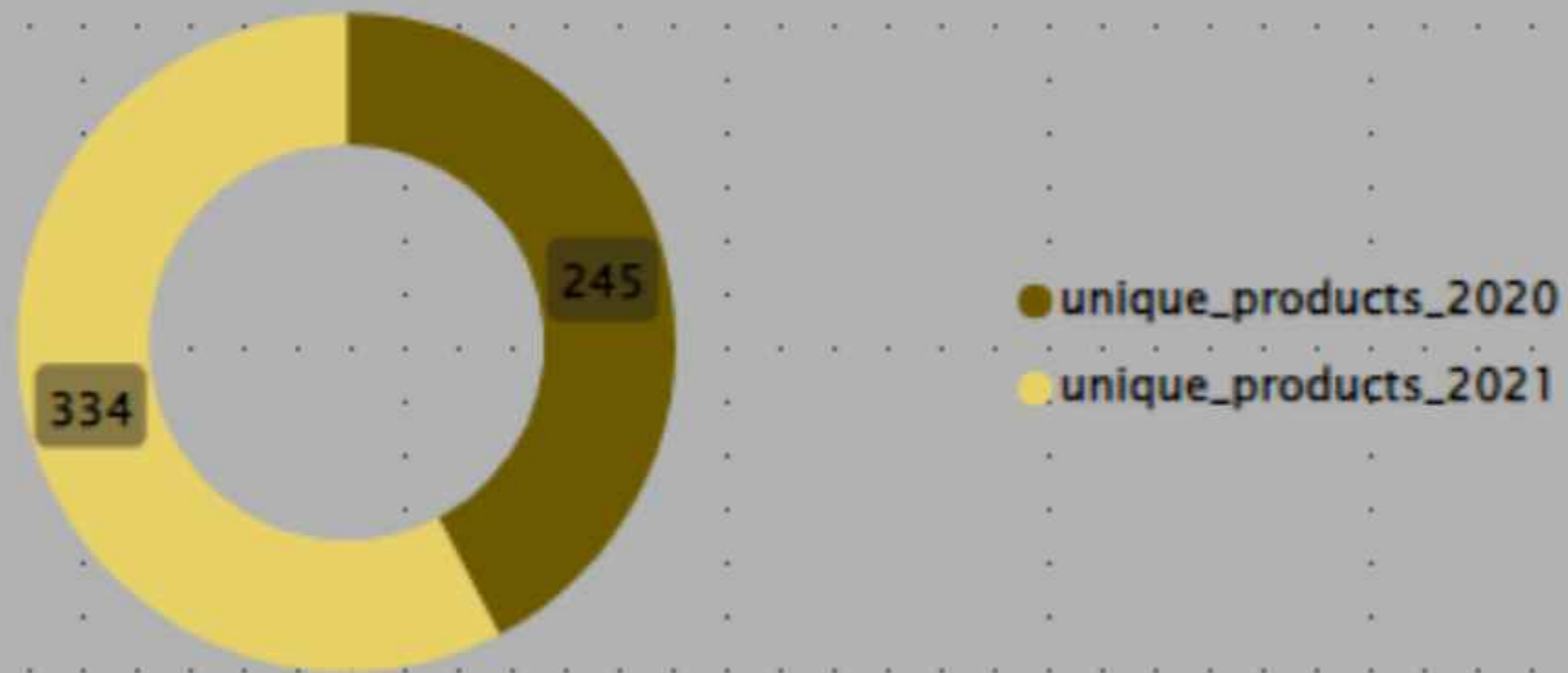
unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

VISUAL 2:

INSIGHTS:

There was a remarkable surge in the number of unique products, rising to 334 in 2021 from 245 in 2020, reflecting an impressive growth of 36.33%. This significant increase highlights a strategic emphasis on expanding the product range, which not only broadens the customer base but also presents opportunities to drive higher sales and revenue. Such growth serves as a strong indicator of the company's ability to adapt to evolving market demands, positioning it for continued business success and expansion.

Unique_Products 2021 Vs 2020



AD HOC REQUEST 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

SQL QUERY:

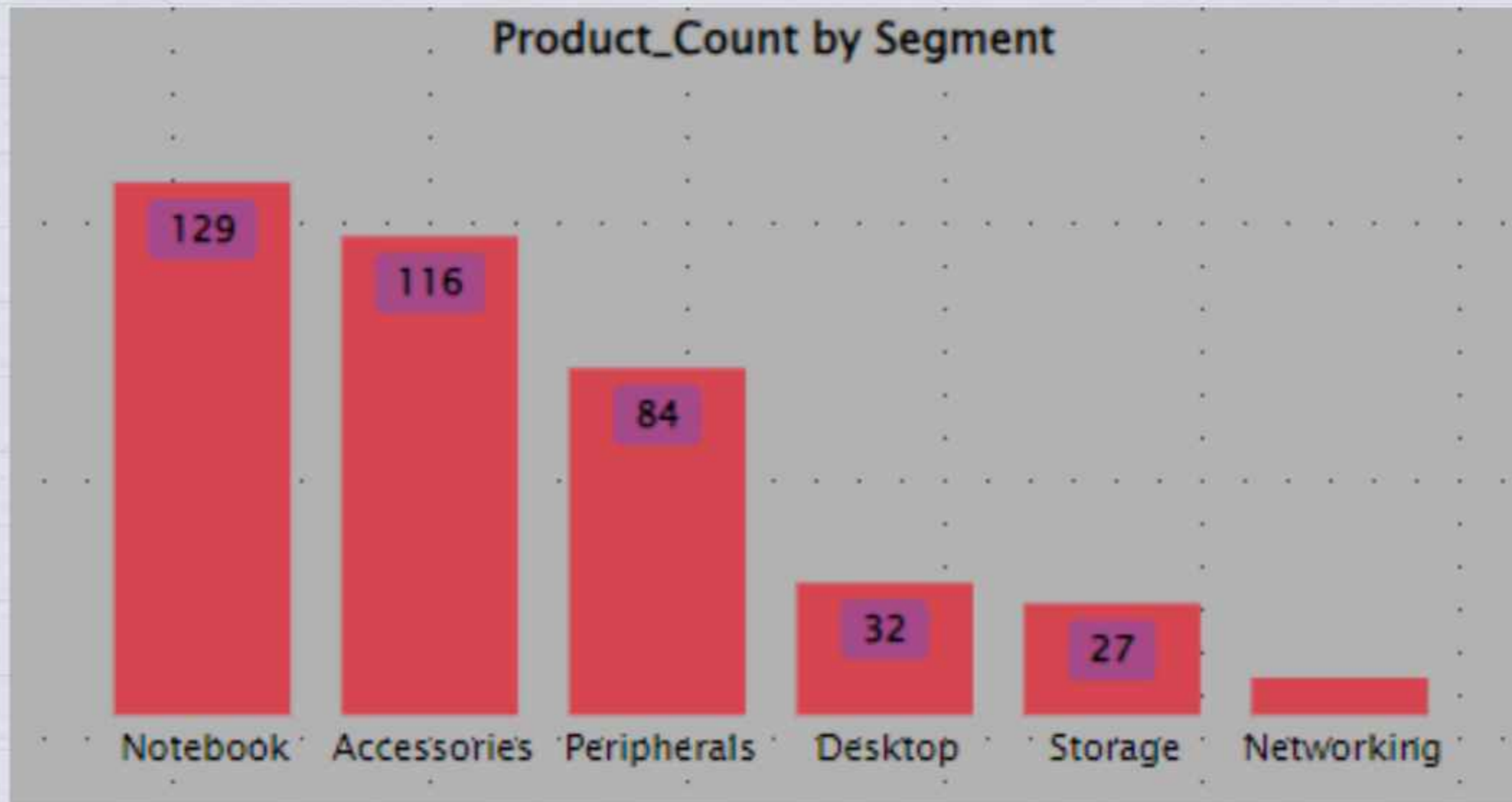
```
select segment,  
count(distinct product_code) as product_count  
from dim_product  
group by segment  
order by product_count desc
```

OUTPUT:

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

VISUAL 3:

INSIGHTS:



The "Notebook" segment leads with the highest product count, offering 129 distinct products, while the "Networking" segment has the fewest, with just 9 products. These insights underscore the diversity in product offerings across segments, with "Notebooks" and "Accessories" providing an extensive range to meet a wide array of customer needs, while "Networking" maintains a more specialized selection. This strategic variety in product offerings enables the company to cater to a broad spectrum of customer preferences, ensuring comprehensive coverage across different market segments.

AD HOC REQUEST 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

SQL QUERY:

```
with x as
(select p.segment, count(distinct p.product_code) as product_count_2020
from dim_product p
join fact_sales_monthly s
on p.product_code = s.product_code
where s.fiscal_year = 2020
group by p.segment),

y as
(select p.segment, count(distinct p.product_code) as product_count_2021
from dim_product p
join fact_sales_monthly s
on p.product_code = s.product_code
where s.fiscal_year = 2021
group by p.segment)

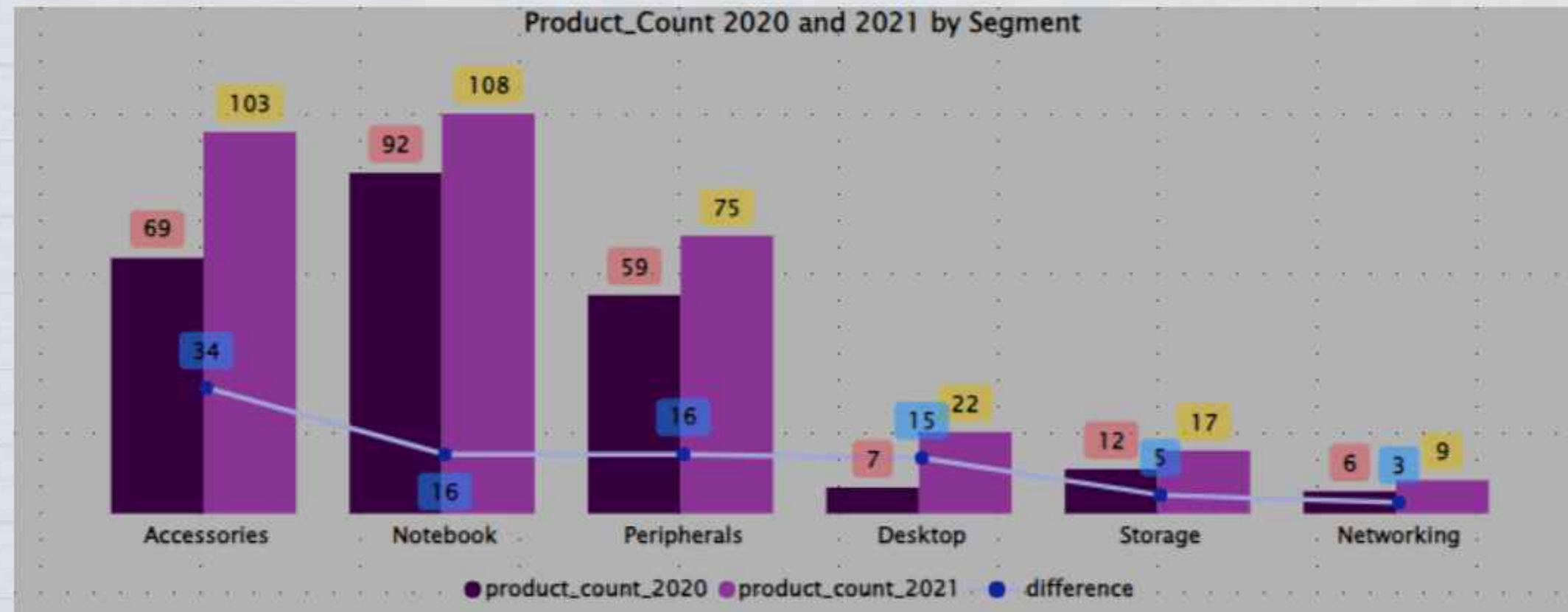
select x.segment, x.product_count_2020, y.product_count_2021, abs(x.product_count_2020 - y.product_count_2021) as difference
from x
join y
on x.segment = y.segment
order by difference desc
```

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

VISUAL 4:

INSIGHTS:



The "Accessories" segment experienced a notable increase in product offerings, adding 34 new products in 2021 compared to 2020. This growth highlights a broader trend of expanding the product portfolio, especially in the "Accessories" and "Notebook" segments, suggesting a strategic focus on catering to a wider range of customer preferences. Such expansion in product variety not only enhances market competitiveness but also provides customers with more choices, positioning the company to better meet diverse consumer needs and preferences.

AD HOC REQUEST 5:

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

SQL QUERY:

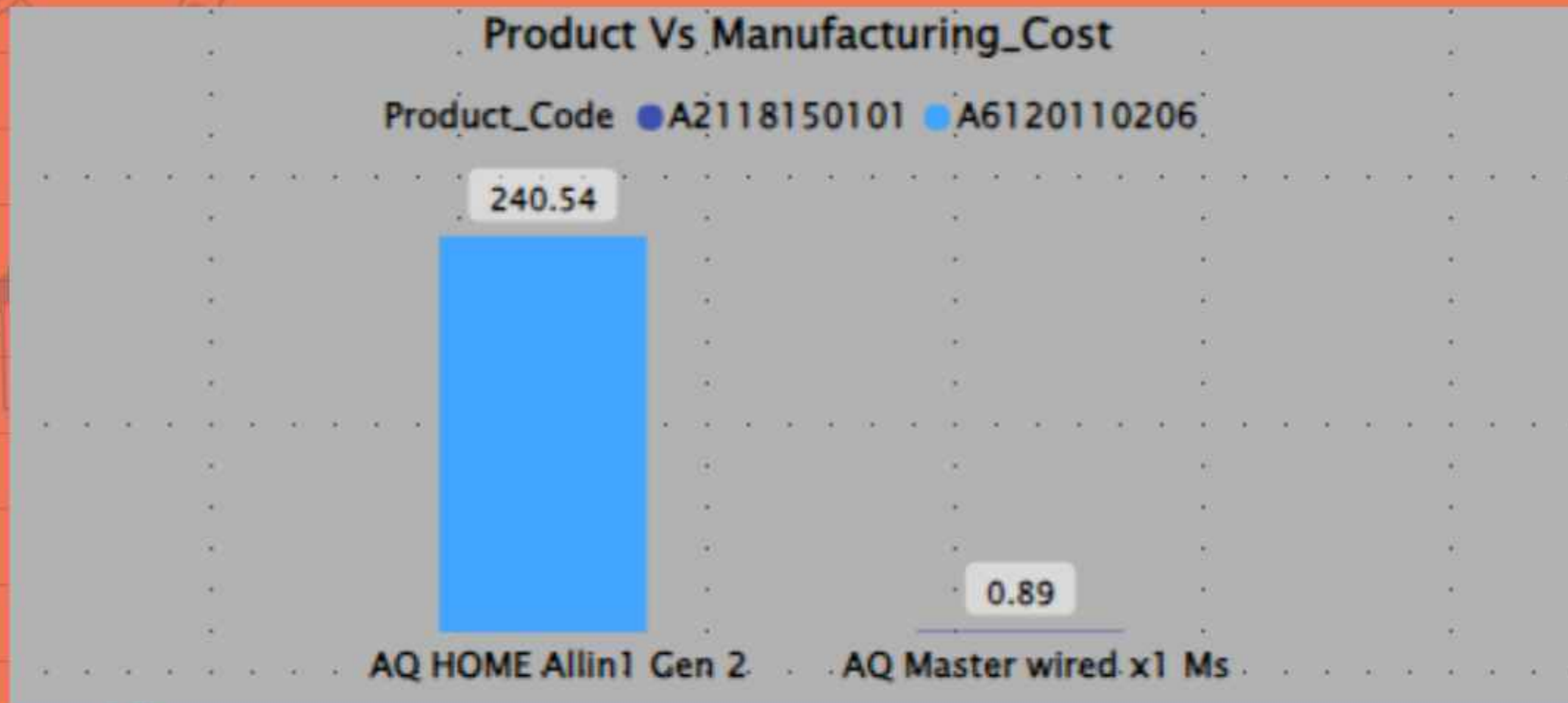
```
select m.product_code, p.product, round(m.manufacturing_cost, 2) as manufacturing_cost
from fact_manufacturing_cost m
join dim_product p
on m.product_code = p.product_code
where m.manufacturing_cost = (select max(manufacturing_cost) from fact_manufacturing_cost)
or m.manufacturing_cost = (select min(manufacturing_cost) from fact_manufacturing_cost)
order by m.manufacturing_cost desc
```

OUTPUT:

product_code	product	manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	240.54
A2118150101	AQ Master wired x1 Ms	0.89

VISUAL 5:

INSIGHTS:



The "AQ HOME Allin1 Gen 2" has a relatively high manufacturing cost of 240.54, whereas the "AQ Master Wired x1 Ms" has a much lower manufacturing cost of just 0.89. This contrast highlights the varying production expenses across product types, reflecting differences in components, complexity, and materials required for each item.

AD HOC REQUEST 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

SQL QUERY:

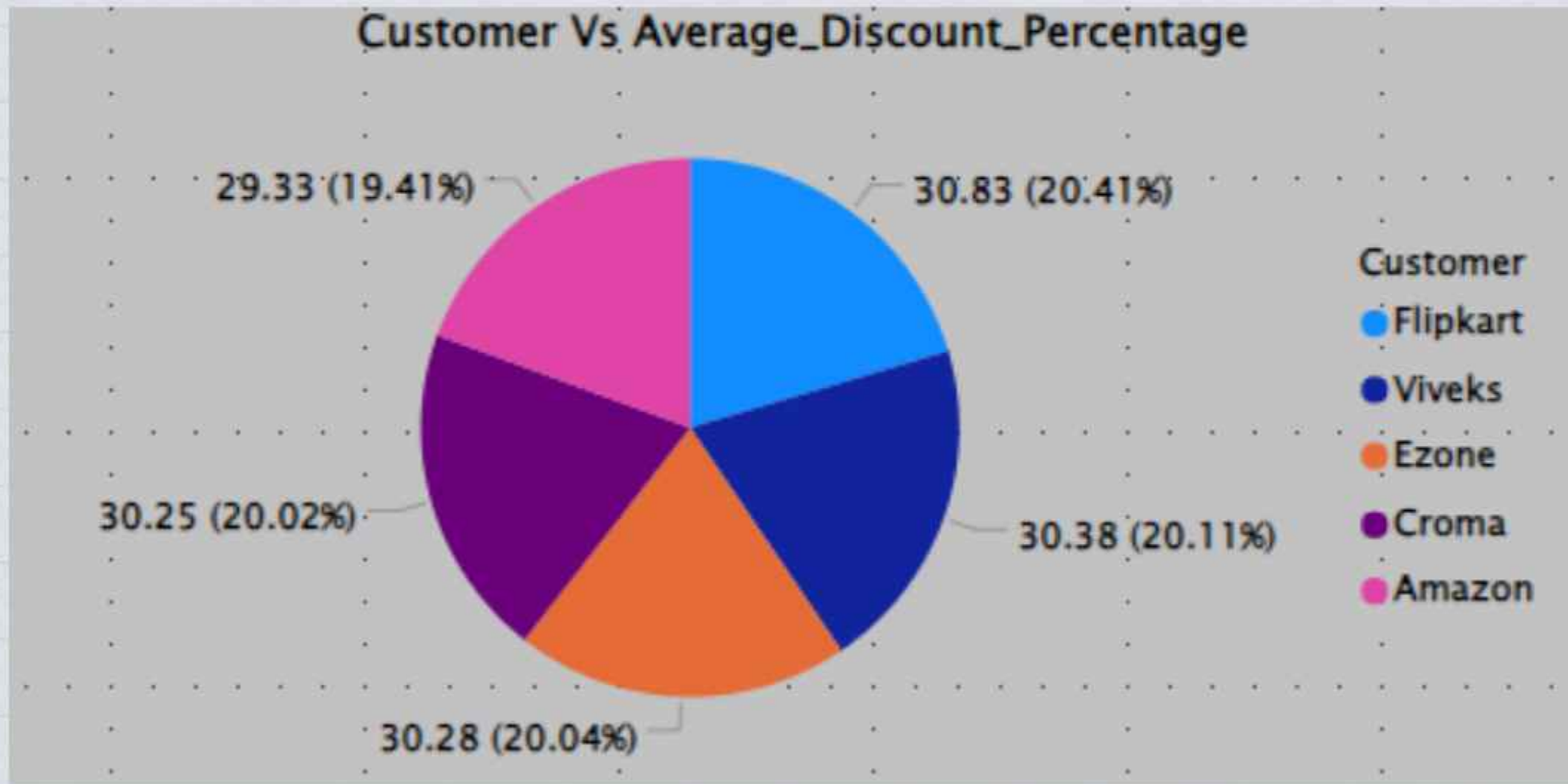
```
select pid.customer_code, c.customer, round(avg(pid.pre_invoice_discount_pct) * 100, 2) as average_discount_percentage
from fact_pre_invoice_deductions pid
join dim_customer c
on pid.customer_code = c.customer_code
where pid.fiscal_year = 2021
and c.market = "India"
group by pid.customer_code, c.customer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

VISUAL 6:

INSIGHTS:



Flipkart" leads with the highest average pre-invoice discount at 30.83%, while "Amazon" offers a slightly lower average discount of 29.33%. This variation in discounting strategies reflects distinct approaches among platforms: "Flipkart" and "Viveks" cater to more cost-conscious shoppers by providing higher average discounts, whereas "Amazon" employs a comparatively lower discount approach, possibly targeting a customer base less sensitive to discounts. These insights are valuable for refining discount strategies and aligning them with customer preferences across different channels.

AD HOC REQUEST 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

SQL QUERY:

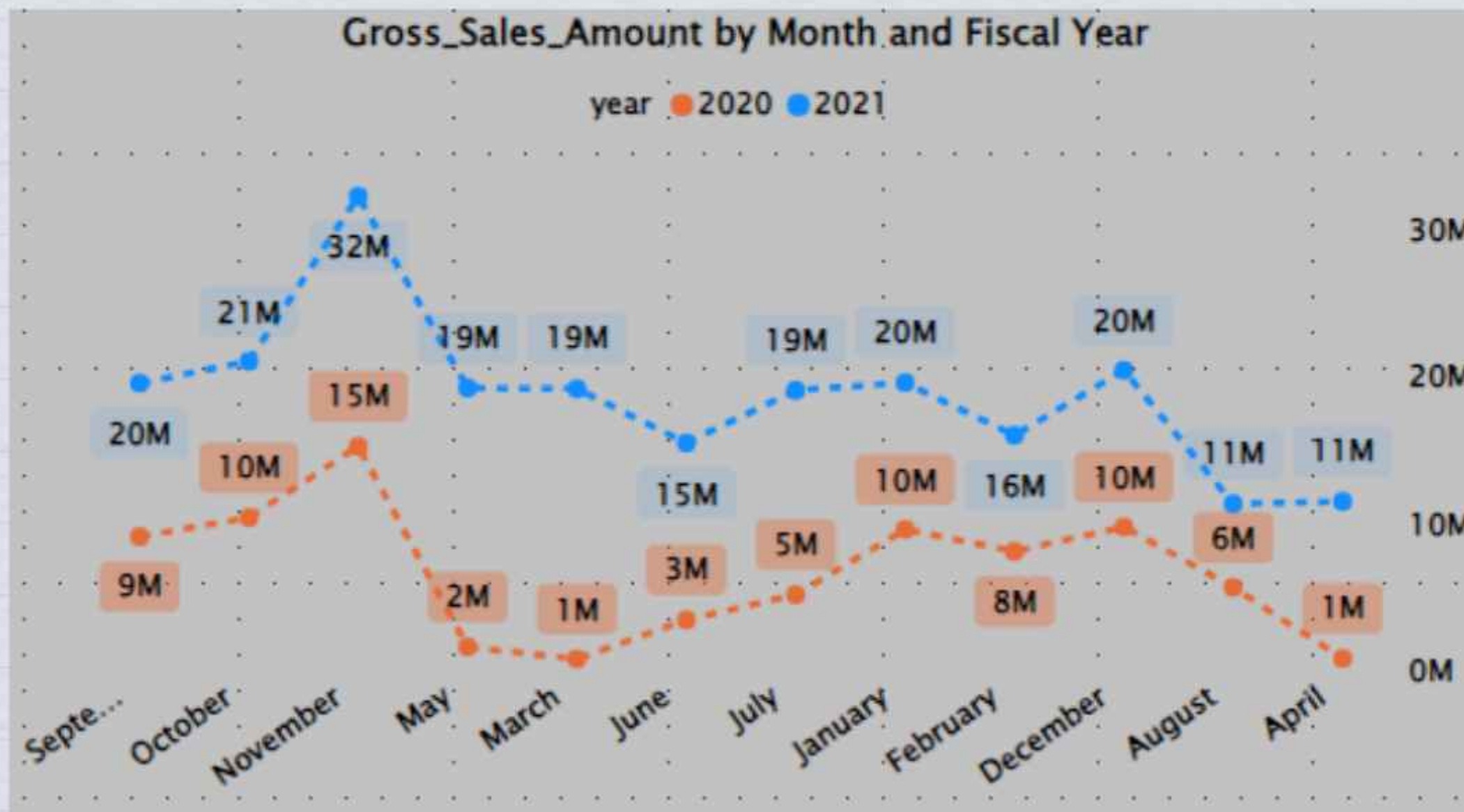
```
select monthname(s.date) as month, s.fiscal_year as year,
round(sum(gross_price * s.sold_quantity), 2) as gross_sales_amount
from fact_sales_monthly s
join fact_gross_price g
on g.product_code = s.product_code
join dim_customer c
on c.customer_code = s.customer_code
where c.customer = "Atliq Exclusive"
group by month, year
order by year
```

OUTPUT:

month	year	gross_sales_amount
September	2020	9092670.34
October	2020	10378637.60
November	2020	15231894.97
December	2020	9755795.06
January	2020	9584951.94
February	2020	8083995.55
March	2020	766976.45
April	2020	800071.95
May	2020	1586964.48
June	2020	3429736.57
July	2020	5151815.40
August	2020	5638281.83
September	2021	19530271.30
October	2021	21016218.21
November	2021	32247289.79
December	2021	20409063.18
January	2021	19570701.71
February	2021	15986603.89
March	2021	19149624.92

VISUAL 7:

INSIGHTS:



In November 2021, gross sales peaked at an impressive \$32,247,289.79, marking it as the highest-grossing month of the fiscal year. The year began with lower sales in September, but saw a substantial spike in November, suggesting strong seasonality patterns. November consistently stands out as a high-performing month, while sales in March and April of fiscal year 2020 were relatively low, showing improvement in fiscal year 2021. These insights provide a valuable basis for strategic decisions, such as concentrating marketing efforts and inventory planning around peak sales months, and addressing potential challenges during traditionally lower sales periods.

AD HOC REQUEST 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

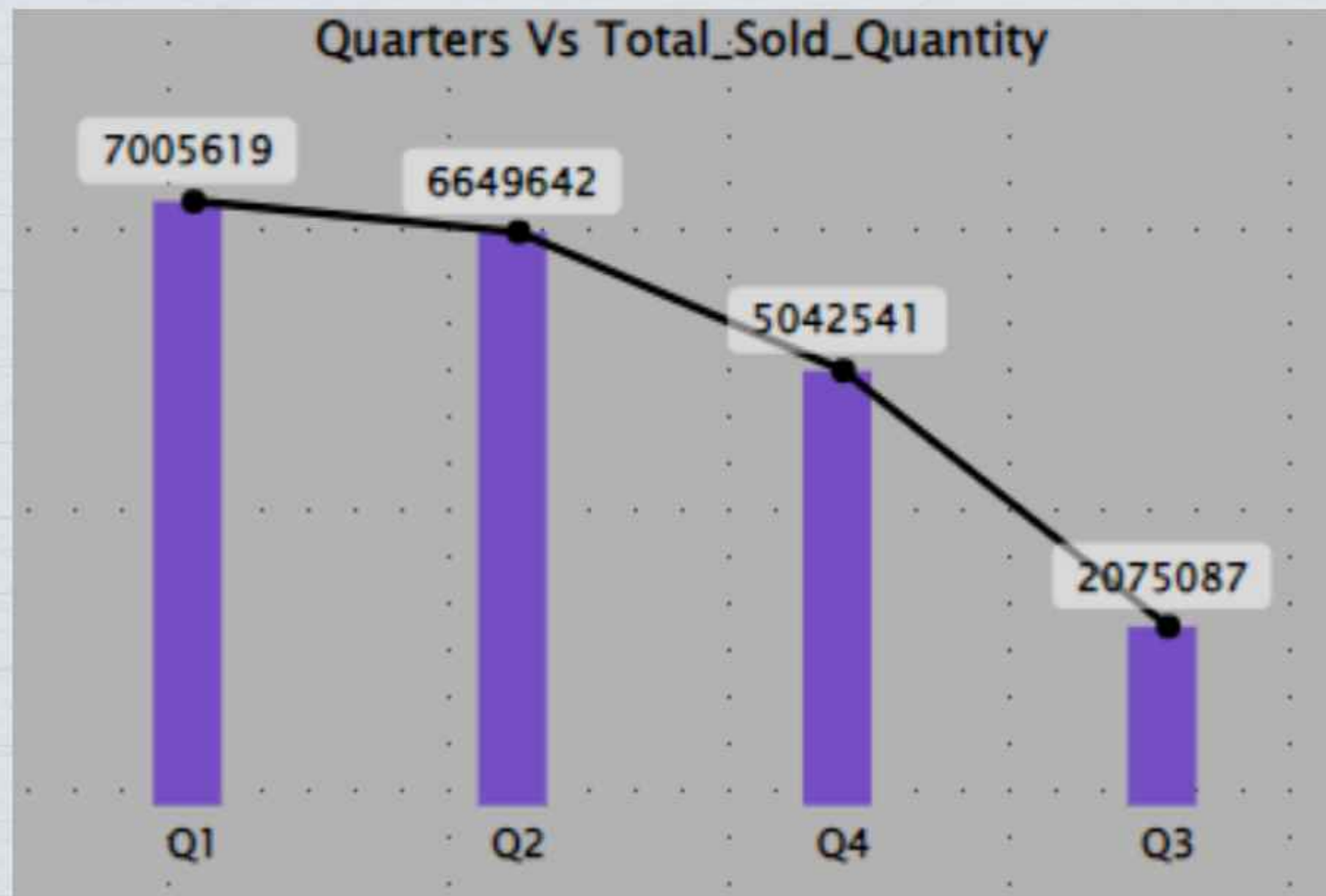
SQL QUERY:

OUTPUT:

```
select
case
when month(s.date) in (9, 10, 11) then "Q1"
when month(s.date) in (12, 01, 02) then "Q2"
when month(s.date) in (03, 04, 05) then "Q3"
else "Q4"
end as quarters,
sum(sold_quantity) as total_sold_quantity
from fact_sales_monthly s
where s.fiscal_year = 2020
group by quarters
order by total_sold_quantity desc
```

quarters	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

VISUAL 8:



INSIGHTS:

The highest total sold quantity occurred in Q1, reaching 7,005,619 units. This trend highlights seasonal variations in sales, with Q1 and Q2 being the strongest quarters, while Q3 shows weaker performance. Understanding these seasonal patterns is essential for optimizing inventory and marketing strategies to better align with periods of high demand, ensuring efficient resource allocation and enhanced responsiveness to market needs.

AD HOC REQUEST 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

SQL QUERY:

```
with x as
(select c.channel, round(sum(g.gross_price * s.sold_quantity) / 1000000, 2) as gross_sales_mln
from fact_sales_monthly s
join fact_gross_price g
on g.product_code = s.product_code
join dim_customer c
on c.customer_code = s.customer_code
where s.fiscal_year = 2021
group by c.channel)

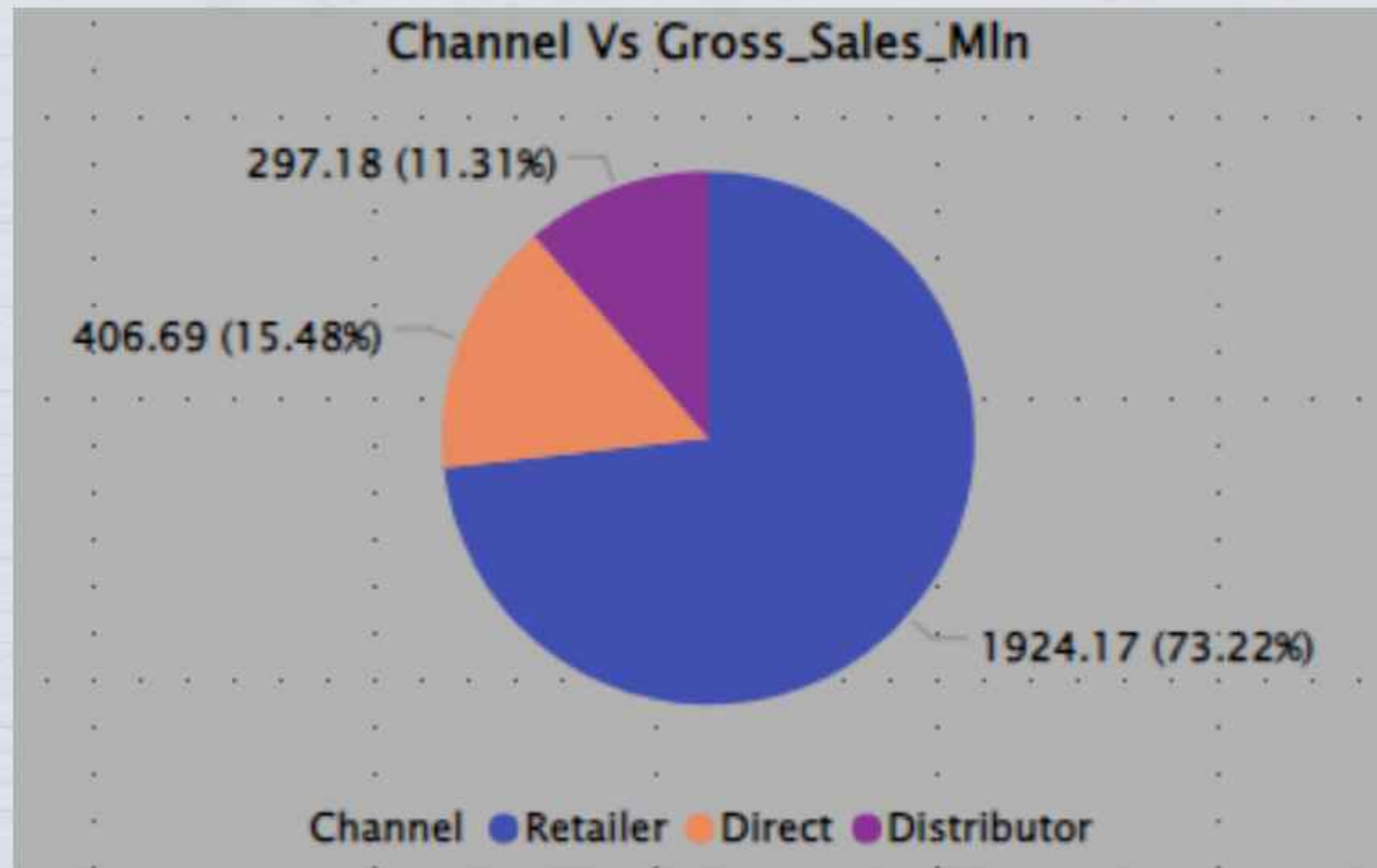
select channel, gross_sales_mln, round((gross_sales_mln / (select sum(gross_sales_mln) from x)) * 100, 2)
order by gross_sales_mln desc
```

OUTPUT:

channel	gross_sales_mln	percentage
Retailer	1924.17	73.22
Direct	406.69	15.48
Distributor	297.18	11.31

VISUAL 9:

INSIGHTS:



The "Retailer" channel dominates sales, contributing a substantial 73.22% of gross sales, marking it as the primary revenue driver. The "Direct" channel also plays a key role, accounting for 15.47% of gross sales, while the "Distributor" channel adds another 11.31%. This strong emphasis on the "Retailer" channel underscores its importance to overall revenue. However, there may be valuable opportunities to further maximize sales by exploring diversification and growth within the "Direct" and "Distributor" channels.

AD HOC REQUEST 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

SQL QUERY:

```
with x as
(select p.division, s.product_code, p.product, sum(s.sold_quantity) as total_sold_quantity,
rank() over(partition by p.division order by sum(s.sold_quantity) desc) as rank_order
from fact_sales_monthly s
join dim_product p
on p.product_code = s.product_code
where s.fiscal_year = 2021
group by p.division, s.product_code, p.product)

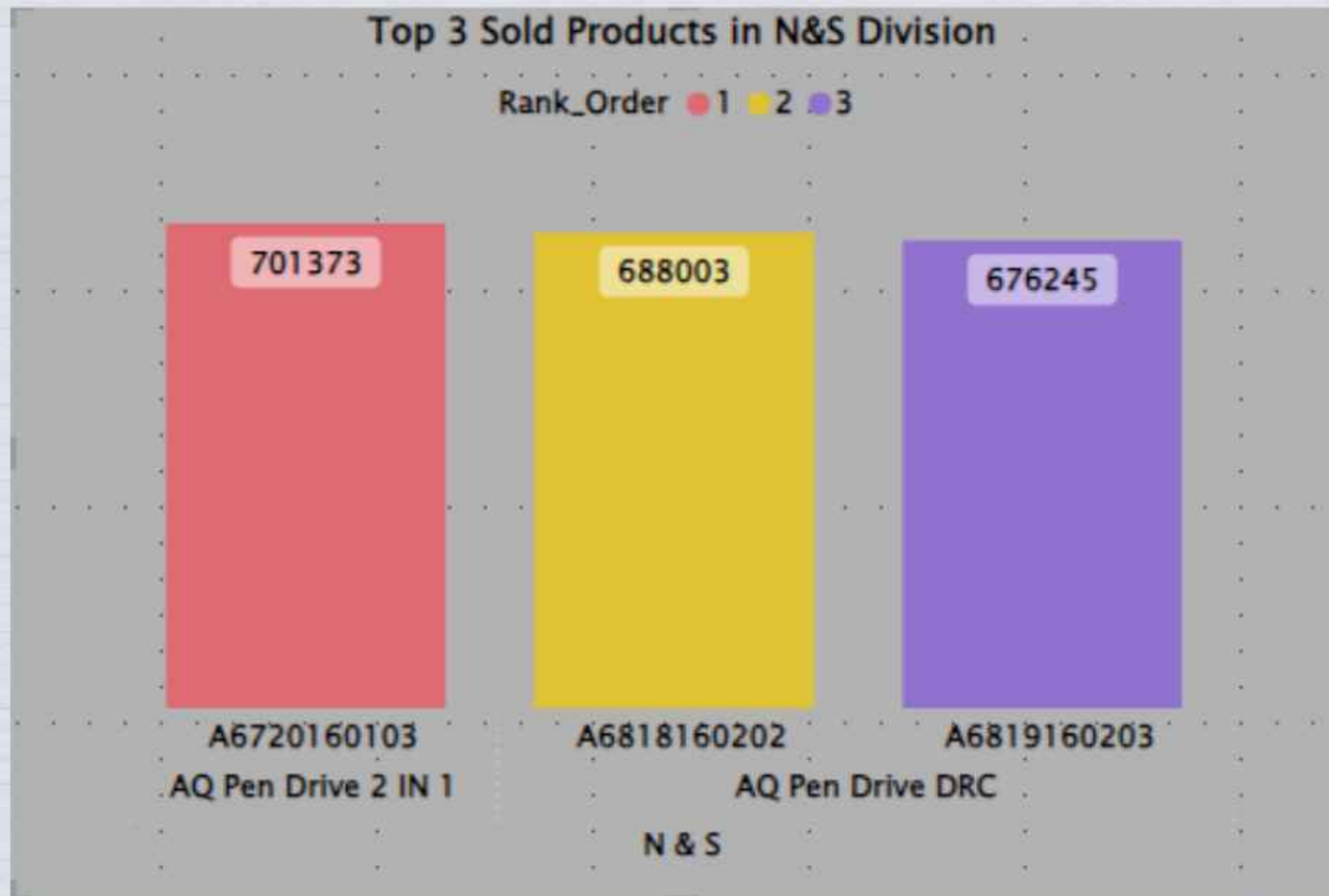
select * from x
where rank_order in (1, 2, 3)
order by division, rank_order
```

OUTPUT:

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

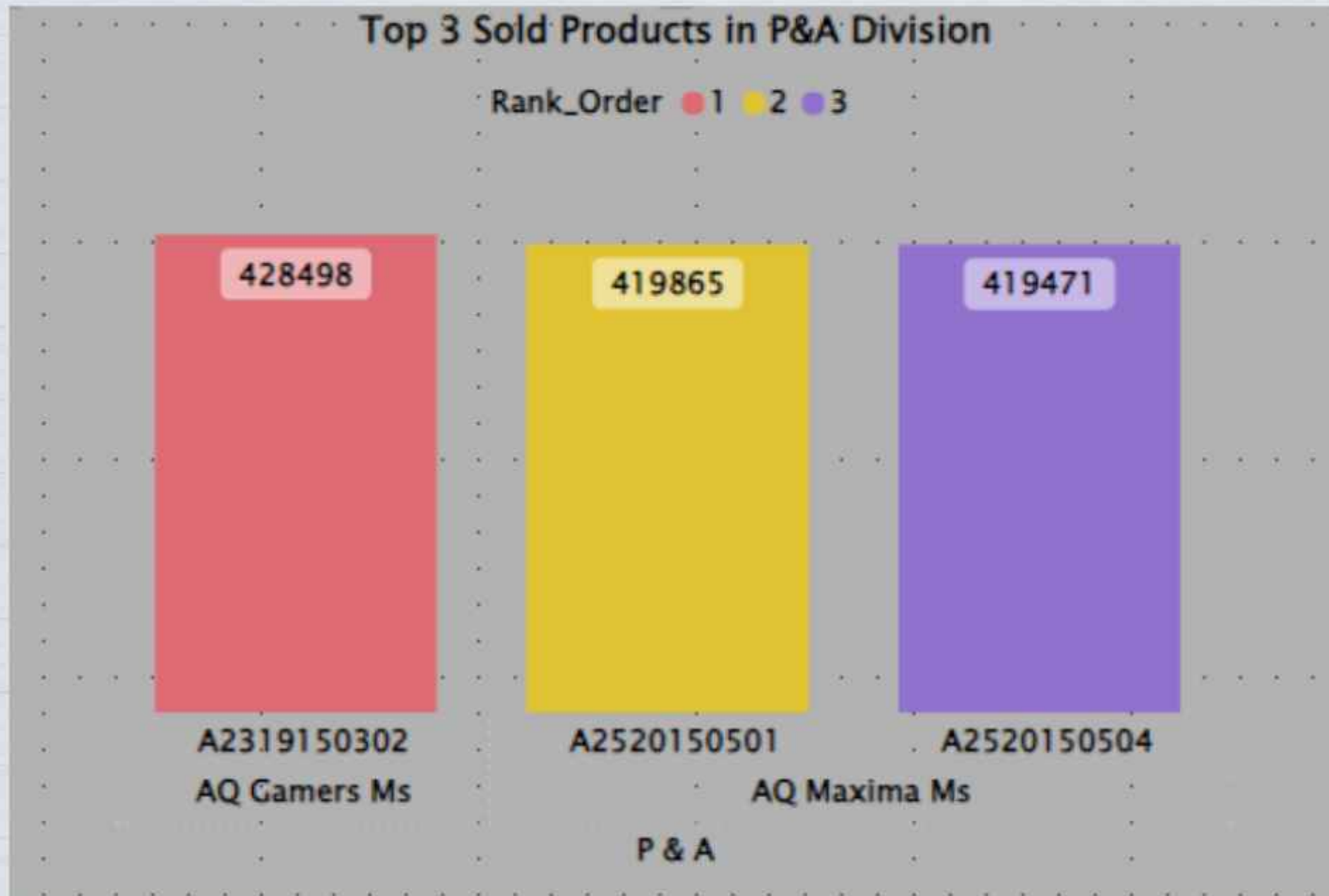
VISUAL 10.1:

INSIGHTS:



The top three products are "AQ Pen Drive 2 IN 1," "AQ Pen Drive DRC," and an additional variant of "AQ Pen Drive DRC," indicating strong consumer demand for pen drives within this division. This popularity underscores the division's leadership in the market segment and highlights substantial growth potential. To sustain this success, effective inventory management will be essential in meeting demand and optimizing stock levels for these high-performing items.

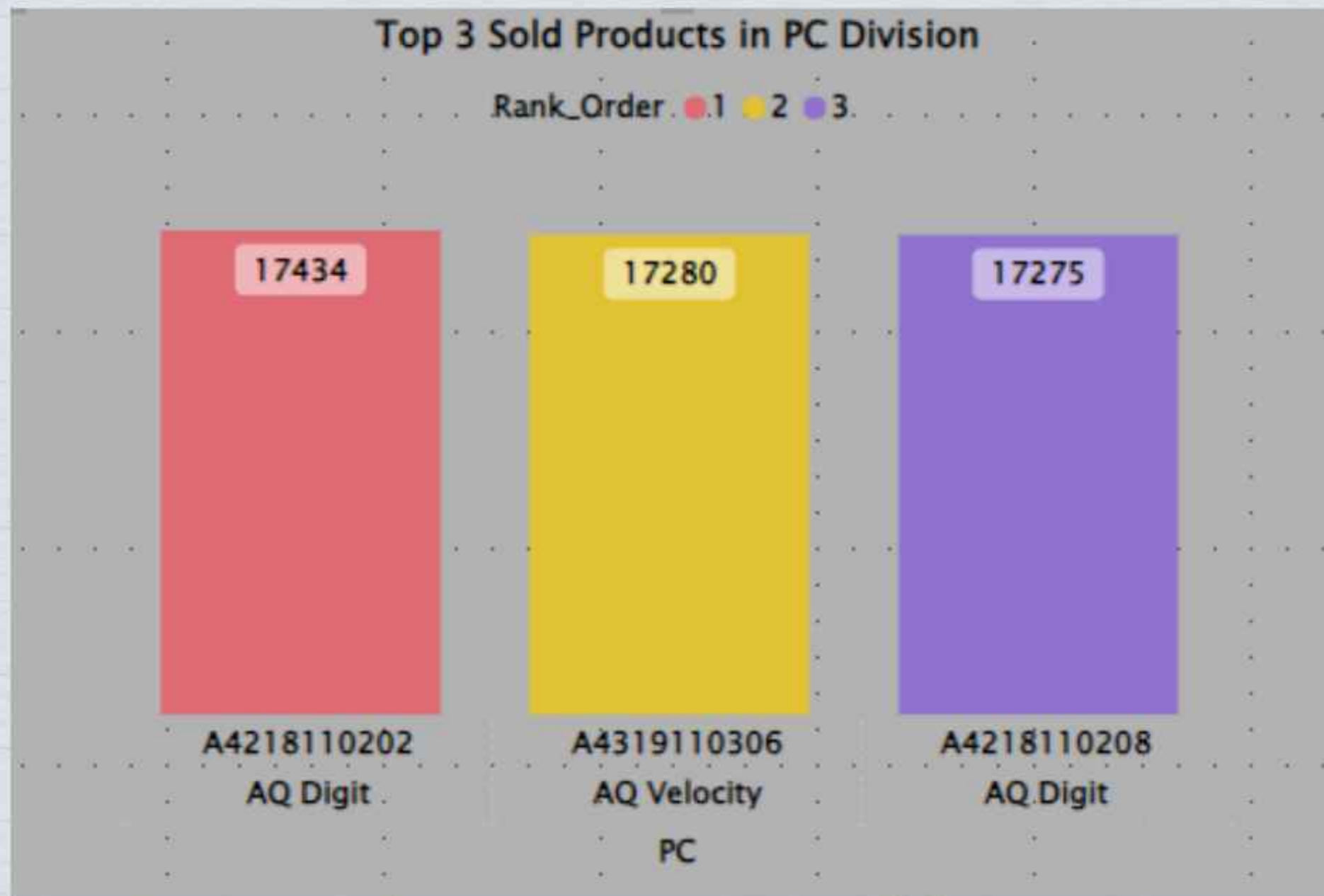
VISUAL 10.2:



INSIGHTS:

The "AQ Gamers Ms" stands out as the best-selling product, closely followed by two variants of "AQ Maxima Ms," showcasing the division's focus on gaming-related items that appeal to a dedicated customer niche. Effective inventory management is crucial to consistently meet this demand, while ongoing promotion and branding of these top products will be key to sustaining long-term success in this competitive market.

VISUAL 10.3:



INSIGHTS:

In the "PC" division, the top-selling product is "AQ Digit," with two variants, followed by "AQ Velocity." This highlights the division's specialization in PC-related products, emphasizing a strong focus on the computing niche. To meet growing customer demand, efficient inventory management is essential. Additionally, sustained branding and targeted marketing efforts will be crucial to maintaining the division's success in this competitive sector.



THANK YOU!