

Case Study Report: Analyzing Sales and Payment Data

Executive Summary

In this case study, we explore the analysis of sales and Payment data using SQL queries to extract valuable insights. We have employed effective SQL querying techniques to retrieve relevant data and have visualized the results using impactful charts to facilitate a better understanding of the data trends.

Introduction

The objective of this case study was to gain insights from sales, Payment data and present the findings through clear and informative charts. The data used for this analysis covers a specific time period and includes information on sales transactions, payment details. The data sets are taken from Kaggle.

Methodology

Data Extraction

I began by extracting the necessary data using SQL queries. This involved:

1. **Sales Data:** Extracting sales data, including City, Price of Product, product information, and sales amounts.
2. **Payment Data:** Collecting payment data, including client name, pay earned after tax, contact email, service name, hours worked, and invoice date.

Data Analysis

With the data at hand, we performed the following analyses:

1. **Sales Trends:** I identified sales trends by examining the sales figures with in different price ranges, allowing us to understand the seasonality and growth patterns.
2. **Payment Trends:** I identified each client payment and their hours worked and examine which client works more and receive high salary.

SQL Queries

I used the following SQL queries to extract and manipulate the data:

For Sales Data

```
select city, sales, ProductType as Product_Type, priceeach as Price_Of_Product,
count(CustomerName) as CustomerCount,
sum(case when priceeach>=37 and priceeach <=57 then sales else 0 end ) as
Total_No_Of_Sales_With_In_PriceRange37_57,
sum(case when priceeach>57 and priceeach <=78 then sales else 0 end ) as
Total_No_Of_Sales_With_In_PriceRange58_78 ,
```

```
sum(case when priceeach>78 and priceeach <=100 then sales else 0 end ) as
```

```
Total_No_Of_Sales_With_In_PriceRange79_100
```

```
from OrderAndCustomers
```

```
group by city, ProductType, priceeach, sales order by city;
```

[For Payment Data](#)

```
select distinct c.Client_name, c.contact_email, s.service_name,i.hours_worked,
```

```
round((s.hourly_rate * i.hours_worked)-(i.Tax_Cut_In_Percentage*(s.hourly_rate * i.hours_worked)),2)
```

```
as Pay_Earned_After_Tax, i.invoice_date
```

```
from Services s inner join Invoices i on i.service_id=s.service_id
```

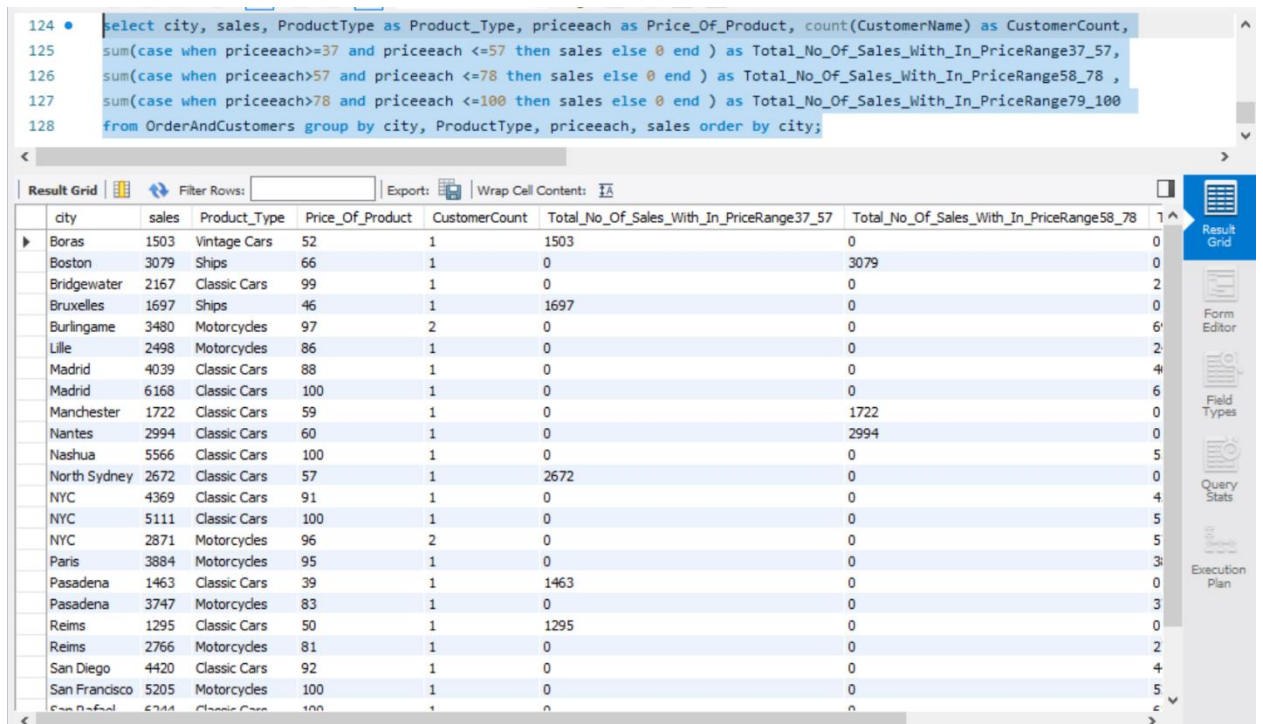
```
inner join Clients c on c.client_id=i.client_id;
```

[Charts and Visualizations](#)

We translated the SQL query results into meaningful charts to visualize the data trends:

[For Sales Data](#)

- [Data Extracted After Querying](#)



The screenshot shows a SQL query editor with a query and its results in a table grid. The query is as follows:

```
124 • select city, sales, ProductType as Product_Type, priceeach as Price_Of_Product, count(CustomerName) as CustomerCount,
125 sum(case when priceeach>=37 and priceeach <=57 then sales else 0 end ) as Total_No_Of_Sales_With_In_PriceRange37_57,
126 sum(case when priceeach>57 and priceeach <=78 then sales else 0 end ) as Total_No_Of_Sales_With_In_PriceRange58_78 ,
127 sum(case when priceeach>78 and priceeach <=100 then sales else 0 end ) as Total_No_Of_Sales_With_In_PriceRange79_100
128 from OrderAndCustomers group by city, ProductType, priceeach, sales order by city;
```

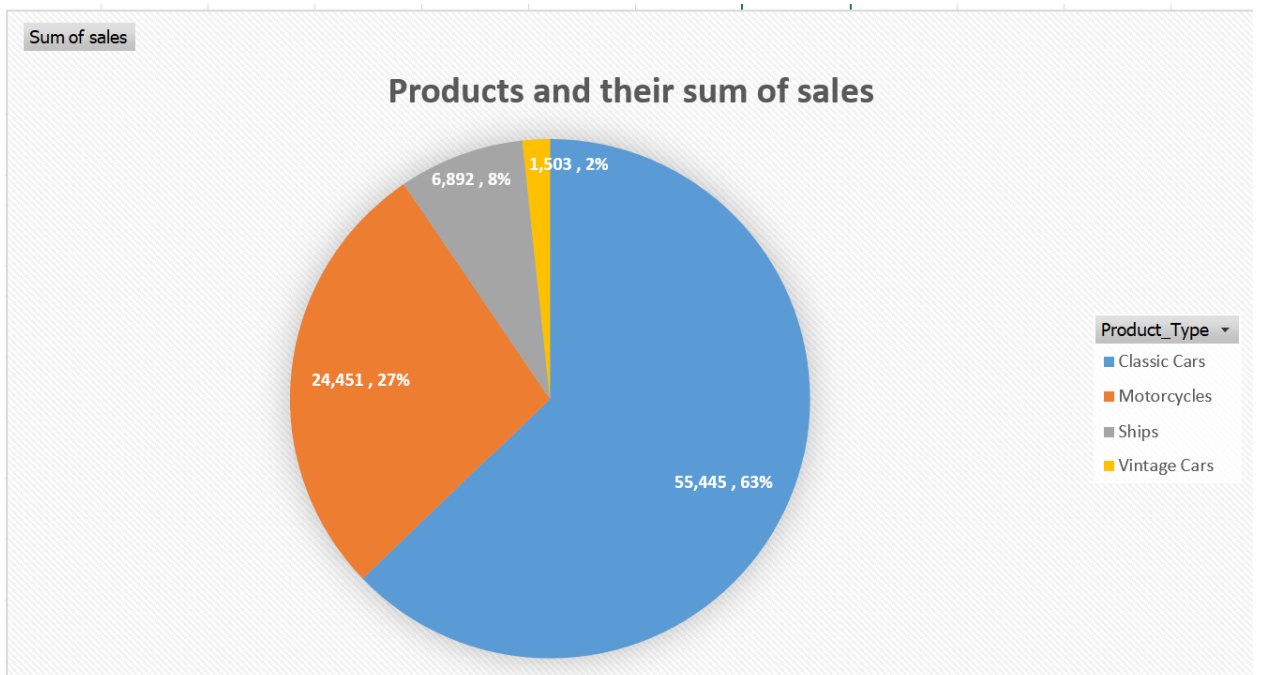
The results are displayed in a table grid with the following columns:

city	sales	Product_Type	Price_Of_Product	CustomerCount	Total_No_Of_Sales_With_In_PriceRange37_57	Total_No_Of_Sales_With_In_PriceRange58_78	Total_No_Of_Sales_With_In_PriceRange79_100
Boras	1503	Vintage Cars	52	1	1503	0	0
Boston	3079	Ships	66	1	0	3079	0
Bridgewater	2167	Classic Cars	99	1	0	0	2
Bruxelles	1697	Ships	46	1	1697	0	0
Burlingame	3480	Motorcycles	97	2	0	0	6
Lille	2498	Motorcycles	86	1	0	0	2
Madrid	4039	Classic Cars	88	1	0	0	4
Madrid	6168	Classic Cars	100	1	0	0	6
Manchester	1722	Classic Cars	59	1	0	1722	0
Nantes	2994	Classic Cars	60	1	0	2994	0
Nashua	5566	Classic Cars	100	1	0	0	5
North Sydney	2672	Classic Cars	57	1	2672	0	0
NYC	4369	Classic Cars	91	1	0	0	4
NYC	5111	Classic Cars	100	1	0	0	5
NYC	2871	Motorcycles	96	2	0	0	5
Paris	3884	Motorcycles	95	1	0	0	3
Pasadena	1463	Classic Cars	39	1	1463	0	0
Pasadena	3747	Motorcycles	83	1	0	0	3
Reims	1295	Classic Cars	50	1	1295	0	0
Reims	2766	Motorcycles	81	1	0	0	2
San Diego	4420	Classic Cars	92	1	0	0	4
San Francisco	5205	Motorcycles	100	1	0	0	5
San Rafael	6244	Classic Cars	100	1	0	0	6

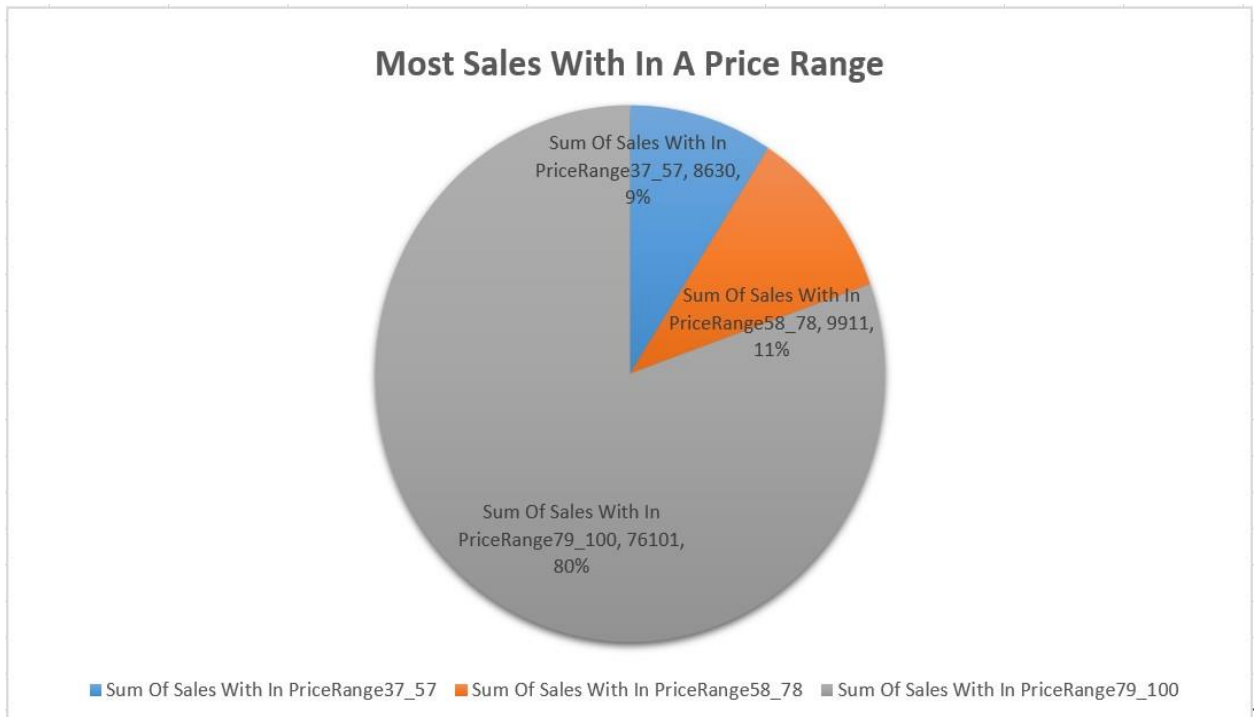
- Extracted Data in excel to Analyze trends

	A	B	C	D	E	F	G	H
1	City	Sales	Product_Type	Price_Of_Product	Customer_Count	Total No Of Sales With In PriceRange37_57	Total No Of Sales With In PriceRange58_78	Total No Of Sales With In PriceRange79_100
2	Boras	1503	Vintage Cars	52	1	1503	0	0
3	Boston	3079	Ships	66	1	0	3079	0
4	Bridgewater	2167	Classic Cars	99	1	0	0	2167
5	Bruxelles	1697	Ships	46	1	1697	0	0
6	Burlingame	3480	Motorcycles	97	2	0	0	6960
7	Lille	2498	Motorcycles	86	1	0	0	2498
8	Madrid	4039	Classic Cars	88	1	0	0	4039
9	Madrid	6168	Classic Cars	100	1	0	0	6168
10	Manchester	1722	Classic Cars	59	1	0	1722	0
11	Nantes	2994	Classic Cars	60	1	0	2994	0
12	Nashua	5566	Classic Cars	100	1	0	0	5566
13	North Sydney	2672	Classic Cars	57	1	2672	0	0
14	NYC	4369	Classic Cars	91	1	0	0	4369
15	NYC	5111	Classic Cars	100	1	0	0	5111
16	NYC	2871	Motorcycles	96	2	0	0	5742
17	Paris	3884	Motorcycles	95	1	0	0	3884
18	Pasadena	1463	Classic Cars	39	1	1463	0	0
19	Pasadena	3747	Motorcycles	83	1	0	0	3747
20	Reims	1295	Classic Cars	50	1	1295	0	0
21	Reims	2766	Motorcycles	81	1	0	0	2766
22	San Diego	4420	Classic Cars	92	1	0	0	4420
23	San Francisco	5205	Motorcycles	100	1	0	0	5205
24	San Rafael	6244	Classic Cars	100	1	0	0	6244
25	Singapore	4873	Classic Cars	100	1	0	0	4873
26	Strasbourg	2342	Classic Cars	87	1	0	0	2342
27	Toulouse	2116	Ships	62	1	0	2116	0
28						Sum Of Sales With In PriceRange37_57	Sum Of Sales With In PriceRange58_78	Sum Of Sales With In PriceRange79_100
29						8630	9911	76101

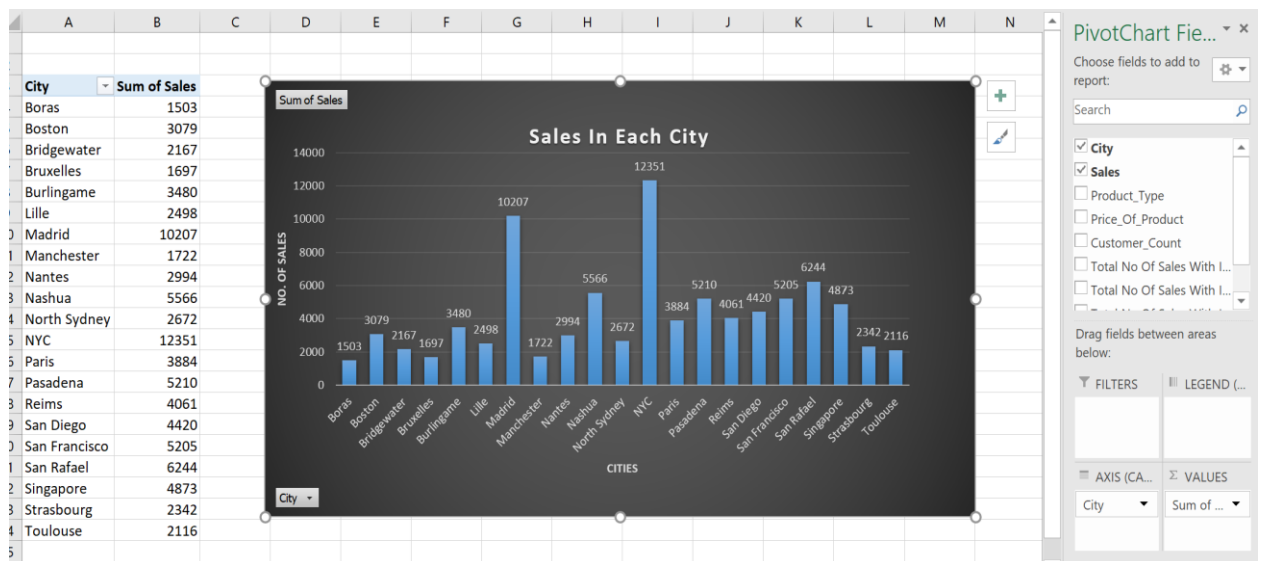
- Product Wise Most Sales



- Most Sales with in Price Ranges



- Total Sales in each City



Insights from Analysis of Sales Data

1. The most sales are in New York city. And the top 3 cities with most sales are NewYork, Madrid and San Rafael.
2. The most no of sales are in the price range 79_100 almost 80 percent of the total sales data that we have.
3. The best seller product type is classic cars, that is 63 percent of the all the products sales data that we have.

For Payment Data

- **Data Extracted After Querying**

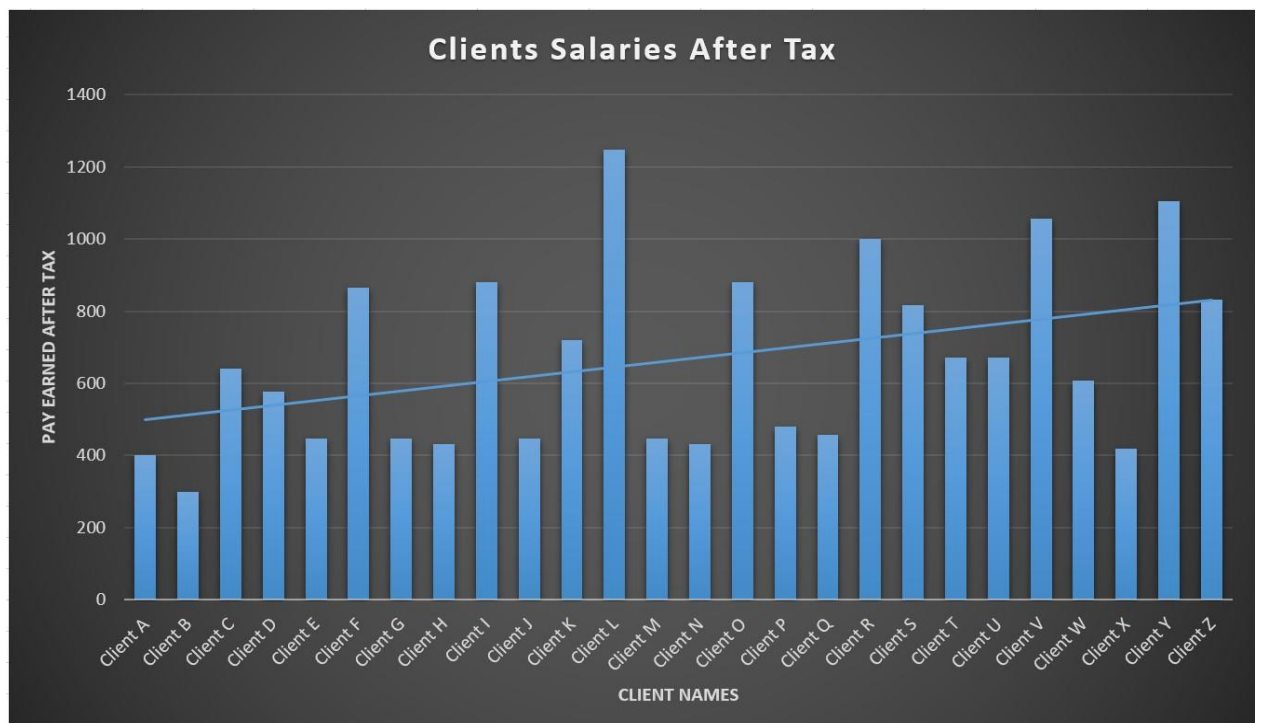
```
118 • select distinct c.Client_name,  
119 round((s.hourly_rate * i.hours_worked)-(i.Tax_Cut_In_Percentage*(s.hourly_rate * i.hours_worked)),2)  
120 as Pay_Earned_After_Tax,c.contact_email, s.service_name,i.hours_worked, i.invoice_date  
121 from Services s inner join Invoices i on i.service_id=s.service_id  
122 inner join Clients c on c.client_id=i.client_id;
```

	Client_name	Pay_Earned_After_Tax	contact_email	service_name	hours_worked	invoice_date
▶	Client A	400.00	clientA@email.com	Service X	10	2023-08-01
	Client B	300.00	clientB@email.com	Service Y	5	2023-08-05
	Client C	640.00	clientC@email.com	Service Z	8	2023-08-15
	Client D	576.00	clientD@email.com	Service W	12	2023-08-20
	Client E	448.00	clientE@email.com	Service V	7	2023-08-25
	Client F	864.00	clientF@email.com	Service U	9	2023-08-30
	Client G	448.00	clientG@email.com	Service T	8	2023-09-05
	Client H	432.00	clientH@email.com	Service S	6	2023-09-10
	Client I	880.00	clientI@email.com	Service R	10	2023-09-15
	Client J	448.00	clientJ@email.com	Service Q	7	2023-09-20
	Client K	720.00	clientK@email.com	Service P	9	2023-09-25
	Client L	1248.00	clientL@email.com	Service O	12	2023-09-30
	Client M	448.00	clientM@email.com	Service N	8	2023-10-05
	Client N	432.00	clientN@email.com	Service M	6	2023-10-10
	Client O	880.00	clientO@email.com	Service L	10	2023-10-15
	Client P	480.00	clientP@email.com	Service K	8	2023-10-05
	Client Q	456.00	clientQ@email.com	Service J	6	2023-10-10
	Client R	1000.00	clientR@email.com	Service I	10	2023-10-15
	Client S	816.00	clientS@email.com	Service H	12	2023-10-20
	Client T	672.00	clientT@email.com	Service G	8	2023-10-25
	Client U	672.00	clientU@email.com	Service F	7	2023-10-30
	Client V	1056.00	clientV@email.com	Service E	12	2023-10-20
	Client W	608.00	clientW@email.com	Service D	8	2023-10-25
	Client V	420.00	clientV@email.com	Service C	7	2023-10-20

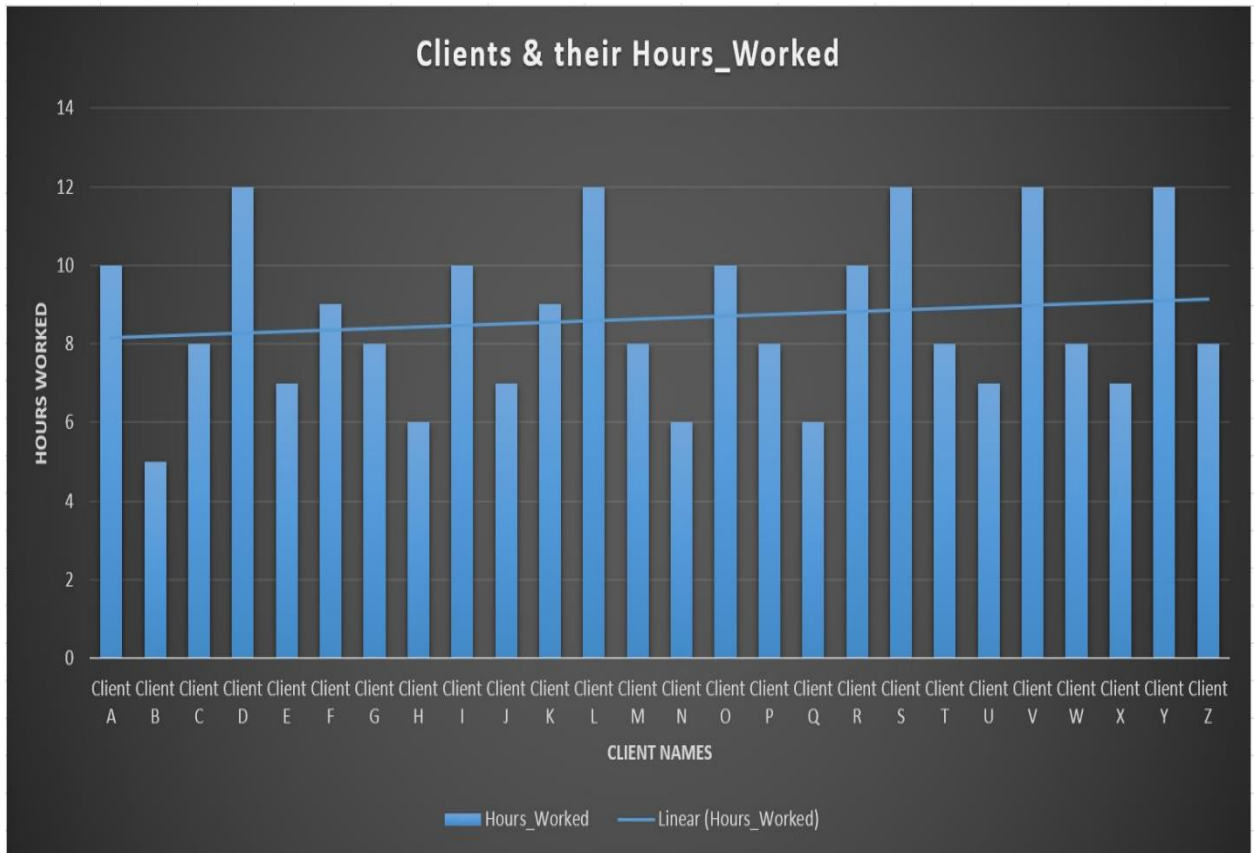
- **Extracted Data in excel to Analyze trends**

Client_name	Pay_Earned_After_Tax	Contact_Email	Service_Name	Hours_Worked	invoice_date
Client A	400.00	clientA@email.com	Service X	10	8/1/2023
Client B	300.00	clientB@email.com	Service Y	5	8/5/2023
Client C	640.00	clientC@email.com	Service Z	8	8/15/2023
Client D	576.00	clientD@email.com	Service W	12	8/20/2023
Client E	448.00	clientE@email.com	Service V	7	8/25/2023
Client F	864.00	clientF@email.com	Service U	9	8/30/2023
Client G	448.00	clientG@email.com	Service T	8	9/5/2023
Client H	432.00	clientH@email.com	Service S	6	9/10/2023
Client I	880.00	clientI@email.com	Service R	10	9/15/2023
Client J	448.00	clientJ@email.com	Service Q	7	9/20/2023
Client K	720.00	clientK@email.com	Service P	9	9/25/2023
Client L	1,248.00	clientL@email.com	Service O	12	9/30/2023
Client M	448.00	clientM@email.com	Service N	8	10/5/2023
Client N	432.00	clientN@email.com	Service M	6	10/10/2023
Client O	880.00	clientO@email.com	Service L	10	10/15/2023
Client P	480.00	clientP@email.com	Service K	8	10/5/2023
Client Q	456.00	clientQ@email.com	Service J	6	10/10/2023
Client R	1,000.00	clientR@email.com	Service I	10	10/15/2023
Client S	816.00	clientS@email.com	Service H	12	10/20/2023
Client T	672.00	clientT@email.com	Service G	8	10/25/2023
Client U	672.00	clientU@email.com	Service F	7	10/30/2023
Client V	1,056.00	clientV@email.com	Service E	12	10/20/2023
Client W	608.00	clientW@email.com	Service D	8	10/25/2023
Client X	420.00	clientX@email.com	Service C	7	10/30/2023
Client Y	1,104.00	clientY@email.com	Service B	12	10/20/2023
Client Z	832.00	clientZ@email.com	Service A	8	10/25/2023

- **Clients Salaries after Tax**



- **Clients and their Hours Worked**



Insights from Payment Data

1. Client L has earned most salary after tax. The top 3 clients with most salaries after tax is Client L, Y and V.
2. Client L, D, S, V and Y have worked 12 hours and this is the maximum hours of work and no other client is close to 12 hours work.
3. Client L, Y and V have the most salary after tax and also have worked the most hours.

Recommendations

1. **Inventory Management:** Based on the popular products analysis, consider optimizing inventory for the top-selling items to meet customer demand efficiently.
2. **Payment Reminder System:** Implement a system to send reminders for outstanding invoices to improve cash flow.

3. **Customer Segmentation:** Further segment customers based on their purchasing behavior to tailor marketing strategies and promotions effectively.

Conclusion

Through effective SQL querying and data visualization, we gained valuable insights into sales and payment data. We identified sales trends, popular products, and payment patterns. These insights can inform strategic decisions to improve business operations, such as inventory management and customer engagement.