1-Strategic price optimization can significantly improve profit margins without hurting sales by leveraging product elasticity insights and competitive pricing intelligence.

2-Determine the business questions behind this message to be answered

**Page 1: Performance Overview**

**Theme:** Revenue, Profit, Quantity, and Product/Category Performance

**Business Questions:**

1. **What are our top revenue-generating product categories and individual products?**
2. **Which products deliver the highest profit margins?**
3. **Which product has the highest total quantity sold?**
4. **How does product weight or rating (score) affect sales volume?**
5. **Which product categories contribute the most to overall revenue?**

**Page 2: Price Elasticity & Sales Dynamics**

**Theme:** Demand Sensitivity, Price Impact, Product Clustering

**Business Questions:**

1. **Which products are price-sensitive (elastic) vs. price-insensitive (inelastic)?**
2. **What pricing recommendations can we make based on elasticity analysis?**
3. **How does the average price trend over time affect total quantity sold?**
4. **Are there clusters of products where small price changes could significantly impact demand?**

**Page 3: Competitive Pricing Analysis**

**Theme:** Competitor Benchmarking, Pricing Strategy

**Business Questions:**

1. **Are our product prices higher, lower, or equal to competitors’?**
2. **Which products should we consider increasing or decreasing prices for?**
3. **What is the relationship between our prices and competitors’ average prices?**
4. **How many products are priced competitively, and how many are misaligned?**
5. **What factors most influence our unit prices (Key Influencers)?**

3-Write at least 10 SQL queries (including analytical functions) to answer these business

Questions  
--1

--تصنيف المنتجات الاكثر دخلا

with catg\_sales as (

select product\_category\_name,product\_id , sum(total\_price) as total\_rev,sum(qty) as QTY\_sold

from product\_sales

group by product\_category\_name ,product\_id

)

select product\_id,total\_rev,QTY\_sold,

rank() over(order by total\_rev desc) as rank\_rev,

rank() over(order by QTY\_sold desc ) as rank\_sold\_QTY

from catg\_sales

--2

--تصنيف المنتجات الاكثر طلبا

with order\_count as(

select product\_category\_name,product\_id,sum(customers) as Total\_orders,sum(total\_price) as total\_rev

from product\_sales

group by product\_category\_name,product\_id

)

select product\_category\_name,product\_id,Total\_orders,total\_rev,

dense\_rank() over(order by Total\_orders desc) as rank\_most\_ordered\_item

from order\_count

--3

--تاثير السعر علي المييعات

select product\_id,avg(unit\_price) as agg\_sales,sum(qty) as qty\_sold,

corr(unit\_price,qty) as price\_elasticity,

case

  when corr(unit\_price,qty)< -0.3 then 'highly elastic'

  when corr(unit\_price,qty)< 0 then 'elastic'

  when corr(unit\_price,qty)= 0 then 'Neutral'

  else

  'Inelastic'

  END AS elasticity\_category

from product\_sales

group by product\_id

--4

--تاثير الوزن ع ميبعات الشركة

select count(\*) as prodcut\_count,sum(total\_price) as total\_rev,sum(freight\_price)as total\_fright,sum(total\_price-freight\_price) as total\_profit,

case

when product\_weight\_g < 500 then 'light weight'

when product\_weight\_g < 2000 then 'medium weight'

else 'heavy wight'

end as weigth\_catg

from product\_sales

group by weigth\_catg

--5

--ترتيب اكثر المنتجات تقييما

select product\_id,avg(product\_score) as avg\_rate,sum(total\_price) as total\_revnue, dense\_rank() over(order by avg(product\_score)desc)

from product\_sales

group by product\_id

--6

-- تحليل المبيعات بالنسين السابقة وتغيرها

with sal\_year as(

SELECT

  product\_category\_name,

  year,

  month,

  SUM(total\_price-freight\_price) AS total\_profit

FROM product\_sales

GROUP BY

  product\_category\_name,

  year,

  month

ORDER BY

  product\_category\_name, year, month

)

select product\_category\_name,year, sum(total\_profit) as tota\_profi\_current , lag(sum(total\_profit)) over(partition by product\_category\_name order by year) as perv\_year\_profit,

sum(total\_profit)- lag(sum(total\_profit)) over(partition by product\_category\_name order by year) as changes

from sal\_year

group by product\_category\_name,year

order by product\_category\_name,year

--7

-- تغيرات السعر

select product\_id,year, month,

unit\_price,lead(unit\_price) over(partition by product\_id order by year)as  next\_price,

unit\_price-lead(unit\_price) over(partition by product\_id order by year) as change\_price

from product\_sales

--8

--مقارنة اسعار تكلفة الشحن

SELECT product\_id, extract(year from to\_date(month\_year,'DD-MM-YYYY')) as year,extract(month from to\_date(month\_year,'DD-MM-YYYY')) as month, freight\_price,

least(fp1,fp2,fp3)as min\_price\_competitor ,

freight\_price-least(fp1,fp2,fp3)as price\_different

FROM product\_sales

--9

--مقارنة اسعار المنتجات

with pric\_product as (

SELECT product\_id,product\_category\_name, extract(year from to\_date(month\_year,'DD-MM-YYYY')) as year,extract(month from to\_date(month\_year,'DD-MM-YYYY')) as month, unit\_price,

least(comp\_1,comp\_2,comp\_3)as min\_price\_competitor ,

unit\_price-least(comp\_1,comp\_2,comp\_3)as price\_different

FROM product\_sales

)

select product\_id,avg(unit\_price) as price , avg(min\_price\_competitor) as avg\_min\_price\_competitor,avg(unit\_price)-avg(min\_price\_competitor) as diff\_price

from pric\_product

group by product\_id