AGENDA

BUSINESS OVERVIEW

Domain: Consumer Goods
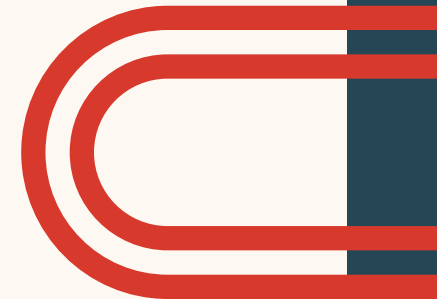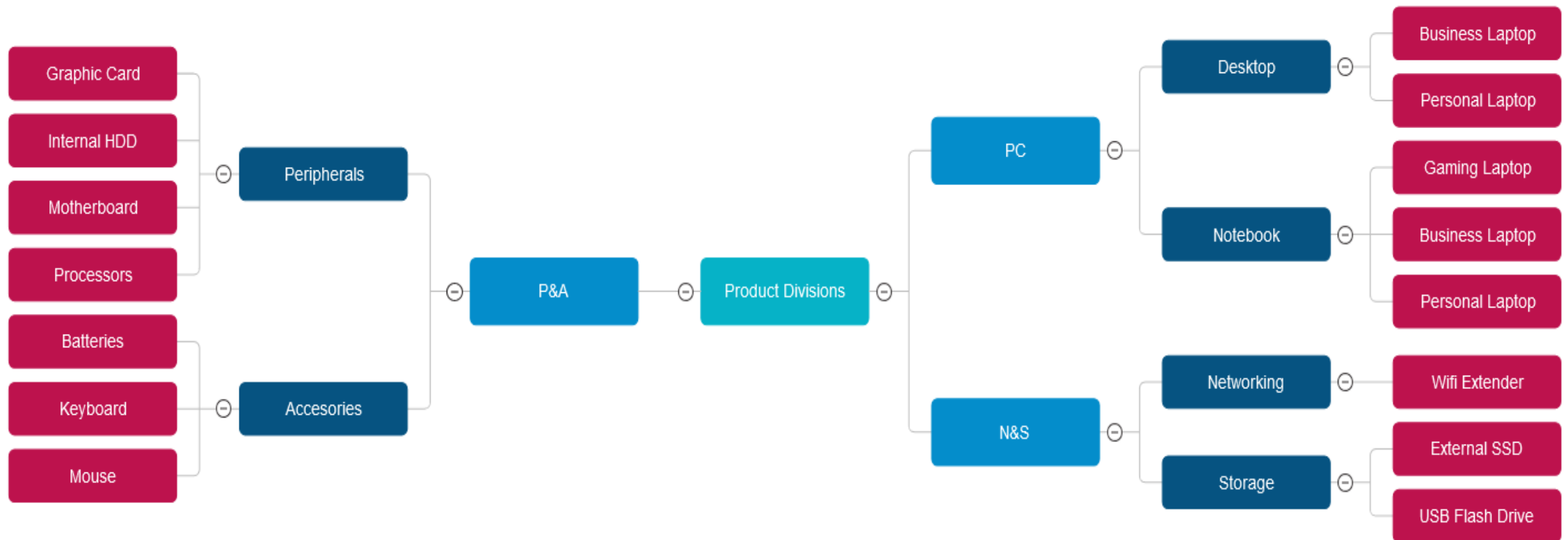
Business Overview:
- AtliQ Hardware is a fictitious company that sells computer hardware and peripherals like PC, mouse, printer etc. to clients across the world.
- They have a major B2B business model wherein they sell to stores like Croma, Best Buy, Staples, Flipkart etc. who then sell it to the end users (consumers). These stores are their main customers.
- They sell through 3 channels: Retailer, Direct and Distributor.
- AtliQ Hardware's Customers are of two types. Both these Platforms are called Retailer channels.
  1. Brick & Mortar Customer: Actual physical stores e.g. Croma, Best Buy
  2. E-commerce Customer: Online websites E.g. Amazon, Flipkart
- AtliQ Hardware also has a minor B2C business model wherein they own stores: AtliQ E-store and AtliQ Exclusive. These are called Direct channels.
- They manufacture products under 3 major divisions: Networking & Storage, PC, Peripherals & Accessories.
- They are currently operational in NA, LATAM, EU and APAC regions.

MARKETS
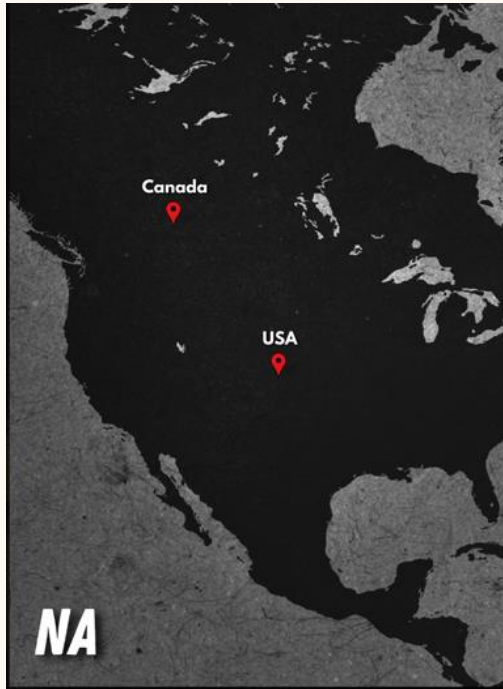
AtliQ Hardware operates across four major regions: North America (NA), Latin America (LATAM), Europe (EU), and Asia Pacific (APAC). This global presence allows AtliQ to serve diverse customer needs with products in Networking and Storage, PCs, Peripherals and Accessories.
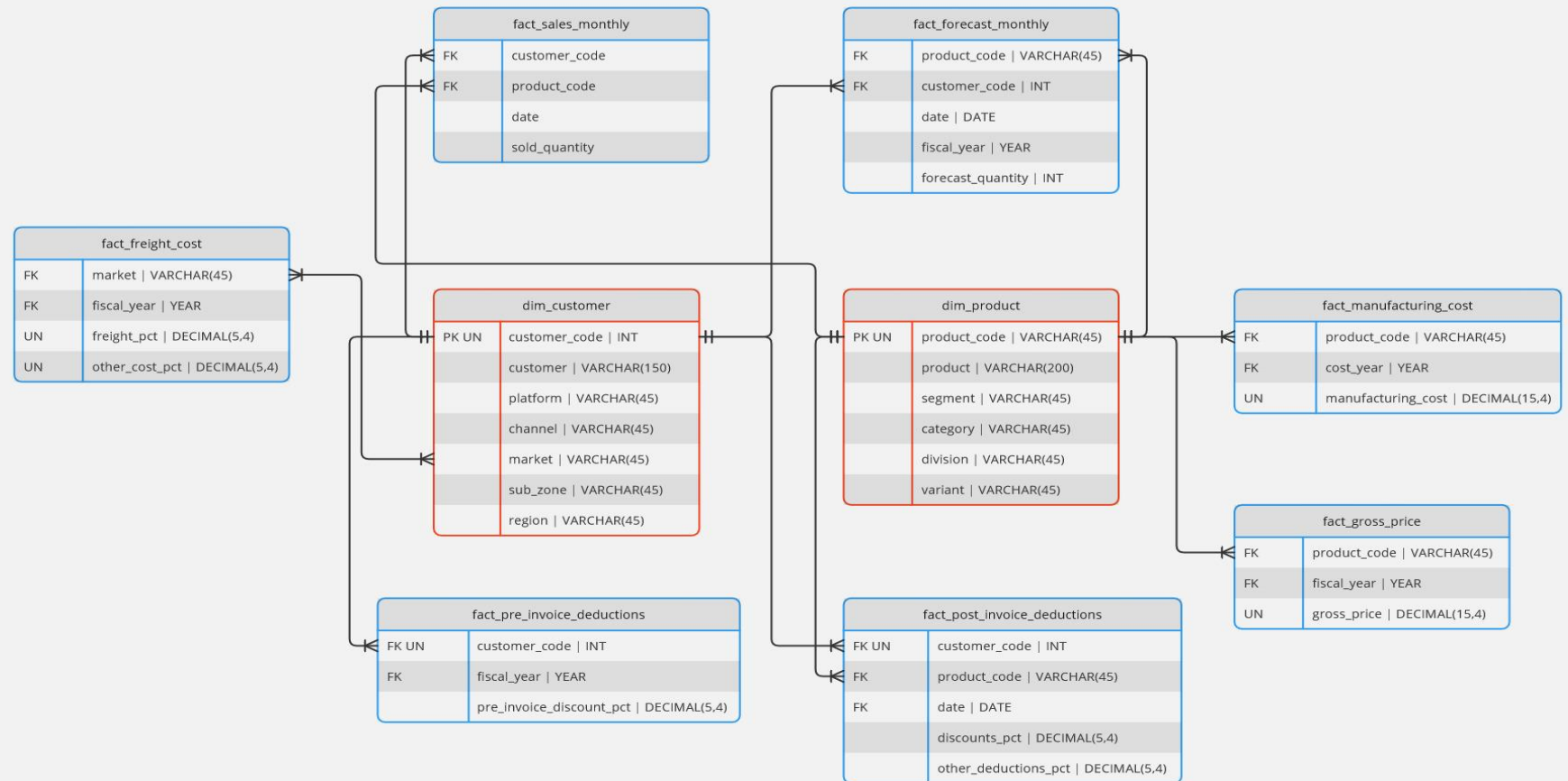
PRODUCT LINE

AtliQ Hardware: Consumer Goods ERD

DATA MODEL

fact_sales_monthly

FK	customer_code
FK	product_code
	date
	sold_quantity

fact_forecast_monthly

FK	product_code	VARCHAR(45)
FK	customer_code	INT
	date	DATE
	fiscal_year	YEAR
	forecast_quantity	INT

fact_freight_cost

FK	market	VARCHAR(45)
FK	fiscal_year	YEAR
UN	freight_pct	DECIMAL(5,4)
UN	other_cost_pct	DECIMAL(5,4)

dim_customer

PK UN	customer_code	INT
	customer	VARCHAR(150)
	platform	VARCHAR(45)
	channel	VARCHAR(45)
	market	VARCHAR(45)
	sub_zone	VARCHAR(45)
	region	VARCHAR(45)

dim_product

PK UN	product_code	VARCHAR(45)
	product	VARCHAR(200)
	segment	VARCHAR(45)
	category	VARCHAR(45)
	division	VARCHAR(45)
	variant	VARCHAR(45)

fact_manufacturing_cost

FK	product_code	VARCHAR(45)
FK	cost_year	YEAR
UN	manufacturing_cost	DECIMAL(15,4)

fact_gross_price

FK	product_code	VARCHAR(45)
FK	fiscal_year	YEAR
UN	gross_price	DECIMAL(15,4)

fact_pre_invoice_deductions

FK UN	customer_code	INT
FK	fiscal_year	YEAR
	pre_invoice_discount_pct	DECIMAL(5,4)

fact_post_invoice_deductions

FK UN	customer_code	INT
FK	product_code	VARCHAR(45)
FK	date	DATE
	discounts_pct	DECIMAL(5,4)
	other_deductions_pct	DECIMAL(5,4)

The input dataset comprises sales information for the fiscal years 2020 and 2021, complemented by 2 dimension tables for customer details and product details as well as 6 other fact tables regarding a wide range of finance data. AtliQ Hardware has Sep to Aug FY cycle.

AD-HOC QUERIES

TOOLS:
MYSQL – QUERIES | MIRO – ERD | DATAWRAPPER - VISUALS

Business growth analysis is essential for any company that wants to remain competitive and successful in the long term.

The goal is to write effective SQL queries to answer 10 ad-hoc business requests from the Data Analytics Director, aiming to secure valuable insights into the consumer goods sector. By fulfilling these different ad-hoc requests, I delivered specific answers to important business questions enabling the company to understand its product portfolio, sales trends across diverse customer segments, and a monthly overview of products sold.

INSIGHTS

VISUALIZATIONS

QUERIED RESULTS

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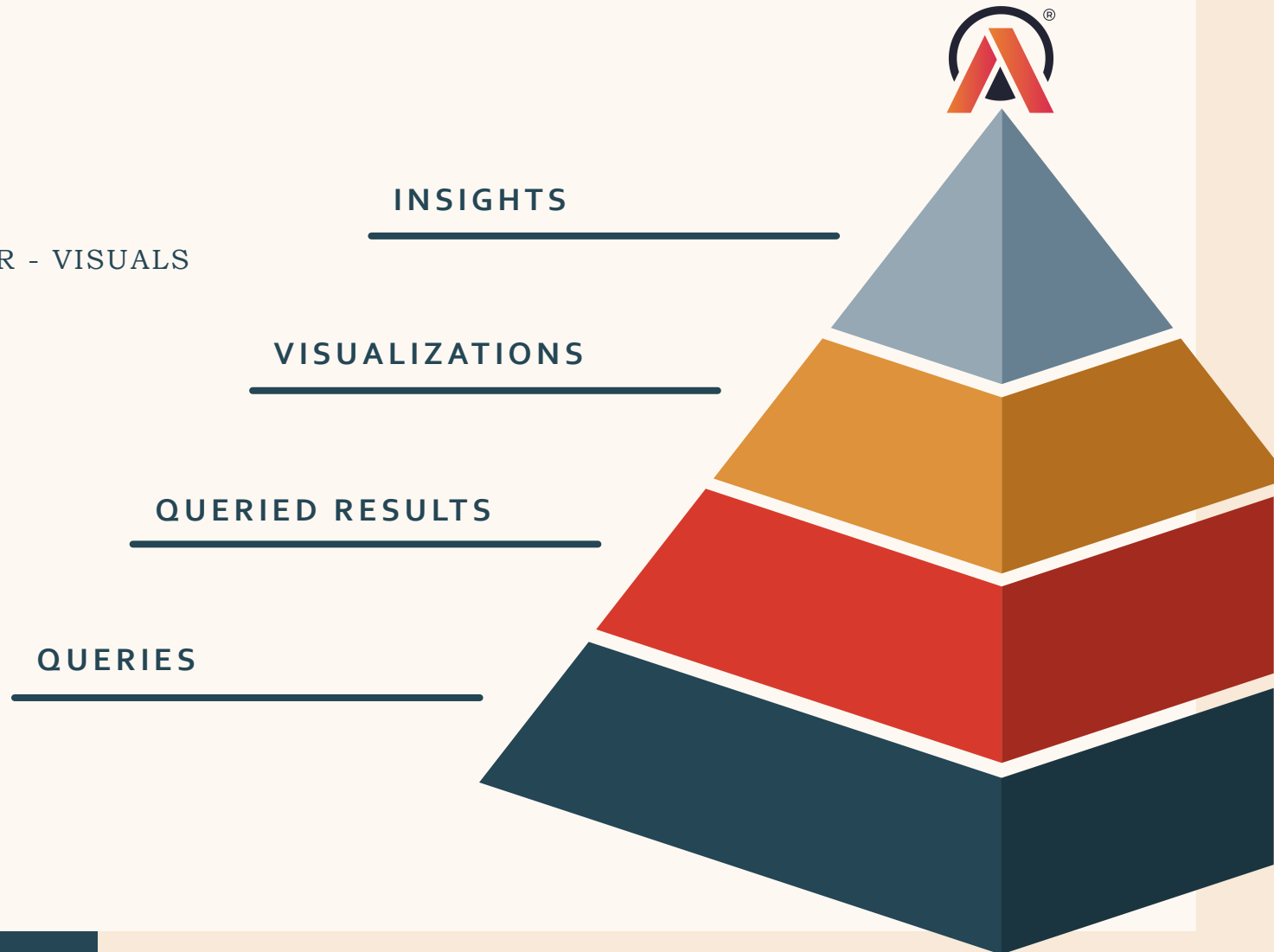
1. Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

Query:

```sql
SELECT
        DISTINCT(market) AS atliq_exclusive_markets
FROM gdb0041.dim_customer
WHERE customer = "Atliq Exclusive" AND region = "APAC";
```

Output:

atliq_exclusive_markets
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Insight:

- Atliq Exclusive has established a presence in eight key markets within the APAC region.

Visual:

Atliq Exclusive APAC Markets

Australia Bangladesh India Indonesia Japan New Zealand Philippines South Korea

Map: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

2. What is the percentage increase of unique product in 2021 vs. 2020?

Query:

```sql
WITH uniqprod_2020 AS (
        SELECT COUNT(DISTINCT(product_code)) AS prodcnt_2020 FROM fact_sales_monthly WHERE fiscal_year = 2020
), uniqprod2021 AS (
        SELECT COUNT(DISTINCT(product_code)) AS prodcnt_2021 FROM fact_sales_monthly WHERE fiscal_year = 2021
)
SELECT
        prodcnt_2020, prodcnt_2021,
        ROUND(((prodcnt_2021 - prodcnt_2020)/prodcnt_2020)*100, 2) AS prodcnt_inc_pct
FROM uniqprod_2020, uniqprod2021;
```
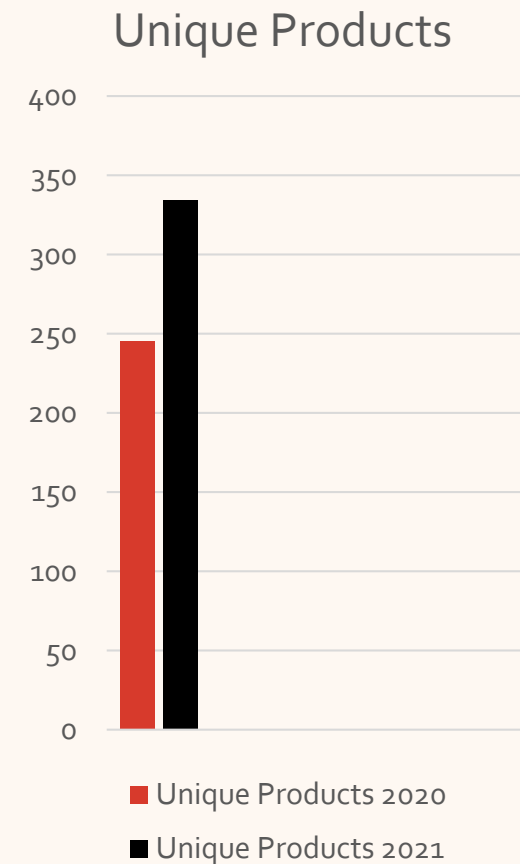
Output:

	prodcnt_2020	prodcnt_2021	prodcnt_inc_pct
▶	245	334	36.33

Insight:

- In FY 2020, we had a total of 245 products and in FY 2021, the number of products increased to 334, reflecting a 36.33 % growth.

Visual:

Unique Products

■ Unique Products 2020
■ Unique Products 2021

3. Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.

Query:

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

Output:

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

Visual:

Unique Product Count by Segments

Unique Products

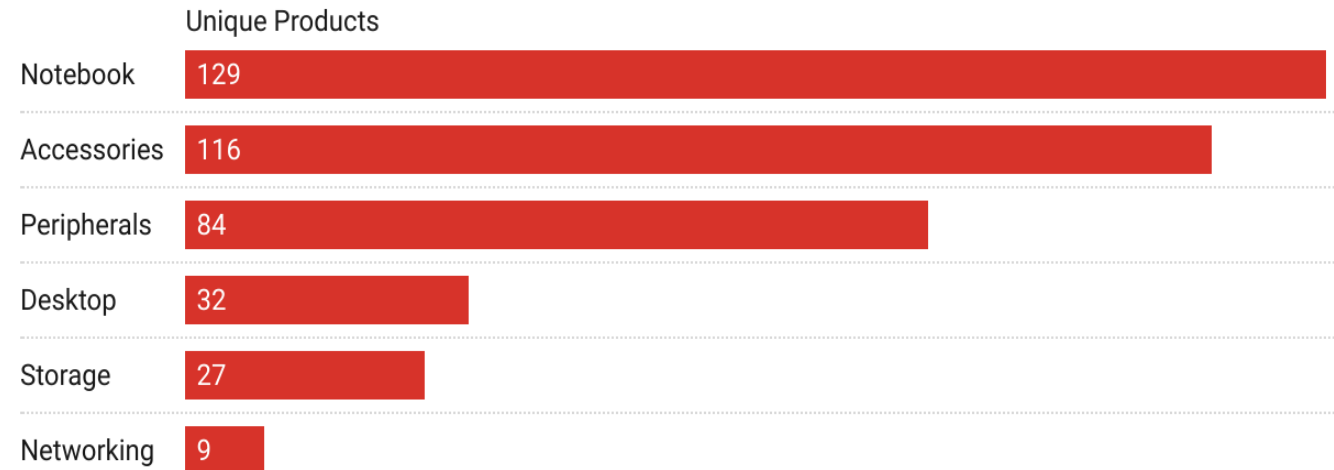| Segment	Count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9

Chart: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Insight:

- Atliq Hardware presents an extensive array of products across the Notebook, Accessories and Peripherals segments.
- There is a strategic need consider strategies to broaden the product portfolio by introducing trending products in lower-count segments like Desktop, Networking, and Storage segments.

4. Which segment had the most percentage increase in unique products in 2021 vs 2020?

Query:

```
WITH uniqsegprod_2020 AS (
    SELECT
            segment AS seg_2020,
            COUNT(DISTINCT(fsm.product_code)) AS prodcnt_2020
    FROM dim_product AS dp
    JOIN fact_sales_monthly AS fsm USING (product_code)
    WHERE fsm.fiscal_year = 2020
    GROUP BY segment
),
uniqsegprod_2021 AS (
    SELECT
            segment AS seg_2021,
            COUNT(DISTINCT(fsm.product_code)) AS prodcnt_2021
    FROM dim_product AS dp
    JOIN fact_sales_monthly AS fsm USING (product_code)
    WHERE fsm.fiscal_year = 2021
    GROUP BY segment
)
SELECT
    seg_2020 AS segment,
    prodcnt_2020, prodcnt_2021,
    ROUND(((prodcnt_2021-prodcnt_2020)/prodcnt_2020)*100, 2) AS segprodcnt_inc_pct
FROM uniqsegprod_2020 AS usp_2020, uniqsegprod_2021 AS usp_2021
WHERE usp_2020.seg_2020 = usp_2021.seg_2021
ORDER BY segprodcnt_inc_pct DESC;
```

Visual:

Product Portfolio Growth by Segments

17.39   214.29

Segment	Product Count 2020	▼ Product Count 2021	Product Count Increment %
Notebook	92	108	17
Accessories	69	103	49
Peripherals	59	75	27
Desktop	7	22	214
Storage	12	17	42
Networking	6	9	50

Table: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Insight:

- In FY 2021, Atliq Hardware primarily focused on expanding its presence in the Desktop segment, introducing a total of 15 new products (214.9 % growth from FY 2020) to the market.
- While Notebook segment had the highest product count of 108 in FY 2021, it experienced the slowest growth of just 17.39 % from FY 2020.

5. List the products with the highest and lowest manufacturing costs.

Query:

```sql
WITH prod_manufacost AS (
    SELECT
        product_code, product, manufacturing_cost
    FROM dim_product
    JOIN fact_manufacturing_cost USING (product_code)
)
(SELECT *, "Highest Cost" AS overall FROM prod_manufacost ORDER BY manufacturing_cost DESC LIMIT 1)
UNION
(SELECT *, "Lowest Cost" AS overall FROM prod_manufacost ORDER BY manufacturing_cost ASC LIMIT 1);
```

Visual:
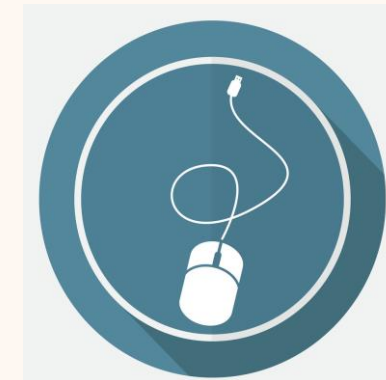
AQ HOME Allin 1
Gen 2
(A6121110208)
Highest
Manufacturing Cost:
263.42 $

AQ Master wired x1
Ms
(A2118150101)
Lowest
Manufacturing Cost:
0.86 $

Output:

product_code	product	manufacturing_cost	overall
A6121110208	AQ HOME Allin1 Gen 2	263.4207	Highest Cost
A2118150101	AQ Master wired x1 Ms	0.8654	Lowest Cost

Insight:

- Review production processes for high-cost products in PC segment to identify potential cost-saving measures.
- Review production methods of low-cost products in P&A segment to replicate efficient practices across other product lines.

6. Generate a report which contains the top 5 customers who received a higher than average pre-invoice discount % for the fiscal year 2021 in the Indian market.

Query:

```sql
SELECT
    fprid.customer_code, dc.customer,
    fprid.pre_invoice_discount_pct AS high_pre_inv_discount_pct
FROM dim_customer AS dc
JOIN fact_pre_invoice_deductions AS fprid USING (customer_code)
WHERE fprid.fiscal_year = 2021 AND dc.market = "India"
AND pre_invoice_discount_pct > (SELECT AVG(pre_invoice_discount_pct) FROM fact_pre_invoice_deductions WHERE fiscal_year = 2021)
ORDER BY high_pre_inv_discount_pct DESC
LIMIT 5
```

Visual:

High Pre-Invoice Discount Customers

■ Flipkart (90002009)

Pre-Invoice Discount %

Customer	Value
Flipkart (90002009)	0.308
Viveks (90002006)	0.304
Ezone (90002003)	0.303
Croma (90002002)	0.303
Amazon (90002016)	0.293

Chart: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Output:

customer_code	customer	high_pre_inv_discount_pct
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933

Insight:

- Flipkart (90002009) holds the position of the most heavily discounted customer in the Indian market, with a pre-invoice discount percentage of 30.83 % in FY 2021 as compared to the overall average of 23.4 %.
- Atliq extended approximately similar pre-invoice discount percentages (~ 30 %) to each of its top 4 customers in FY 2021. AtliQ should engage in negotiations to secure more favorable terms with these high-discount customers by implementing loyalty programs or volume-based incentives to maintain customer satisfaction while reducing the average discount rate thereby improving profit margins.

7. Get the complete report of the Gross Sales amount for the customer "Atliq Exclusive" for each month.

Query:

```sql
-- Method 1: Using the pre-configured gross_sales view.
SELECT
        CONCAT(MONTHNAME(month), ' (', YEAR(month), ')') AS month,
        fiscal_year,
        SUM(gross_sales) AS gross_sales_amount
FROM gross_sales
WHERE customer = "Atliq Exclusive"
GROUP BY month, fiscal_year
ORDER BY gross_sales_amount DESC;

-- Method 2: Without using any pre-configured view.
SELECT
        DATE_FORMAT( fsm.date, '%M (%Y)' ) AS Month,
        fsm.fiscal_year AS Fiscal_Year,
        ROUND( SUM( (fsm.sold_quantity * fgp.gross_price) ), 2 ) AS Gross_Sales_Amount
FROM fact_sales_monthly fsm
JOIN dim_customer AS dc ON dc.customer_code = fsm.customer_code
JOIN fact_gross_price AS fgp ON fgp.product_code = fsm.product_code AND fgp.fiscal_year = fsm.fiscal_year
WHERE dc.customer = 'Atliq Exclusive'
GROUP BY Month, Fiscal_Year
ORDER BY Fiscal_Year;
```

Visual:
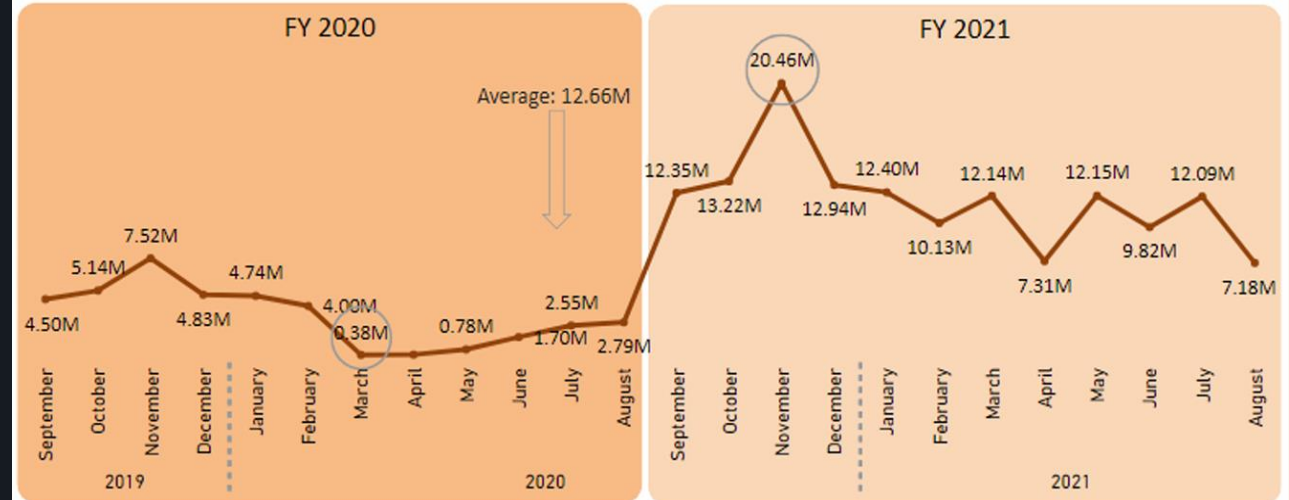
Insight:

- Atliq Exclusive experienced its highest sales of 20.46M $ in November 2020, whereas March 2020 recorded the lowest sales of 0.38M $.
- Monthly Gross Sales for Atliq Exclusive peaked in November and tanked in April for both 2019 and 2020.
- Decline in Monthly Gross Sales between March and August 2020 can be attributed to the impact of Covid-19. Post Covid-19 sales have optimistically rebounded in August remaining robust and surpassing the levels seen in FY 2020.

8. Which Quarter of 2020, got the maximum Total Sold Quantity?

Query:

```
-- Method 1: Using the pre-configured get_fiscal_quarter function.
SELECT
        get_fiscal_quarter(date) AS FQ,
        SUM(sold_quantity) AS total_sold_qty
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY FQ
ORDER BY total_sold_qty DESC;

-- Method 2: Without using any function.
SELECT
        CASE
                WHEN date BETWEEN '2019-09-01' AND '2019-11-01' THEN 'Q1'
                WHEN date BETWEEN '2019-12-01' AND '2020-02-01' THEN 'Q2'
                WHEN date BETWEEN '2020-03-01' AND '2020-05-01' THEN 'Q3'
                WHEN date BETWEEN '2020-06-01' AND '2020-08-01' THEN 'Q4'
        END AS FQ,
        ROUND(SUM(sold_quantity)/1000000, 2) AS total_sold_qty_mln
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY FQ
ORDER BY total_sold_qty_mln DESC;
```

Output:

	FQ	total_sold_qty_mln
▶	Q1	7.01
	Q2	6.65
	Q4	5.04
	Q3	2.08

Month	Quarter	Total Sold Quantity
September	Q1	1.76M
October	Q1	2.19M
November	Q1	3.05M
January	Q2	1.76M
February	Q2	1.70M
December	Q2	3.18M
March	Q3	0.24M
April	Q3	0.82M
May	Q3	1.02M
June	Q4	1.56M
July	Q4	1.69M
August	Q4	1.79M

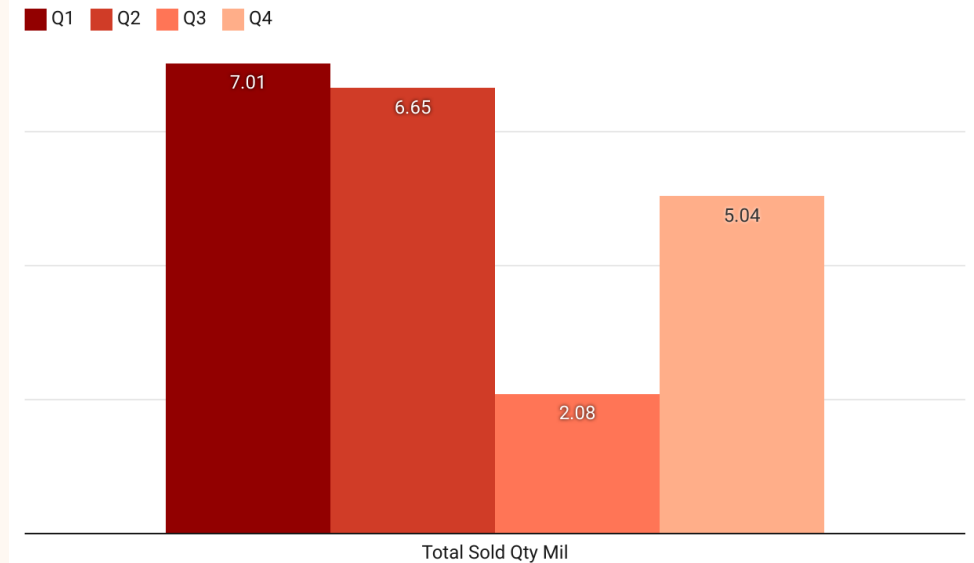Visual:

Total Sold Qty by FY 2020 Quarter

Chart: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Insight:

- In FY 2020 Q1 had the highest Total Sold Quantity at around 7.01 Million units.
- In FY 2020 Q3 (March, April and May), the Total Sold Quantity plummeted to its lowest at around 2.08 Million units during the peak of Covid-19 due to widespread lockdowns impacting all businesses.

9. Which channel helped to bring more Gross Sales in the fiscal year 2021 and the Contribution %?

Query:

```sql
WITH channel_gs AS (
    SELECT
        channel,
        SUM(gross_sales) AS channel_gross_sales
    FROM gross_sales AS gs
    JOIN dim_customer AS dc USING (customer_code)
    WHERE gs.fiscal_year = 2021
    GROUP BY channel
),
overall_gs AS (
    SELECT SUM(gross_sales) AS total_gross_sales FROM gross_sales WHERE fiscal_year = 2021
)
SELECT
    channel,
    ROUND(channel_gross_sales/1000000, 2) AS channel_gross_sales_mil,
    ROUND((channel_gross_sales/total_gross_sales)*100, 2) AS channel_gs_pct
FROM channel_gs, overall_gs
ORDER BY channel_gs_pct DESC;
```

Output:

channel	channel_gross_sales_mil	channel_gs_pct
Retailer	1219.08	73.23
Direct	257.53	15.47
Distributor	188.03	11.30

Visual:

Channel-wise Gross Sales Contribution % - FY 2021

Distributor (11.30%)
Direct (15.47%)
Total: 1664.64 Mil
Retailer (73.23%)

Chart: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Insight:

- Overall 73.23 % of AtliQ's majority Gross Sales were conducted through their Retailer channel. In contrast, sales through Direct channel (15.47 %) and Distributor channels (11.30 %) together make up around a quarter of the total revenue.
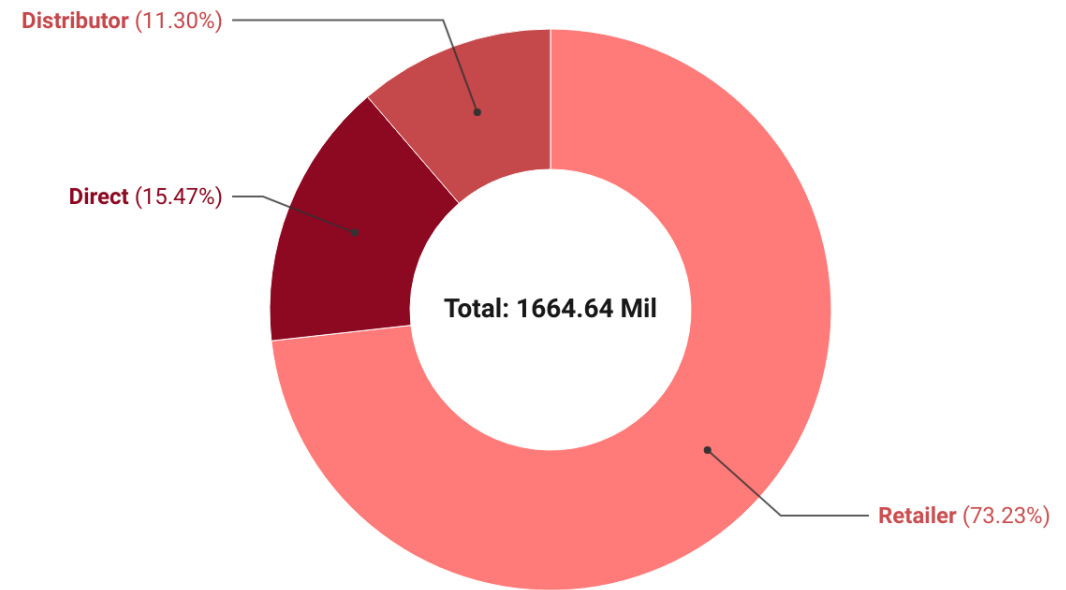
10. Get the Top 3 products in each division that have a high Total Sold Quantity in FY 2021?

Query:

```sql
WITH prod_sold_qty AS (
    SELECT
            dp.product_code, dp.product, dp.division,
            SUM(fsm.sold_quantity) AS total_sold_qty
    FROM fact_sales_monthly AS fsm
    JOIN dim_product AS dp USING (product_code)
    WHERE fsm.fiscal_year = 2021
    GROUP BY dp.product_code, dp.product, dp.division
),
div_sold_qty_ranking AS (
    SELECT
            division, product_code, product,
            total_sold_qty,
            DENSE_RANK () OVER(PARTITION BY division ORDER BY total_sold_qty DESC) AS sold_qty_div_rank
    FROM prod_sold_qty
    ORDER BY division, sold_qty_div_rank
)
SELECT * FROM div_sold_qty_ranking WHERE sold_qty_div_rank < 4;
```
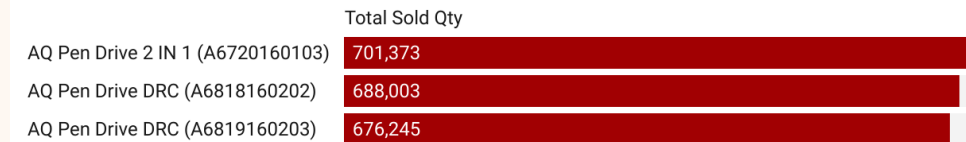
Output:

division	product_code	product	total_sold_qty	sold_qty_div_rank
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:

Division-wise Top 3 Products by Qty Sold

N & S

Total Sold Qty

AQ Pen Drive 2 IN 1 (A6720160103)	701,373
AQ Pen Drive DRC (A6818160202)	688,003
AQ Pen Drive DRC (A6819160203)	676,245

P & A

Total Sold Qty

AQ Gamers Ms (A2319150302)	428,498
AQ Maxima Ms (A2520150501)	419,865
AQ Maxima Ms (A2520150504)	419,471

PC

Total Sold Qty

AQ Digit (A4218110202)	17,434
AQ Velocity (A4319110306)	17,280
AQ Digit (A4218110208)	17,275

Chart: Sagar More • Source: AtliQ Hardware • Created with Datawrapper

Insight:

- Top 3 best-selling products in the N & S division were Pen drives.
- Top 3 best-selling products in the P & A division were Mouse.
- Top 3 best-selling products in the PC division were Laptops.

NA

Canada & US

NE

Germany, Netherlands, Norway, Poland, Sweden, Austria & UK

SE

France, Italy, Portugal & Spain

ROA

Indonesia, Japan, Pakistan, Philippines, South Korea, Bangladesh &China

INDIA

India

ANZ

Australia & New Zealand

LATAM

Mexico, Brazil, Chile & Columbia

THANK YOU

Thanks for checking out this project.

Reach out for discussion/suggestions:
sagarmore.work@gmail.com

Connect with me on *LinkedIn*!