

## Project Summary:

This retail analytics project focuses on extracting and analysing critical data to provide actionable insights to both state-wide managers and store managers, enhancing decision-making and revenue optimization strategies.

- Annual Sales Data for Products (2019):
- Average Stock Quantity for Products Across Stores:
- Total Sales by Monthly by Category (Yearly):
- Average Profit Margin (2019):
- Total Sales by State by Category (2018):
- Sales Revenue Data (2018) by Store by State:

## Technologies Utilized:

SQL for data extraction, aggregation, and analysis

Excel for Data

Kind Regards

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1. Extracted and analysed annual sales data for 2019, providing a comprehensive view of product performance and revenue trends throughout the year

The screenshot displays the Microsoft SQL Server Management Studio interface. The 'Query Explorer' on the left shows the database structure for 'LAPTOP-RUC82GT6\SQLEXPRESS (SQL Se...)' with folders for Databases, Tables, Views, and External Resources. The 'Query' window shows a SQL query for 'SQLQuery2.sql' that selects the top 10 products by total sales for the year 2019. The 'Results' pane at the bottom shows the output of the query as a table with 12 rows and 4 columns: PRODUCT\_NAME, CATEGORY\_NAME, (No column name), and Tot\_Sales.

```
-- select top 10 * from [Practice].[dbo].[Item_Sales]
--total sales per category in 2029
select p.PRODUCT_NAME, p.CATEGORY_NAME, Year(it.TXN_DATE), round(sum(it.SALES),0) as Tot_Sales
from [Practice].[dbo].[Item_Sales] IT
join [Practice].[dbo].[Product] p on p.PRODUCT_ID = it.ITEM_ID
where it.SALES > 0
and Year(it.TXN_DATE) = 2019
group by it.ITEM_ID, p.PRODUCT_NAME, Year(it.TXN_DATE), p.CATEGORY_NAME
order by Tot_Sales
```

	PRODUCT_NAME	CATEGORY_NAME	(No column name)	Tot_Sales
1	Free Range Eggs, 12pk	DAIRY	2019	18
2	Coke No Sugar 1.5L	DRINKS	2019	28
3	Organic Avocado	PRODUCE	2019	33
4	Fresh Salmon Fillets	SEAFOOD	2019	34
5	Washed Spinach	PRODUCE	2019	37
6	Baby Spinach	PRODUCE	2019	38
7	Fuji Apples 6pk	PRODUCE	2019	42
8	Wholegrain Loaf, Large	BAKERY	2019	43
9	Beef Mince, Lean	MEAT	2019	47
10	Greek Yogurt, 1kg	DAIRY	2019	53
11	Chicken Breast Fillets	MEAT	2019	61
12	Lamb Shanks	MEAT	2019	66

## 2. No. of Customers by each Demographic Category

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure for 'LAPTOP-RUC82GT6\SQLEXPRESS (SQL Se)'. The main query window shows the following SQL code:

```
SELECT TOP (1000) [CUSTOMER_ID]
, [FIRST_NAME]
, [LAST_NAME]
, [DEMOGRAPHIC]
, [STAR_SIGN]
, [SIGNUP_DATE]
FROM [Practice ].[dbo].[Customer]

select DEMOGRAPHIC,
count(CUSTOMER_ID) as No_of_Customers
from [Practice ].[dbo].[Customer]
group by DEMOGRAPHIC
```

The Results pane at the bottom displays the output of the second query:

	DEMOGRAPHIC	No_of_Customers
1	Elderly couple	14
2	Elderly single adult	12
3	Middle-aged couple	23
4	Teenager	22
5	Young couple	24
6	Young family	27
7	Young single adult	25

## 3. Calculated average stock quantities for each product item across multiple stores, excluding items with no recorded stock. This analysis aids in optimizing inventory management and ensuring product availability.

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure for 'LAPTOP-RUC82GT6\SQLEXPRESS (SQL Se)'. The main query window shows the following SQL code:

```
select ITEM_ID,
p.PRODUCT_NAME,
Avg(V.STOCK_QTY) as avg_stock_qty
from Practice.dbo.Item_Inventory V
--join [Practice ].[dbo].[Store] S on v.STORE_ID = s.STORE_ID
join [Practice ].[dbo].[Product] P on v.ITEM_ID = p.PRODUCT_ID
group by ITEM_ID, p.PRODUCT_NAME
HAVING
COUNT(*) > 0
order by ITEM_ID
```

The Results pane at the bottom displays the output of the query:

	ITEM_ID	PRODUCT_NAME	avg_stock_qty
1	1	Fuji Apples 6pk	81
2	2	Washed Spinach	103
3	3	Lamb Shanks	87
4	4	Coke No Sugar 1.5L	105
5	5	Wholegrain Loaf, Large	90
6	6	Organic Avocado	75
7	7	Chicken Breast Fillets	95
8	8	Greek Yogurt, 1kg	75
9	9	Fresh Salmon Fillets	90
10	10	Baby Spinach	75
11	11	Beef Mince, Lean	100
12	12	Free Range Eggs, 12pk	85
13	13	Almond Milk, Unsweetened	70
14	14	Sweet Potatoes	97

- 4 Analysed total sales by month and category for the entire year, alongside distinct basket counts. This insight enables managers to understand seasonal sales patterns and customer purchasing behaviour.

SQLQuery9.sql - LA...C82GT6\iminz (76))    SQLQuery8.sql - LA...C82GT6\iminz (74))\*

```

Select Datename(MONTH, d.date) as Months,
      --MONTH(d.date) as Months,
      count(distinct(s.[BASKET_ID])) as BasketID_Count,
      p.CATEGORY_NAME,
      round(sum(s.SALES), 0) as tot_sales
FROM [Practice].[dbo].[Item_Sales] S
join [Practice].[dbo].[Product] P on p.PRODUCT_ID = s.ITEM_ID
join [Practice].[dbo].[Date] d on d.[DATE] = s.TXN_DATE
where ITEM_ID = 4
and Year(s.TXN_DATE) = '2018'
group by Datename(MONTH, d.date), p.CATEGORY_NAME
order by BasketID_Count

```

100 %

Results Messages

	Months	BasketID_Count	CATEGORY_NAME	tot_sales
1	November	2	DRINKS	17
2	December	3	DRINKS	27
3	January	11	DRINKS	81

5. Determined the average profit margin for transactions in 2019, facilitating insights into profitability and guiding pricing strategies.

```

select [BASKET_ID],
       [TXN_DATE],
       --ROUND(AVG(CAST(REPLACE(PROFIT_MARGIN, '%', '') AS DECIMAL(5, 2))), 2) AS Avg_Profit_Margin
       FORMAT(AVG(CAST(REPLACE(PROFIT_MARGIN, '%', '') AS DECIMAL(10, 2))), '0.00') AS Avg_Profit_Margin
FROM [Practice].[dbo].[Item_Sales]
where PROFIT_MARGIN is not NULL -- '0'
and YEAR(TXN_DATE) = 2019
group by [BASKET_ID], [TXN_DATE]

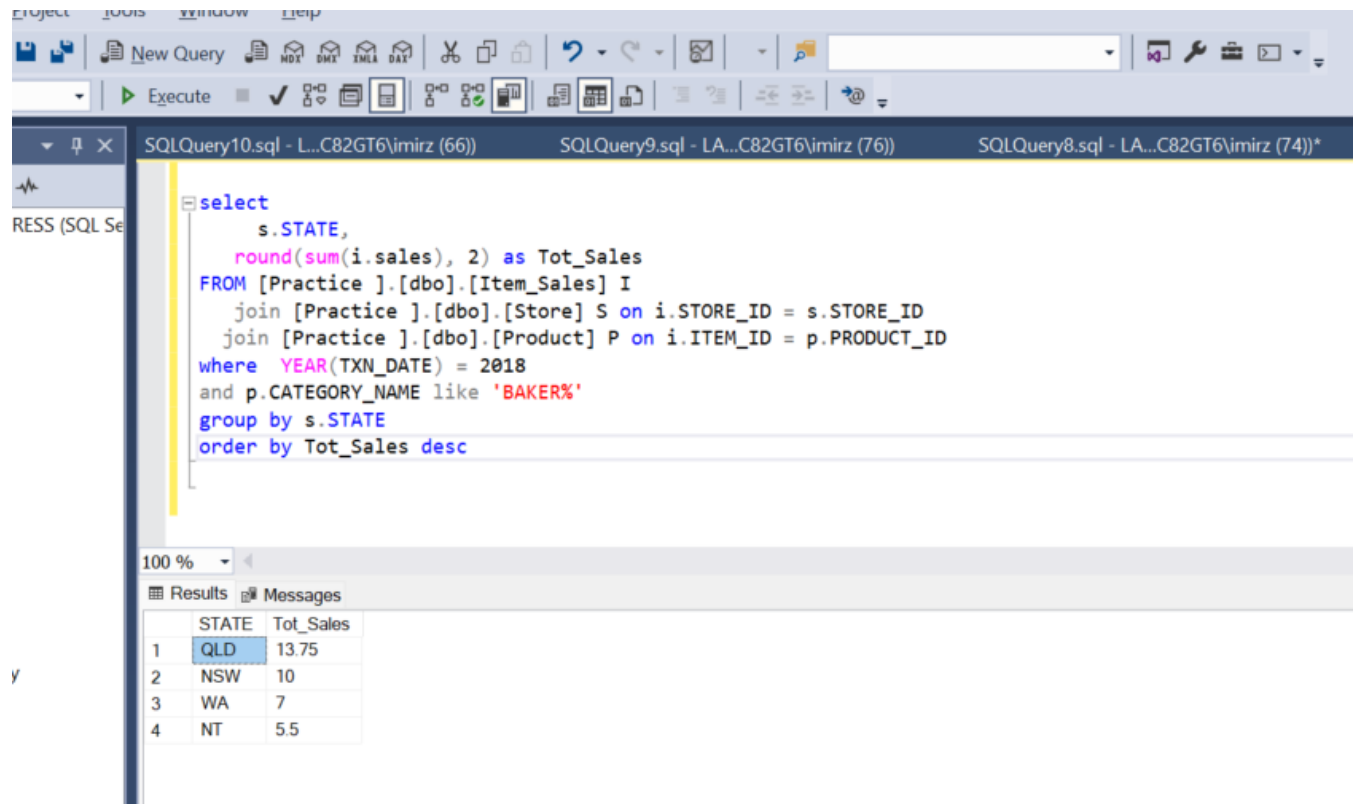
```

00 %

Results Messages

	BASKET_ID	TXN_DATE	Avg_Profit_Margin
1	20180101_005	2019-01-01	20.00
2	20190101_003	2019-01-01	17.67
3	20190101_005	2019-01-01	15.00
4	20190102_122	2019-01-02	17.67
5	20190105_032	2019-01-05	20.00
6	20190110_011	2019-01-10	20.00
7	20190114_012	2019-01-14	19.00
8	20190115_023	2019-01-15	21.00
9	20190115_025	2019-01-15	19.00
10	20190120_022	2019-01-20	17.67
11	20190125_045	2019-01-25	21.00
12	20190201_003	2019-02-01	19.00
13	20190205_032	2019-02-05	21.00
14	20190210_011	2019-02-10	17.67
15	20190214_032	2019-02-14	19.00

6. Examined total sales by state and category for the year 2018, highlighting regional performance and category-specific revenue contributions.

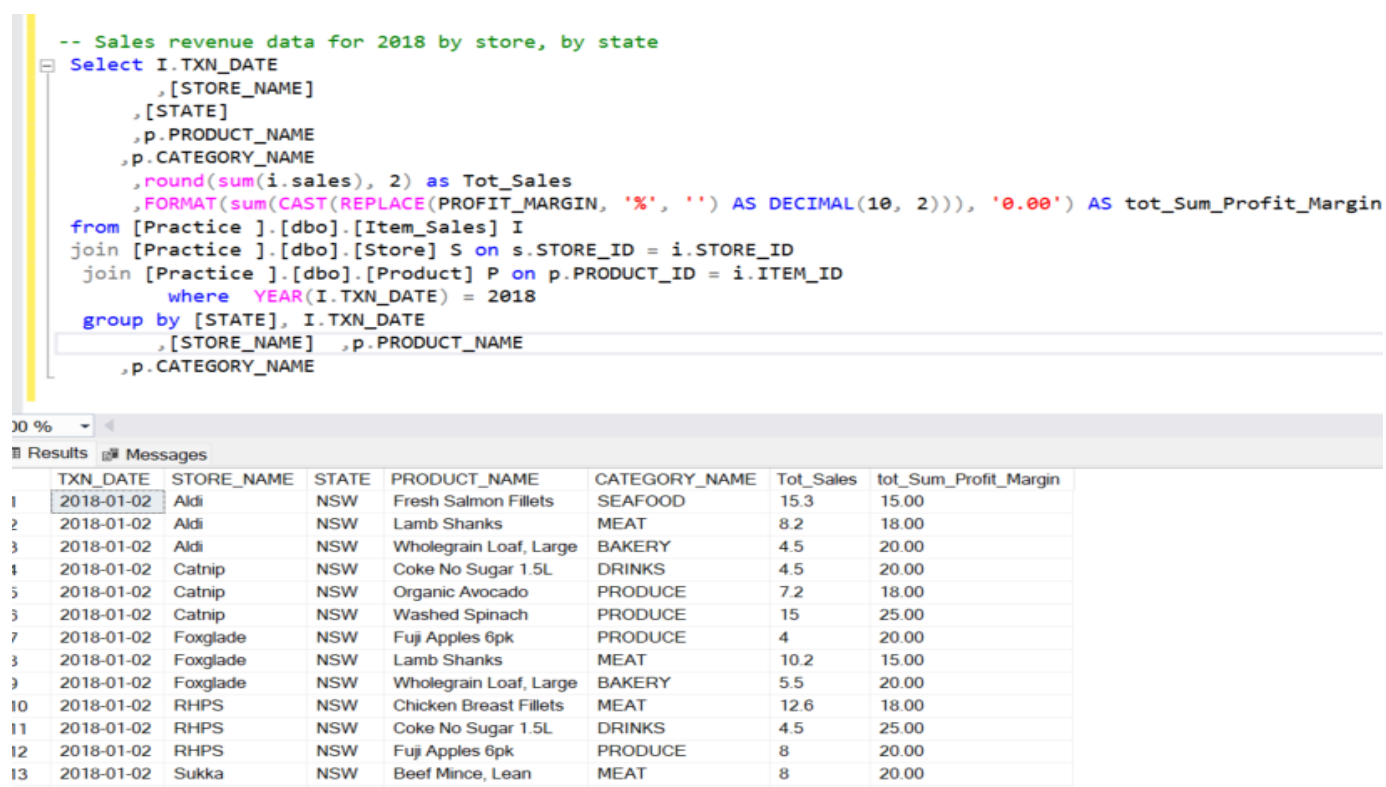


The screenshot shows the SQL Server Enterprise Manager interface. The top pane displays a SQL query that selects the state and total sales for the year 2018, filtered by the 'BAKER%' category. The bottom pane shows the results of the query, which are sorted by total sales in descending order.

```
select
    s.STATE,
    round(sum(i.sales), 2) as Tot_Sales
FROM [Practice].[dbo].[Item_Sales] I
    join [Practice].[dbo].[Store] S on i.STORE_ID = s.STORE_ID
    join [Practice].[dbo].[Product] P on i.ITEM_ID = p.PRODUCT_ID
where YEAR(TXN_DATE) = 2018
and p.CATEGORY_NAME like 'BAKER%'
group by s.STATE
order by Tot_Sales desc
```

	STATE	Tot_Sales
1	QLD	13.75
2	NSW	10
3	WA	7
4	NT	5.5

7. Report on sales revenue data for 2018 categorized by store locations and states, providing visibility into geographical sales distribution and store performance.



The screenshot shows the SQL Server Enterprise Manager interface. The top pane displays a SQL query that selects sales revenue data for the year 2018, categorized by store location and state. The bottom pane shows the results of the query, which are sorted by total sales in descending order.

```
-- Sales revenue data for 2018 by store, by state
Select I.TXN_DATE
    , [STORE_NAME]
    , [STATE]
    , p.PRODUCT_NAME
    , p.CATEGORY_NAME
    , round(sum(i.sales), 2) as Tot_Sales
    , FORMAT(sum(CAST(REPLACE(PROFIT_MARGIN, '%', '') AS DECIMAL(10, 2))), '0.00') AS tot_Sum_Profit_Margin
from [Practice].[dbo].[Item_Sales] I
    join [Practice].[dbo].[Store] S on s.STORE_ID = i.STORE_ID
    join [Practice].[dbo].[Product] P on p.PRODUCT_ID = i.ITEM_ID
where YEAR(I.TXN_DATE) = 2018
group by [STATE], I.TXN_DATE
    , [STORE_NAME]
    , p.PRODUCT_NAME
    , p.CATEGORY_NAME
```

	TXN_DATE	STORE_NAME	STATE	PRODUCT_NAME	CATEGORY_NAME	Tot_Sales	tot_Sum_Profit_Margin
1	2018-01-02	Aldi	NSW	Fresh Salmon Fillets	SEAFOOD	15.3	15.00
2	2018-01-02	Aldi	NSW	Lamb Shanks	MEAT	8.2	18.00
3	2018-01-02	Aldi	NSW	Wholegrain Loaf, Large	BAKERY	4.5	20.00
4	2018-01-02	Catnip	NSW	Coke No Sugar 1.5L	DRINKS	4.5	20.00
5	2018-01-02	Catnip	NSW	Organic Avocado	PRODUCE	7.2	18.00
6	2018-01-02	Catnip	NSW	Washed Spinach	PRODUCE	15	25.00
7	2018-01-02	Foxglade	NSW	Fuji Apples 6pk	PRODUCE	4	20.00
8	2018-01-02	Foxglade	NSW	Lamb Shanks	MEAT	10.2	15.00
9	2018-01-02	Foxglade	NSW	Wholegrain Loaf, Large	BAKERY	5.5	20.00
10	2018-01-02	RHPS	NSW	Chicken Breast Fillets	MEAT	12.6	18.00
11	2018-01-02	RHPS	NSW	Coke No Sugar 1.5L	DRINKS	4.5	25.00
12	2018-01-02	RHPS	NSW	Fuji Apples 6pk	PRODUCE	8	20.00
13	2018-01-02	Sukka	NSW	Beef Mince, Lean	MEAT	8	20.00