Consumer Goods Ad-Hoc Analysis

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Introduction

- Atliq Hardware (fictitious corporation) is one of the major computer hardware manufacturers in India, with a strong presence in other nations.

- Nevertheless, the management did note that they do not have sufficient insights to make prompt, wise, and data-informed judgments.

- Plan to expand the data analytics team by adding junior data analysts.

- To assess candidates, Data analytics director, Tony Sharma plans to conduct a SQL challenge to evaluate both tech and soft skills.

- The company seeks insights for 10 ad hoc requests.

DATA-DRIVEN DECISION-MAKING

Primary goals

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

```
select distinct(market)
from dim_customer
where customer  = 'Atliq Exclusive' AND region = 'APAC'
order by market ASC;
```

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

- **India is a leading market in terms of Gross Sales for Atliq Exclusive in Asia Pacific region out of 8 countries, followed by South Korea, Indonesia, Australia and others.**

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

```
select up_2020 as unique_products_2020,up_2021 as unique_products_2021,
 round(((up_2021-up_2020)*100/up_2020),2) as percentage_chg
from
(
    (select count(distinct(product_code)) as up_2020
    from fact_sales_monthly where fiscal_year = 2020) as A,

    (select count(distinct(product_code)) as up_2021
    from fact_sales_monthly where fiscal_year = 2021) as B
)
```

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

- We observe a 36.33% rise in number of unique products from 2020 to 2021.

Unique Products 2021
Vs
Unique Products 2020

Percentage Change 36.33%

334

245

Unique Product 2020

Unique Product 2021
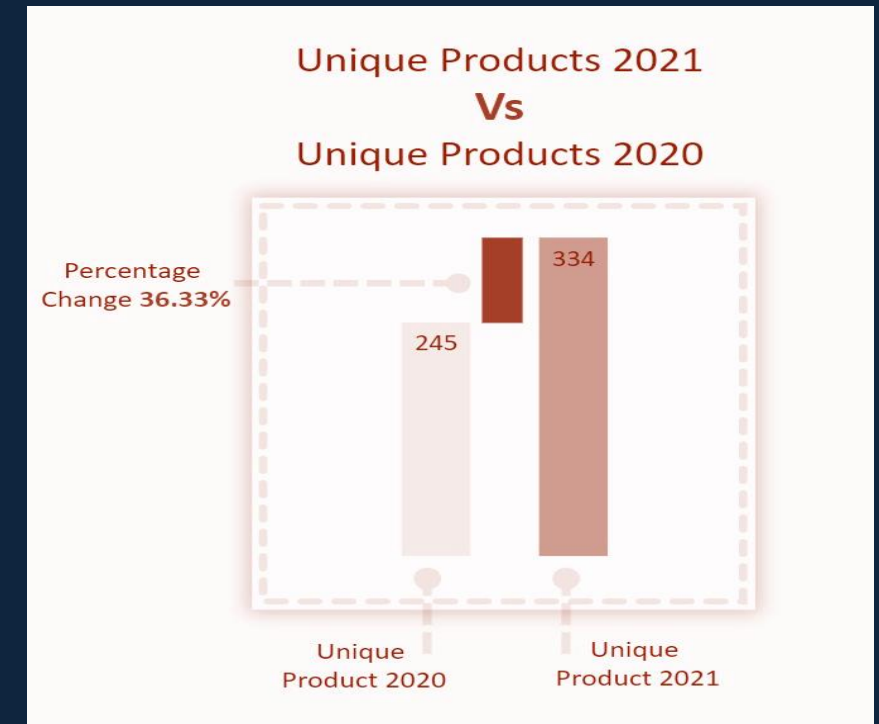
3.Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields segment, product_count.

```sql
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

- **Atliq hardware can research on current trends as well as needs and introduce some new products in Networking and Storage segments.**

Unique **product counts** for each **segment**

Unique Products	Segments
129	Notebook
116	Accessories
84	Peripherals
32	Desktop
27	Storage
9	Networking
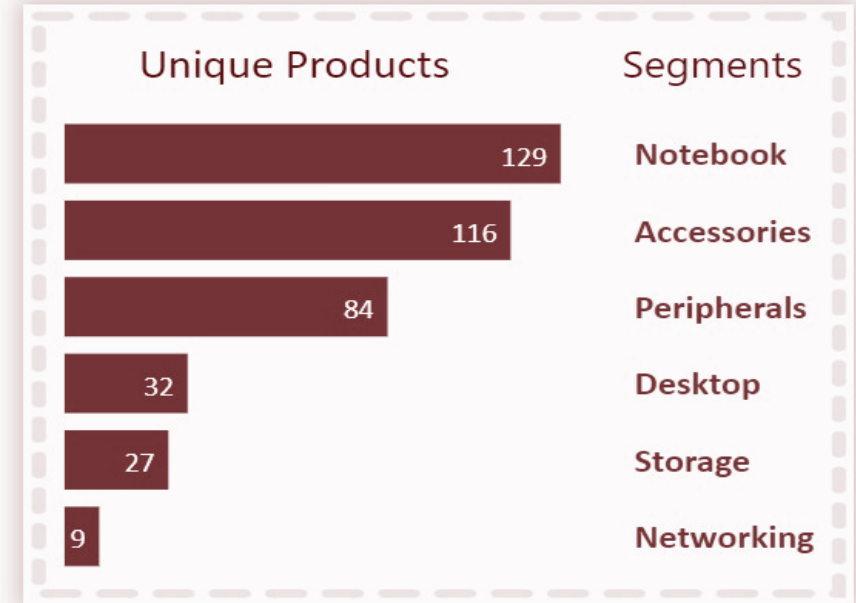
4. Follow-up: Which segment had the most increase in unique products in 2021 vs 2020? The final output contains these fields, segment product_count_2020, product_count_2021, difference.

```sql
with cte1 as
(select p.segment as col1, count(distinct(p.product_code)) as col2
from dim_product as p
join fact_sales_monthly as s
on p.product_code = s.product_code
where s.fiscal_year   = 2020
group by p.segment
order by col2 DESC),
cte2 as
(select p.segment as col3, count(distinct(p.product_code)) as col4
from dim_product as p
join fact_sales_monthly as s
on p.product_code = s.product_code
where s.fiscal_year   = 2021
group by p.segment
order by col4 DESC)
select
    col1 as segment,
    col2 as product_count_2020,
    col4 as product_count_2021,
    (col4-col2) as difference
from
    cte1,cte2
where
    col1 = col3
order by difference DESC;
```

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

- **For Atliq hardware, Desktop segment saw highest comparative increase in its products in year 2021.**

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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
select p.product_code, p.product, m.manufacturing_cost
from dim_product as p
join fact_manufacturing_cost as m
on m.product_code = p.product_code
where manufacturing_cost in (
(select min(manufacturing_cost) from fact_manufacturing_cost),
(select max(manufacturing_cost) from fact_manufacturing_cost))
order by manufacturing_cost DESC;
```

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

Products having the
highest and **lowest**
manufacturing costs

240.54
A6120110206
AQ HOME Allin1 Gen 2
Personal Desktop

0.89
A2118150101
AQ Master wired x1 Ms
Mouse

Product code & Product

- **Mouse: AQ Master wired x1 Ms (Variant: Standard 1) has the lowest manufacturing cost.**

- **Personal Desktop: AQ Home Allin1 Gen2 (Variant: Plus 3) has the highest manufacturing cost.**

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 .

```
SET sql_mode="";
select c.customer_code,
c.customer,
concat(round(avg(pre_invoice_discount_pct)*100,2),' %') as average_discount_percentage
from dim_customer as c
join fact_pre_invoice_deductions as pre
on pre.customer_code = c.customer_code
where pre.fiscal_year = 2021 AND c.market = 'India'
group by c.customer_code
order by avg(pre_invoice_discount_pct) DESC
limit 5
```

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 %

Top 5 Indian customers with highest average discount percentage for FY 2021

- The largest average pre-invoice discount was given to Flipkart. The least average pre-invoice discount was given to Amazon.

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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
select
    month(s.date) as Month,
    year(s.date) as Year,
    sum(s.sold_quantity*g.gross_price) as Gross_sales_amount
from fact_sales_monthly as s
join fact_gross_price as g
on g.product_code = s.product_code AND
    g.fiscal_year = s.fiscal_year
join dim_customer as c
on c.customer_code = s.customer_code
where c.customer = 'Atliq Exclusive'
group by month(s.date),year(s.date)
order by Year,Month;
```


Month	Year	Gross_sales_amount
9	2019	4496259.6724
10	2019	5135902.3467
11	2019	7522892.5608
12	2019	4830404.7285
1	2020	4740600.1605
2	2020	3996227.7661
3	2020	378770.9700
4	2020	395035.3535
5	2020	783813.4238
6	2020	1695216.6008
7	2020	2551159.1584
8	2020	2786648.2601

9	2020	12353509.7938
10	2020	13218636.1966
11	2020	20464999.0997
12	2020	12944659.6509
1	2021	12399392.9788
2	2021	10129735.5675
3	2021	12144061.2501
4	2021	7311999.9547
5	2021	12150225.0139
6	2021	9824521.0110
7	2021	12092346.3245
8	2021	7178707.5902
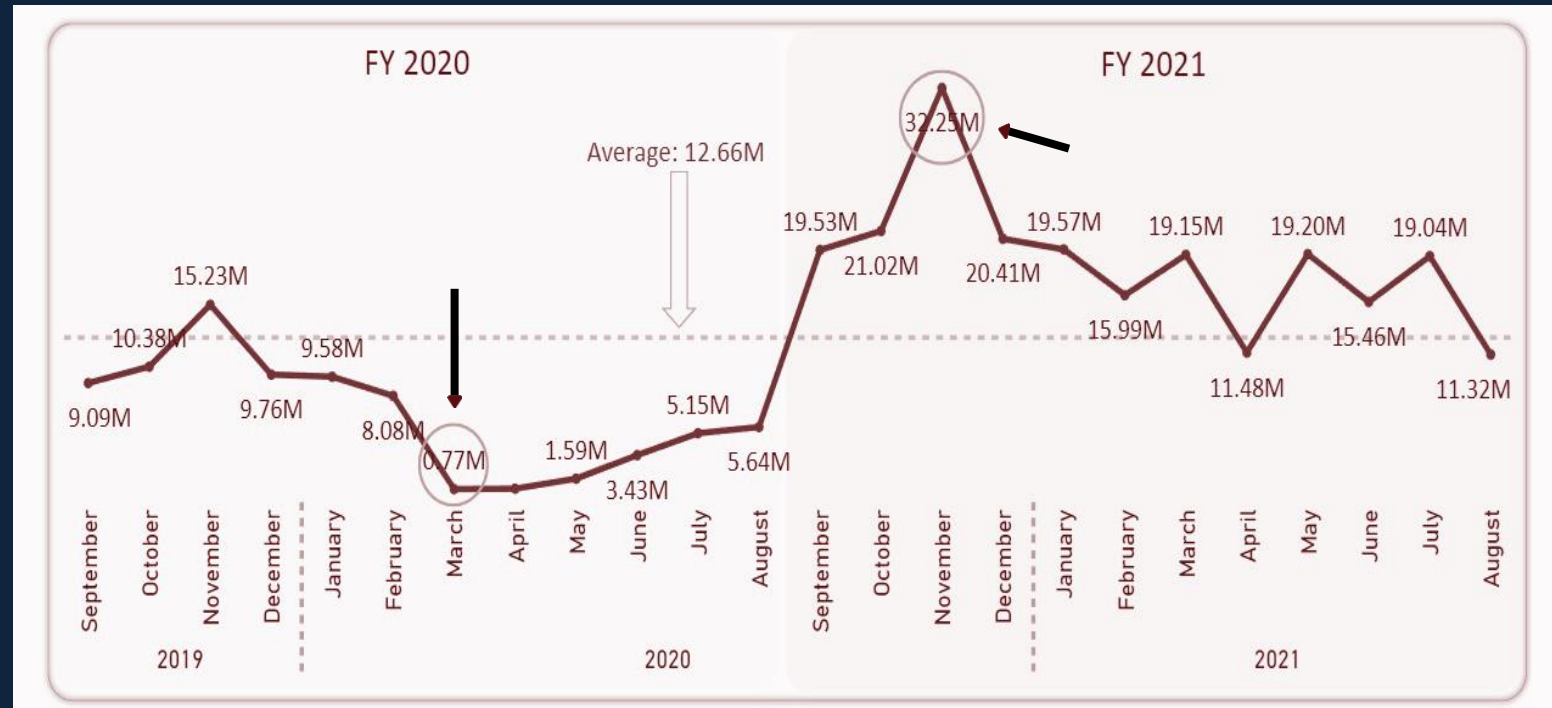
- **73.8% of the total Gross sales figure is in FY 2021.**
- **Atliq hardware can introduce some products to increase sales in summer. Overall the sales have increased after pandemic and have remained consistently high then pre pandemic year.**
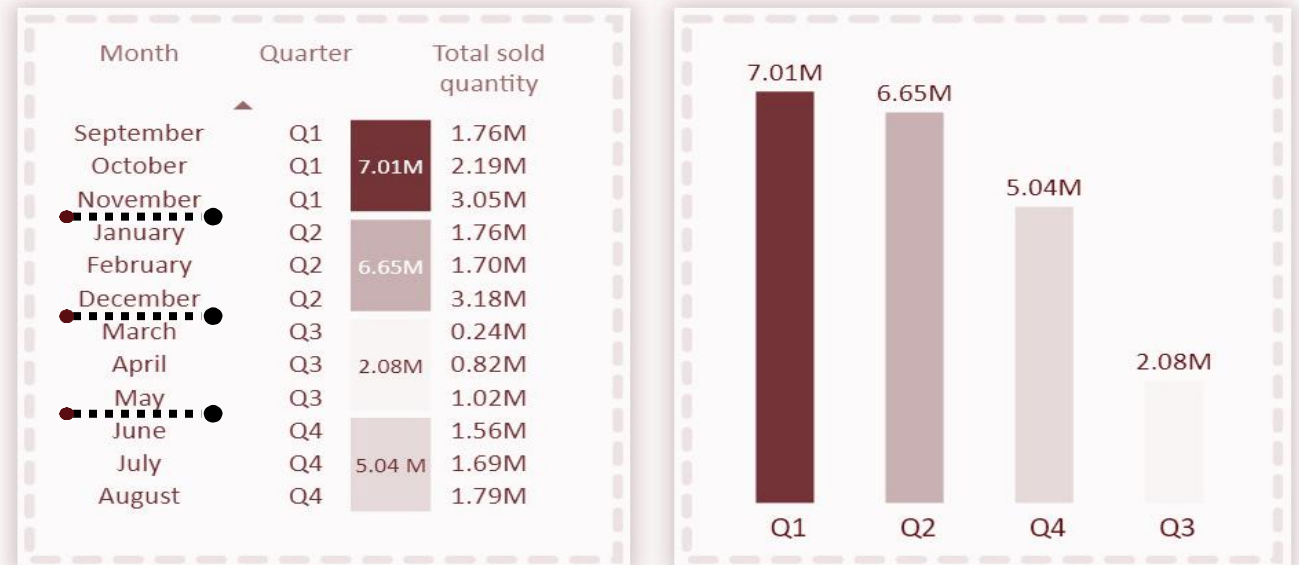
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8. In which quarter of 2020, got the maximum total_sold_quantity? The final output contains these fields sorted by the total_sold_quantity, Quarter, total_sold_quantity.

```
with cte1 as
(select
    date,
    sold_quantity
from fact_sales_monthly
where fiscal_year = 2020)

select
    case
        when month(date) in (09,10,11) then 'Q1'
        when month(date) in (12,01,02) then 'Q2'
        when month(date) in (03,04,05) then 'Q3'
        when month(date) in (06,07,08) then 'Q4'
    end as Quarter, sum(sold_quantity) as total_sold_quantity
from cte1
group by Quarter
order by total_sold_quantity DESC;
```

Quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

Total sold quantity in FY 2020 by Quarter

Month	Quarter		Total sold quantity
September	Q1		1.76M
October	Q1	7.01M	2.19M
November	Q1		3.05M
January	Q2		1.76M
February	Q2	6.65M	1.70M
December	Q2		3.18M
March	Q3		0.24M
April	Q3	2.08M	0.82M
May	Q3		1.02M
June	Q4		1.56M
July	Q4	5.04 M	1.69M
August	Q4		1.79M

- **Quarter 1 of FY2020 saw the most units sold overall, while Quarter 3 had the fewest.**
- **The highest and lowest overall sold quantity is in December and March. Quarter 1 accounts for approximately 34% of the total sold quantity for FY2020.**

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
with cte1 as
(select
    c.channel,
    round(sum((s.sold_quantity*g.gross_price)/1000000),2) as gross_sales_mln
from  fact_sales_monthly as s
join dim_customer as c
on c.customer_code = s.customer_code
join fact_gross_price as g
on g.product_code = s.product_code
where s.fiscal_year = 2021
group by c.channel)

select
    *,
    round((gross_sales_mln*100/sum(gross_sales_mln) over() ),2) as percentage
from cte1;
```


Gross sales and contribution percentages by **Channels** for **FY 2021**

Retailer 1924.17M (73.22%)

Distributor 297.18M (11.31%)

Direct 406.69M (15.47%)

channel	gross_sales_mln	percentage
Direct	406.69	15.48
Distributor	297.18	11.31
Retailer	1924.17	73.22
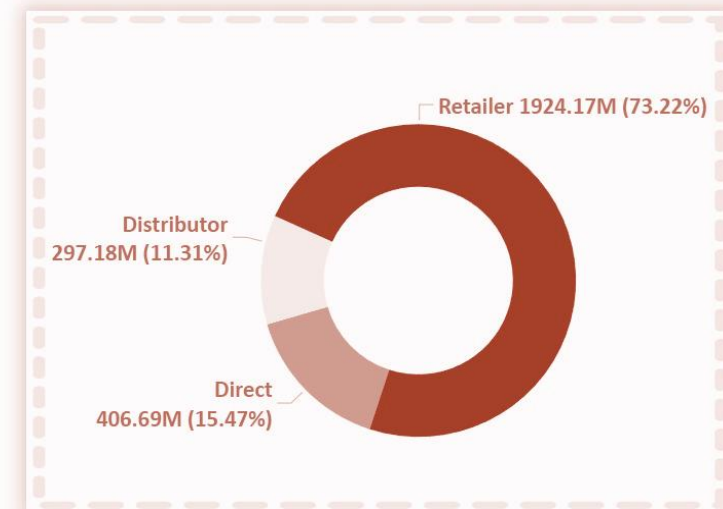
- Channel: "Retailer" helped bring maximum sales to the company with 73.22% as the contribution percentage.
- Channel: "Distributor" makes the least contribution at a percentage of 11.31%.

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
with cte1 as
(select
    p.division,
    p.product_code,
    p.product,
    sum(s.sold_quantity) as total_sold_quantity
from dim_product as p
join fact_sales_monthly as s
on p.product_code = s.product_code
where s.fiscal_year = 2021
group by p.product_code,p.division,p.product),
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	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

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.
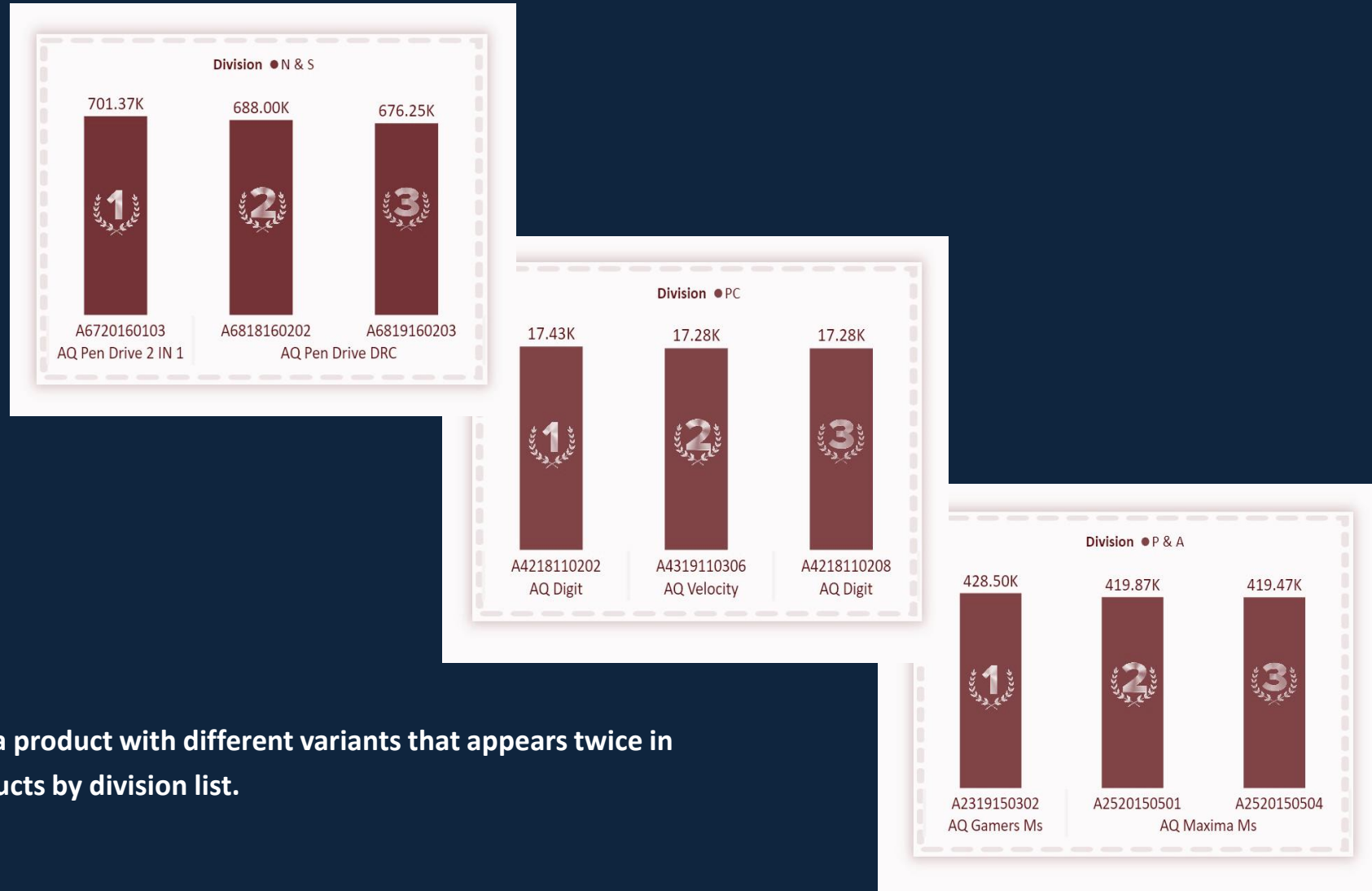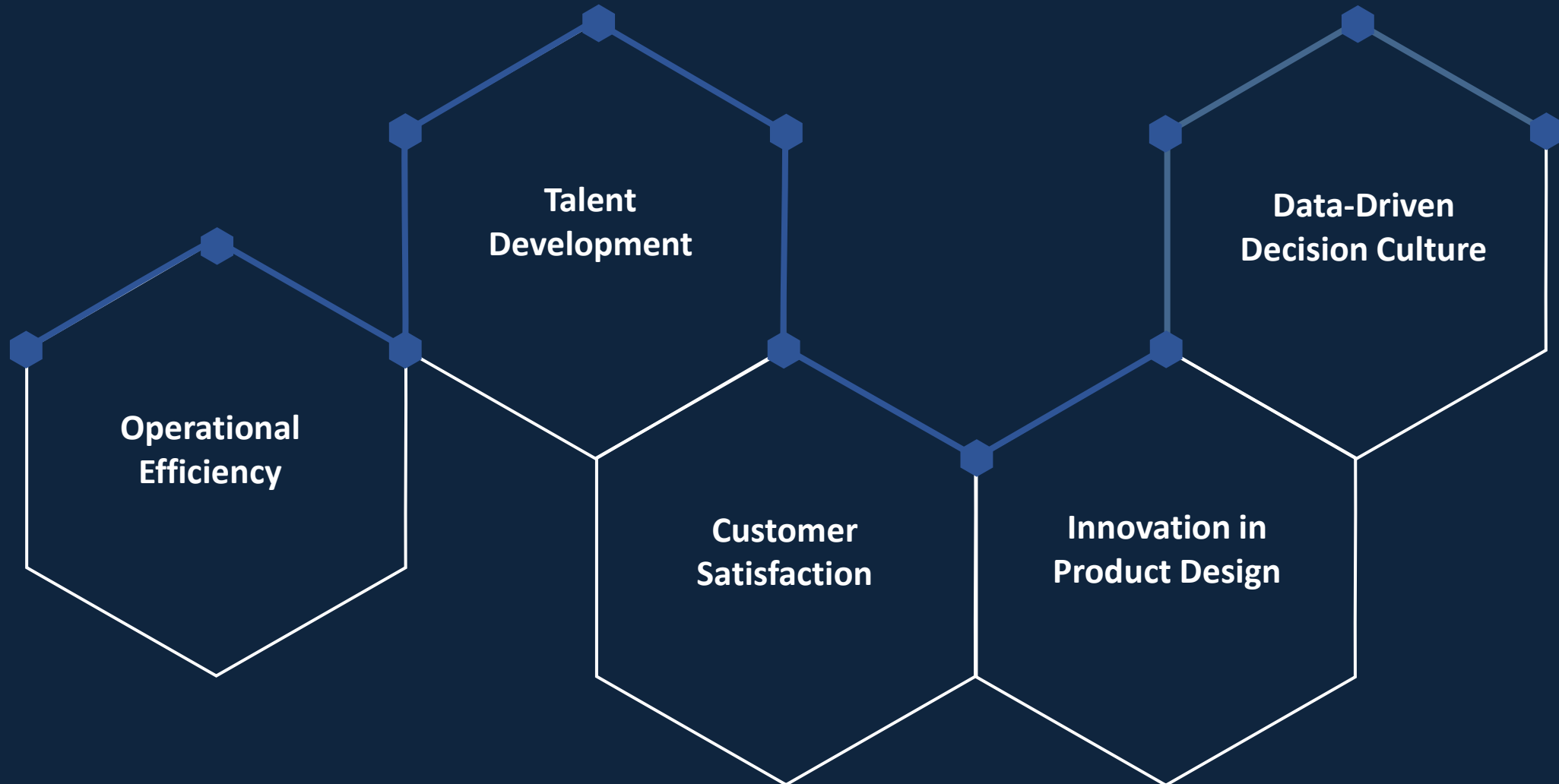

- **Every division has a product with different variants that appears twice in the top three products by division list.**

Areas of growth

Global Market Expansion	Diversification of Product Line	Technological Advancements	Strategic Partnerships	Data Analytics Capabilities
Explore and enter new international markets to increase the company's global presence.	Introduce new and innovative computer hardware products to diversify the company's offerings.	Invest in research and development to stay at the forefront of technological advancements in the hardware industry.	Form strategic partnerships with other technology companies to enhance product development and market reach.	Continuously enhance and leverage data analytics capabilities for informed decision-making and improved operational efficiency.

Areas of focus

Talent Development

Data-Driven Decision Culture

Operational Efficiency

Customer Satisfaction

Innovation in Product Design

How we get there

Global Market Expansion

- Conduct market research to identify promising international markets.
- Adapt products and marketing strategies to meet the specific needs of diverse global markets.

Diversification of Product Line

- Invest in research and development to identify gaps in the market.
- Collaborate with product designers and engineers to create new and innovative hardware products.
- Test and gather feedback from target markets during product development.

Data Analytics Capabilities

- Invest in advanced analytics tools and technologies.
- Provide training programs for employees to enhance data analytics skills.

Summary

- **Atliq Hardware has performed well in year 2021 introducing 102 new products with Peripherals and Accessories bringing in the highest revenue followed by PC.**

- **PC is the strongest performing division, generating 39% of total sales while accounting for only 3% of overall quantities of products sold.**

- **Try to tweak discounts rates such that the customers bring in more gross sales for the company.**

- **Space to increase e-commerce sales by partnering with new e-commerce platforms with competitive discounts.**

Thank you

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