Empowering Data-Driven Decisions at **AtliQ Hardware**

Presenter – Sonia Aggarwal

Introduction

- Welcome to my presentation on empowering data-driven decisions at AtliQ Hardware.
- I am excited to demonstrate how SQL queries can provide valuable insights to address ad hoc business requests.

Company Overview

- AtliQ Hardware is a leading electronic manufacturing company, offering a diverse range of hardware products to customers across various countries.
- Their business operates through multiple channels, including **Retailers**, **Distributors**, and **Direct Sales** through two distinct platforms: **brick-and-mortar stores and e-commerce.**
- They have established a significant **market presence** in their product segment across all countries they serve.
- As they continue to experience substantial growth, they've encountered challenges in efficiently collecting and analyzing data from various sources.
- This impediment has the potential to hinder their ability to make informed decisions for future growth strategies and address issues promptly.

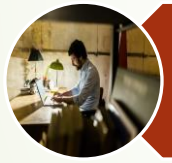
Project Objective

- The primary objective of this project is to enhance their data analytics capabilities to support quick and informed decision-making.
- Recognizing the need for a robust data analytics team, they are planning to expand their workforce by adding several junior data analysts.
- **Tony Sharma**, their **Data Analytics Director**, has set forth a unique approach to hiring, seeking candidates who excel in both technical and soft skills.
- To identify the right talent for their team, they are conducting a SQL challenge that will evaluate candidates' technical prowess while ensuring they possess the interpersonal skills necessary to collaborate effectively in a dynamic environment.

Agenda

Data Exploration

Understanding the Ad Hoc Requests



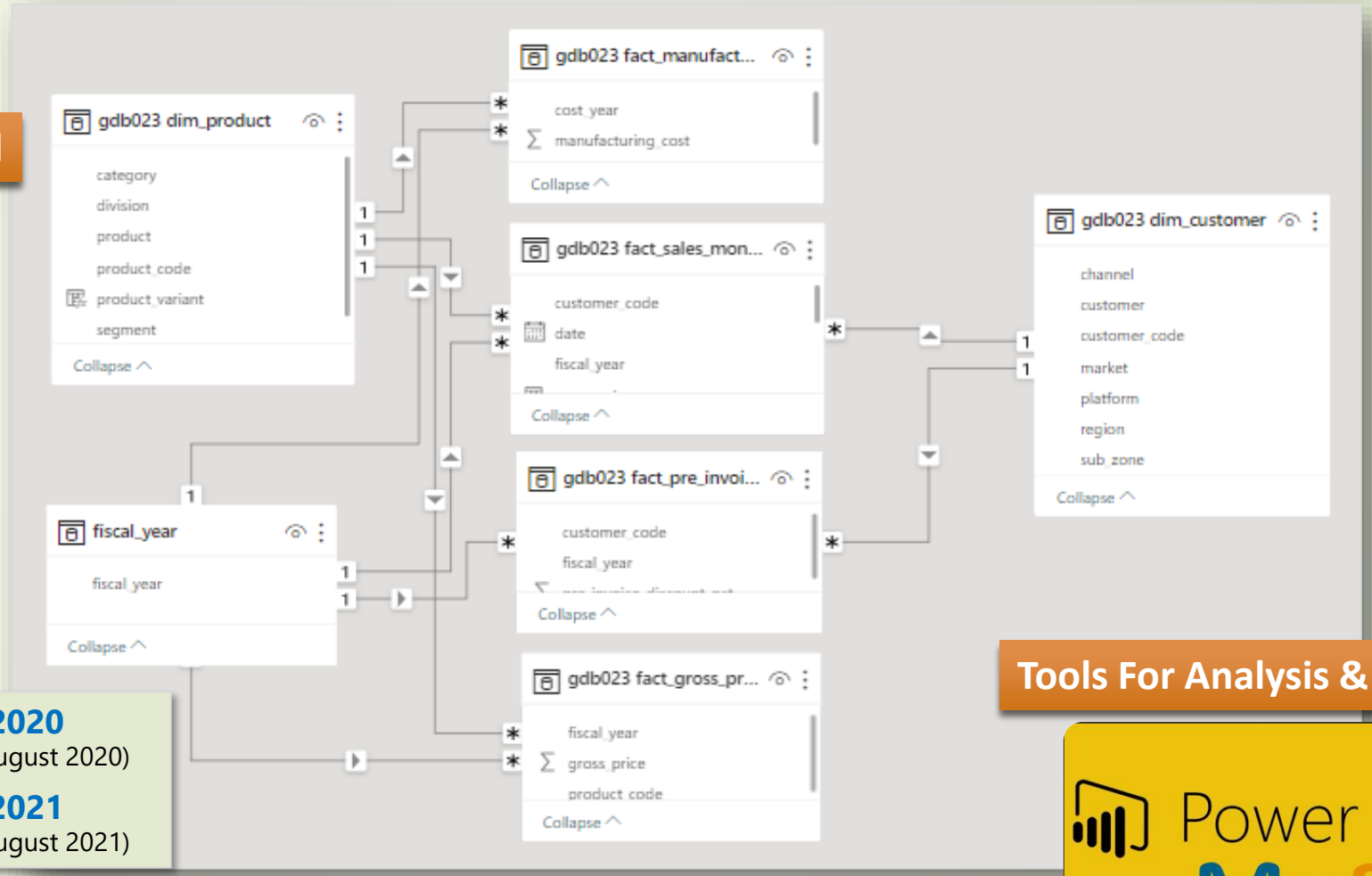
SQL Queries and Data Extraction

Insights and Visualizations

Conclusion and Future Steps

Data Exploration

Data Model



Fiscal Year 2020
(September 2019 – August 2020)

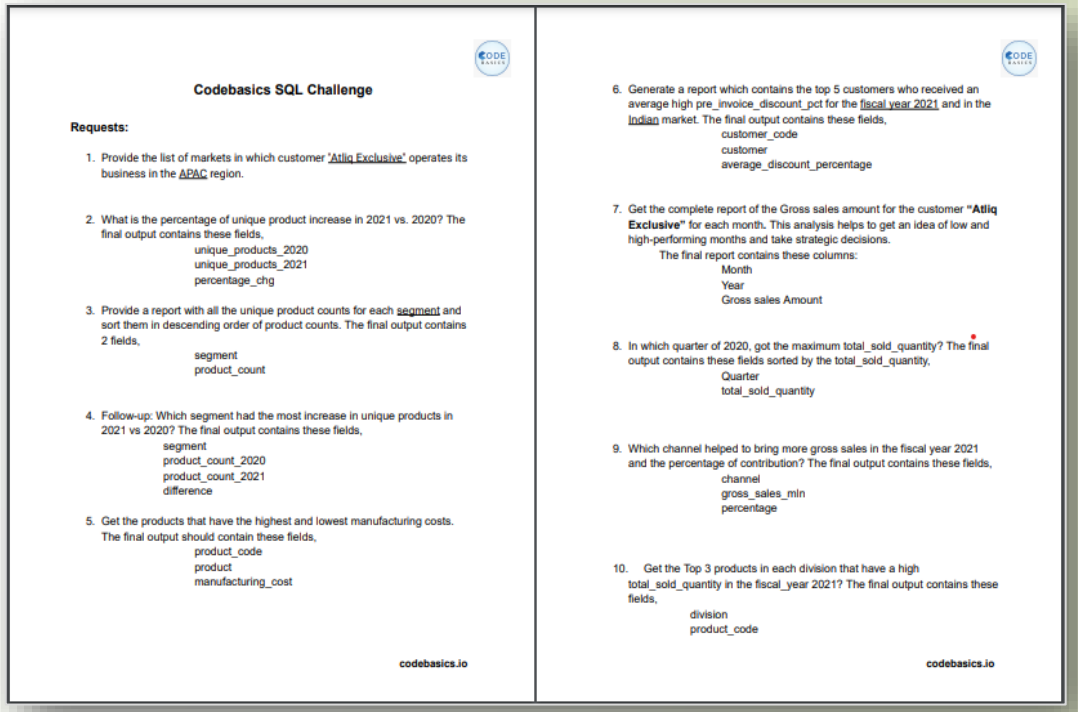
Fiscal Year 2021
(September 2020 – August 2021)

Tools For Analysis & Visualization

Power BI
MySQL

Understanding Ad Hoc Requests

- Let's dive into the 10 ad hoc requests from Atliq Hardware's top-level management.
- For each request, I've created SQL queries to extract the necessary data.



Codebasics SQL Challenge

Requests:

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

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

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

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

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

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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

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

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

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

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

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

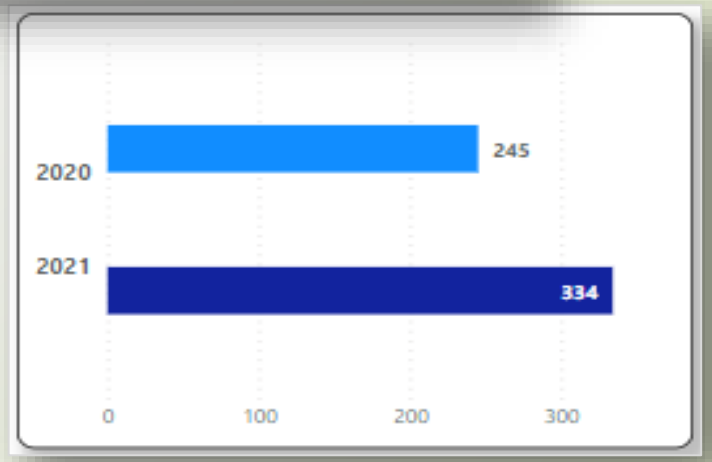
```sql
SELECT DISTINCT market
FROM dim_customer
WHERE
    region = "APAC" AND
    customer = "Atliq Exclusive"
ORDER BY market;
```

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

Ad Hoc Requests 2 - What is the percentage of unique product increase in 2021 vs. 2020?

```
with cte1 as (
            SELECT COUNT(DISTINCT product_code) unique_product_2020
            FROM fact_sales_monthly
            WHERE fiscal_year=2020),
    cte2 as (
            SELECT COUNT(DISTINCT product_code) unique_product_2021
            FROM fact_sales_monthly
            WHERE fiscal_year=2021),
    cte3 as (
            SELECT ((unique_product_2021-unique_product_2020)*100/unique_product_2020) percentage_chg
            FROM cte1
            JOIN cte2  )
SELECT unique_product_2020, unique_product_2021,
round(percentage_chg,2) percentage_chg
FROM cte1,cte2,cte3;
```

unique_product_2020	unique_product_2021	percentage_chg
245	334	36.33



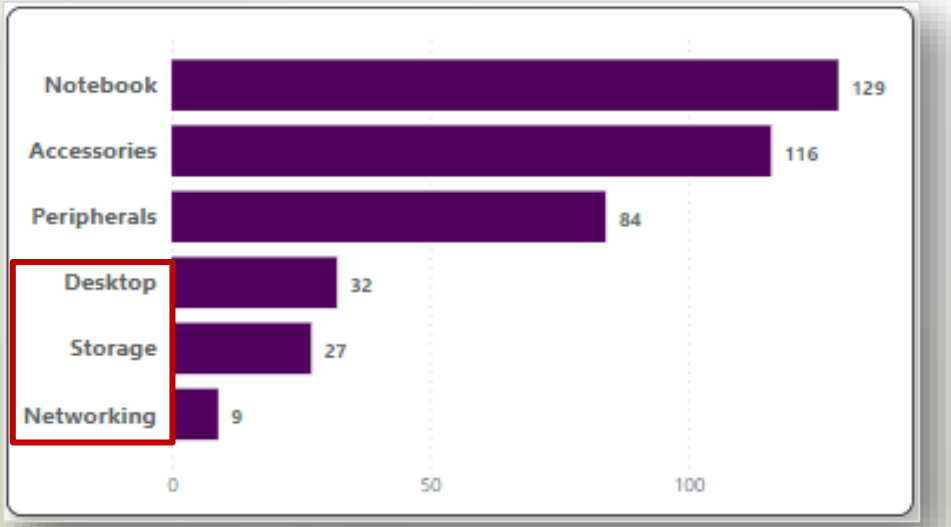
Insight:

The company has **significantly increased** its unique product count in fiscal year 2021 to compete in the market.

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

```
SELECT segment, COUNT(product_code) 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



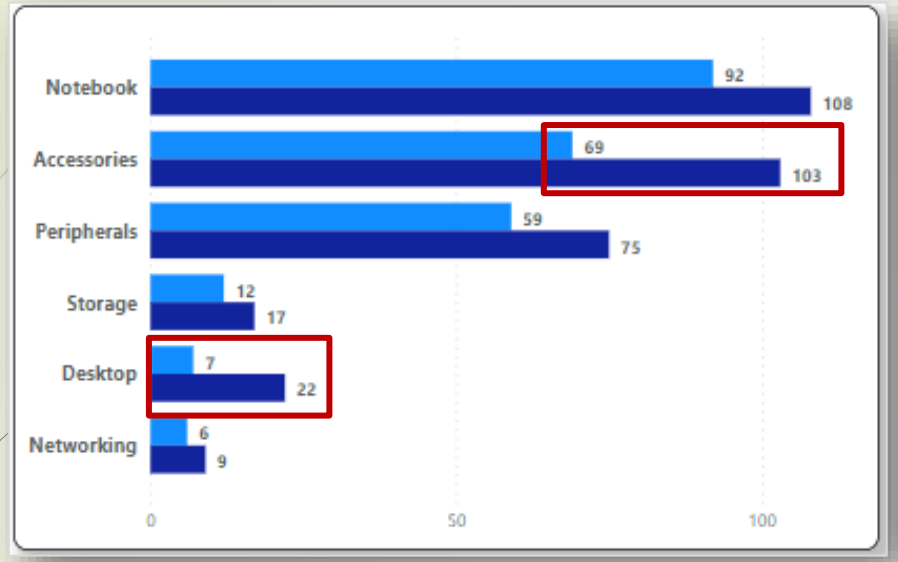
Insight:

- Segment including **Notebook, Accessories**, and **Peripherals** has the **most contribution** in the unique product count of the company by which the company generates most of its revenue.
- Other segment including **Desktop, Storage**, and **Networking** has very **less participation** in the unique products count now.
- To increase sales in these segments, the company can provide **extra discounts and combo offers** to gain more revenue.

Ad Hoc Requests 4 - Which segment had the most increase in unique products in 2021 vs 2020?

```
WITH cte1 as (
             SELECT segment, COUNT(DISTINCT product_code) unique_product_2020
             FROM fact_sales_monthly
             JOIN dim_product USING(product_code)
             WHERE fiscal_year=2020
             GROUP BY segment
            ),
cte2 as (
             SELECT segment, COUNT(DISTINCT product_code) unique_product_2021
             FROM fact_sales_monthly
             JOIN dim_product USING(product_code)
             WHERE fiscal_year=2021
             GROUP BY segment
             )
SELECT
    cte1.segment, unique_product_2020, unique_product_2021,
    (unique_product_2021-unique_product_2020) difference
FROM cte1
JOIN cte2 USING (segment)
ORDER BY difference DESC;
```

segment	unique_product_2020	unique_product_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



segment	unique_products_2020	unique_products_2021	difference	difference %
Notebook	92	108	16	17.39%
Accessories	69	103	34	49.28%
Peripherals	59	75	16	27.12%
Storage	12	17	5	41.67%
Desktop	7	22	15	214.29%
Networking	6	9	3	50.00%
Total	**245**	**334**	**89**	**36.33%**

Insight:

- As I have already discussed in the previous slide that premium segments including Notebooks, Accessories, and Peripherals have the most contribution to the company's revenue so the company has increased its **Accessories segment** with the most increase in the number of **new unique products**.
- But I want to focus on the **Desktop segment** also, on which the company has increased more than **double of its new unique products** to increase sales in these segments also.

Ad Hoc Requests 5 - Get the products that have the highest and lowest manufacturing costs.

```sql
SELECT product_code, product, manufacturing_cost
FROM fact_manufacturing_cost
JOIN dim_product
    USING (product_code)
WHERE manufacturing_cost
    IN (
        (SELECT MAX(manufacturing_cost) FROM fact_manufacturing_cost),
        (SELECT MIN(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

AQ HOME Allin1 Gen 2
Personal Desktop (Plus 3)
Manufacturing Cost – $240.54

AQ Master wired x1 Ms
Mouse (Standard 1)
Manufacturing Cost – $0.89

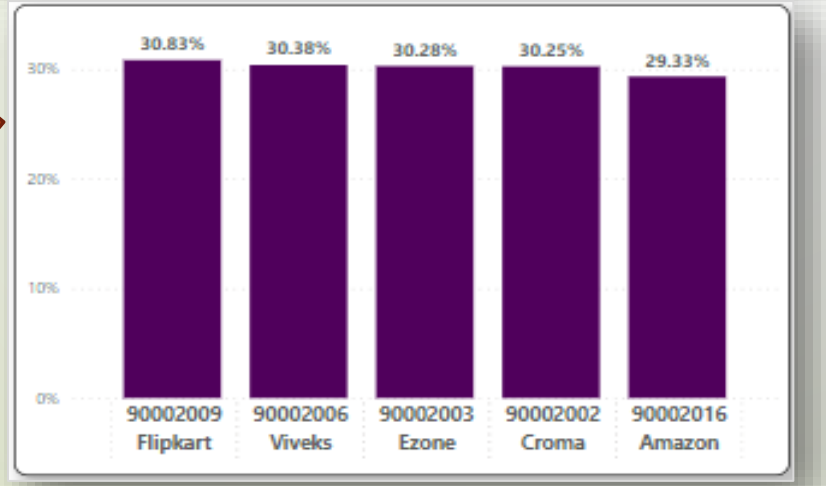
Insights:

- **Personal Desktop**: AQ Home Allin1 Gen2 (Variant:Plus3) has the highest manufacturing cost.
- **Mouse**: AQ Master wired x1 Ms (Variant:Standard1) has the lowest manufacturing cost.

Ad Hoc Requests 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.

```sql
SELECT
    c.customer_code, c.customer,
    AVG(pre_invoice_discount_pct) as average_discount_percentage
FROM fact_pre_invoice_deductions
JOIN dim_customer c
USING (customer_code)
WHERE
    fiscal_year=2021 AND
    market="INDIA"
GROUP BY customer_code
ORDER BY average_discount_percentage DESC
LIMIT 5;
```

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.30830000
90002006	Viveks	0.30380000
90002003	Ezone	0.30280000
90002002	Croma	0.30250000
90002016	Amazon	0.29330000

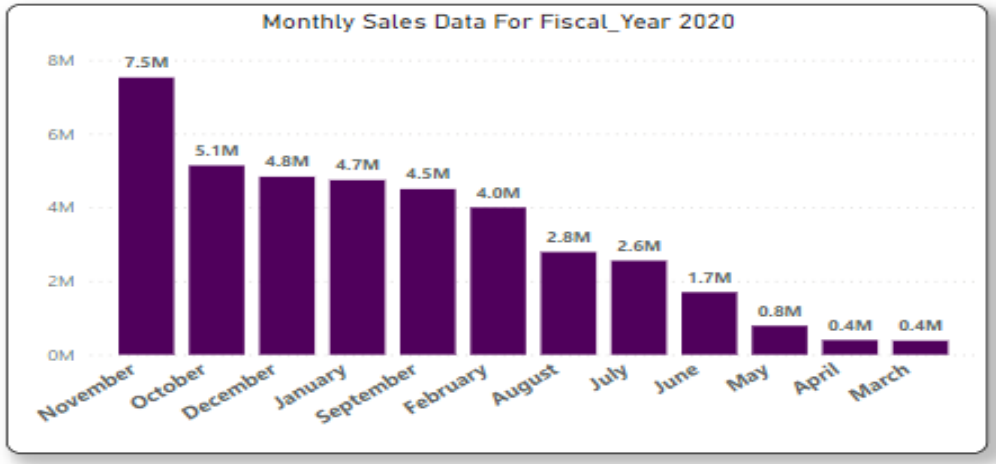


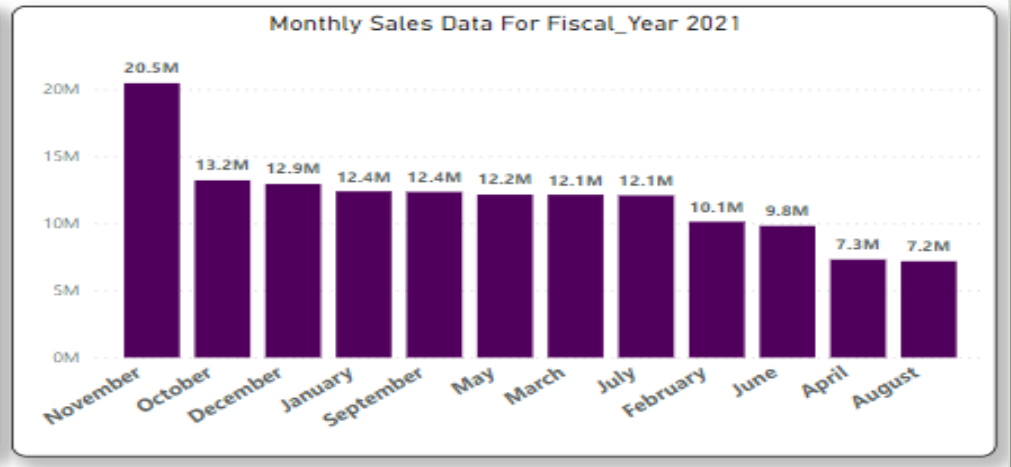
Insights:

- The **Highest** average pre-invoice discount was given to **Flipkart** in the Indian Market for the fiscal year 2021.

Ad Hoc Requests 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

```sql
SELECT
    monthname(s.date) as month_name, s.fiscal_year,
    ROUND(SUM(s.sold_quantity * g.gross_price/1000000), 2) as gross_sales_mln
FROM fact_sales_monthly s
JOIN dim_customer c
USING (customer_code)
JOIN fact_gross_price g
USING(product_code, fiscal_year)
WHERE customer = "Atliq Exclusive"
GROUP BY month_name, s.fiscal_year
ORDER BY fiscal_year, gross_sales_mln DESC;
```





fiscal_year	month_num	Month Name	customer	Sum of gross_sale
2020	1	September	Atliq Exclusive	4,496,259.67
2020	2	October	Atliq Exclusive	5,135,902.35
2020	3	November	Atliq Exclusive	7,522,892.56
2020	4	December	Atliq Exclusive	4,830,404.73
2020	5	January	Atliq Exclusive	4,740,600.16
2020	6	February	Atliq Exclusive	3,996,227.77
2020	7	March	Atliq Exclusive	378,770.97
2020	8	April	Atliq Exclusive	395,035.35
2020	9	May	Atliq Exclusive	783,813.42
2020	10	June	Atliq Exclusive	1,695,216.60
2020	11	July	Atliq Exclusive	2,551,159.16
2020	12	August	Atliq Exclusive	2,786,648.26

fiscal_year	month_num	Month Name	customer	Sum of gross_sale
2021	1	September	Atliq Exclusive	12,353,509.79
2021	2	October	Atliq Exclusive	13,218,636.20
2021	3	November	Atliq Exclusive	20,464,999.10
2021	4	December	Atliq Exclusive	12,944,659.65
2021	5	January	Atliq Exclusive	12,399,392.98
2021	6	February	Atliq Exclusive	10,129,735.57
2021	7	March	Atliq Exclusive	12,144,061.25
2021	8	April	Atliq Exclusive	7,311,999.95
2021	9	May	Atliq Exclusive	12,150,225.01
2021	10	June	Atliq Exclusive	9,824,521.01
2021	11	July	Atliq Exclusive	12,092,346.32
2021	12	August	Atliq Exclusive	7,178,707.59

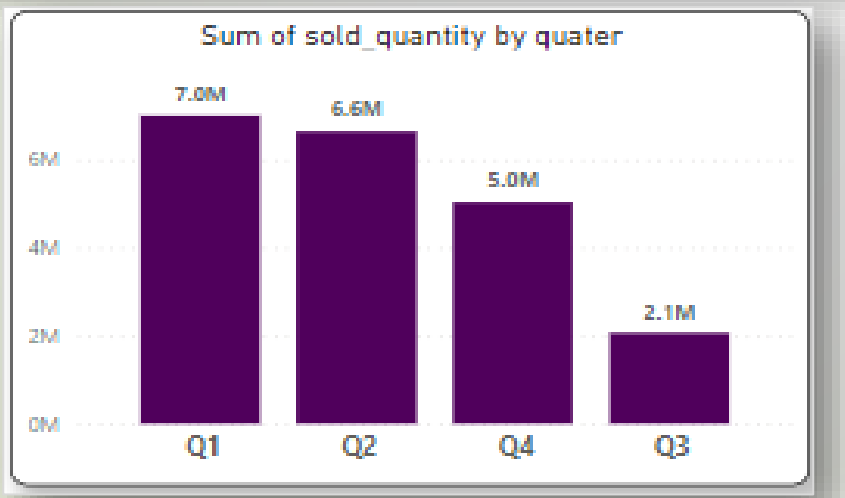
Insights:

- The **highest** Gross sales total for both fiscal years (2020 & 2021) is in **November**.
- But the **lowest** Gross sales total for fiscal years 2020 and 2021 is in **March and August** respectively.
- In the fiscal year 2020 due to **COVID-19 and the global Chip shortage**, the company faced some constraints in its production and sales
- But as the graph shows for 2021 not only they are coming back on track instead they are also generating more sales than the average sales of the previous year.

Ad Hoc Requests 8 - In which quarter of 2020, got the maximum total_sold_quantity?

```sql
SELECT
    concat("Qtr ", QUARTER(s.date + interval 4 month)) as quarter,
    SUM(s.sold_quantity) as total_sold_quantity
FROM fact_sales_monthly s
WHERE fiscal_year = 2020
GROUP BY quarter
ORDER BY total_sold_quantity DESC;
```

	quarter	total_sold_quantity
▶	Qtr 1	7005619
	Qtr 2	6649642
	Qtr 4	5042541
	Qtr 3	2075087



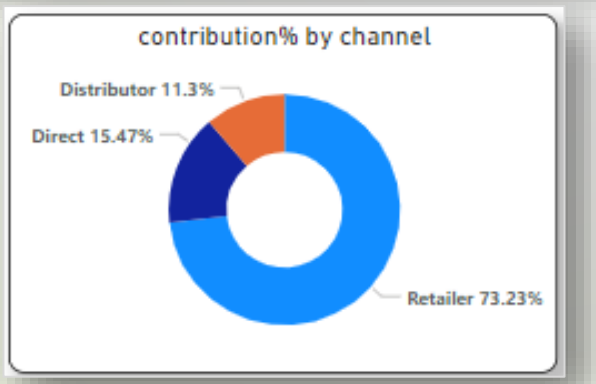
Insights:

- **Quarter1** of FY2020 saw the most units sold overall, while **Quarter3** had the least quantity sold.
- **Reasons** for this is, as we have seen in previous report that company got highest sales in month of **November** which comes under Quarter1 and lowest sales in **March** which comes under in Quarter3 .
- Therefore **Quater1** accounts for approximately 34% of the total sold quantity for FY2020.

Ad Hoc Requests 9 - Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution?

```sql
WITH cte1 as (
            SELECT
            c.channel,
            round(SUM(s.sold_quantity * g.gross_price)/1000000, 2) as gross_sales_mln
            FROM gdb023.fact_sales_monthly s
            JOIN dim_customer c USING (customer_code)
            JOIN fact_gross_price g USING(product_code, fiscal_year)
            WHERE fiscal_year = 2021
            GROUP BY c.channel),
cte2 as (
            SELECT round(sum(gross_sales_mln),2) tgs
            FROM cte1 )
SELECT channel, gross_sales_mln, round(gross_sales_mln*100/tgs, 2)  percentage
FROM cte1, cte2
ORDER BY gross_sales_mln DESC;
```

	channel	gross_sales_mln	percentage
▶	Retailer	1219.08	73.23
	Direct	257.53	15.47
	Distributor	188.03	11.30



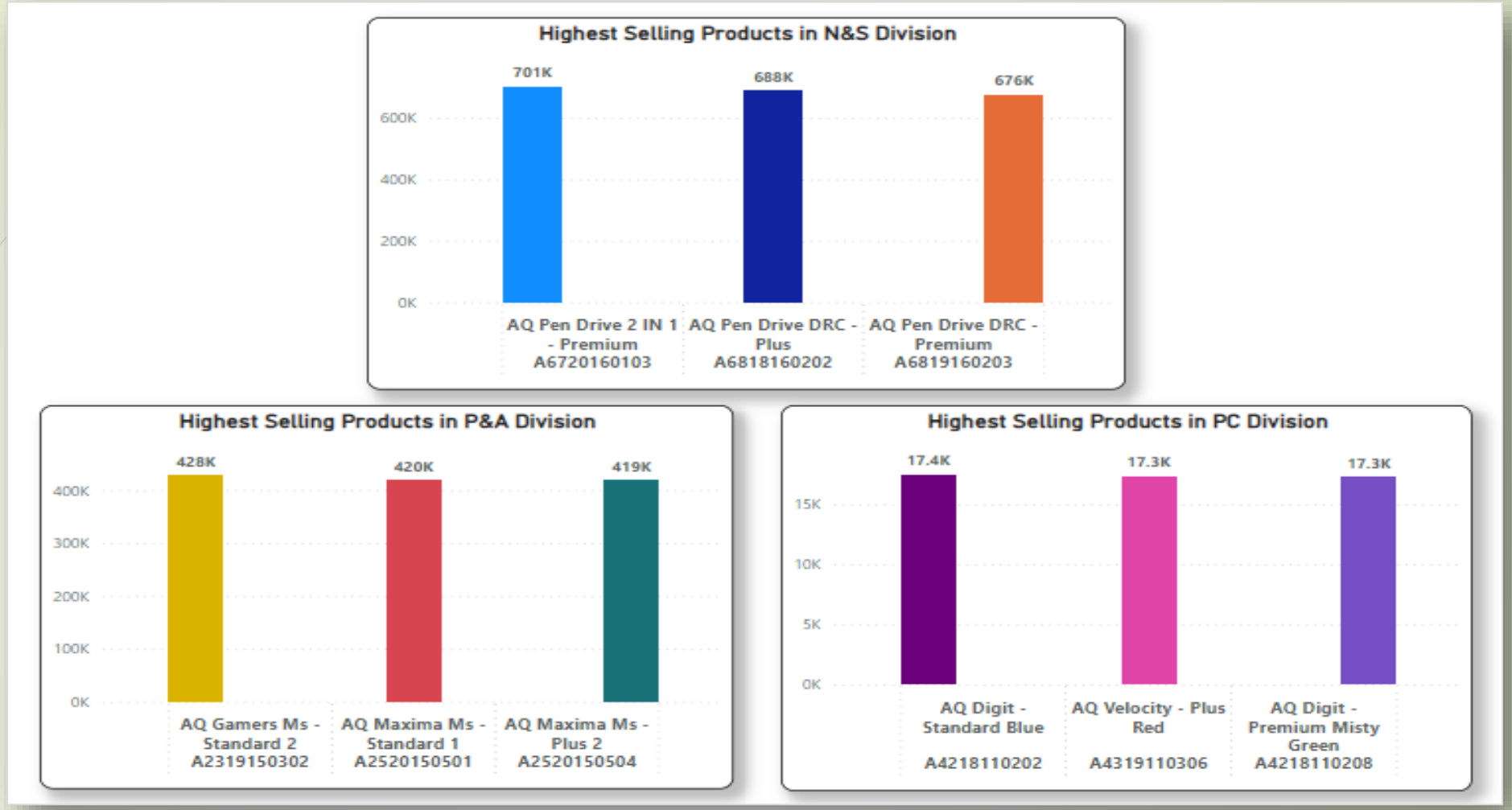
Insights:

- Channel: "**Retailer** " has the maximum sales contribution percentage to the company with 73.23% .
- Channel: "**Distributor** " contribute the least with a percentage of 11.30%.

Ad Hoc Requests 10 - Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021?

```
WITH cte1 AS (
            SELECT
                p.division, p.product_code,
                CONCAT(p.product," (", p.variant, ")") AS product,
                sum(s.sold_quantity) total_sold_qty
            FROM fact_sales_monthly s
            JOIN dim_product p USING(product_code)
            WHERE fiscal_year = 2021
            GROUP BY product_code),
    cte2 AS (
            SELECT *,
            RANK() OVER(PARTITION BY division ORDER BY total_sold_qty DESC) rank_order
            FROM cte1)
SELECT * FROM cte2
WHERE rank_order <=3;
```

division	product_code	product	total_sold_qty	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



Insights:

- Every division has its best-selling products with different variants which contribute the highest number of sold quantity in the company's total sales.

Thank You

Codebasics and AtliQ Hardware

- By effectively addressing the ad hoc requests using SQL queries and presenting insights through creative visualizations, I believe I can contribute to Atliq Hardware' mission of data-informed decision-making.
- Thank you all for your time and attention.