Atliq Hardwares

Consumer Goods Ad-hoc Insights

Codebasics Resume Project Challenge

Presented by Tuhin Ghosh | Feb 2023

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1. PROJECT SUMMARY

About Company

1

Atliq Hardwares is one of India's **leading computer hardware producers** and well expanded in other countries.

Problem Statement

2

Management of the company noticed they do not get enough insights to **make quick, smart data-informed decisions.** They want to expand their data analytics team by adding several junior data analysts. **Tony Sharma, their data analytics director,** wanted to hire someone good at tech and soft skills. Hence, he decided to conduct a **SQL challenge** which will help him understand both skills.

Objective

3

In this challenge, it has been asked to run **SQL queries** to answer **10 important ad-hoc requests** for which the business needs insights. The target audience of this dashboard is **top-level management**, so a presentation has to be created using which the management can get **high-quality and accurate insights** to take **crucial business decisions.**

2. UNDERSTANDING THE DATASET

The Dataset consists of **6 tables** of which **2** are **dimension tables** and **4** are **fact tables**. The dataset contains the **sales data** for fiscal years **2020** and **2021**. The **Fiscal Year** in **Atliq Hardwares** starts on 1st **September** and ends on 31st **August**.

1

Table Name: dim_customer
Description: Contains customer-related data

2

Table Name: dim_product
Description: Contains product-related data

3

Table Name: fact_gross_price
Description: Contains gross price information for each product

4

Table Name: fact_manufacturing_cost
Description: Contains the cost incurred in the production of each product

5

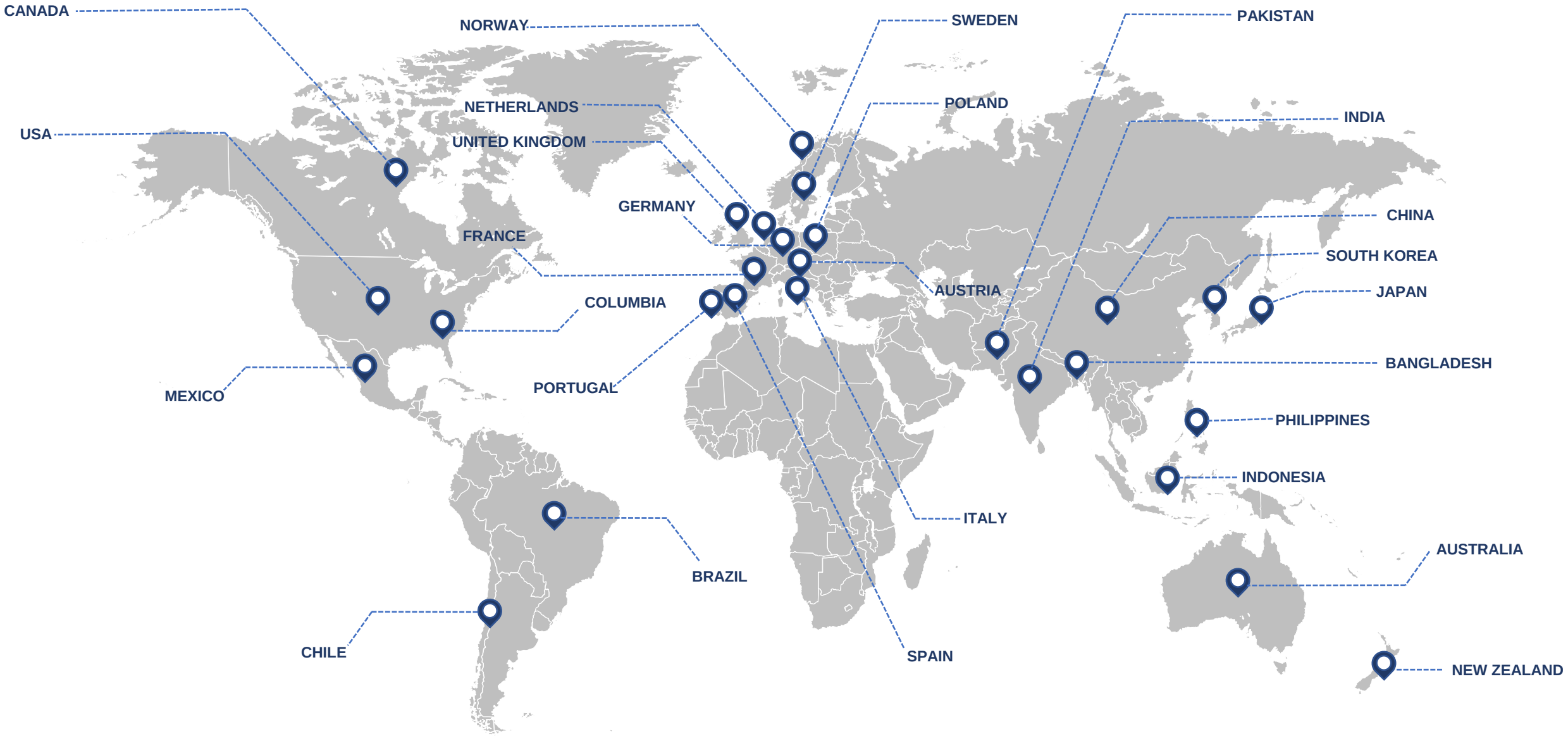
Table Name: fact_pre_invoice_deductions
Description: Contains pre-invoice deductions information for each product

6

Table Name: fact_sales_monthly
Description: contains monthly sales data for each product

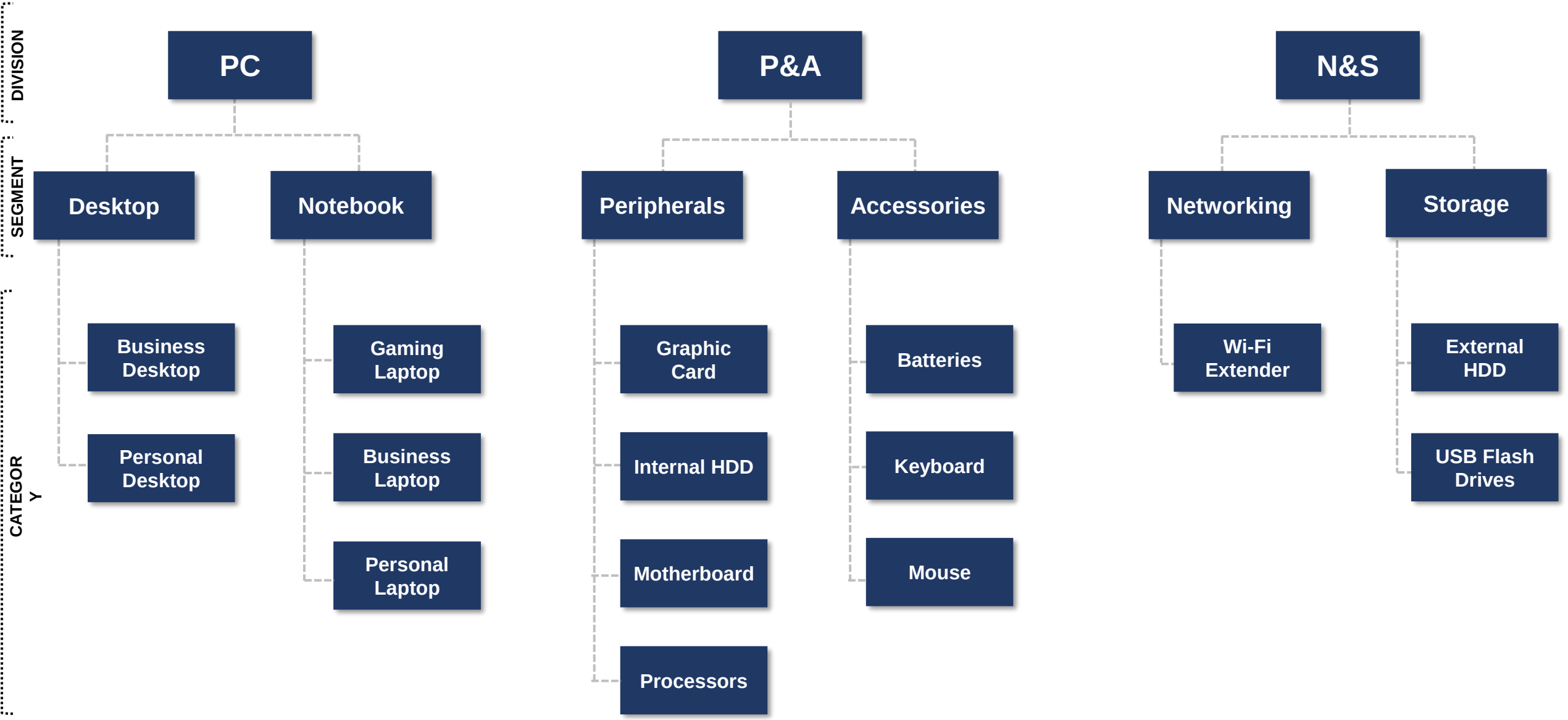
3. ATLIQ's MARKET

Atliq Hardwares is well-expanded across **27** countries in **Asia Pacific**, **European Union**, **North America** & **Latin America** regions.



4. ATLIQ's PRODUCT LINES

Atliq Hardwares has **3 product divisions** under which there are **6 product segments** and **15 product categories**.



5. AD-HOC REQUESTS

Request 1

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

SQL Query & Output

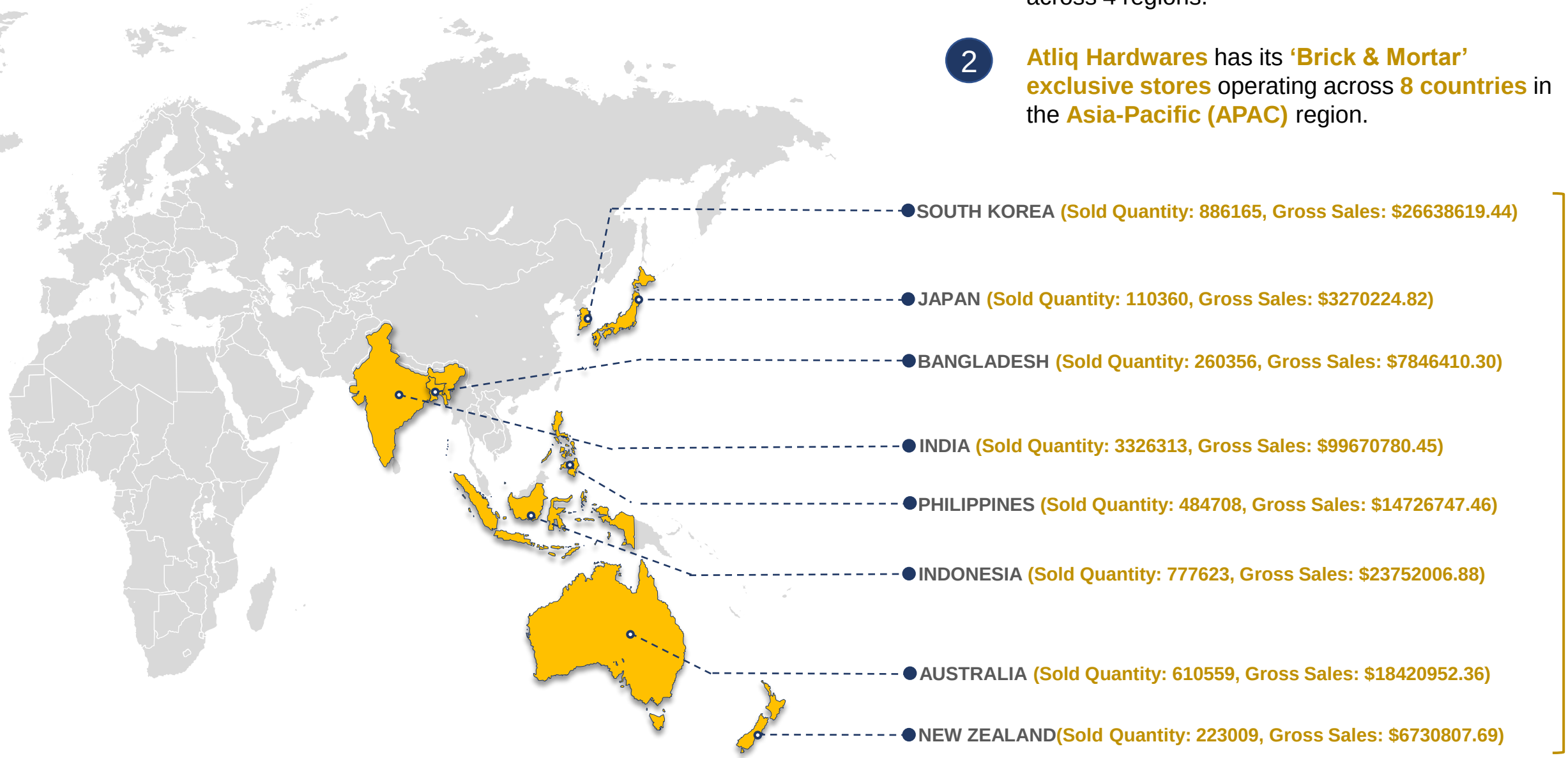
```
SELECT
  DISTINCT(market)
FROM
  dim_customer
WHERE
  customer = "Atliq Exclusive"
  AND region = "APAC";

--OUTPUT--

+-------------+
| market      |
+-------------+
| India       |
| Indonesia   |
| Japan       |
| Philiphines |
| South Korea |
| Australia   |
| Newzealand  |
| Bangladesh  |
+-------------+
```

VISUALIZATION FOR REQUEST 1

Insights

1. **Atliq Hardwares** is operating in 27 countries across 4 regions.

2. **Atliq Hardwares** has its **'Brick & Mortar' exclusive stores** operating across **8 countries** in the **Asia-Pacific (APAC)** region.



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_change

SQL Query & Output

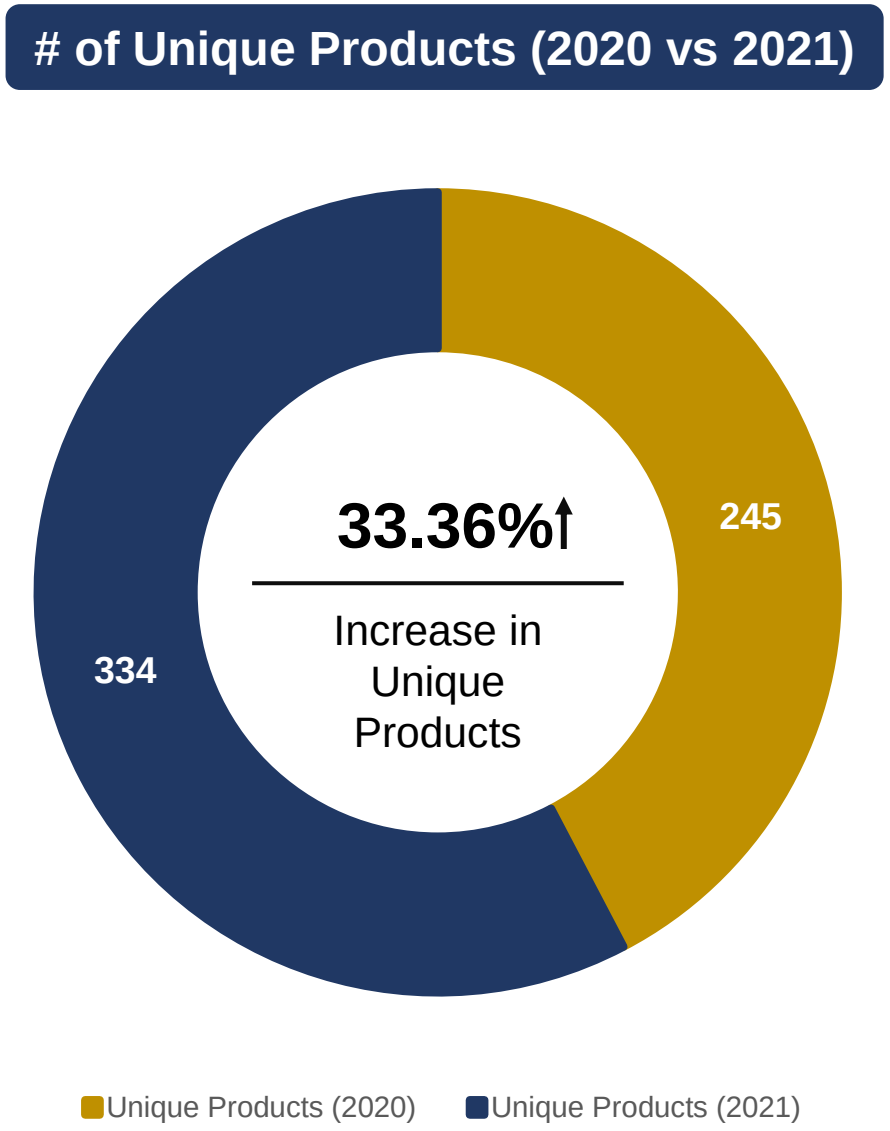
```
WITH uniq_prod_in_2020 AS (
  SELECT
    count(
      DISTINCT(product_code)
    ) AS unique_products_2020
  FROM
    fact_sales_monthly
  WHERE
    fiscal_year = 2020
),
uniq_prod_in_2021 AS (
  SELECT
    count(
      DISTINCT(product_code)
    ) AS unique_products_2021
  FROM
    fact_sales_monthly
  WHERE
    fiscal_year = 2021
)
SELECT
  unique_products_2020,
  unique_products_2021,
  round(
    (
      unique_products_2021 - unique_products_2020
    )* 100 / unique_products_2020,
    2
  ) AS percentage_change
FROM
  uniq_prod_in_2020 CROSS
  JOIN uniq_prod_in_2021;


--OUTPUT--

+----------------------+----------------------+-------------------+
| unique_products_2020 | unique_products_2021 | percentage_change |
+----------------------+----------------------+-------------------+
|                  245 |                  334 |             36.33 |
+----------------------+----------------------+-------------------+
```

VISUALIZATION FOR REQUEST 2

Insights

1. **Atliq Hardwares** produced **245 unique products** in **2020** whereas it increased to **334** unique products in **2021.**

2. With **89** more **unique products** produced in **2021, Atliq Hardwares** has achieved a **33.36%** increase in unique products from the previous year.



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 & Output

```sql
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

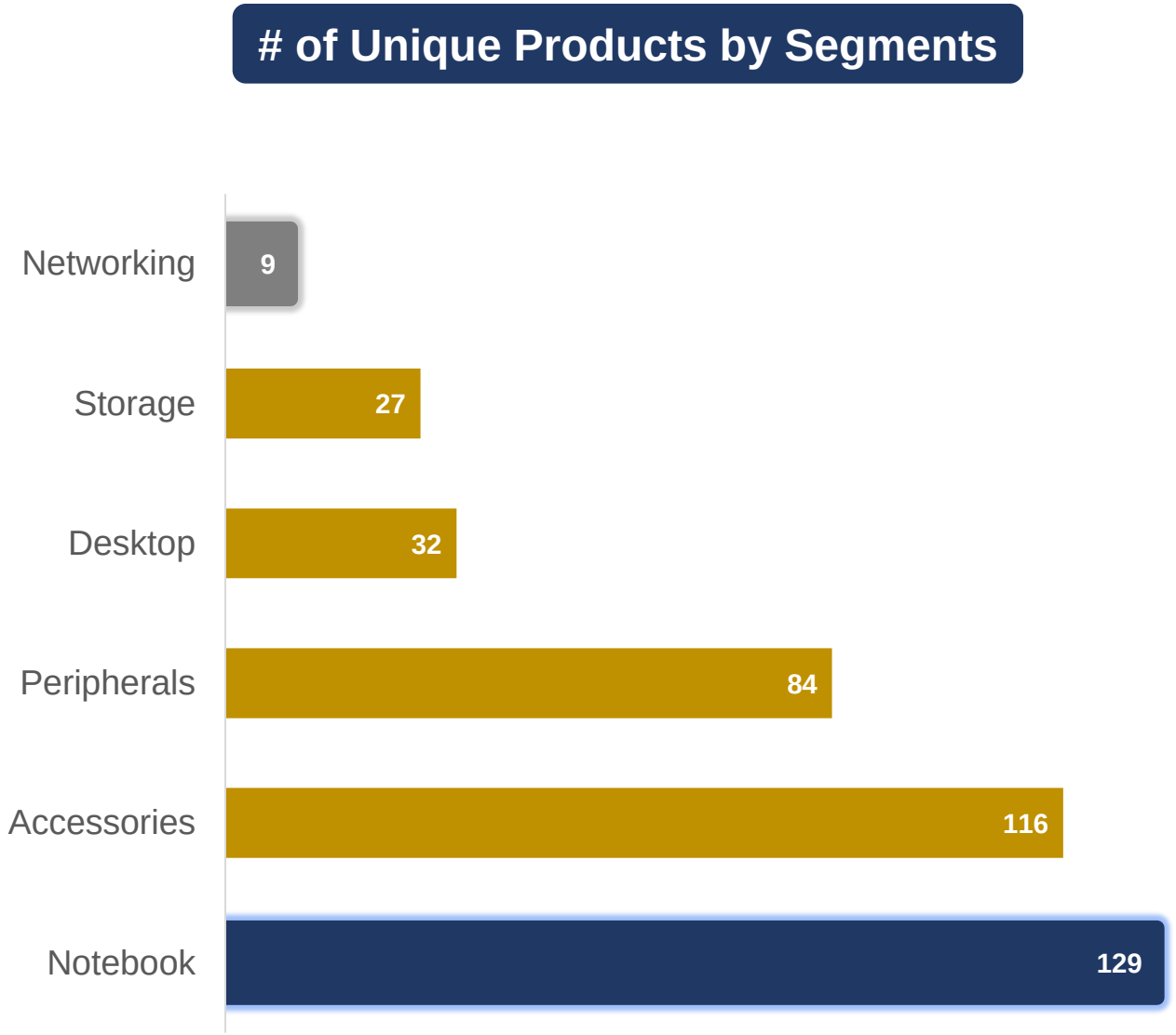
VISUALIZATION FOR REQUEST 3

Insights

1. **Atliq Hardwares** has **6** different **product segments** in which the **Notebook** segment has the **highest** number of unique products whereas **Networking** has the **least** number of unique products.

2. The **Notebook** segment has **129** unique products whereas the **Networking** segment with only **9** unique products is **120** unique products behind the Notebook segment.

3. **Accessories** and **Peripherals** segments are just behind the **Notebook** segment with 116 & 84 unique products respectively. **Storage** and **Desktop** segments have less variety of unique products with only 27 and 32 nos. respectively.



Request 4

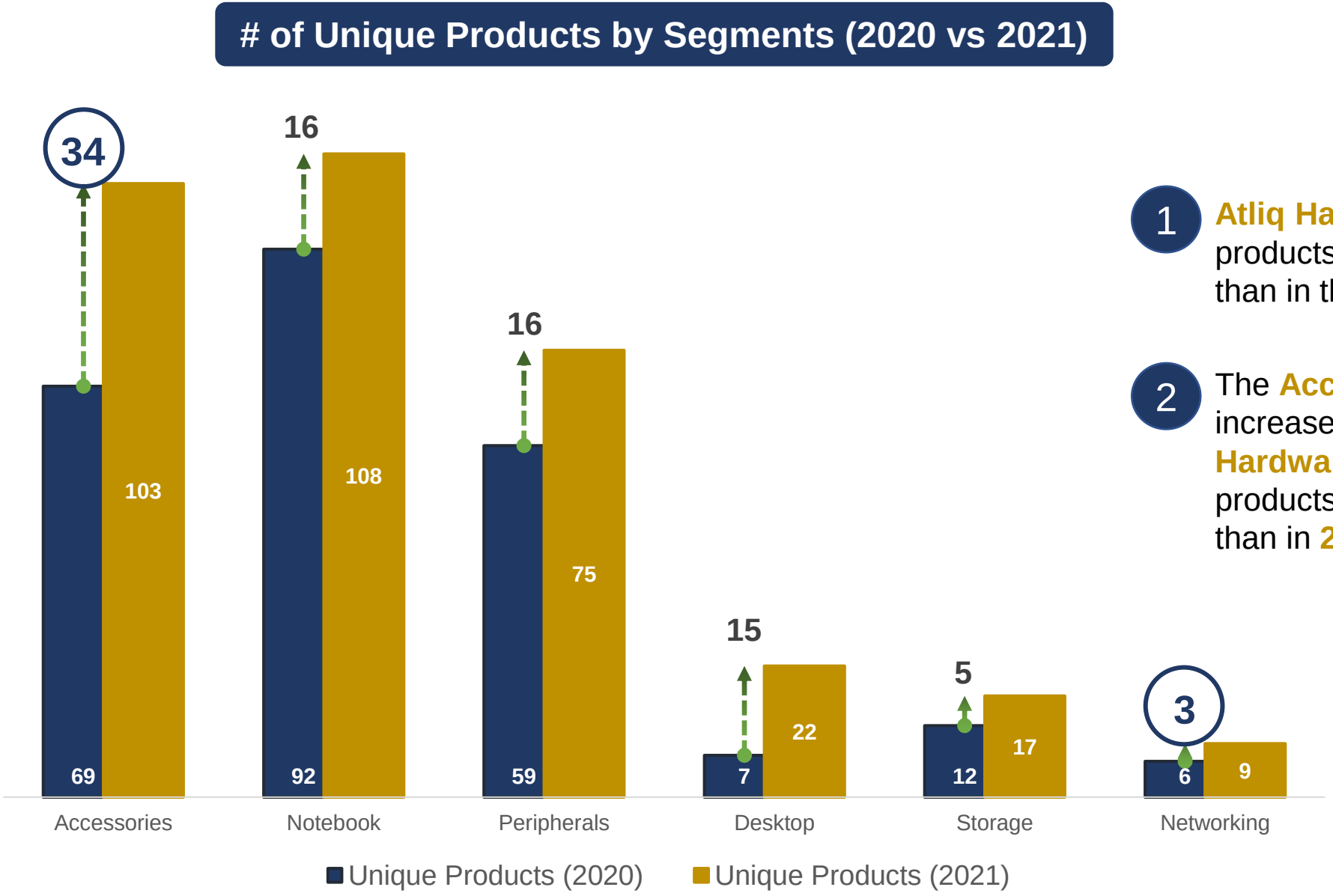
Which segment had the most increase in **unique products in 2021 vs 2020?** The final output contains these fields,

segment product_count_2020
product_count_2021
difference

SQL Query & Output

```sql
WITH uniq_prod_count_2020 AS (
  SELECT
    p.segment,
    COUNT(
      DISTINCT(p.product_code)
    ) AS product_count_2020,
    fiscal_year
  FROM
    dim_product p
    JOIN fact_sales_monthly s USING (product_code)
  WHERE
    fiscal_year = 2020
  GROUP BY
    segment
),
uniq_prod_count_2021 AS (
  SELECT
    p.segment,
    COUNT(
      DISTINCT(p.product_code)
    ) AS product_count_2021,
    fiscal_year
  FROM
    dim_product p
    JOIN fact_sales_monthly s USING (product_code)
  WHERE
    fiscal_year = 2021
  GROUP BY
    segment
)
SELECT
  segment,
  product_count_2020,
  product_count_2021,
  product_count_2021 - product_count_2020 AS difference
from
  uniq_prod_count_2020
  JOIN uniq_prod_count_2021 USING (segment)
GROUP BY
  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 |
+-------------+--------------------+--------------------+------------+
```

VISUALIZATION FOR REQUEST 4



Insights

1. **Atliq Hardwares** produced more unique products in every product segment in 2021 than in the previous year.

2. The **Accessories** segment has the most increase in unique products in **2021 as Atliq Hardwares** has produced **34** more unique products in the Accessories segment in **2021** than in **2020.**

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 & Output

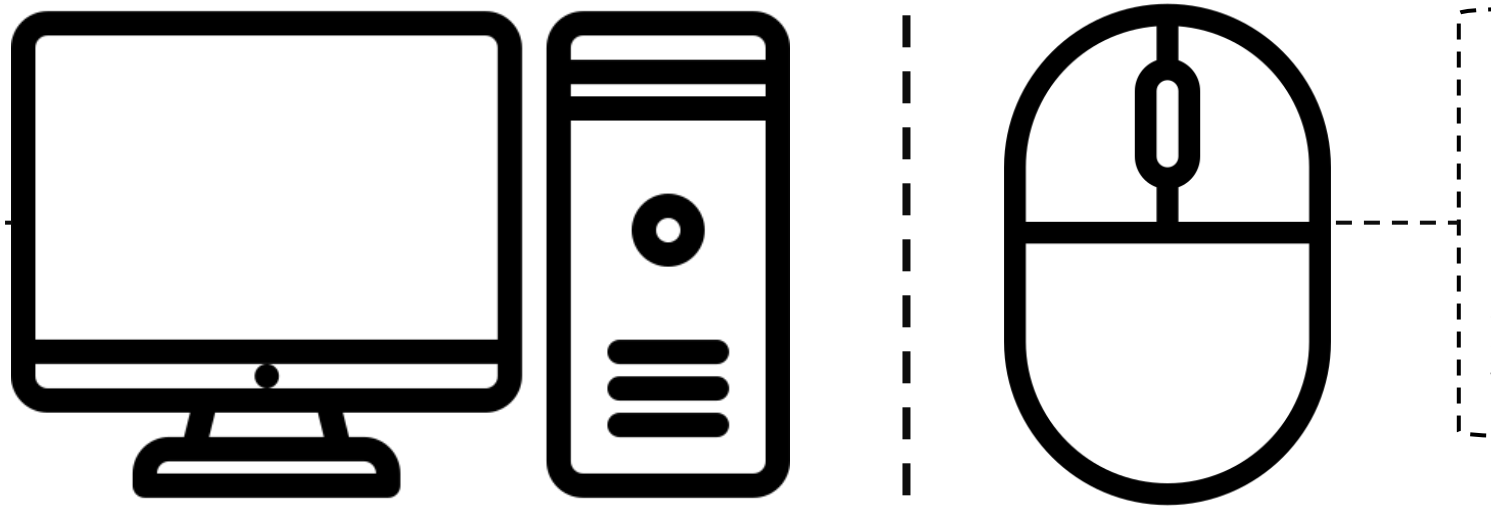
```sql
SELECT
  p.product_code,
  concat(p.product, " (", p.variant, ")") AS product,
  m.manufacturing_cost
FROM
  dim_product p
  JOIN fact_manufacturing_cost m USING (product_code)
WHERE
  manufacturing_cost =(
    SELECT
      max(manufacturing_cost)
    FROM
      fact_manufacturing_cost
  )
  OR manufacturing_cost =(
    SELECT
      min(manufacturing_cost)
    FROM
      fact_manufacturing_cost
  )
ORDER BY
  manufacturing_cost DESC;


--OUTPUT--

+--------------+-------------------------------------+--------------------+
| product_code | product                             | manufacturing_cost |
+--------------+-------------------------------------+--------------------+
| A6120110206  | AQ HOME Allin1 Gen 2 (Plus 3)       |           240.5364 |
| A2118150101  | AQ Master wired x1 Ms (Standard 1)  |             0.8920 |
+--------------+-------------------------------------+--------------------+
```

VISUALIZATION FOR REQUEST 5

Products with the Highest and the Lowest Manufacturing Costs

$240.54

Highest Manufacturing Cost
Product Code: A6120110206
Product: AQ HOME Allin1 Gen 2 (Plus 3)
Segment: Desktop
Category: Personal Desktop
Variant: Plus 3



$0.89

Lowest Manufacturing Cost
Product Code: A2118150101
Product: AQ Master wired x1 Ms (Standard 1)
Segment: Accessories
Category: Mouse
Variant: Standard 1

Insights

1. **AQ HOME Allin1 Gen 2 (Plus 3)** under the personal desktop category has the **highest** manufacturing cost of **$240.54.**
2. **AQ Master wired x1 Ms (Standard 1)** under the mouse category has the **lowest** manufacturing cost of **$0.89.**

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 & Output

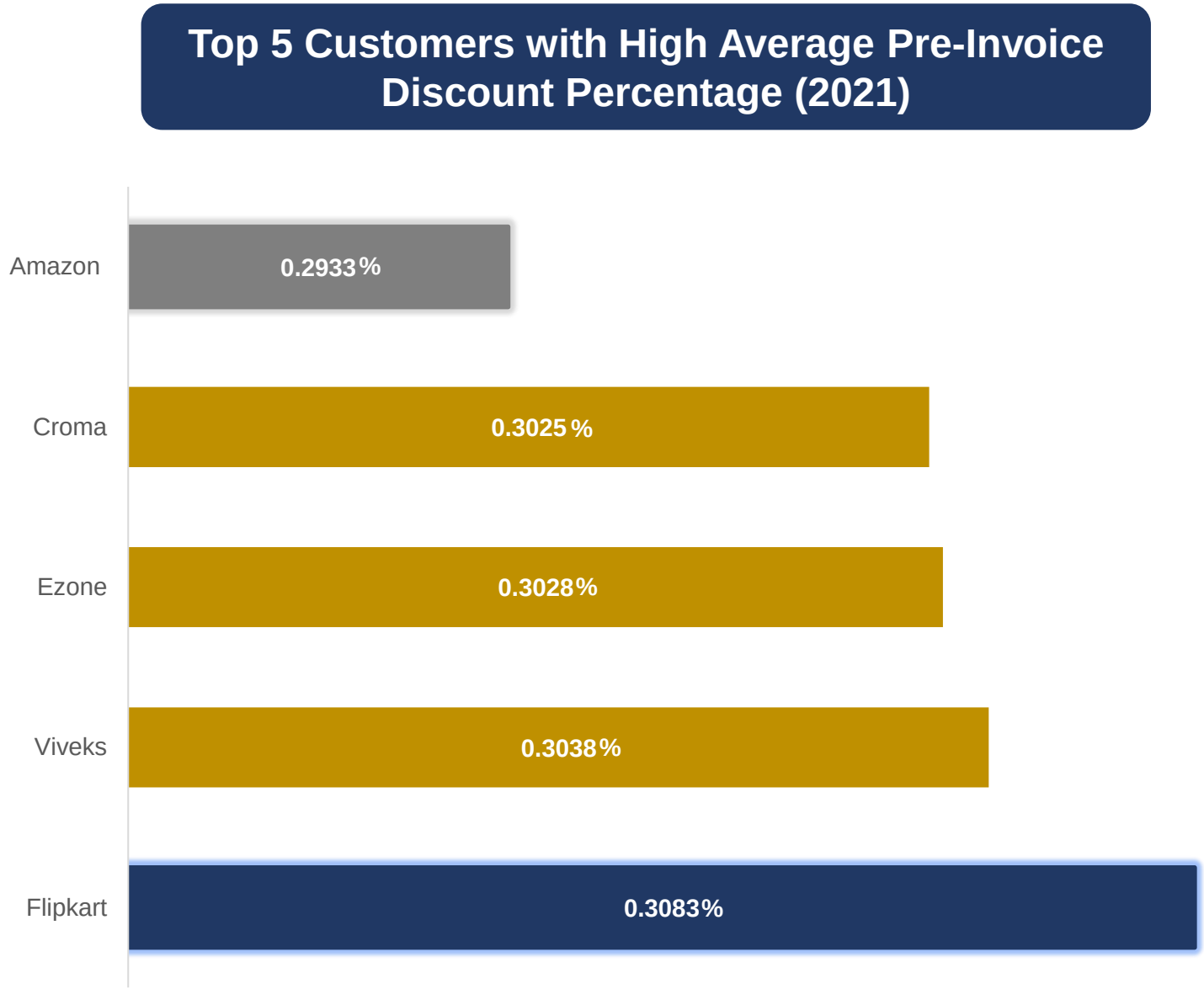
```
SELECT
  c.customer_code,
  c.customer,
  d.fiscal_year,
  ROUND(
    AVG(d.pre_invoice_discount_pct),
    4
  ) AS average_discount_percentage
FROM
  fact_pre_invoice_deductions d
  JOIN dim_customer c using (customer_code)
WHERE
  fiscal_year = 2021
  AND market = "India"
GROUP BY
  d.fiscal_year,
  c.customer_code,
  c.customer
ORDER BY
  average_discount_percentage DESC
LIMIT
  5;

--OUTPUT--

+---------------+----------+-------------+----------------------------+
| customer_code | customer | fiscal_year | average_discount_percentage |
+---------------+----------+-------------+----------------------------+
|      90002009 | Flipkart |        2021 |                     0.3083 |
|      90002006 | Viveks   |        2021 |                     0.3038 |
|      90002003 | Ezone    |        2021 |                     0.3028 |
|      90002002 | Croma    |        2021 |                     0.3025 |
|      90002016 | Amazon   |        2021 |                     0.2933 |
+---------------+----------+-------------+----------------------------+
```

VISUALIZATION FOR REQUEST 6

Insights

1. **Flipkart** has received the highest Average Pre-Invoice Discount Percentage from Atliq Hardwares in **2021** followed by **Viveks** holding the second position.

2. **Amazon** has received the 5th highest Average Pre-Invoice Discount Percentage from Atliq Hardwares in **2021**.



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 & Output

```sql
SELECT
  MONTHNAME(s.date) AS MONTH,
  s.fiscal_year,
  ROUND(
    SUM(g.gross_price * s.sold_quantity),
    2
  ) AS gross_sales_amount
FROM
  dim_customer c
  JOIN fact_sales_monthly s ON c.customer_code = s.customer_code
  JOIN fact_gross_price g ON s.product_code = g.product_code
WHERE
  c.customer = "Atliq Exclusive"
GROUP BY
  MONTHNAME(s.date),
  fiscal_year
ORDER BY
  s.fiscal_year;

--OUTPUT--
```

MONTH	fiscal_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
April	2021	11483530.30
May	2021	19204309.41
June	2021	15457579.66
July	2021	19044968.82
August	2021	11324548.34

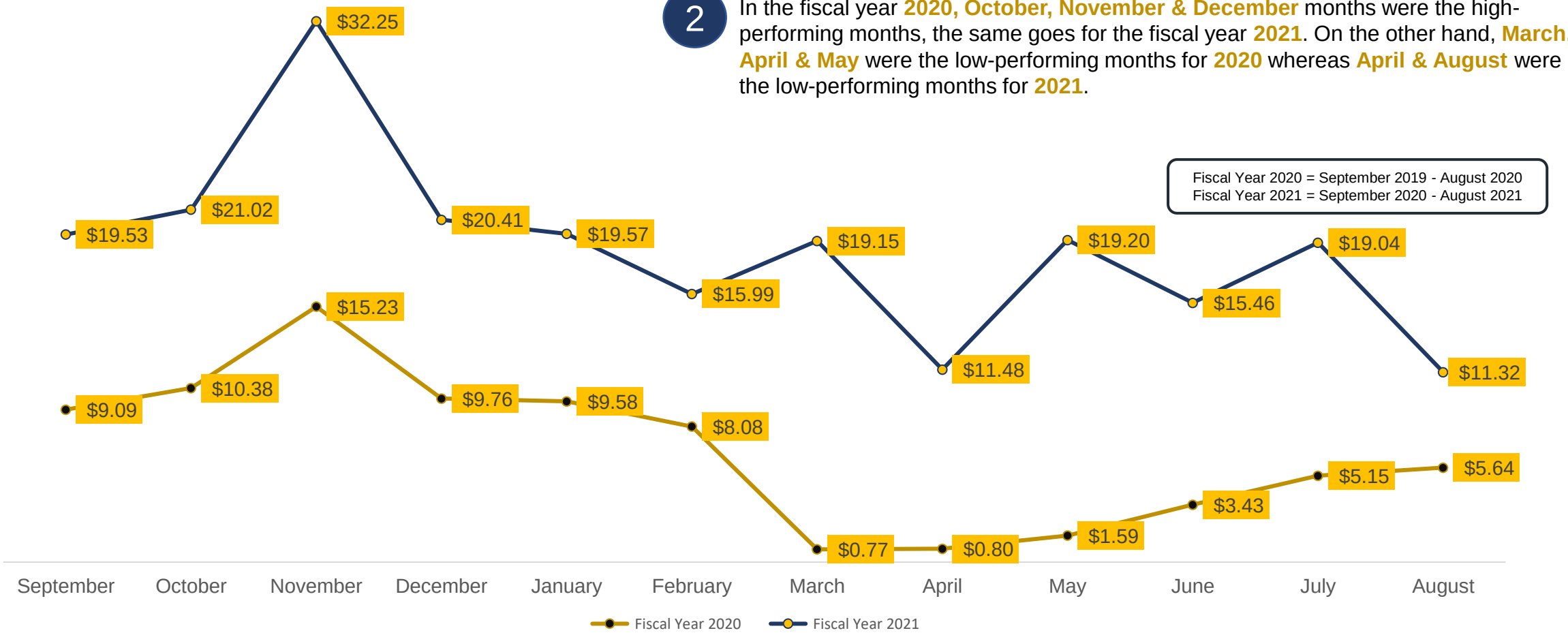
VISUALIZATION FOR REQUEST 7

Monthly Gross Sales for Atliq Exclusive in Millions (2020 vs 2021)

Insights

1. In the fiscal year **2020**, the gross sales were **$79.50 million** whereas there is a significant growth in the gross sales in the fiscal year **2021** with **$224.42 million** making the total gross sales of **$303.92 million** for **Atliq Exclusive.**

2. In the fiscal year **2020, October, November & December** months were the high-performing months, the same goes for the fiscal year **2021**. On the other hand, **March, April & May** were the low-performing months for **2020** whereas **April & August** were the low-performing months for **2021**.



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

```sql
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;

--OUTPUT--

+---------+----------------------+
| quarter | total_sold_quantity |
+---------+----------------------+
| Q1      |              7005619 |
| Q2      |              6649642 |
| Q4      |              5042541 |
| Q3      |              2075087 |
+---------+----------------------+
```

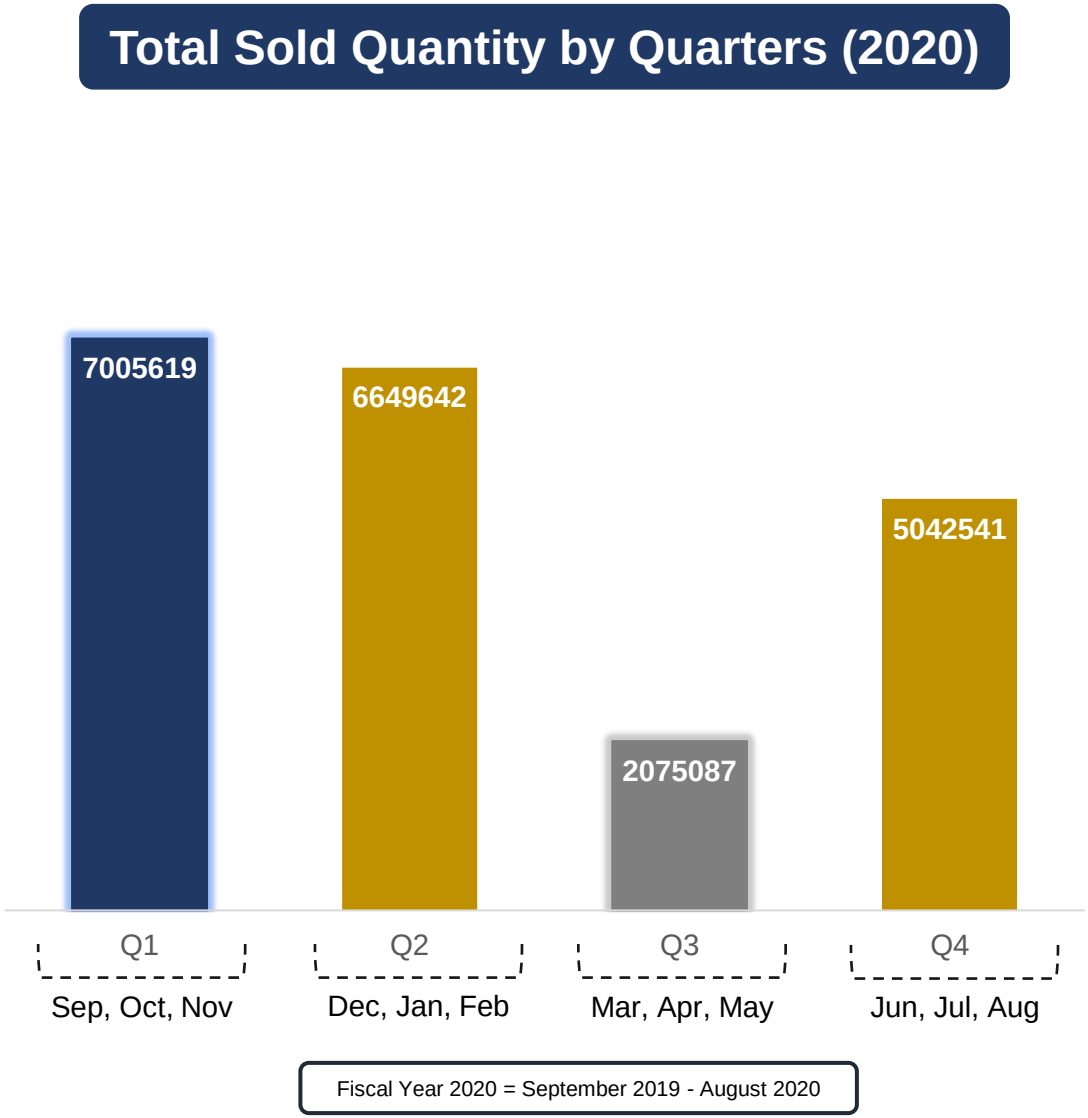
VISUALIZATION FOR REQUEST 8

Insights

1. **Quarter 1** (Q1) of the fiscal year **2020** got the highest Total Sold Quantity with **70,05,619**.

2. The sales performance in **Quarter 3** (Q3) of the fiscal year **2020** was significantly low as this quarter registered the lowest Total Sold Quantity with **20,75,087**.

3. **Atliq Hardwares** has managed to recover its sales performance significantly in **Quarter 4** (Q4) with a Total Sold Quantity of **50,42,541**.



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 & Output

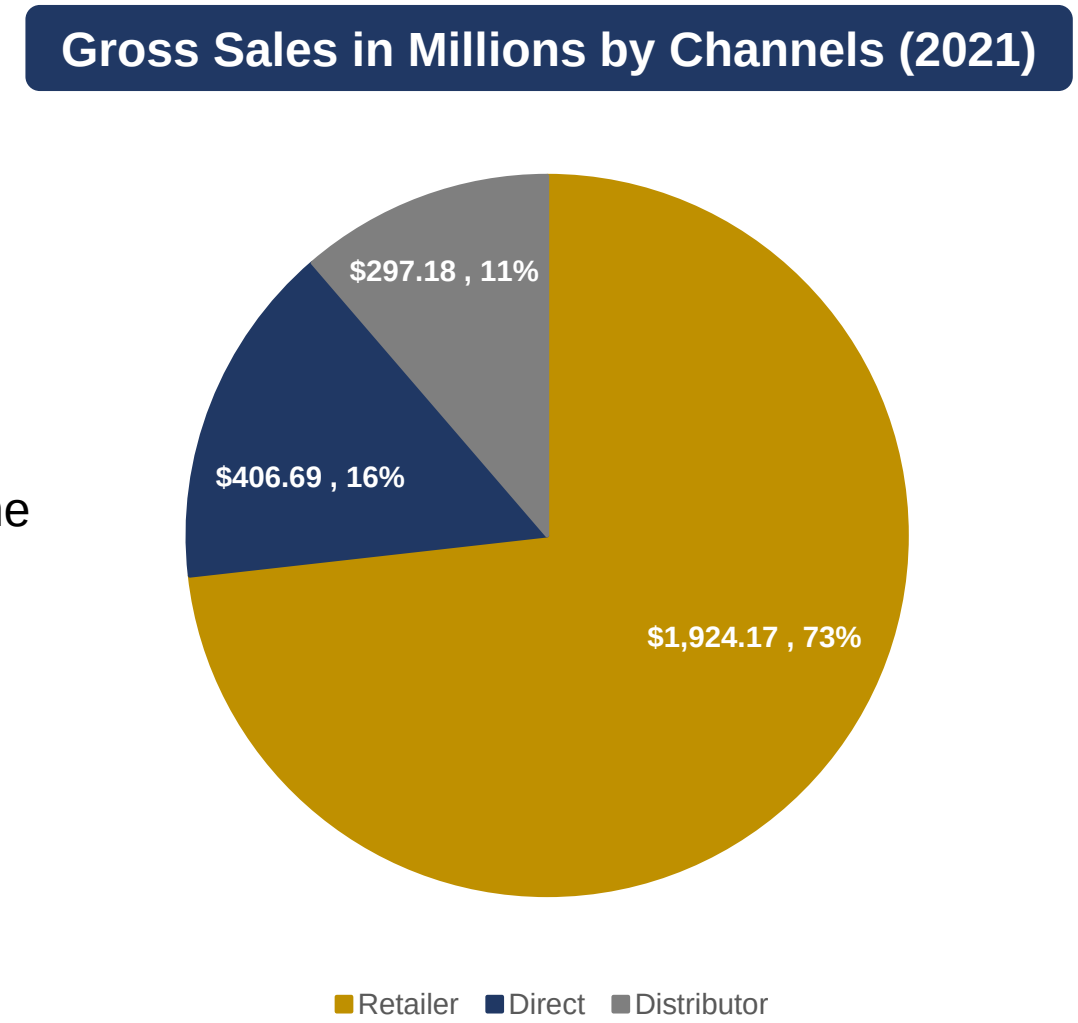
```sql
WITH gross_sales_per_channel AS (
  SELECT
    c.channel,
    ROUND(
      SUM(g.gross_price * sold_quantity)/ 1000000,
      2
    ) as gross_sales_mln
  FROM
    dim_customer c
    JOIN fact_sales_monthly s ON c.customer_code = s.customer_code
    JOIN fact_gross_price g ON s.product_code =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

--OUTPUT--

+-------------+-----------------+------------+
| channel     | gross_sales_mln | percentage |
+-------------+-----------------+------------+
| Retailer    |         1924.17 |      73.22 |
| Direct      |          406.69 |      15.48 |
| Distributor |          297.18 |      11.31 |
+-------------+-----------------+------------+
```

VISUALIZATION FOR REQUEST 9

Insights

1. **Atliq Hardwares** is selling its products through Retailer, Direct & Distributor channels in which the **Retailers** have contributed to bringing the highest gross sales with **$1,924.17 million** which is **73%** of the total gross sales for the fiscal year **2021**.

2. The **Direct channel** contributed to achieving the gross sales amount of **$406.68** million followed by the **Distributor channel** registering gross sales of **$297.18** million for the fiscal year **2021**.



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 & Output

```sql
WITH sold_quant_by_product_division AS (
  SELECT
    p.division,
    p.product_code,
    concat(p.product, " (", p.variant, ")") AS product,
    SUM(s.sold_quantity) total_sold_quantity
  FROM
    fact_sales_monthly s
    JOIN dim_product p ON s.product_code = p.product_code
  WHERE
    fiscal_year = 2021
  GROUP BY
    p.division,
    p.product_code,
    concat(p.product, " (", p.variant, ")")
),
prod_rank_by_sold_quant AS (
  SELECT
    *,
    DENSE_RANK() OVER (
      PARTITION BY division
      ORDER BY
        total_sold_quantity DESC
    ) AS rank_order
  FROM
    sold_quant_by_product_division
)
SELECT
  *
FROM
  prod_rank_by_sold_quant
WHERE
  rank_order <= 3;


--OUTPUT--
```

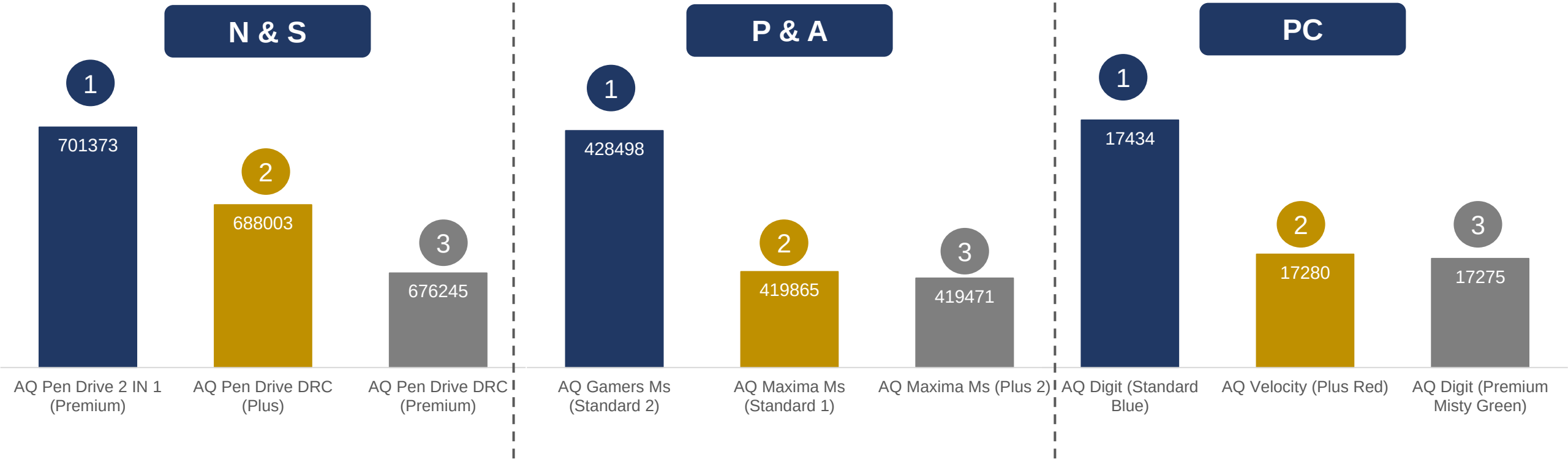
division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1 (Premium)	701373	1
N & S	A6818160202	AQ Pen Drive DRC (Plus)	688003	2
N & S	A6819160203	AQ Pen Drive DRC (Premium)	676245	3
P & A	A2319150302	AQ Gamers Ms (Standard 2)	428498	1
P & A	A2520150501	AQ Maxima 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

VISUALIZATION FOR REQUEST 10

Top 3 Products in each Division by Sold Quantity (2021)

Insights

1. **Atliq Hardwares** has 3 product divisions, **N&S**, **P&A**, and **PC** having **36**, **200**, and **161** unique products under each division respectively.
2. **AQ Pen Drive 2 IN 1 (Premium)**, **AQ Gamer Ms (Standard 2)** & **AQ Digit (Standard Blue)** are the top most sold products in **N&S**, **P&A**, and **PC** divisions respectively in **2021**.



THANK YOU