

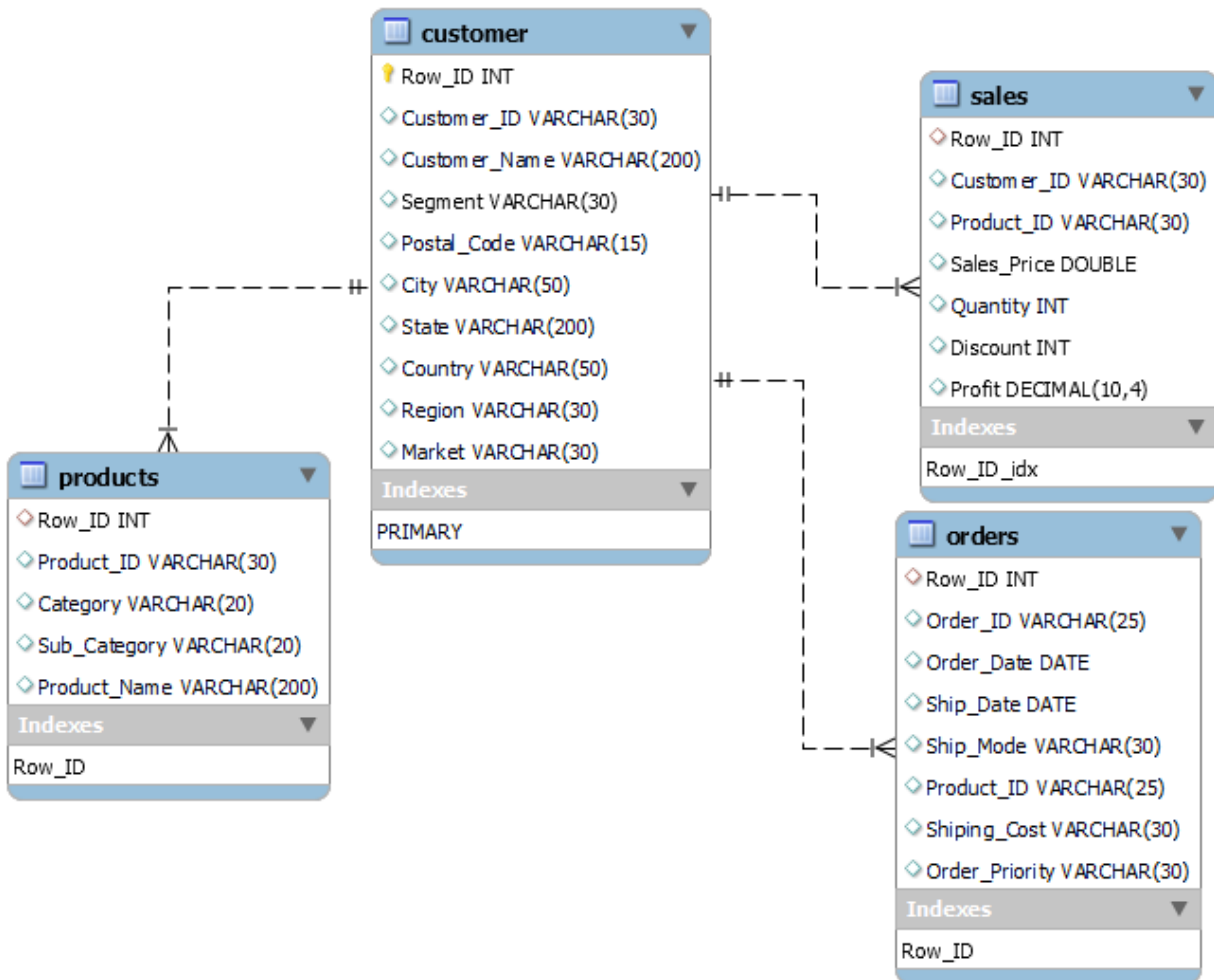
Data Dictionary (Global Store):

Spreadsheet tab	Element or value display name	Description	Data type	Character length	Acceptable values	null value?
Customer	Row_ID	unique for every row unique for every	int	N/A	whole number	N
Customer	Customer ID	Customer	Varchar	30	String	N
Customer	State	Address	Varchar	200	String	N
Customer	Customer Name	Customer Name	Varchar	30	String	N
Customer	Segment	3 options to choose from	Varchar	30	String	N
Customer	Postal_Code	Address unique code	Varchar	15	String	Y
Customer	City	Address	Varchar	50	String	N
Customer	Country	Address	Varchar	50	String	N
Customer	Region	Region	Varchar	30	String	N
Customer	Market	5 different options	Varchar	30	String	N
Sales	Sales_Price	Price	Varchar	30	String	N
Sales	Quantity	Number of items	int	N/A	whole number	N
Sales	Discount	Discount	Double	N/A	Fraction	N
Sales	Profit	Profit	Double	N/A	Fraction	N
orders	Product_ID	unique Product Number	Varchar	30	String	N
orders	Order_ID	unique Order Number	Varchar	25	String	N
orders	Order_Date	Date of order	Date	N/A	Date	N
orders	Ship_Date	Shipping initiation date	Date	N/A	Date	N
orders	Ship_Mode	4 option to choose from	Varchar	30	String	N
orders	Shipping_Cost	Shipping Cost	Double	N/A	Fraction	N
orders	Order_Priority	4 option to choose from	Varchar	30	String	N
Products	Category	3 option to choose from	Varchar	20	String	N
Products	Sub-Category	Product types	Varchar	20	String	N
Products	Product Name	Name of the Product	Varchar	200	String	N
Products	Product_ID	unique Product Number	Varchar	30	String	N

2: Data Base (Source)

<https://drive.google.com/drive/folders/1K7ECtTcV5FOfRQDvZmxAEz0qd7auhXaY>

Entity Relationship Diagram (ERD)



3: Executive Summary:

Issue To Address:

How can data-driven insights from sales, customer, orders of geographical tracking and discount strategy analysis be used to solve business problems and make informed decisions that drive growth, efficiency, and customer satisfaction?

1. *Sales Analysis:*

- What are the highest selling products in terms of total sales and quantity?
- Which product categories and sub-categories contribute the most to sales?
- Which product categories and sub-categories contribute the least to sales?
- Are there any specific segments or regions that consistently drive higher sales?

2. *Profitability and Costs:*

- Which products have the highest profit margins?
- Are there products with low profits that should be re-evaluated?

3. *Customer Behavior:*

- What is the distribution of orders based on order priority?
- Are there certain customer segments that tend to place larger or more frequent orders?
- How does discount affect sales volume and profitability?

4. *Order Management:*

- Are there certain shipping modes/cost that are preferred by customers and should be prioritized?

5. *Geographical Insights:*

- Which regions or countries contribute the most to sales and profits?

6. *Market Trends:*

- Are there seasonal patterns in sales, and how can the company prepare for these fluctuations?

7. *Discount Strategy:*

- Is the current discount strategy effective in driving sales and profitability?
- Are there specific product categories or customer segments that respond well to discounts?

Data Cleaning: Customers

1: Change the Data types:

The screenshot shows the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'company', 'erd', 'global_store', and 'global_store_project'. Under 'global_store_project', there are 'Tables' (customer, orders, products, sales) and 'Views' (Stored Procedures, Functions). The 'Information' pane shows the 'customer' table with columns: Row_ID (int PK), Customer_ID (varchar(30)), Customer_Name (varchar(200)), Segment (varchar(30)), Postal_Code (varchar(15)), City (varchar(50)), State (varchar(200)), Country (varchar(50)), Region (varchar(30)), and Market (varchar(30)). The main query editor shows the following SQL code:

```
1 -- Change data types of specified attributes in a table
2 • ALTER TABLE Customers
3 ALTER COLUMN Row_ID INT PRIMARY KEY,
4 ALTER COLUMN Customer_ID VARCHAR(30),
5 ALTER COLUMN Customer_Name VARCHAR(200),
6 ALTER COLUMN Segment VARCHAR(30),
7 ALTER COLUMN Postal_Code VARCHAR(15),
8 ALTER COLUMN City VARCHAR(50),
9 ALTER COLUMN State VARCHAR(200),
10 ALTER COLUMN Country VARCHAR(50),
11 ALTER COLUMN Region VARCHAR(30),
12 ALTER COLUMN Market VARCHAR(30);
13
14
15
16
17
18
19
```

On the right, the 'SQLAdditions' pane shows a message: 'Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.'

-- Change data types in Customers table

ALTER TABLE Customers

ALTER COLUMN Row_ID INT PRIMARY KEY,

ALTER COLUMN Customer_ID VARCHAR(30),

ALTER COLUMN Customer_Name VARCHAR(200),

ALTER COLUMN Segment VARCHAR(30),

ALTER COLUMN Postal_Code VARCHAR(15),

ALTER COLUMN City VARCHAR(50),

ALTER COLUMN State VARCHAR(200),

ALTER COLUMN Country VARCHAR(50),

ALTER COLUMN Region VARCHAR(30),

ALTER COLUMN Market VARCHAR(30);

Data Cleaning: Orders

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

company
erd
global_store
global_store_project
Tables
customer
orders
products
sales
Views
Stored Procedures
Functions
parch
sys

Administration Schemas

Information

Table: orders

Columns:

Row_ID	int
Order_ID	varchar(25)
Order_Date	date
Ship_Date	date
Ship_Mode	varchar(30)
Product_ID	varchar(25)
Shipping_Cost	varchar(30)
Order_Priority	varchar(30)

Query 1 x

Limit to 50000 rows

```
1 -- Change data types of specified attributes in the "orders" table
2 ALTER TABLE orders
3 ALTER COLUMN Row_ID INT,
4 ALTER COLUMN Order_ID VARCHAR(25),
5 ALTER COLUMN Order_Date DATE,
6 ALTER COLUMN Ship_Date DATE,
7 ALTER COLUMN Ship_Mode VARCHAR(30),
8 ALTER COLUMN Product_ID VARCHAR(25),
9 ALTER COLUMN Shipping_Cost VARCHAR(30),
10 ALTER COLUMN Order_Priority VARCHAR(30);
11
```

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Context Help Snippets

Object Info Session

Output

-- Change data types of specified attributes in the "orders" table with corrected column name

ALTER TABLE orders

ALTER COLUMN Row_ID INT,

ALTER COLUMN Order_ID VARCHAR(25),

ALTER COLUMN Order_Date DATE,

ALTER COLUMN Ship_Date DATE,

ALTER COLUMN Ship_Mode VARCHAR(30),

ALTER COLUMN Product_ID VARCHAR(25),

ALTER COLUMN Shipping_Cost VARCHAR(30),

ALTER COLUMN Order_Priority VARCHAR(30);

Data Cleaning: Products

The screenshot shows the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'global_store_project' expanded, showing tables like 'customer', 'orders', 'products', and 'sales'. The 'products' table is selected. Below it, the 'Columns' pane lists the columns: 'Row_ID' (int), 'Product_ID' (varchar(30)), 'Category' (varchar(20)), 'Sub_Category' (varchar(20)), and 'Product_Name' (varchar(200)). The main query editor shows the following SQL code:

```
1  -- Change data types of specified attributes in the "products" table
2  ALTER TABLE products
3  ALTER COLUMN Row_ID INT,
4  ALTER COLUMN Product_ID VARCHAR(30),
5  ALTER COLUMN Category VARCHAR(20),
6  ALTER COLUMN Sub_Category VARCHAR(20),
7  ALTER COLUMN Product_Name VARCHAR(200);
8
```

On the right, the 'SQLAdditions' pane shows a message: 'Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.'

```
-- Change data types of specified attributes in the "products" table

ALTER TABLE products

ALTER COLUMN Row_ID INT,

ALTER COLUMN Product_ID VARCHAR(30),

ALTER COLUMN Category VARCHAR(20),

ALTER COLUMN Sub_Category VARCHAR(20),

ALTER COLUMN Product_Name VARCHAR(200);
```

Data Cleaning: Sales

The screenshot shows the MySQL Workbench interface. The 'Schemas' pane on the left shows the 'global_store_project' database with a 'sales' table. The 'Query 1' editor in the center contains the following SQL code:

```
1  -- Change data types of specified attributes to double in the "sales" table
2  ALTER TABLE sales
3  ALTER COLUMN Row_ID INT,
4  ALTER COLUMN Customer_ID VARCHAR(30),
5  ALTER COLUMN Product_ID VARCHAR(30),
6  ALTER COLUMN Sales_Price DOUBLE,
7  ALTER COLUMN Quantity INT,
8  ALTER COLUMN Discount DOUBLE,
9  ALTER COLUMN Profit DOUBLE ;
10
```

The 'Table: sales' information pane on the left shows the current column data types:

Columns:	Current Data Type
Row_ID	int
Customer_ID	varchar(30)
Product_ID	varchar(30)
Sales_Price	double
Quantity	int
Discount	double
Profit	double

The right pane shows the 'SQLAdditions' section with a message: 'Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.'

-- Change data types of specified attributes to double in the "sales" table

ALTER TABLE sales

ALTER COLUMN Row_ID INT,

ALTER COLUMN Customer_ID VARCHAR(30),

ALTER COLUMN Product_ID VARCHAR(30),

ALTER COLUMN Sales_Price DOUBLE,

ALTER COLUMN Quantity INT,

ALTER COLUMN Discount DOUBLE,

ALTER COLUMN Profit DOUBLE ;

Data Exploration:

Sales Analysis:

- What are the highest selling products in terms of total sales and quantity?

The screenshot shows the MySQL Workbench interface. The 'Query 1' tab is active, displaying the following SQL query:

```
1 • SELECT
2     Products.Product_ID,
3     Products.Product_Name,
4     SUM(sales.Sales_Price) AS TotalSales
5 FROM Products
6 JOIN sales ON sales.Product_ID = Products.Product_ID
7 GROUP BY Products.Product_ID, Products.Product_Name
8 ORDER BY TotalSales DESC
9 LIMIT 10;
```

The 'Result Grid' shows the results of the query, sorted by TotalSales in descending order. The first row is highlighted.

Product_ID	Product_Name	TotalSales
TEC-PH-3148	Apple Smart Phone, Full Size	4433725.2899999665
TEC-PH-5355	Nokia Smart Phone, Full Size	3379514.320000038
OFF-ST-4057	Eldon File Cart, Single Width	3094897.5000000694
TEC-PH-3806	Cisco Smart Phone, Full Size	2904778.139999991
FUR-CH-4654	Hon Executive Leather Armchair, Adjustable	2851482.480000037
TEC-PH-5268	Motorola Smart Phone, Full Size	2779940.539999997
OFF-ST-5693	Rogers File Cart, Single Width	2475169.199999969
FUR-CH-5441	Office Star Executive Leather Armchair, Adjustable	2279775.600000023
OFF-ST-6033	Smead File Cart, Single Width	1955581.3200000338
FUR-CH-4530	Harbour Creations Executive Leather Armchair, Adjustable	1954739.2800000121

The 'Table: products' section on the left shows the following columns:

- Row_ID: int
- Product_ID: varchar(30)
- Category: varchar(20)
- Sub_Category: varchar(20)
- Product_Name: varchar(200)

Total_Sales

SELECT

```
products.Product_ID,
products.Product_Name,
SUM(sales.Quantity) AS TotalQuantity
```

FROM sales

JOIN products

```
ON sales.Row_ID = products.Row_ID
```

```
GROUP BY Product_ID, Product_Name
```

```
ORDER BY TotalQuantity DESC
```

```
LIMIT 10;
```

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: Query 1 x SQL Additions: Jump to

SCHEMAS

Filter objects

- company
- erd
- global_store
- global_store_project**
 - Tables
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 - Columns
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- Views
- Stored Procedures

Administration Schemas

Information

Table: products

Columns:

- Row_ID int
- Product_ID varchar(30)
- Category varchar(20)
- Sub_Category varchar(20)
- Product_Name varchar(200)

Query 1

```
1 • SELECT
2     sales.Product_ID,
3     Products.Product_Name,
4     SUM(sales.Quantity) AS TotalQuantity
5 FROM sales
6 JOIN Products ON sales.Product_ID = Products.Product_ID
7 GROUP BY sales.Product_ID, Products.Product_Name
8 ORDER BY TotalQuantity DESC
9 LIMIT 10;
```

Result Grid

Product_ID	Product_Name	TotalQuantity
OFF-FA-6129	Staples	198852
OFF-BI-3737	Cardinal Index Tab, Clear	31004
OFF-ST-4057	Eldon File Cart, Single Width	28890
OFF-ST-5693	Rogers File Cart, Single Width	22008
OFF-BI-4828	Ibico Index Tab, Clear	20833
OFF-AR-5923	Sanford Pencil Sharpener, Water Color	20720
OFF-ST-6033	Smead File Cart, Single Width	19250
OFF-BI-3293	Avery Index Tab, Clear	18648
OFF-AR-6120	Stanley Pencil Sharpener, Water Color	18150

Result 2 x

Output: Action Output

Read Only Context Help Snippets

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

-- Total_Quantity

SELECT

sales.Product_ID,

Products.Product_Name,

SUM(sales.Quantity) AS TotalQuantity

FROM sales

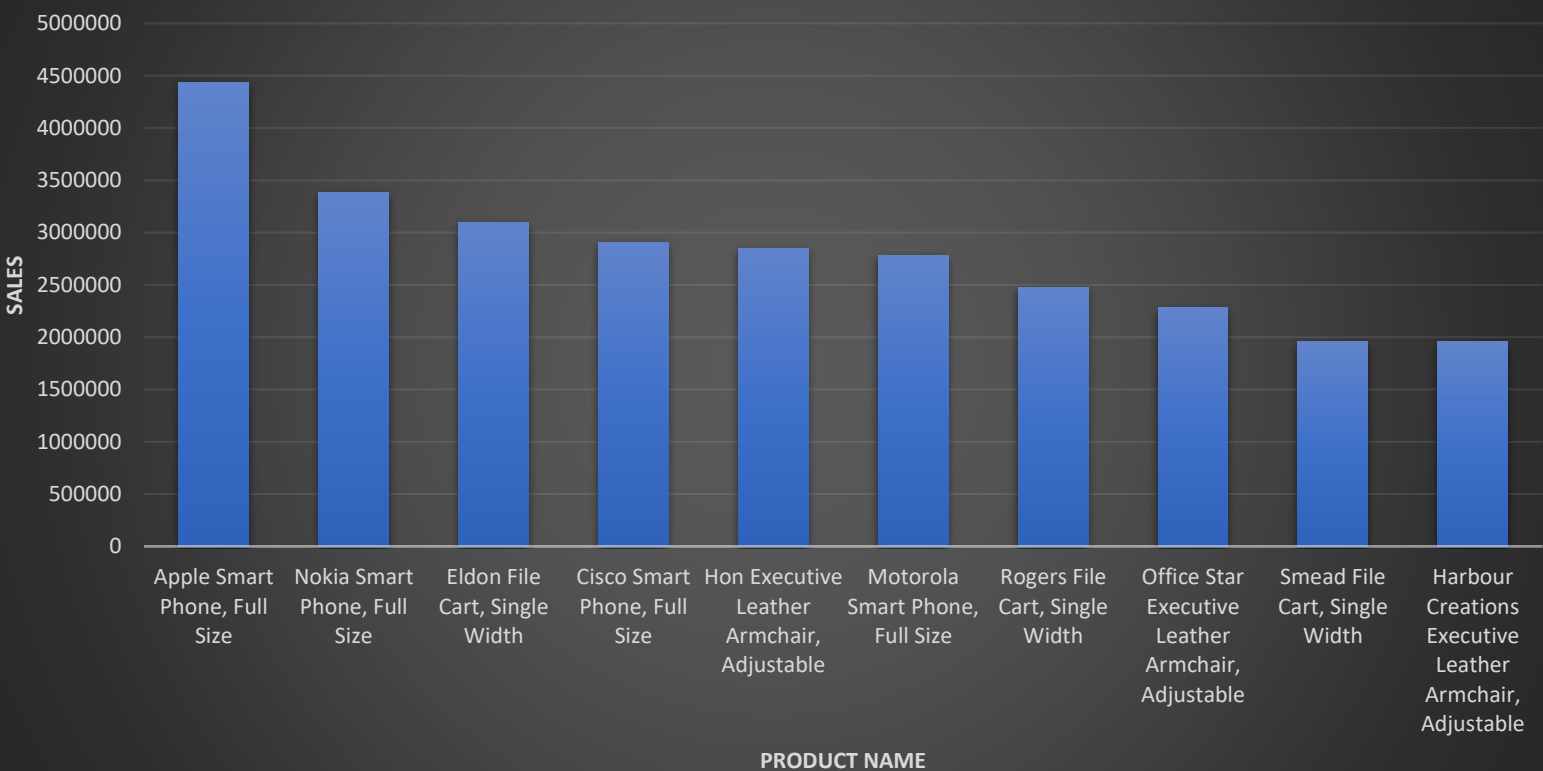
JOIN Products ON sales.Product_ID = Products.Product_ID

GROUP BY sales.Product_ID, Products.Product_Name

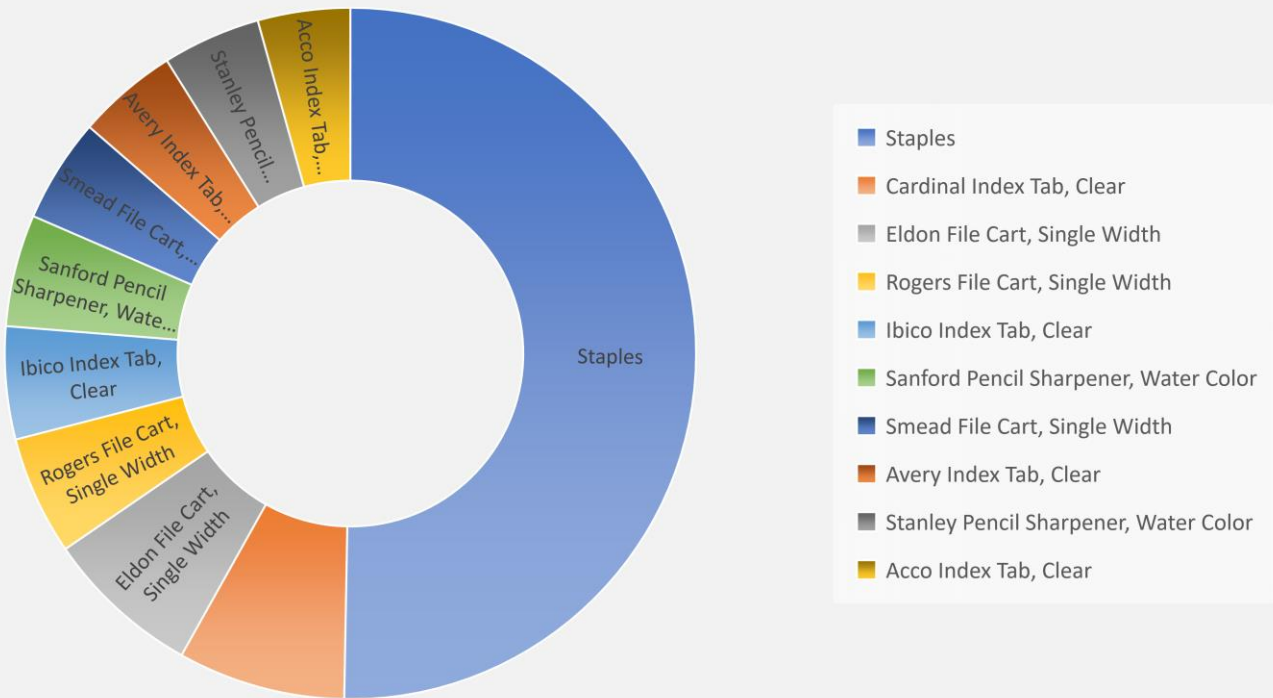
ORDER BY TotalQuantity DESC

LIMIT 10;

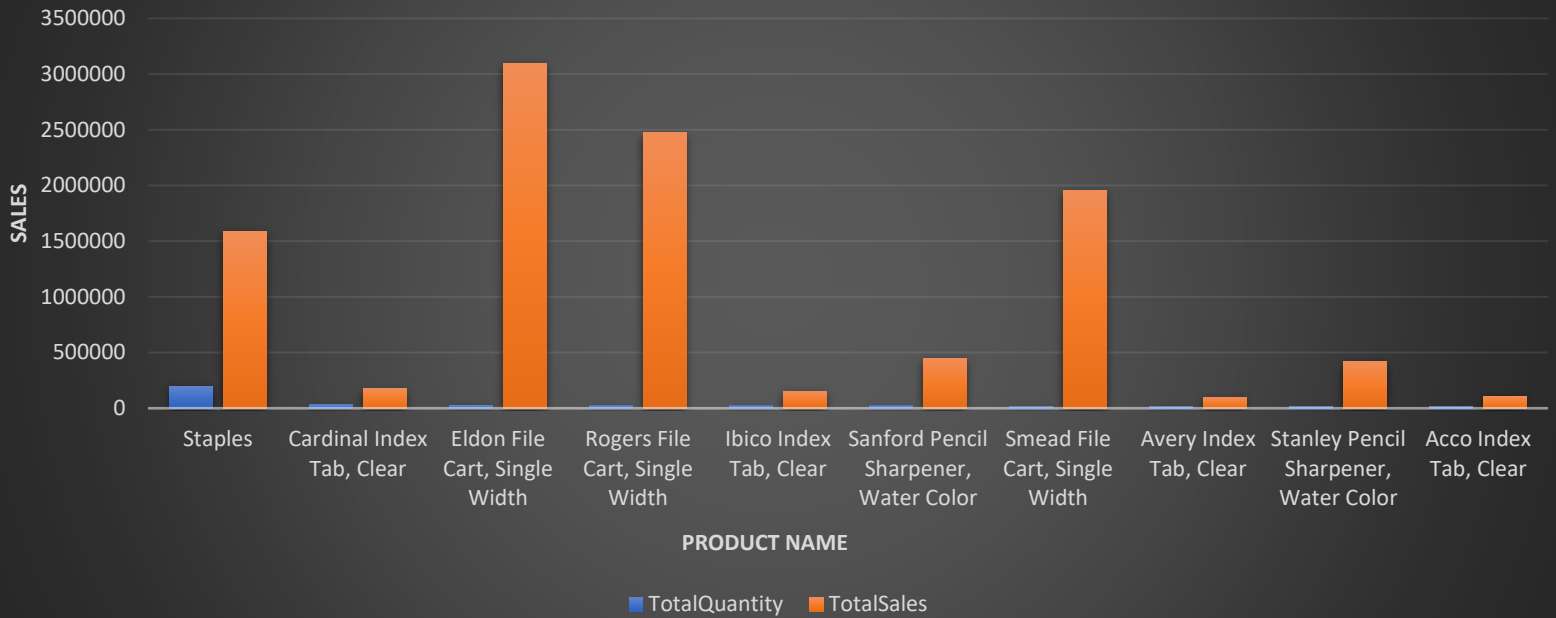
Highest selling Product



Highest selling Product quanntity wise



Sales and Quantity



- Which product categories and sub-categories contribute the most to sales?

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

company

erd

global_store

global_store_project

Tables

customer

orders

products

sales

Columns

Indexes

Foreign Keys

Triggers

Views

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Administration

Schemas

Information

Table: products

Columns:

Row_ID int

Product_ID varchar(30)

Category varchar(20)

Sub_Category varchar(20)

Product_Name varchar(200)

Query 1

Limit to 50000 rows

```

1 • SELECT
2     Products.Category,
3     Products.Sub_Category,
4     SUM(sales.Sales_Price) AS TotalSales
5 FROM sales
6 JOIN Products ON sales.Product_ID = Products.Product_ID
7 GROUP BY Products.Category, Products.Sub_Category
8 ORDER BY TotalSales DESC
9 limit 10;
10
11

```

Result Grid

Category	Sub_Category	TotalSales
Office Supplies	Storage	39551964.9299923
Technology	Phones	38131697.749998614
Furniture	Chairs	35439099.02000309
Technology	Copiers	28485489.589998093
Furniture	Bookcases	28116112.839997962
Technology	Accessories	13224481.70000015
Office Supplies	Art	13037047.819997597
Office Supplies	Binders	12150687.400001613
Office Supplies	Art Supplies	11222222.540000000

Result 14

Output

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Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

-- Total_Sales ctagory and sub category wise

SELECT

Products.Category,

Products.Sub_Category,

SUM(sales.Sales_Price) AS TotalSales

FROM sales

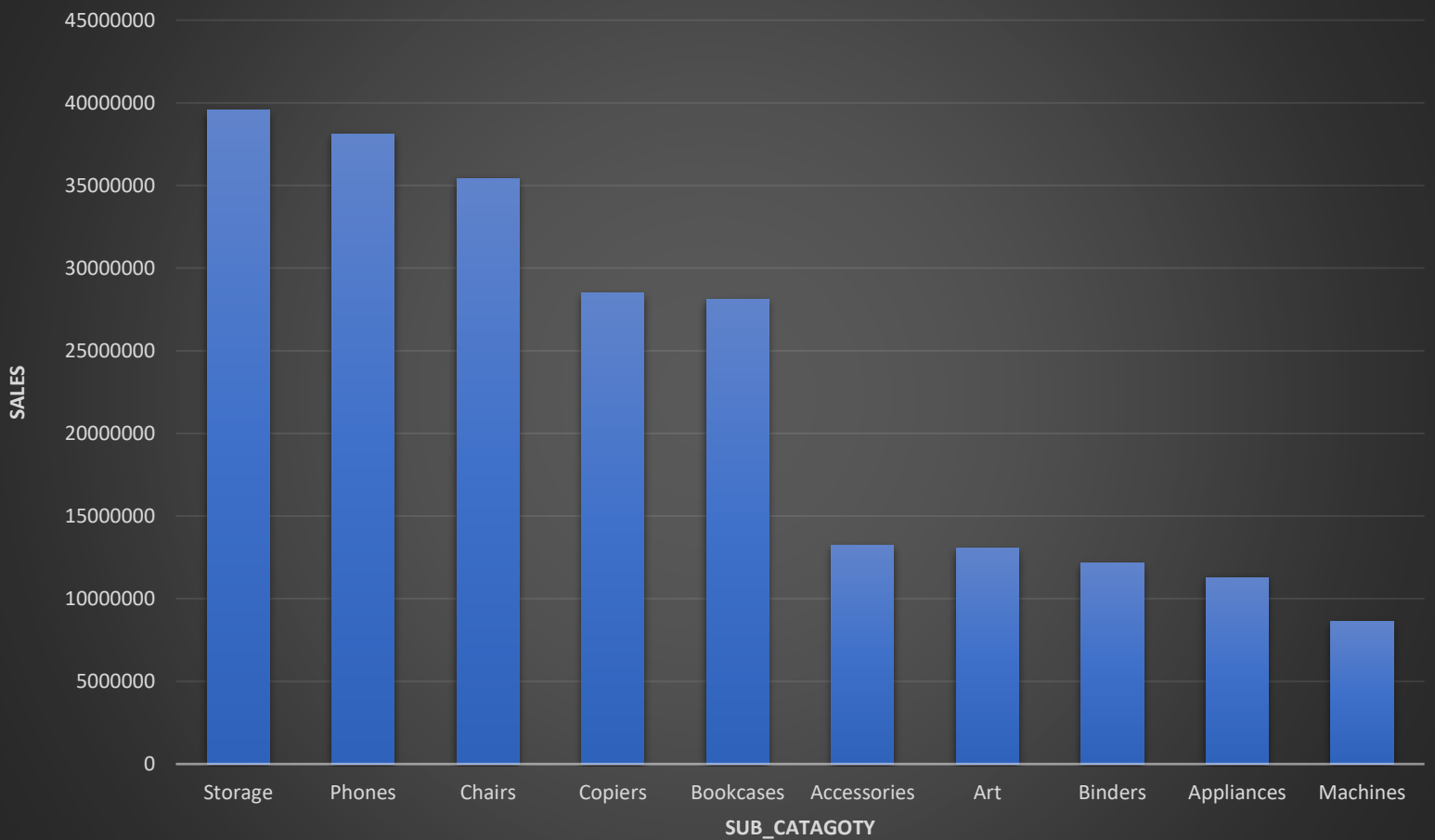
JOIN Products ON sales.Product_ID = Products.Product_ID

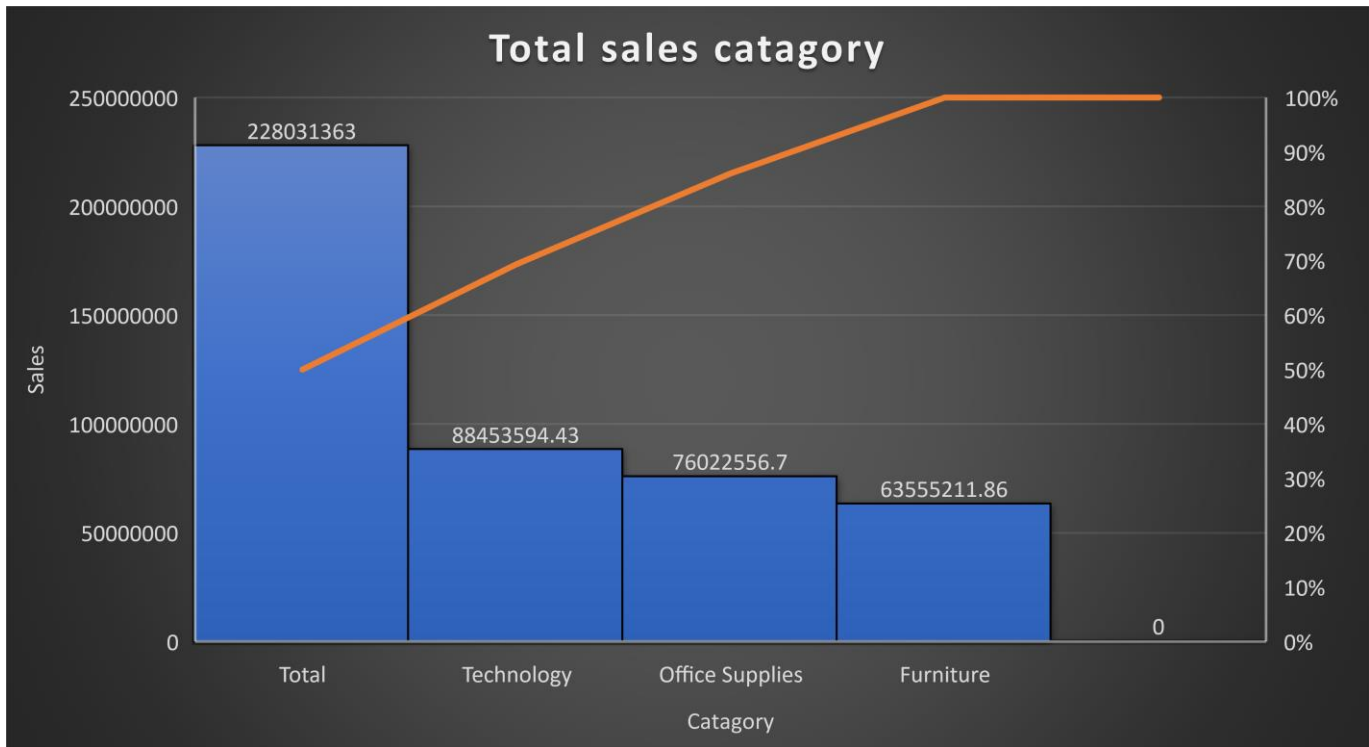
GROUP BY Products.Category, Products.Sub_Category

ORDER BY TotalSales DESC

limit 10;

TotalSales Sub_catagory





- Which product categories and sub-categories contribute the least to sales?

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

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erd

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Tables

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Columns

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Administration Schemas

Information

Table: products

Columns:

Row_ID int

Product_ID varchar(30)

Category varchar(20)

Sub_Category varchar(20)

Product_Name varchar(200)

Query 1

```

1 • SELECT
2     Products.Category,
3     Products.Sub_Category,
4     SUM(sales.Sales_Price) AS TotalSales
5 FROM sales
6 JOIN Products ON sales.Product_ID = Products.Product_ID
7 GROUP BY Products.Category, Products.Sub_Category
8 ORDER BY TotalSales ASC
9 limit 10;
10
11

```

Result Grid

Category	Sub_Category	TotalSales
Office Supplies	Labels	1371297.6300000728
Office Supplies	Envelopes	3068883.2200001613
Office Supplies	Paper	3876214.559999795
Office Supplies	Fasteners	3903575.3699992797
Office Supplies	Supplies	4403099.93999994
Furniture	Tables	4625907.010000004
Furniture	Furnishings	6311913.969999852
Technology	Machines	8611925.390000025
Office Supplies	Adhesives	1122325.540000025

Result 15

Read Only Context Help Snippets

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-- Total_Sales ctagory and sub category wise(Least)

SELECT

Products.Category,

Products.Sub_Category,

SUM(sales.Sales_Price) AS TotalSales

FROM sales

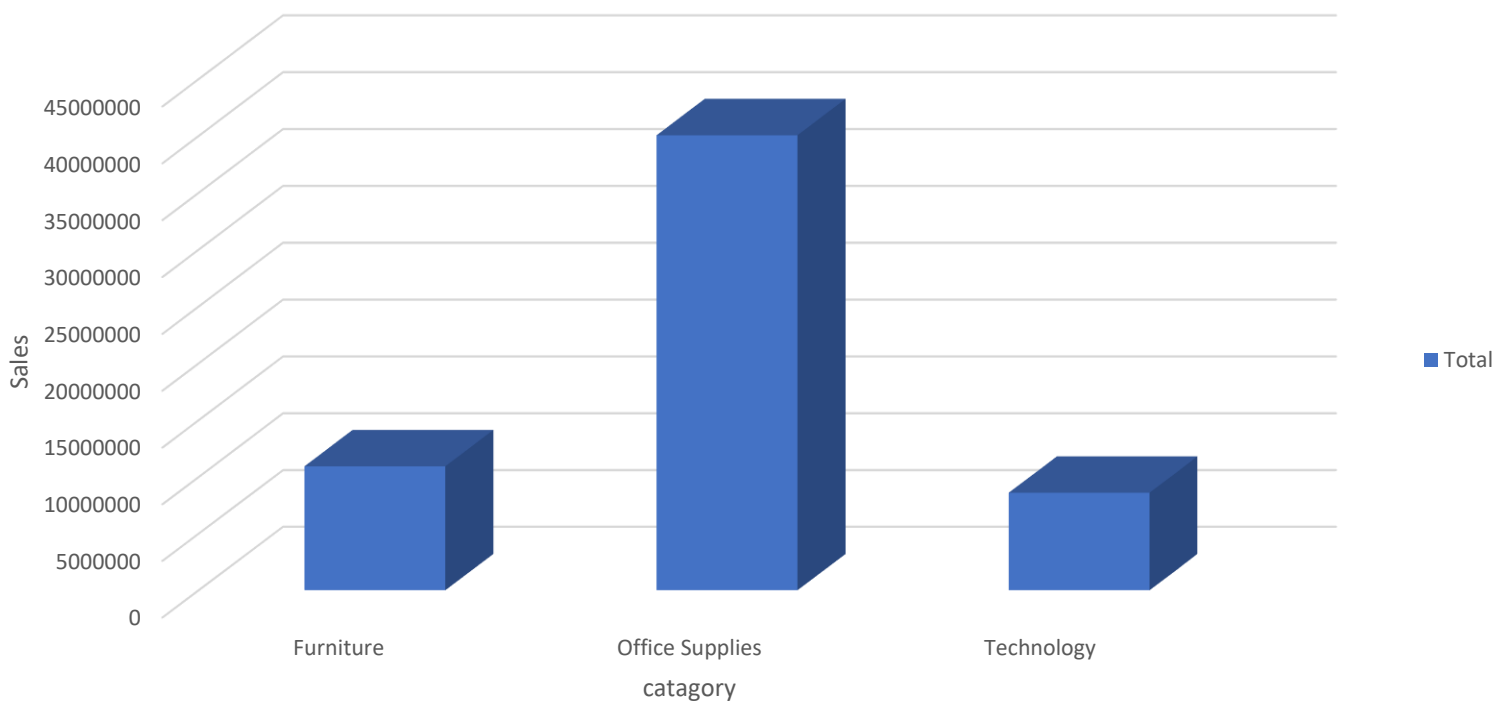
JOIN Products ON sales.Product_ID = Products.Product_ID

GROUP BY Products.Category, Products.Sub_Category

ORDER BY TotalSales ASC

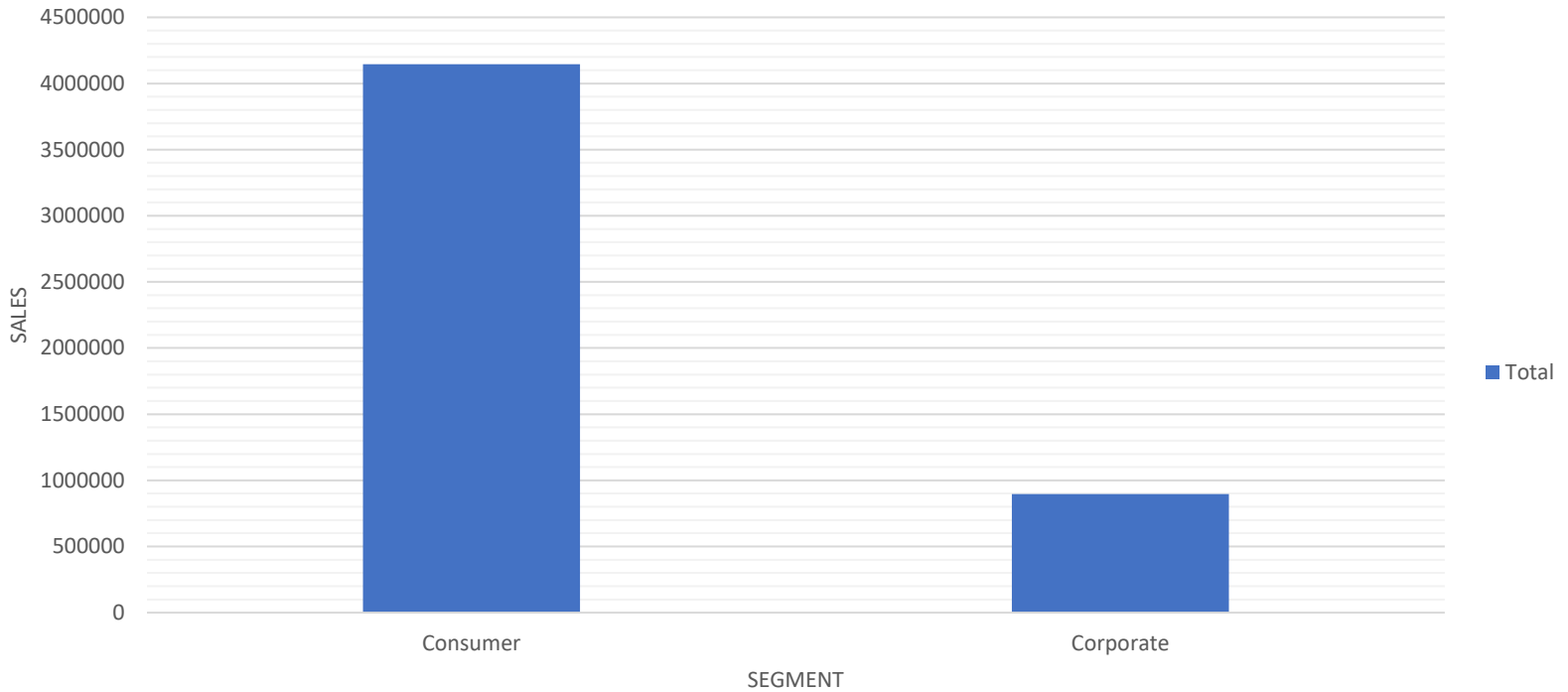
limit 10;

Least Catagory



- Are there any specific segments or regions that consistently drive higher sales?

Best Segment



MySQL Workbench

Local instance MySQL80 x

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Navigator: SCHEMAS

Filter objects

company
erd
global_store
global_store_project
Tables
customer
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products
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Columns
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Administration Schemas

Information:

Table: sales

Columns:
Row_ID int
Customer varchar(30)
ID
Product_ID varchar(30)
Sales_Price double
Quantity int
Discount double
Profit double

Query 1 x

Limit to 50000 rows

```
1 • SELECT
2     Customer.Segment,
3     Customer.Region,
4     SUM(sales.Sales_Price) AS TotalSales
5 FROM Customer
6 JOIN Sales ON sales.Row_ID = Customer.Row_ID
7 GROUP BY Customer.Segment, Customer.Region
8 ORDER BY TotalSales DESC;
9
10
```

Result Grid

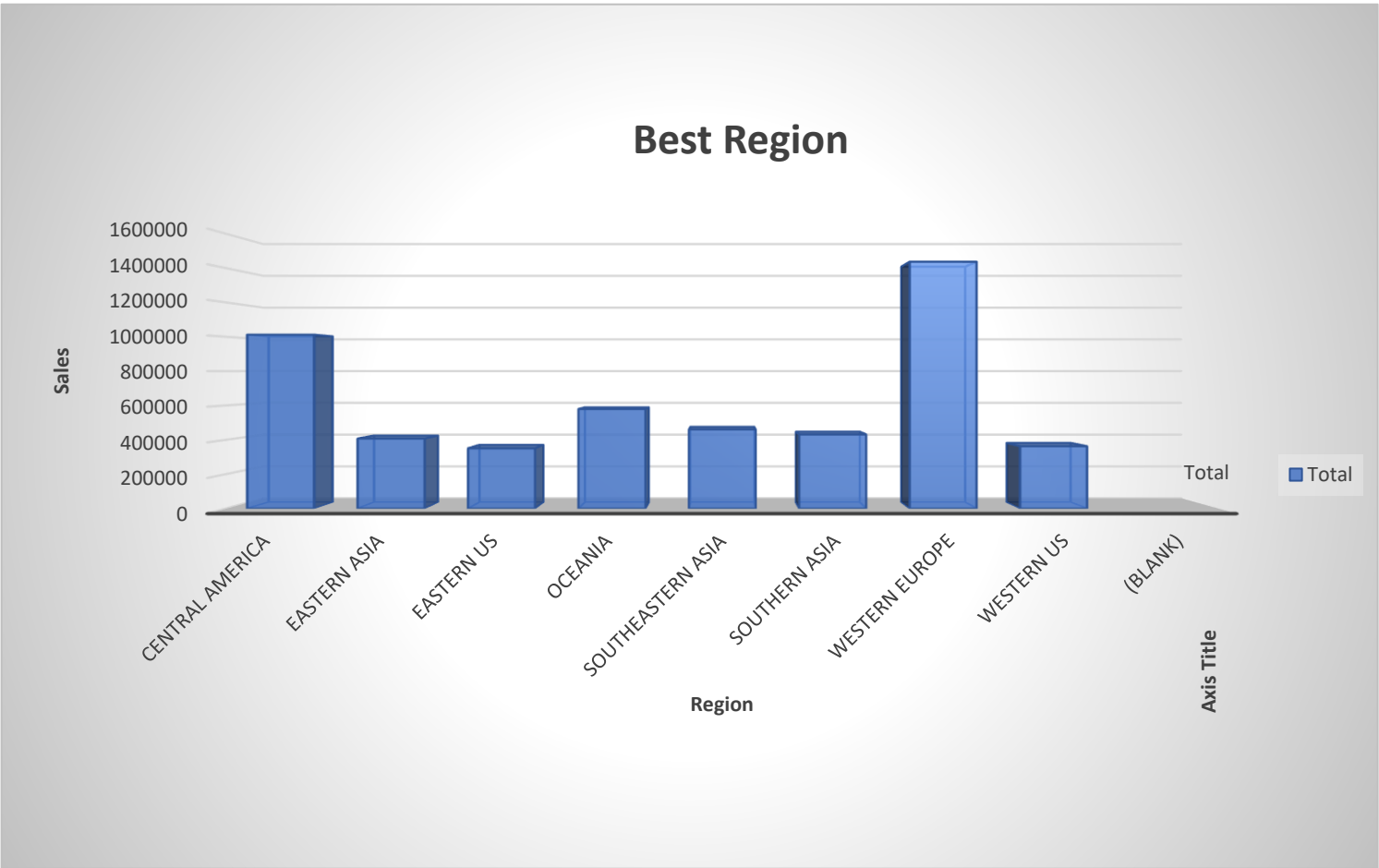
Segment	Region	TotalSales
Consumer	Western Europe	915068.0800000001
Consumer	Central America	637866.98999999995
Consumer	Oceania	579551.06999999997
Corporate	Western Europe	521206.26000000009
Consumer	Southeastern Asia	460753.22000000016
Consumer	Southern Asia	431073.5700000001
Consumer	Eastern Asia	407538.68999999999
Corporate	Central America	374220.96999999997

Result 16 x

Output

SQLAdditions: Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

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Profitability and Costs:

- Which products have the highest profit margins?

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

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SCHEMAS

Filter objects

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- global_store
- global_store_project
 - Tables
 - customer
 - orders
 - products
 - sales
 - Views
 - Stored Procedures
 - Functions
- parch
- sys

Administration Schemas

Information

No object selected

Query 1 x

Limit to 50000 rows

```
1 • SELECT
2   Products.Product_ID,
3   Products.Product_Name,
4   SUM(sales.Profit) AS TotalProfit,
5   SUM(sales.Sales_Price) AS TotalSales,
6   ROUND((SUM(sales.Profit) / SUM(sales.Sales_Price)) * 100, 2) AS ProfitMargin
7 FROM sales
8 JOIN Products ON sales.Product_ID = Products.Product_ID
9 GROUP BY Products.Product_ID, Products.Product_Name
10 ORDER BY ProfitMargin DESC;
11
```

Result Grid

	Product_Name	TotalProfit	TotalSales	ProfitMargin
5	Eureka Disposable Bags for Sanitaire Vibra Groomer I Upright ...	4.47	1.62	275.93
3	Chromcraft Training Table, Adjustable Height	87.74	38.14	230.05
0	Bush Westfield Collection Bookcases, Dark Cherry Finish, Fully...	190.85	90.88	210
3	Euro Pro Shark Stick Mini Vacuum	998.88	512.2199999999999	195.01
5	Chromcraft Coffee Table, Fully Assembled	8186.320000000001	4905.679999999999	166.87
0	Okidata B401 Printer	251.99	179.99	140
0	Zebra GK420t Direct Thermal/Thermal Transfer Printer	938.28	703.71	133.33
0	GBC Plasticlear Binding Covers	479.00999999999997	482.15999999999997	99.35
9	Lesro Training Table, Rectangular	12906.45	13558.199999999995	95.19
3	Brother MFC-9340CDW LED All-in-One Printer, Copier Scanner	319.19	341.99	93.33
5	Hon Coffee Table, Fully Assembled	4227.2	4570.119999999998	92.5

Result 4 x

Output

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Read Only Context Help Snippets

--Profit Margin

SELECT

Products.Product_ID,

Products.Product_Name,

SUM(sales.Profit) AS TotalProfit,

SUM(sales.Sales_Price) AS TotalSales,

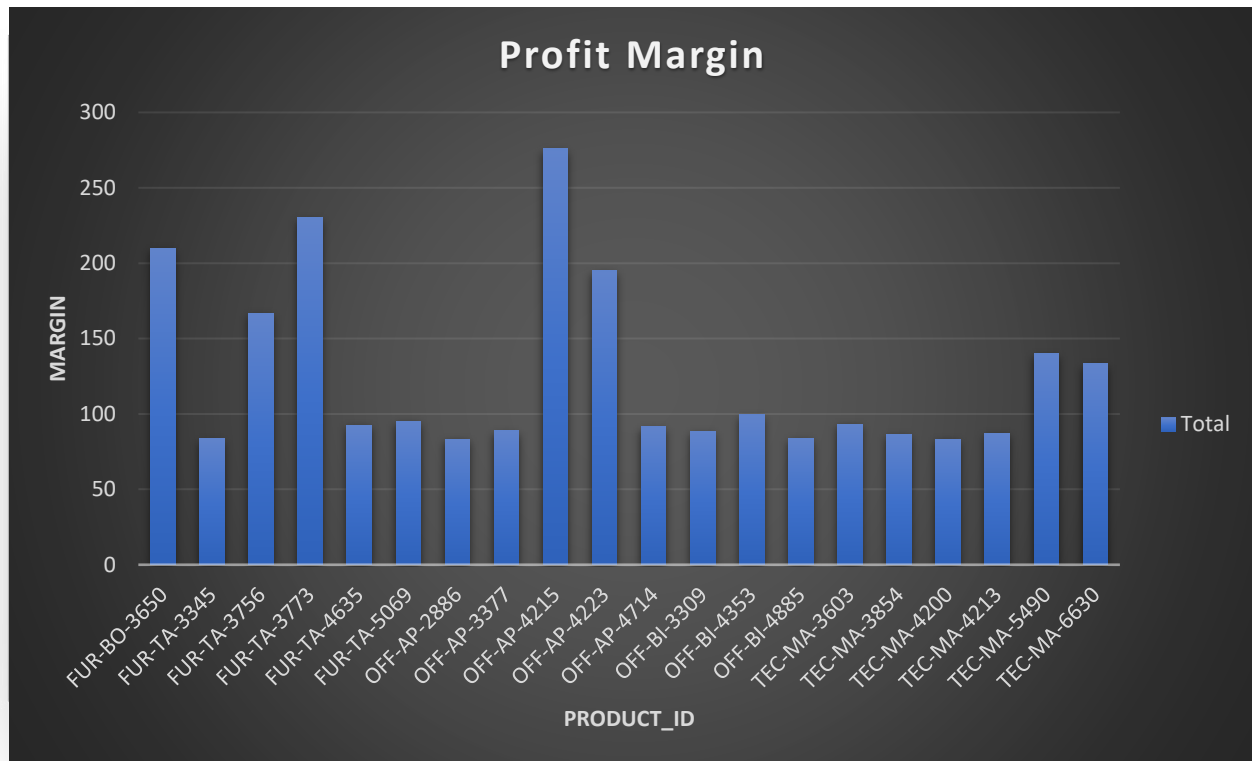
ROUND((SUM(sales.Profit) / SUM(sales.Sales_Price)) * 100, 2) AS ProfitMargin

FROM sales

JOIN Products ON sales.Product_ID = Products.Product_ID

GROUP BY Products.Product_ID, Products.Product_Name

ORDER BY ProfitMargin DESC;



- Are there products with low profits that should be re-evaluated?

MySQL Workbench

Local instance MySQL80

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Navigator

SCHEMAS

Filter objects

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- global_store
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- parch
- sys

Administration Schemas

Information

No object selected

Query 1

Limit to 50000 rows

```

1 SELECT
2   Products.Product_ID,
3   Products.Product_Name,
4   SUM(sales.Profit) AS TotalProfit,
5   SUM(sales.Sales_Price) AS TotalSales,
6   (SUM(sales.Profit) / SUM(sales.Sales_Price)) * 100 AS ProfitMargin
7 FROM sales
8 JOIN Products ON sales.Product_ID = Products.Product_ID
9 GROUP BY Products.Product_ID, Products.Product_Name
10 HAVING ProfitMargin < 5
11 ORDER BY ProfitMargin ASC;
12

```

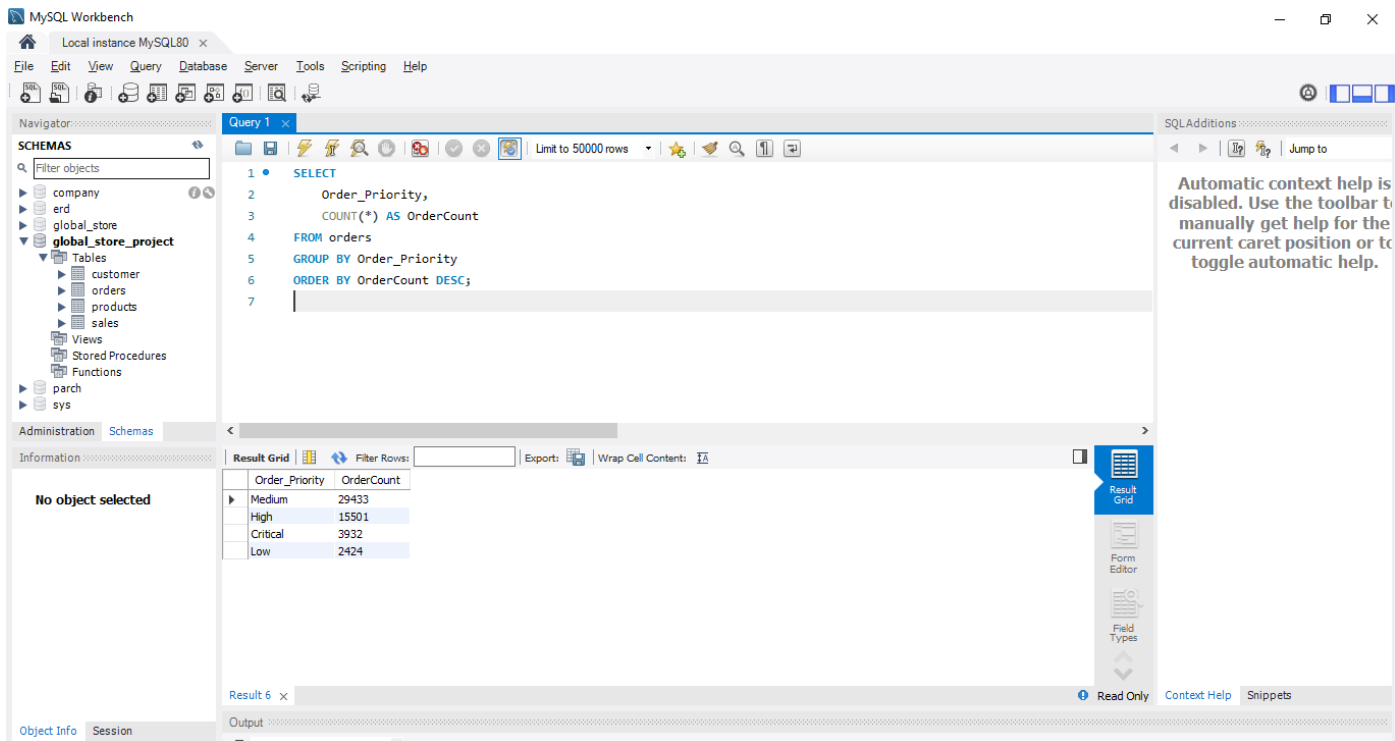
Result Grid

Product_ID	Product_Name	TotalProfit	TotalSales
OFF-FA-3080	Alliance Big Bands Rubber Bands, 12/Pack	0	118.79999999999995
OFF-ST-3399	Belkin OmniView SE Rackmount Kit	0	496.71999999999997
TEC-PH-5658	RCA H540 IRE1 DECT 6.0 4-Line Cordless Handset With Caller...	2.4	239.97
TEC-AC-6075	Sony 8GB Class 10 Micro SDHC R40 Memory Card	0.34	27.19
OFF-ST-5765	SAFCO Commercial Wire Shelving, 72h	122.5	7226.299999999999
OFF-ST-6216	Stur-D-Stor Shelving, Vertical 5-Shelf: 72"H x 36"W x 18 1/2"...	255.29999999999995	12762.699999999997
TEC-MA-5587	Penpower WorldCard Pro Card Scanner	1.83	91.48
FUR-BO-3978	DMI Eclipse Executive Suite Bookcases	1623.1799999999987	66279.59999999998
OFF-ST-6296	Tennsco Stur-D-Stor Boltless Shelving, 5 Shelves, 24" Deep	824.0400000000003	30688.279999999995
OFF-SU-5078	Letter Slitter	0.6	20.16

Result 5

Read Only Context Help Snippets

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

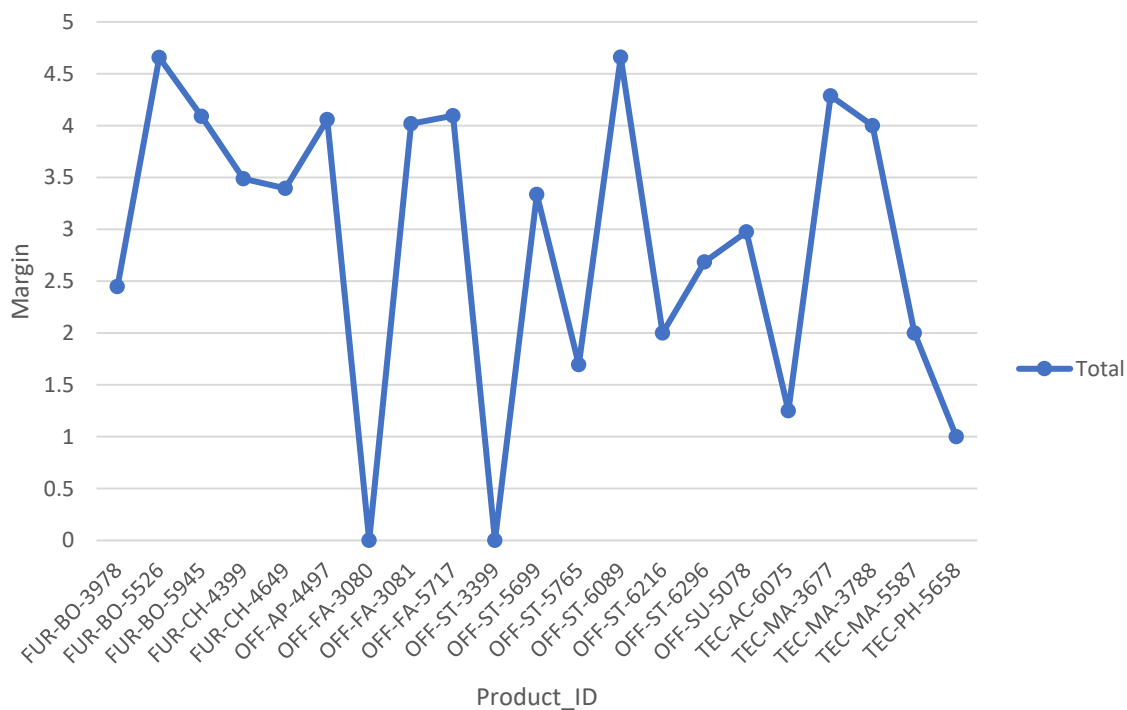


Customer Behavior:

OrderCount

- What is the distribution of orders based on order priority?

Least Profit Margin



- Are there certain customer segments that tend to place larger or more frequent orders?

The screenshot shows the MySQL Workbench interface. The 'Query 1' editor contains the following SQL query:

```
1 SELECT
2     Customer.Segment,
3     AVG(sales.Sales_Price) AS AverageOrderAmount,
4     COUNT(*) AS OrderCount
5 FROM sales
6 JOIN Customer ON sales.Customer_ID = Customer.Customer_ID
7 GROUP BY Customer.Segment
8 ORDER BY AverageOrderAmount DESC, OrderCount DESC
```

The 'Result Grid' shows the following data:

Segment	AverageOrderAmount	OrderCount
Home Office	254.63477372004527	45099
Corporate	252.55196633252433	76513
Consumer	246.80676838391068	129706

The 'Table: sales' information is displayed on the left:

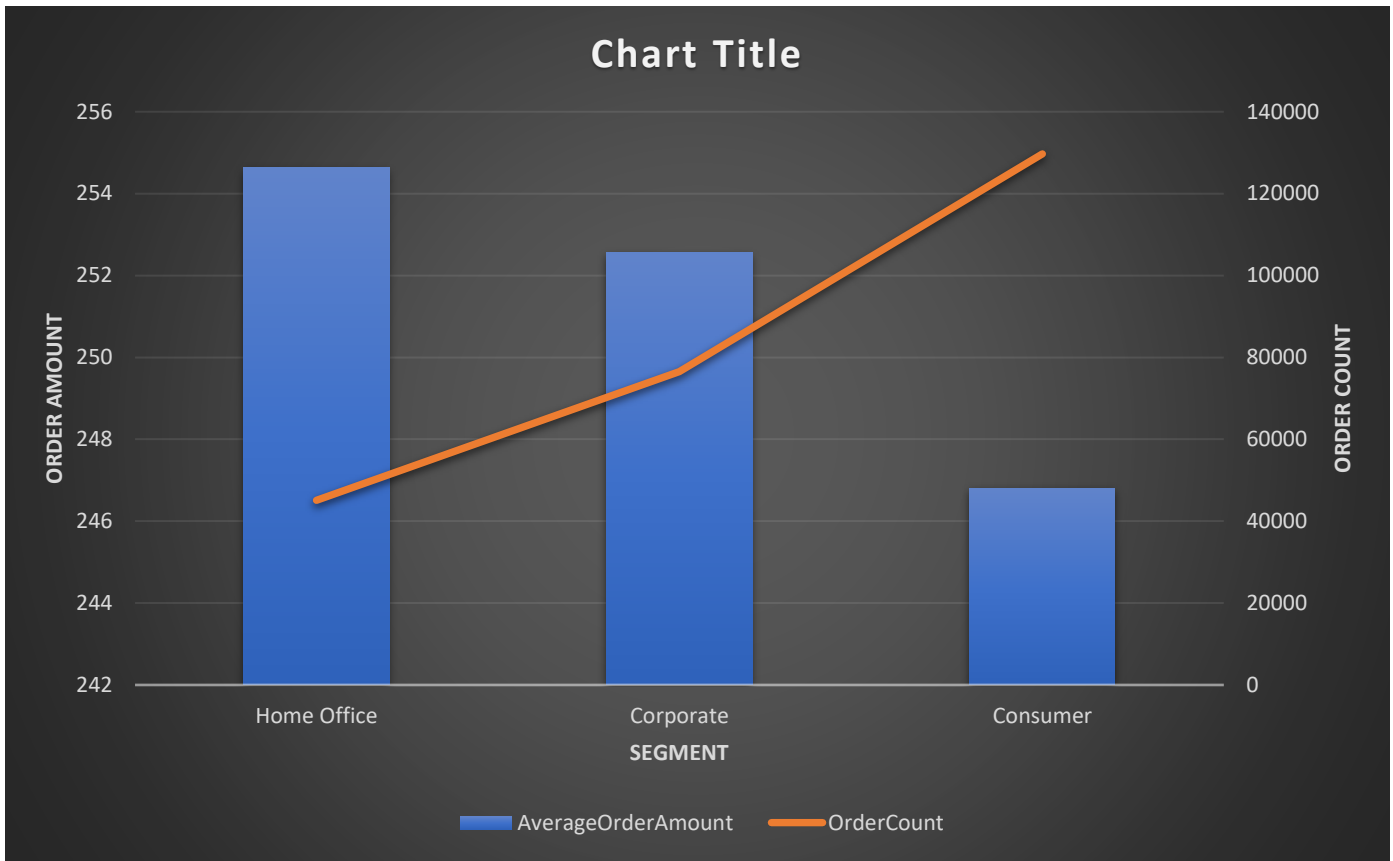
Columns:

- Row_ID: int
- Customer_ID: varchar(30)
- Product_ID: varchar(30)
- Sales_Price: double
- Quantity: int
- Discount: double
- Profit: double

The 'Action Output' pane at the bottom shows the execution of the query:

#	Time	Action	Message	Duration / Fetch
5	18:39:06	alter table sales change column 'Customer ID' Customer_ID varchar(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.031 sec
6	18:39:15	SELECT Customer.Segment, AVG(sales.Sales_Price) AS AverageOrderAmount, CO...	3 row(s) returned	0.516 sec / 0.000 sec
7	18:39:23	SELECT Customer.Segment, AVG(sales.Sales_Price) AS AverageOrderAmount, CO...	3 row(s) returned	0.390 sec / 0.000 sec

```
SELECT
    Customer.Segment,
    AVG(sales.Sales_Price) AS AverageOrderAmount,
    COUNT(*) AS OrderCount
FROM sales
JOIN Customer ON sales.Customer_ID = Customer.Customer_ID
GROUP BY Customer.Segment
ORDER BY AverageOrderAmount DESC, OrderCount DESC;
```



Order Management:

- Are there certain shipping modes/cost that are preferred by customers and should be prioritized?

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

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erd
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sys

Administration Schemas

Information

Table: orders

Columns:

Row_ID int
Order_ID varchar(25)
Order_Date date
Ship_Date date
Ship_Mode varchar(30)
Product_ID varchar(25)
Shipping_Cost varchar(30)
Order_Priority varchar(30)

Query 1

```

1 SELECT
2     Ship_Mode,
3     COUNT(*) AS Total_Orders,
4     AVG(Shipping_Cost) AS Average_Shipping_Cost
5 FROM
6     orders
7 GROUP BY
8     Ship_Mode
9 ORDER BY
10    Total_Orders
11

```

Result Grid

Ship_Mode	Total_Orders	Average_Shipping_Cost
Same Day	2701	42.9991543872639
First Class	7505	41.117327320453185
Second Class	10309	30.556774697836907
Standard Class	30775	20.092596441916786

Result 3

Output

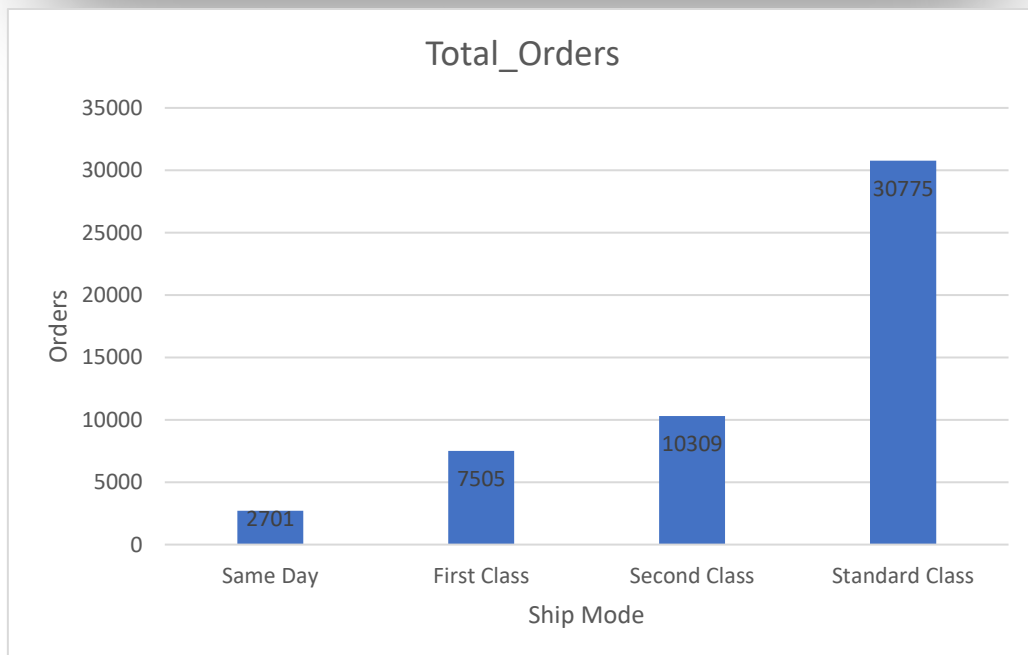
#	Time	Action	Message	Duration / Fetch
13	21:25:39	SELECT Ship_Mode, COUNT(*) AS Total_Orders, AVG(Ship_Cost) AS Average_Shi...	Error Code: 1054. Unknown column 'Ship_Cost' in field list	0.000 sec
14	21:25:58	SELECT Ship_Mode, COUNT(*) AS Total_Orders, AVG(Shipping_Cost) AS Average_...	4 row(s) returned	0.141 sec / 0.000 sec
15	21:26:34	SELECT Ship_Mode, COUNT(*) AS Total_Orders, AVG(Shipping_Cost) AS Average_...	4 row(s) returned	0.156 sec / 0.000 sec

Object Info Session

SQL Additions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

```
SELECT
Ship_Mode,
COUNT(*) AS Total_Orders,
AVG(Shipping_Cost) AS Average_Shipping_Cost
FROM
orders
GROUP BY
Ship_Mode
ORDER BY
Total_Orders ;
```



Geographical Insights:

- Which regions or countries contribute the most to sales and profits?

The screenshot shows the MySQL Workbench interface. The 'Query 1' editor contains the following SQL query:

```
2  Region,
3  Country,
4  SUM(Sales_Price) AS TotalSales,
5  SUM(Profit) AS TotalProfit
6  FROM
7  Customer
8  JOIN sales
9  ON sales.Row_ID=Customer.Row_ID
10 GROUP BY
11 Region, Country
12 ORDER BY
13 TotalSales DESC, TotalProfit DESC
14 limit 20;
15
```

The 'Result Grid' shows the following data:

Region	Country	TotalSales	TotalProfit
Oceania	Australia	925236.9100000011	97940.3800
Western Europe	France	858931.6499999999	108648.1200
Western US	United States	725457.9299999983	95577.9200
Eastern Asia	China	700562.0900000011	130682.4200
Eastern US	United States	678781.3599999985	64388.8700
Western Europe	Germany	628136.5499999982	108640.8700

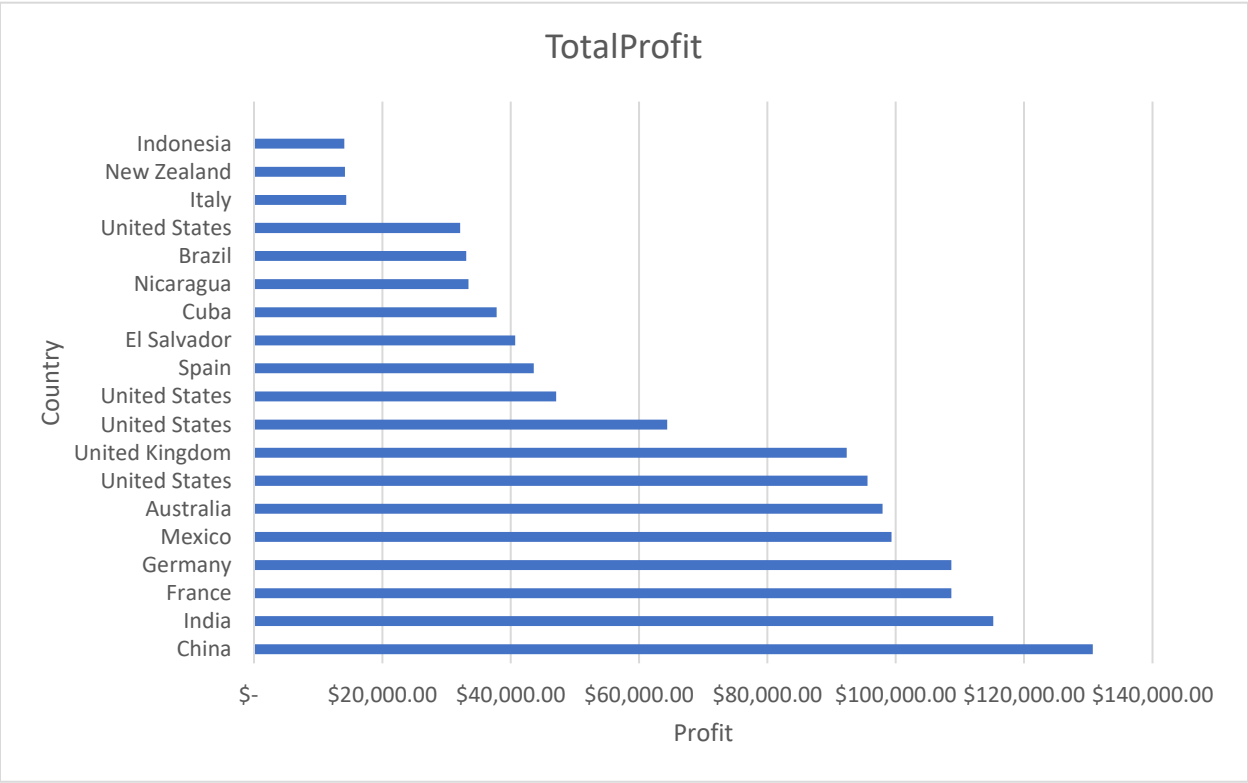
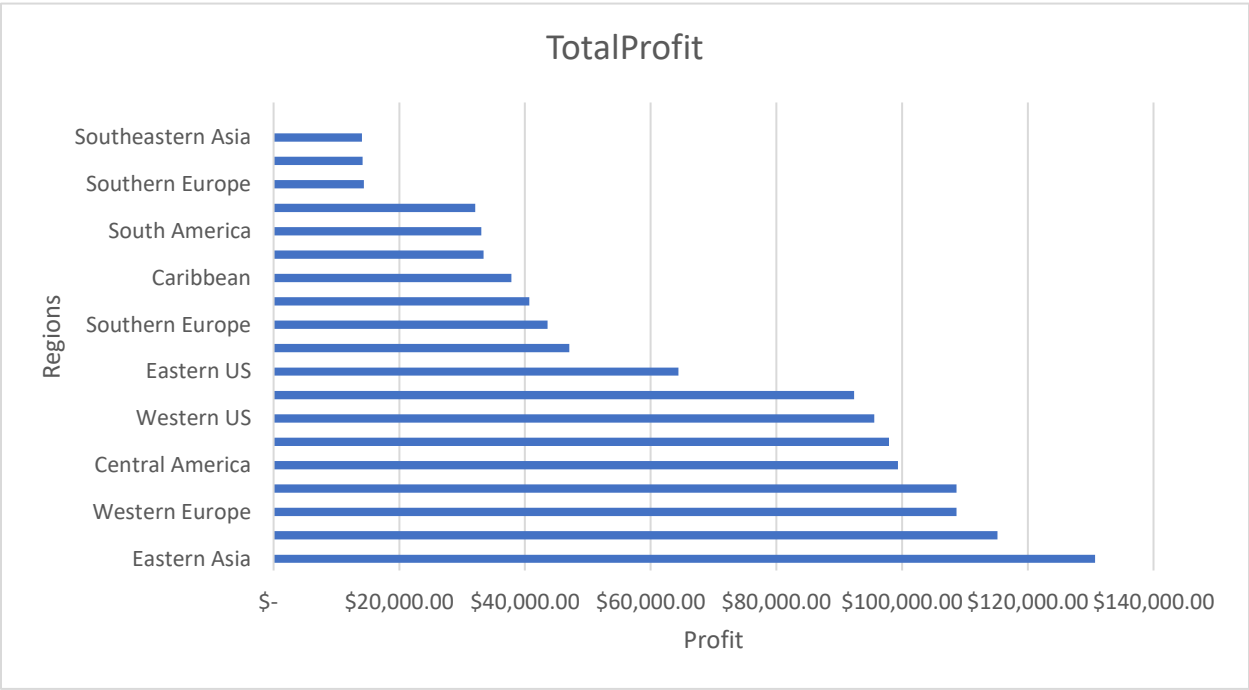
The 'Table: sales' section shows the following columns:

- Row_ID: int
- Customer_ID: varchar(30)
- Product_ID: varchar(30)
- Sales_Price: double
- Quantity: int
- Discount: int
- Profit: decimal(10,4)

The 'Output' section shows the following action output:

#	Time	Action	Message	Duration / Fetch
---	------	--------	---------	------------------

```
SELECT
    Region,
    Country,
    SUM(Sales_Price) AS TotalSales,
    SUM(Profit) AS TotalProfit
FROM
    Customer
JOIN sales
ON sales.Row_ID=Customer.Row_ID
GROUP BY
    Region, Country
ORDER BY
    TotalSales DESC, TotalProfit DESC
limit 20;
```

- Are there seasonal patterns in sales, and how can the company prepare for these fluctuations?

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with 'global_store_project' selected, showing tables like 'customer', 'orders', 'products', and 'sales'. The main editor shows a SQL query (Query 1) with the following text:

```
1 SELECT
2     MONTH(Order_Date) AS Month,
3     SUM(Sales_Price) AS TotalSales
4 FROM
5     sales
6 JOIN orders
7 ON orders.Row_ID=sales.Row_ID
8 GROUP BY
9     Month
10 ORDER BY
11     Month;
12
```

The right sidebar shows 'SQLAdditions' with a message: 'Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.'

The bottom panel shows the 'Output' tab with 'Action Output' selected. It displays a table of execution results:

#	Time	Action	Message	Duration / Fetch
25	22:10:59	SELECT	MONTH(Date) AS Month, SUM(Sales_Price) AS TotalSales FROM sales ... Error Code: 1054, Unknown column 'Date' in field list'	0.000 sec
26	22:12:23	SELECT	MONTH(Order_Date) AS Month, SUM(Sales_Price) AS TotalSales FROM s... 12 row(s) returned	0.359 sec / 0.000 sec
27	22:13:47	SELECT	CASE WHEN MONTH(Date) = 1 THEN 'January' WHEN MONTH(D... Error Code: 1054, Unknown column 'Date' in field list'	0.000 sec
28	22:14:49	SELECT	MONTH(Order_Date) AS Month, SUM(Sales_Price) AS TotalSales FROM s... 12 row(s) returned	0.313 sec / 0.000 sec

```
SELECT

    MONTH(Order_Date) AS Month,

    SUM(Sales_Price) AS TotalSales

FROM

    sales

JOIN orders

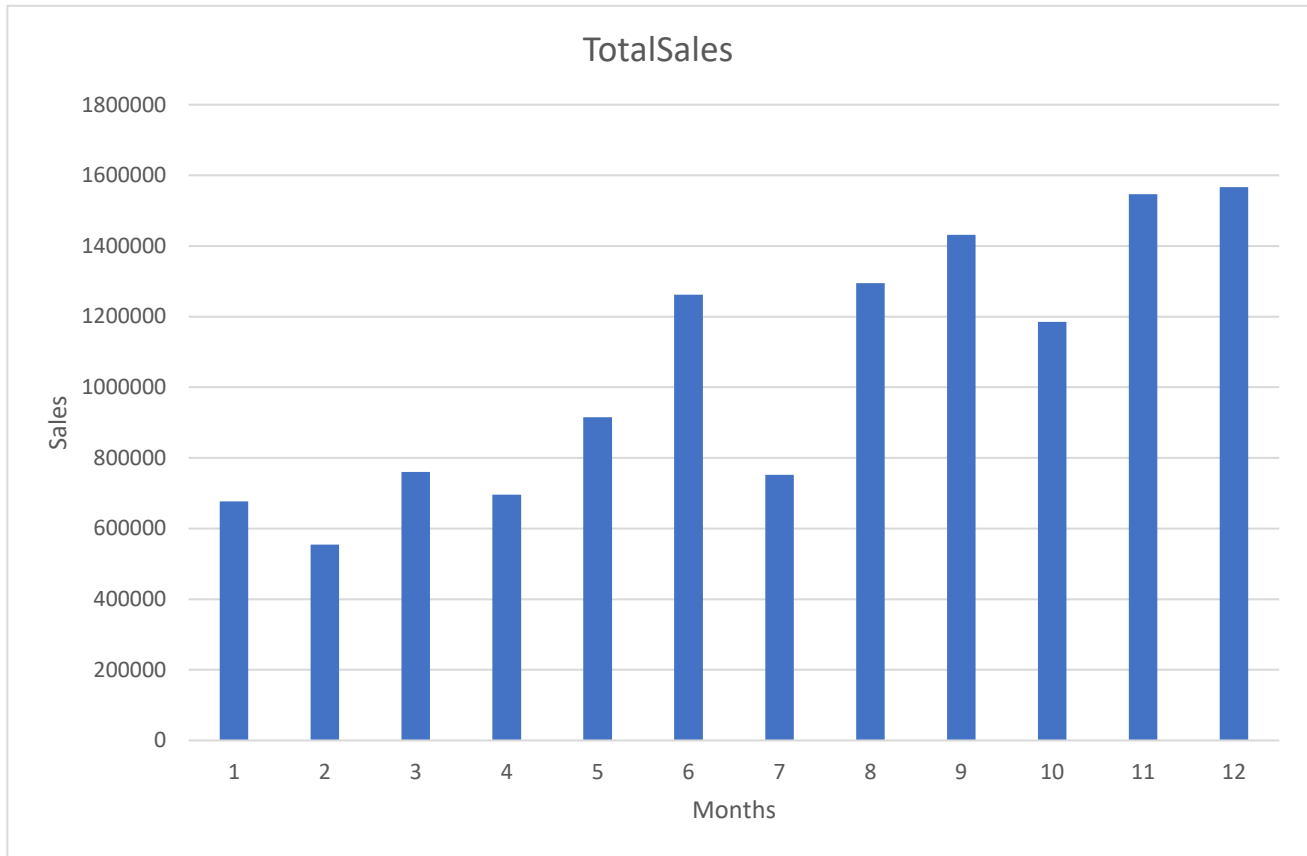
ON orders.Row_ID=sales.Row_ID

GROUP BY

    Month

ORDER BY

    Month;
```



Is there a specific market or region that has seen recent growth or decline?

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- company
- erd
- global_store
- global_store_project
 - Tables
 - customer
 - orders
 - products
 - sales
 - Views
 - Stored Procedures
 - Functions
- parch
- sys

Administration Schemas

Information

Table: orders

Columns:

- Row_ID int
- Order_ID varchar(25)
- Order_Date date
- Ship_Date date
- Ship_Mode varchar(30)
- Product_ID varchar(25)
- Shipping_Cost varchar(30)
- Order_Priority varchar(30)

Query 1

```

1 SELECT
2     Region, Order_Date,
3     SUM(Sales_Price) AS TotalSales
4 FROM
5     sales
6 JOIN customer ON sales.Row_ID = customer.Row_ID
7 join orders
8 on orders.Row_ID=sales.Row_ID
9 WHERE
10    Order_Date >= DATE_SUB(CURDATE(), INTERVAL 8 year)
11 GROUP BY
12     Region, Order_Date
13 ORDER BY
14     TotalSales DESC
15 limit 5;

```

Result Grid

Region	Order_Date	TotalSales
Eastern US	2015-10-23	13780.839999999998
Southern Asia	2015-09-26	12621
Eastern US	2015-11-18	12068.989999999998
Southern US	2015-11-05	10313.5
Southern Asia	2015-11-11	10255.619999999999

Result 18

Output

Action Output

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Read Only Context Help Snippets

```

SELECT
    Region,Order_Date,
    SUM(Sales_Price) AS TotalSales
FROM
    sales
JOIN customer ON sales.Row_ID = customer.Row_ID
join orders
on orders.Row_ID=sales.Row_ID
WHERE
    Order_Date >= DATE_SUB(CURDATE(), INTERVAL 8 year)
GROUP BY
    Region,Order_Date
ORDER BY

```

Discount Strategy:

- Is the current discount strategy effective in driving sales and profitability?

The screenshot shows the MySQL Workbench interface. The 'Query Editor' window contains the following SQL query:

```

1 SELECT
2     products.Category,
3     AVG(sales.Discount) AS AvgDiscount,
4     AVG(sales.Sales_Price) AS AvgSalesPrice,
5     AVG(sales.Profit) AS AvgProfit
6 FROM
7     sales
8 JOIN
9     products ON sales.Product_ID = products.Product_ID
10 WHERE
11     sales.Discount > 0
12 GROUP BY
13     products.Category
14 ORDER BY
15     AvgDiscount DESC;
16

```

The 'Result Grid' shows the following data:

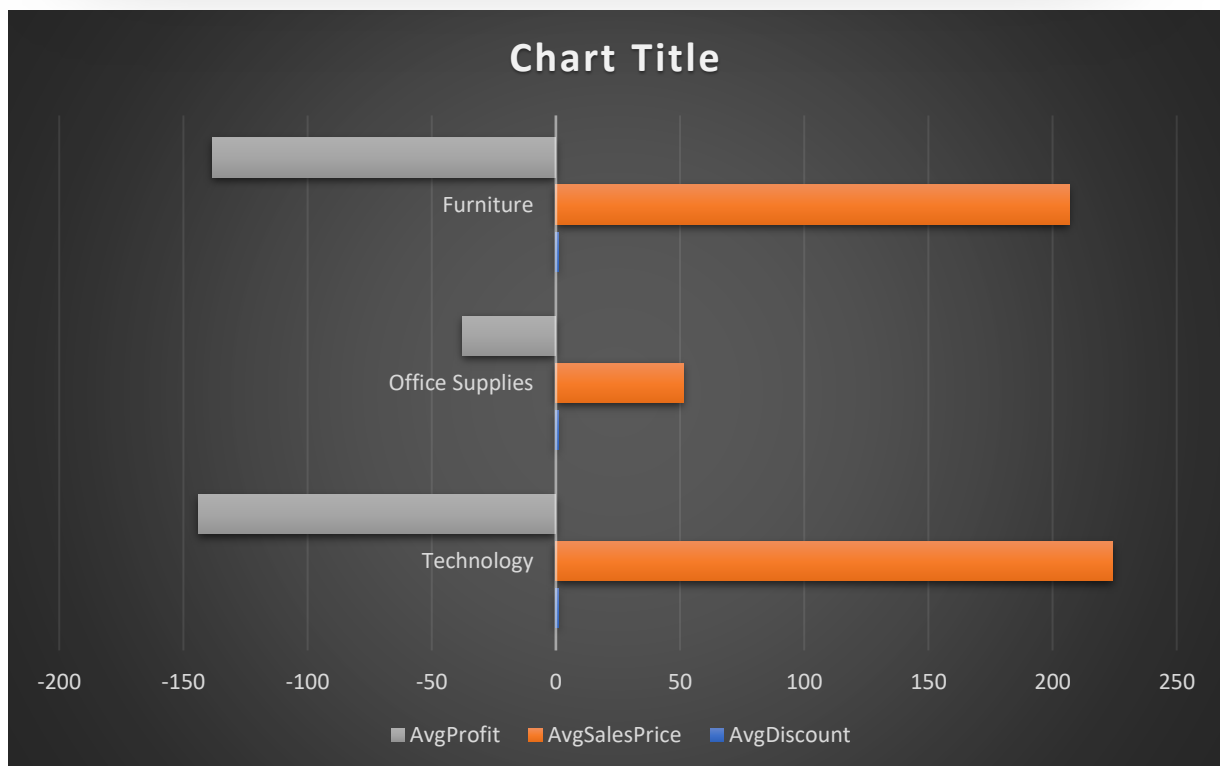
Category	AvgDiscount	AvgSalesPrice	AvgProfit
Technology	1.0000	224.23570110700973	-143.85711650
Office Supplies	1.0000	51.30745765791821	-37.55194013
Furniture	1.0000	206.64525541962118	-138.18744151

The 'Navigator' panel on the left shows the database schema, including tables like 'customer', 'orders', 'products', and 'sales'. The 'Information' panel at the bottom shows the 'customer' table structure.

```

SELECT
    products.Category,
    AVG(sales.Discount) AS AvgDiscount,
    AVG(sales.Sales_Price) AS AvgSalesPrice,
    AVG(sales.Profit) AS AvgProfit
FROM
    sales
JOIN
    products ON sales.Product_ID = products.Product_ID
WHERE
    sales.Discount > 0
GROUP BY
    products.Category
ORDER BY
    AvgDiscount DESC;

```



- Are there specific product categories or customer segments that respond well to discounts?

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

company
erd
global_store
global_store_project
Tables
customer
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products
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Views
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Functions
parch
sys

Administration Schemas

Information

Query 1 x

Limit to 50000 rows

```
5 AVG(sales.Sales_Price) AS AvgSalesPrice,  
6 AVG(sales.Profit) AS AvgProfit  
7 FROM  
8 sales  
9 JOIN  
10 products ON sales.Product_ID = products.Product_ID  
11 JOIN  
12 customer ON sales.Customer_ID = customer.Customer_ID  
13 WHERE  
14 sales.Discount > 0  
15 GROUP BY  
16 products.Category, customer.Segment  
17
```

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

table: customer

Columns:

Row_ID int PK
Customer_ID varchar(30)
Customer_Name varchar(200)
Segment varchar(30)
Postal_Code varchar(15)
City varchar(50)
State varchar(200)
Country varchar(50)
Region varchar(30)
Market varchar(30)

Result Grid

Category	Segment	AvgDiscount	AvgSalesPrice	AvgProfit
Technology	Consumer	1.0000	208.38849675901275	-140.49454201
Technology	Corporate	1.0000	193.53613514791735	-144.18699174
Office Supplies	Consumer	1.0000	53.89183612681971	-40.48849165
Office Supplies	Corporate	1.0000	43.49458245653305	-32.20266487
Office Supplies	Home Office	1.0000	48.91196556898152	-36.79880060
Furniture	Home Office	1.0000	220.21857734359773	-117.68532121
Furniture	Consumer	1.0000	207.6629795402109	-127.87928884
Technology	Home Office	1.0000	232.50658584580154	-138.35705953
Furniture	Corporate	1.0000	170.31039321443075	-130.71952762

Result 22 x

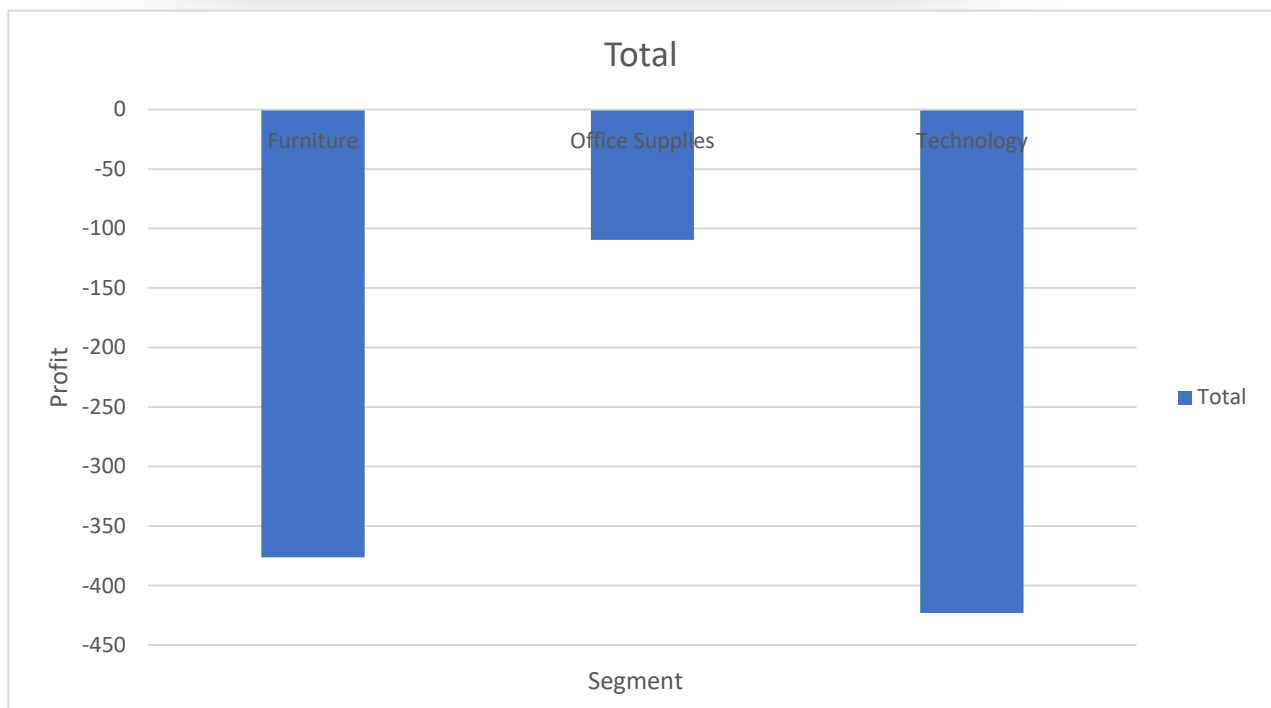
Read Only Context Help Snippets

Output

```

SELECT
    products.Category,
    customer.Segment,
    AVG(sales.Discount) AS AvgDiscount,
    AVG(sales.Sales_Price) AS AvgSalesPrice,
    AVG(sales.Profit) AS AvgProfit
FROM
    sales
JOIN
    products ON sales.Product_ID = products.Product_ID
JOIN
    customer ON sales.Customer_ID = customer.Customer_ID
WHERE
    sales.Discount > 0
GROUP BY
    products.Category, customer.Segment

```



Insights:

Sales Analysis:

- What are the highest selling products in terms of total sales and quantity?
 - ✓ The products with the highest total quantities sold are "Staples," and Given the high demand for these items, the company should ensure robust inventory management to meet customer needs promptly.
- Which product categories and sub-categories contribute the most to sales?
 - ✓ The top-selling product categories and sub-categories, such as "Office Supplies - Storage," "Technology - Phones," and "Furniture - Chairs," reveal customer preferences and guide strategic decisions for inventory, marketing, and product development. Evaluate the profit margins of these top-selling products to assess their contribution to overall profitability.
- Which product categories and sub-categories contribute the least to sales?
 - ✓ The low-selling product categories and sub-categories, such as "Office Supplies - Labels," "Furniture - Tables," and "Technology - Machines," indicate potential areas for improvement and optimization in terms of sales strategies, inventory management, and customer engagement.
- Are there any specific segments or regions that consistently drive higher sales?
 - ✓ Customer segments such as "Consumer" in regions like "Western Europe," "Oceania," and "Central America" consistently exhibit high sales, suggesting strong market demand and potential growth opportunities.

Profitability and Costs:

- Which products have the highest profit margins?
 - ✓ Products like "Southworth Structures Collection" and "Tops Green Bar Computer Printout Paper" exhibit a high 50% profit margin, showcasing strong profitability in these items.
- Are there products with low profits that should be re-evaluated?
 - ✓ Products with significantly negative profit margins, such as "Eureka Disposable Bags" and "Chromcraft Training Table," exhibit substantial losses relative to sales, requiring evaluation and potential adjustments to pricing, costs, or sales strategies.

Customer Behavior:

- What is the distribution of orders based on order priority?
 - ✓ Order distribution analysis reveals that "Medium" and "High" order priorities are the most frequent, while "Critical" and "Low" priorities are relatively less common.
- Are there certain customer segments that tend to place larger or more frequent orders?

- ✓ Order distribution by shipping modes reveals that while "Standard Class" is the most common and cost-efficient, "Same Day" shipping boasts the highest average shipping cost, and "Second Class" handles the highest volume of orders.

Order Management:

- Are there certain shipping modes/cost that are preferred by customers and should be prioritized?
 - ✓ Shipping mode analysis indicates that customers value faster delivery options, as "Same Day" and "First Class" have higher average shipping costs and substantial order counts, while "Standard Class" remains the most popular choice due to its larger volume of orders.

Geographical Insights:

- Which regions or countries contribute the most to sales and profits?
 - ✓ Prominent contributors to sales and profits include Australia in Oceania, France in Western Europe, and China in Eastern Asia, indicating lucrative markets that significantly impact the company's financial performance.

Market Trends:

- Are there seasonal patterns in sales, and how can the company prepare for these fluctuations?
 - ✓ Sales exhibit clear seasonal patterns, with strong peaks in June, August, November, and December, suggesting opportunities for targeted marketing and inventory management strategies during these periods.
- Is there a specific market or region that has seen recent growth or decline?
 - ✓ Recent sales data highlights noteworthy transactions in Eastern US, Southern Asia, and the Southern US regions, indicating potential growth opportunities and market trends.

Discount Strategy:

- Is the current discount strategy effective in driving sales and profitability?
 - ✓ High discounts are applied to products in the Technology, Furniture, and Office Supplies categories, leading to notable reductions in average sales prices and negative average profits in these categories.
- Are there specific product categories or customer segments that respond well to discounts?
 - ✓ Various customer segments respond to high discounts differently across product categories: In the Technology, Office Supplies, and Furniture categories, the Consumer and Corporate segments exhibit significantly reduced average sales prices and negative average profits, suggesting a need for tailored pricing strategies for these segments

Recommendations:

- **Focus on High-Demand Products:** Allocate resources to ensure a steady supply of highest-selling products like "Staples" and "Cardinal Index Tab, Clear" to meet customer demand promptly.
- **Optimize Top-Selling Categories:** Invest in inventory and marketing strategies for top-selling categories like "Office Supplies - Storage," "Technology - Phones," and "Furniture - Chairs" to maximize revenue and profitability.
- **Revamp Low-Selling Categories:** Evaluate low-selling categories such as "Office Supplies - Labels" and "Furniture - Tables" to identify improvement opportunities and enhance sales strategies.
- **Segment and Regional Strategies:** Capitalize on the consistent sales performance of segments like "Consumer" in regions like "Western Europe," "Oceania," and "Central America" by tailoring marketing efforts and product offerings to these markets.
- **Maximize Profitable Products:** Continue to emphasize products with high-profit margins like "South worth Structures Collection" and "Tops Green Bar Computer Printout Paper," while re-evaluating products with negative profit margins for potential adjustments.
- **Customer-Centric Approach:** Prioritize customer segments based on order priority and preferred shipping modes like "Same Day" and "First Class," ensuring efficient and prompt delivery for enhanced customer satisfaction.
- **Strategic Discounts:** Carefully assess discount strategies for Technology, Furniture, and Office Supplies categories, considering their impact on average sales prices and profitability to strike a balance between attracting customers and maintaining profitability.

- **Seasonal Planning:** Leverage the seasonal patterns identified, especially during peak months like June, August, November, and December, to implement targeted marketing campaigns and optimize inventory management.
- **Market Trend Analysis:** Capitalize on emerging trends identified in regions like Eastern US, Southern Asia, and the Southern US, where recent growth has been observed, by tailoring marketing and business strategies to capitalize on these trends.
- **Continuous Monitoring and Adaptation:** Implement data-driven decision-making by continually monitoring sales, profitability, customer behavior, and market trends, and adapting strategies based on real-time insights.