ONLINE SHOPPING DATASETS ANALYTIC

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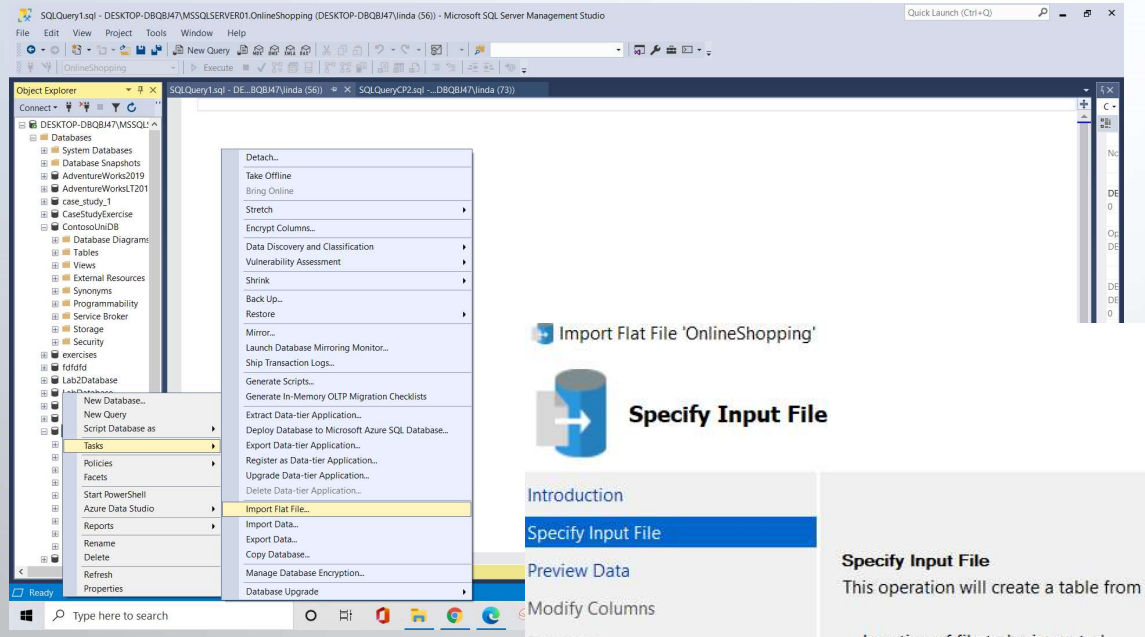
SOURCE DATA, DATA TRANSFER AND DATA CLEANING

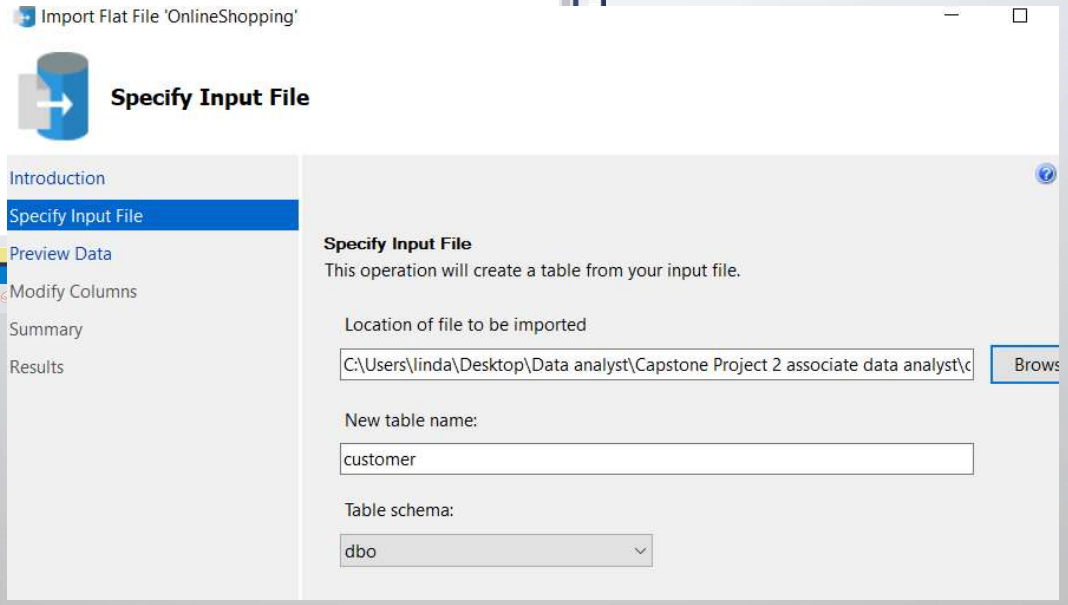
- HTTPS://WWW.KAGGLE.COM/TANYADAYANAND/ONLINE-SHOPPING

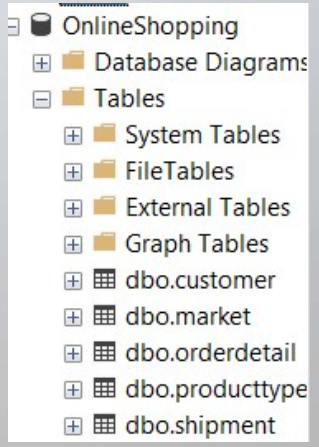
DATA TRANSFER AND DATA CLEANING

```
--ALTER COLUMN SHIPDATE
UPDATE SHIPMENT
SET SHIP_DATE = CONVERT(NVARCHAR(255),CONVERT(SMALLDATETIME, SHIP_DATE,105))
ALTER TABLE SHIPMENT
ALTER COLUMN SHIP_DATE SMALLDATETIME
--ALTER COLUMN PRODUCT_BASE_MARGIN
UPDATE MARKET
SET PRODUCT_BASE_MARGIN = '0' WHERE PRODUCT_BASE_MARGIN ='NA'
ALTER TABLE MARKET
ALTER COLUMN PRODUCT_BASE_MARGIN FLOAT
```

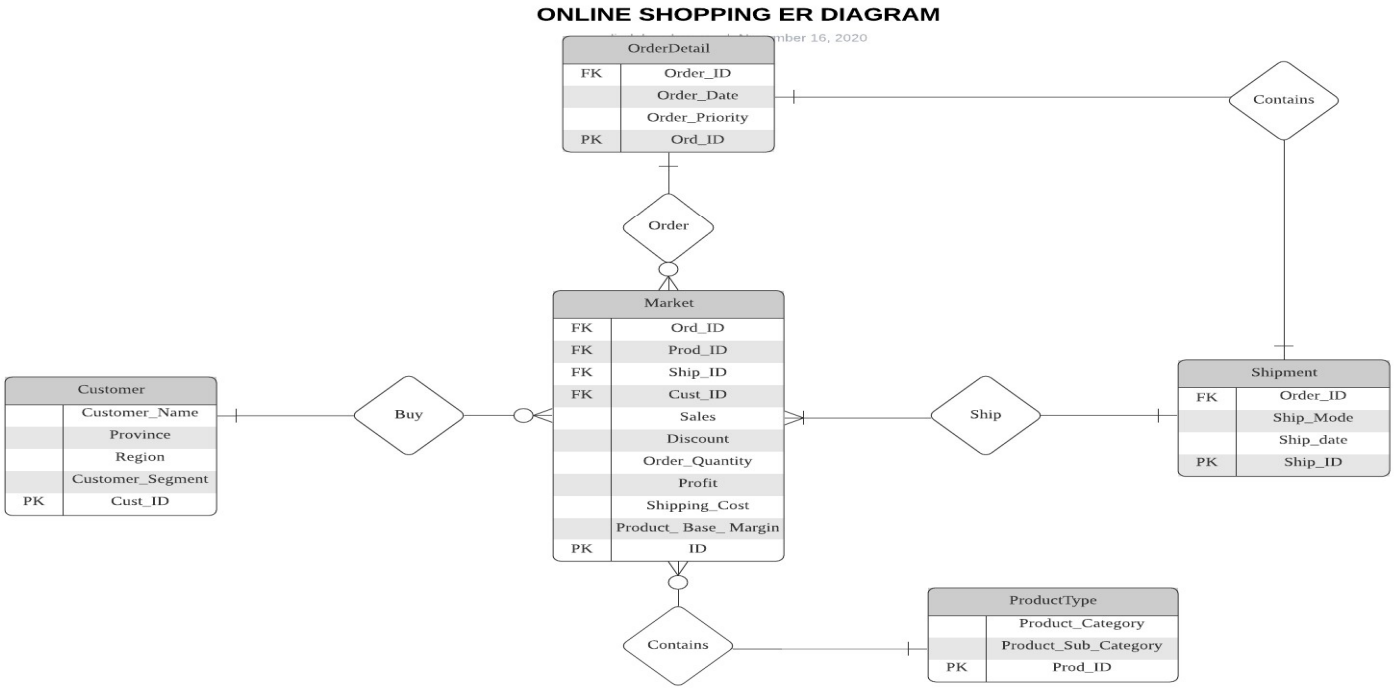
IMPORTING DATASETS TO MS SQL



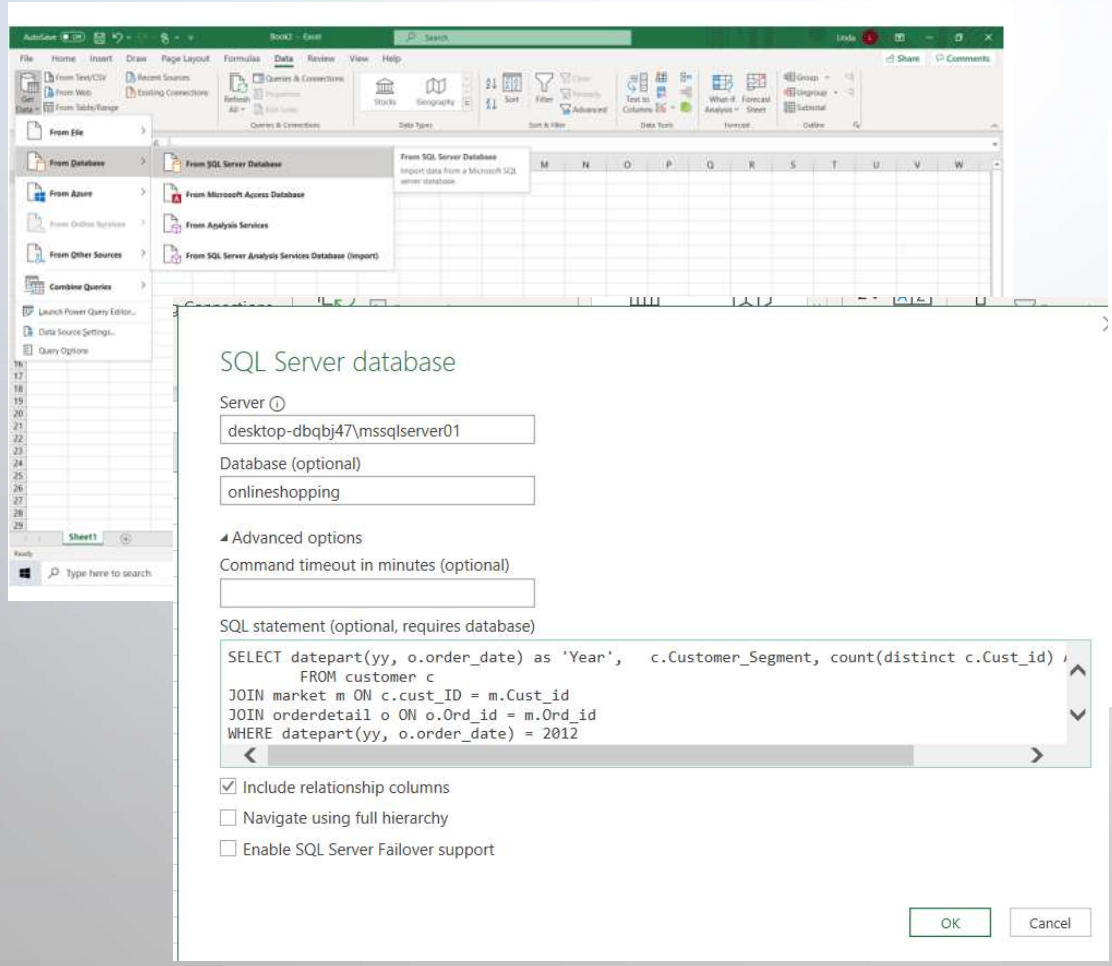


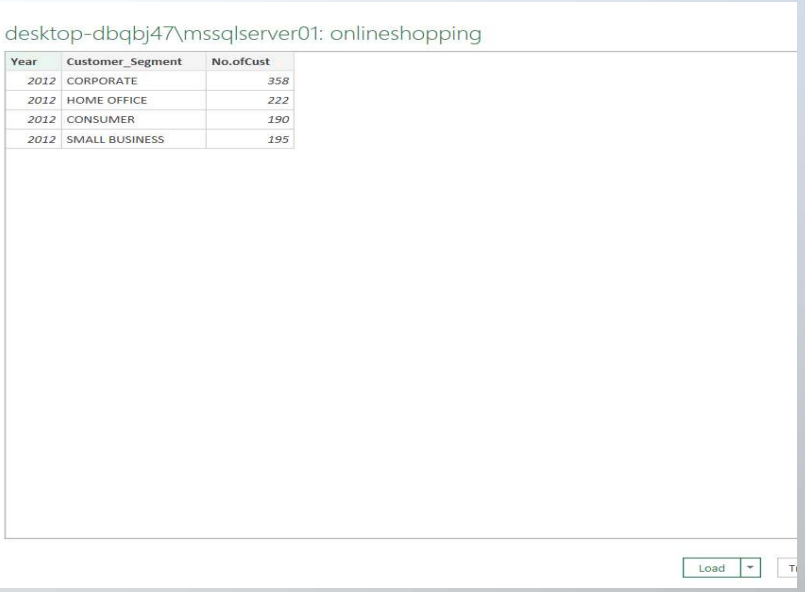


ER DIAGRAM ONLINE SHOPPING



DATA TRANSFER FROM MS SQL TO EXCELL





Year	Customer_Segment	No.ofCust
2012	CORPORATE	358
2012	HOME OFFICE	222
2012	CONSUMER	190
2012	SMALL BUSINESS	195

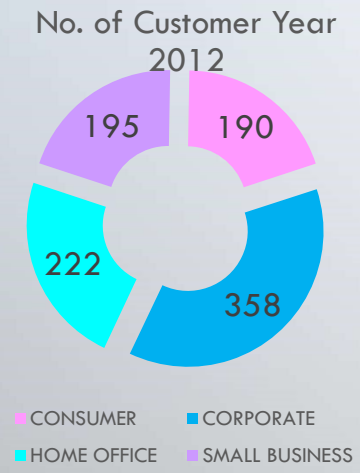
QUERIES

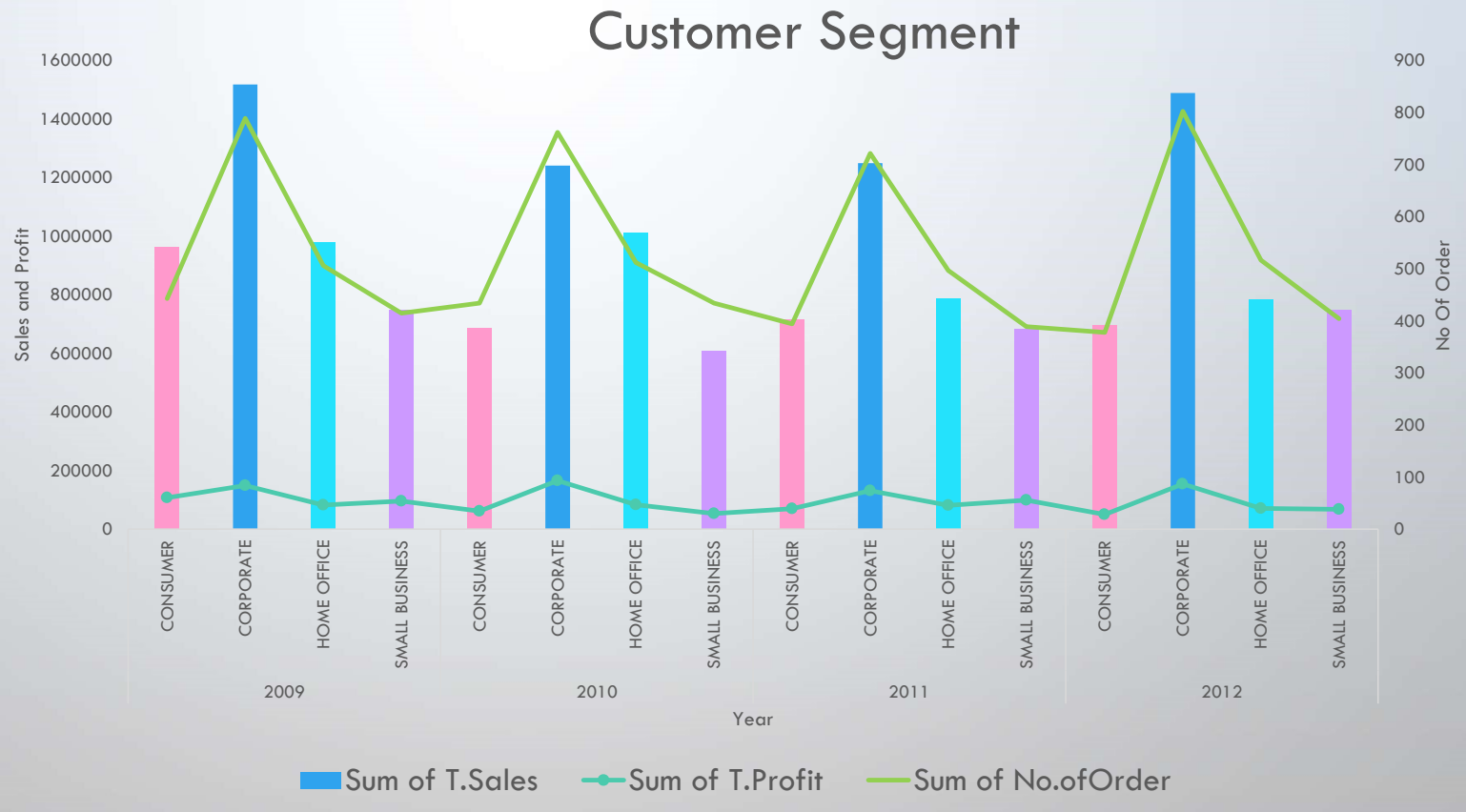
```
--CUSTOMERSEGMENT
SELECT DATEPART(YY, O.ORDER_DATE) AS 'YEAR',   C.CUSTOMER_SEGMENT, COUNT(DISTINCT C.CUST_ID) AS 'NO.OFCUST',
SUM(M.SALES) AS 'T.SALES',
SUM(M.PROFIT) AS 'T.PROFIT',
ROUND(SUM(M.PROFIT)/SUM(M.SALES),2) AS 'GROSS_MARGIN',
COUNT(M.ORD_ID) AS 'NO.OFORDER'
FROM CUSTOMER C
JOIN MARKET M ON C.CUST_ID = M.CUST_ID
JOIN ORDERDETAIL O ON O.ORD_ID = M.ORD_ID
GROUP BY DATEPART(YY, ORDER_DATE),  C.CUSTOMER_SEGMENT
ORDER BY DATEPART(YY, ORDER_DATE), [T.SALES] DESC



-- Topprofit by product
With Toprow AS (
SELECT ROW_NUMBER() over (partition by datepart(yy, order_date) order by round(sum(m.profit),2) desc) AS R,
datepart(yy, order_date) as 'Year',  p.Product_Sub_Category,
c.region,
sum(m.Order_Quantity) AS 'Quantity', round(sum(m.sales),2) AS 'Total Sales',
round(sum(m.profit),2) AS 'TotalProfit',
 round(sum(m.Profit)/sum(m.Sales),2) AS 'Gross_Margin',
 round(avg(m.discount),2) AS 'Discount',
round(avg(m.Product_Base_Margin),2) AS 'ProductBaseMargin',
 round(avg(m.Shipping_Cost),2) AS 'Shippingcost'
FROM orderdetail o
JOIN market m ON o.ord_id = m.Ord_id
JOIN producttype p ON m.Prod_id = p.prod_id
JOIN customer c ON c.Cust_id = m.Cust_id
GROUP by datepart(yy, order_date),  p.Product_sub_Category, c.region)
Select *
From Toprow
where Toprow.R <=20
```

```
-- PROFIT BY PRODUCT
SELECT DATEPART(YY, ORDER_DATE) AS 'YEAR', P.PRODUCT_CATEGORY, SUM(M.ORDER_QUANTITY) AS 'QUANTITY', ROUND(SUM(M.SALES),2) AS 'TOTALSALES',
ROUND(SUM(M.PROFIT),2) AS 'TOTALPROFIT', ROUND(SUM(M.PROFIT)/SUM(M.SALES),2) AS 'GROSS MARGIN', ROUND(AVG(M.DISCOUNT),2) AS 'DISCOUNT'
FROM ORDERDETAIL O
JOIN MARKET M ON O.ORD_ID = M.ORD_ID
JOIN PRODUCTTYPE P ON M.PROD_ID = P.PROD_ID
JOIN CUSTOMER C ON C.CUST_ID = M.CUST_ID
GROUP BY DATEPART(YY,ORDER_DATE), P.PRODUCT_CATEGORY
ORDER BY DATEPART(YY,ORDER_DATE), [TOTALPROFIT] DESC, P.PRODUCT_CATEGORY


--avg shipment cost

Select  Ship_Mode, p.Product_Category,
   round(avg(m.Shipping_Cost),2) AS 'Avg_Shipcost'

FROM orderdetail o
JOIN shipment s ON s.Order_ID = o.Order_ID
JOIN market m ON m.Ord_id = o.Ord_id
JOIN customer c ON c.Cust_id = m.Cust_id
join producttype p on p.Prod_id = m.Prod_id
GROUP by  ship_mode,   p.Product_Category
ORDER by  ship_mode
```

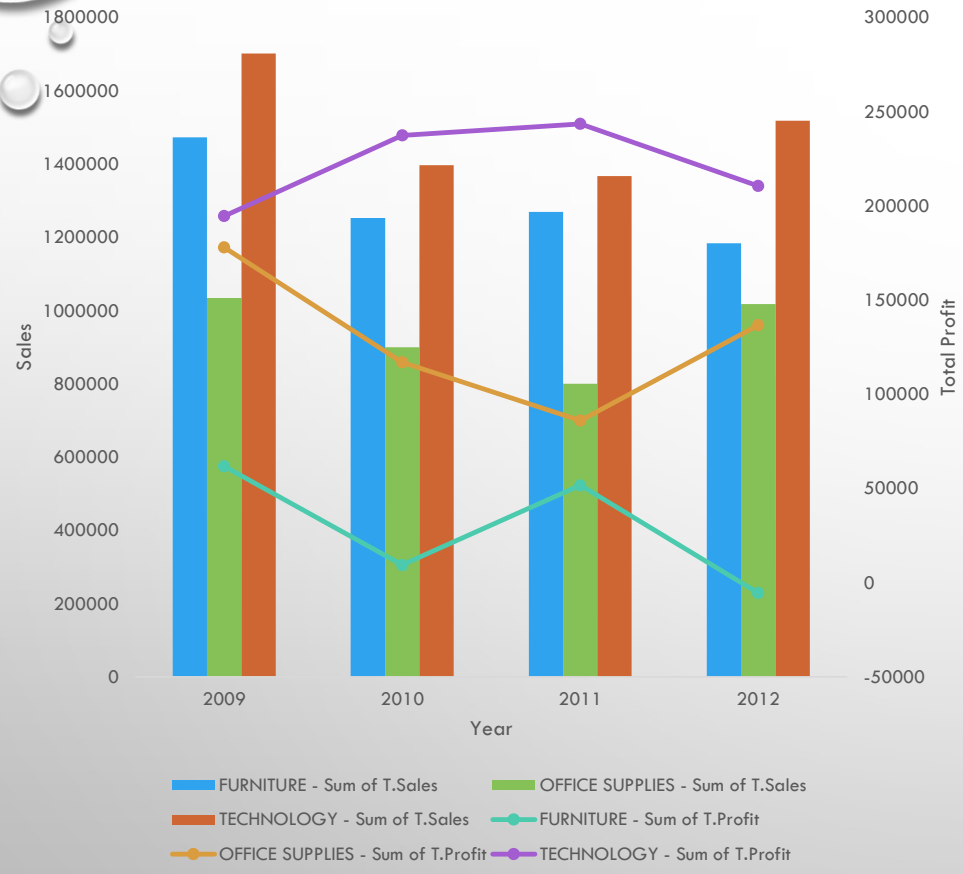
```
-- Losses
With Toprow AS (
SELECT ROW_NUMBER() over (partition by datepart(yy, order_date) order by round(sum(m.profit),2)asc) AS R,
datepart(yy, order_date) as 'Year',  p.Product_Sub_Category, sum(m.Order_Quantity) AS 'Quantity', round(sum(m.sales),2) AS 'Total Sales',
round(sum(m.profit),2) AS 'TotalProfit',
 round(sum(m.Profit)/sum(m.Sales),2) AS 'Gross_Margin',
 round(avg(m.discount),2) AS 'Discount',
 round(avg(m.Product_Base_Margin),2) AS 'ProductBaseMargin',
 round(avg(m.Shipping_Cost),2) AS 'Shippingcost',
 count(distinct m.Cust_id) AS 'No.ofcust',
 count(m.ord_id) AS 'No.ofOrder'
 FROM orderdetail o
JOIN market m ON o.ord_id = m.Ord_id
JOIN producttype p ON m.Prod_id = p.prod_id
GROUP by datepart(yy, order_date),  p.Product_sub_Category)

Select *
From Toprow
where  Toprow.R <=10
```

```sql
--CUSTOMER LIFE CYCLE
SET DATEFORMAT DMY
WITH O_SEQUENCE AS (
SELECT O.ORDER_DATE, C.CUST_ID,
ROW_NUMBER() OVER (PARTITION BY C.CUST_ID ORDER BY
     O.ORDER_DATE ASC) AS ORDER_SEQUENCE,
LAG(O.ORDER_DATE) OVER (PARTITION BY C.CUST_ID ORDER BY
     O.ORDER_DATE ASC) AS PREVIOUS_ORDER_DATE
FROM ORDERDETAIL O
JOIN MARKET M ON M.ORD_ID = O.ORD_ID
JOIN CUSTOMER C ON C.CUST_ID = M.CUST_ID
GROUP BY O.ORDER_DATE, C.CUST_ID),

 TIME_BETWEEN_ORDERS AS (
   SELECT ORDER_DATE, CUST_ID, ORDER_SEQUENCE,
   CASE WHEN PREVIOUS_ORDER_DATE IS NULL THEN ORDER_DATE
   ELSE PREVIOUS_ORDER_DATE END AS PREVIOUS_ORDER_DATE,
   DATEDIFF(DAY, PREVIOUS_ORDER_DATE, ORDER_DATE)
   AS DAYS_BETWEEN_ORDERS
   FROM O_SEQUENCE),

   CUSTOMER_LIFE_CYCLE AS (
     SELECT ORDER_DATE, CUST_ID,
 CASE
 WHEN ORDER_SEQUENCE = 1 THEN 'NEW CUSTOMER'
 WHEN DAYS_BETWEEN_ORDERS > 0 AND DAYS_BETWEEN_ORDERS < 366
     THEN 'ACTIVE CUSTOMER'
 WHEN DAYS_BETWEEN_ORDERS > 365 THEN 'LAPSED CUSTOMER'
ELSE 'UNKNOWN'
END AS CUSTOMER_LIFE_CYCLE,

   ORDER_SEQUENCE,
   PREVIOUS_ORDER_DATE,

   CASE
   WHEN DAYS_BETWEEN_ORDERS IS NULL THEN 0
   ELSE DAYS_BETWEEN_ORDERS
   END AS DAYS_BETWEEN_ORDERS
      FROM TIME_BETWEEN_ORDERS)


SELECT
O.ORDER_DATE,
C.CUST_ID,
T1.CUSTOMER_LIFE_CYCLE,
T1.ORDER_SEQUENCE,
T1.DAYS_BETWEEN_ORDERS,
O.ORDER_ID,
C.CUSTOMER_SEGMENT
FROM ORDERDETAIL O
JOIN MARKET M ON M.ORD_ID = O.ORD_ID
JOIN CUSTOMER C ON C.CUST_ID = M.CUST_ID
JOIN CUSTOMER_LIFE_CYCLE T1 ON
(C.CUST_ID=T1.CUST_ID
AND O.ORDER_DATE=T1.ORDER_DATE)
```

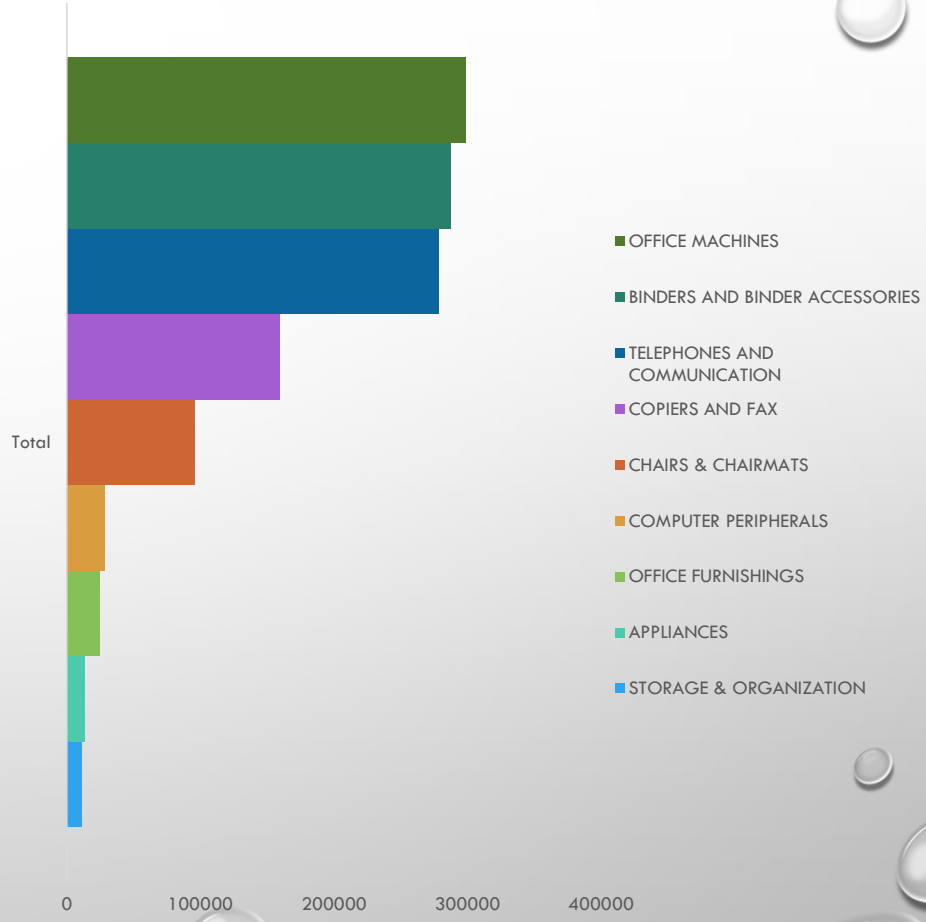

No. of Customer Year 2012
195
190
222
358
CONSUMER
CORPORATE
HOME OFFICE
SMALL BUSINESS


Customer Segment
Sales and Profit
No Of Order
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
900
800
700
600
500
400
300
200
100
0
CONSUMER
CORPORATE
HOME OFFICE
SMALL BUSINESS
2009
2010
2011
2012
Year
Sum of T.Sales
Sum of T.Profit
Sum of No.ofOrder

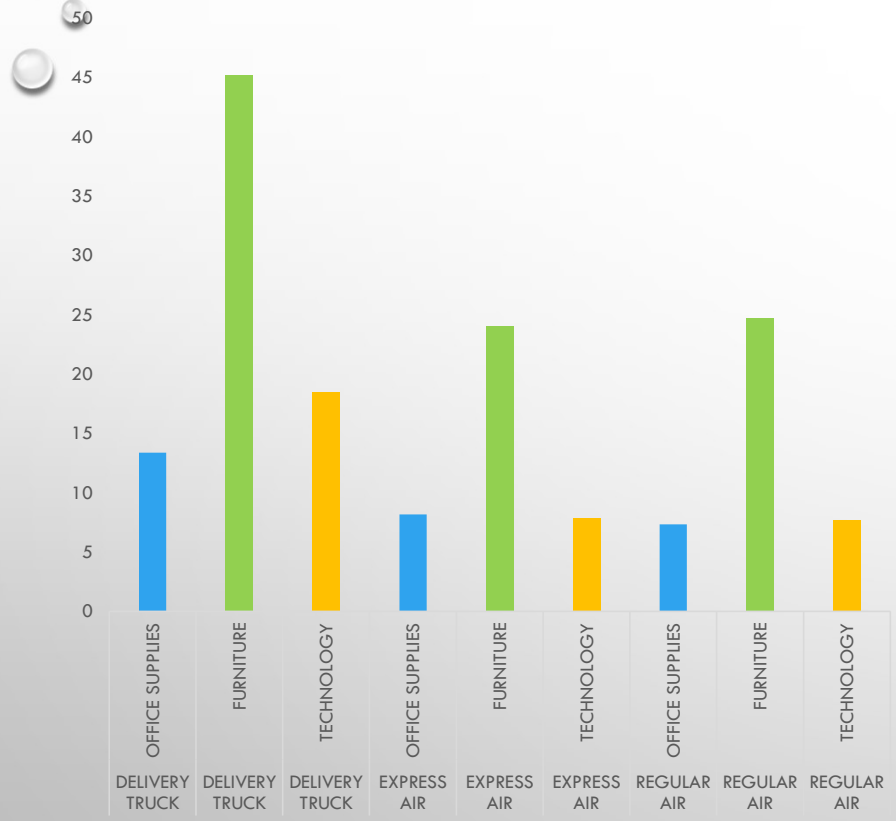
Sales vs Profit by Product



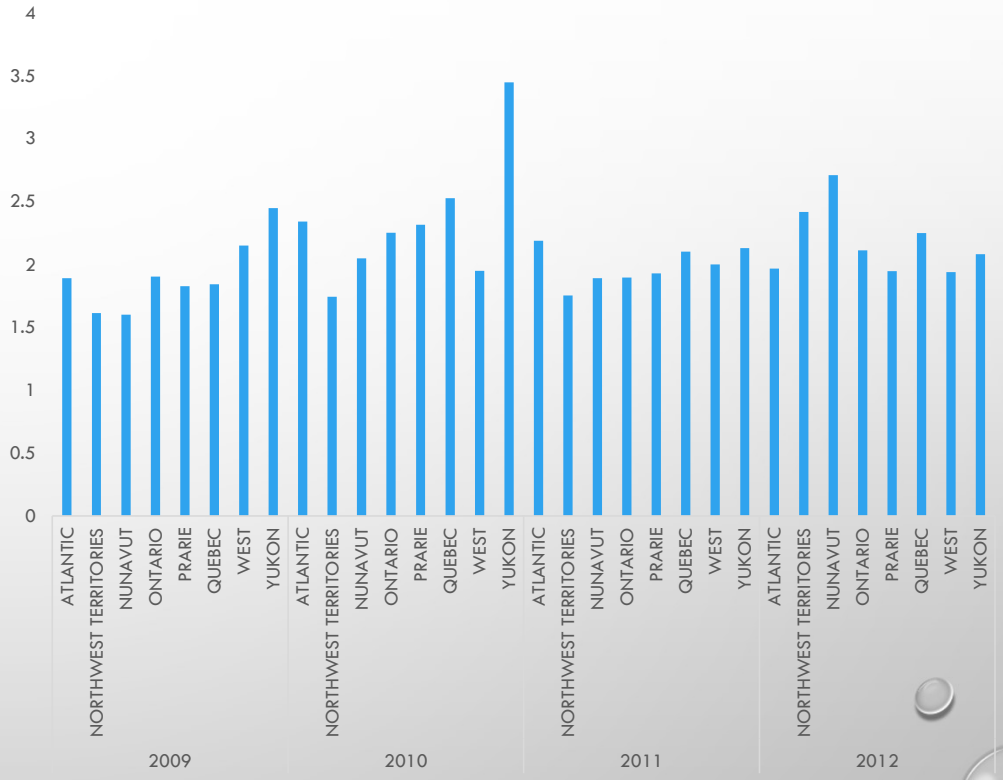
3 years Highest Profit From Product sub category



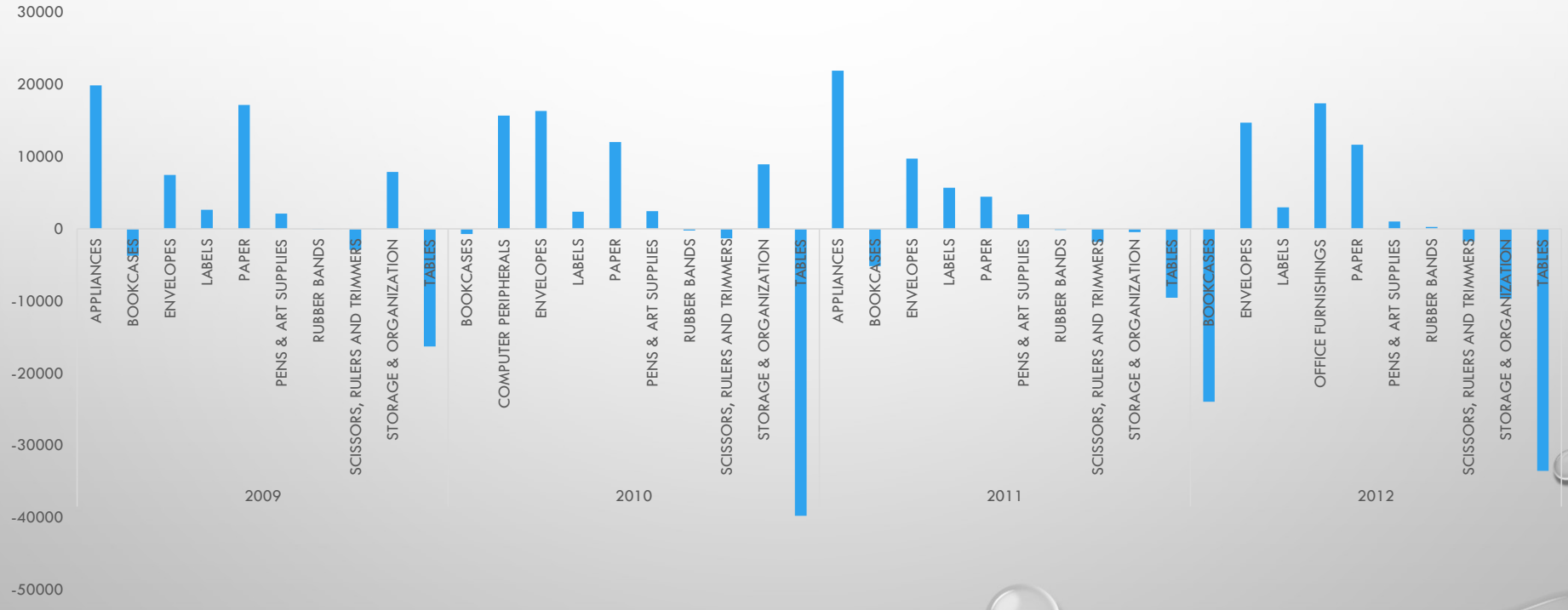
Avg Shipping Cost



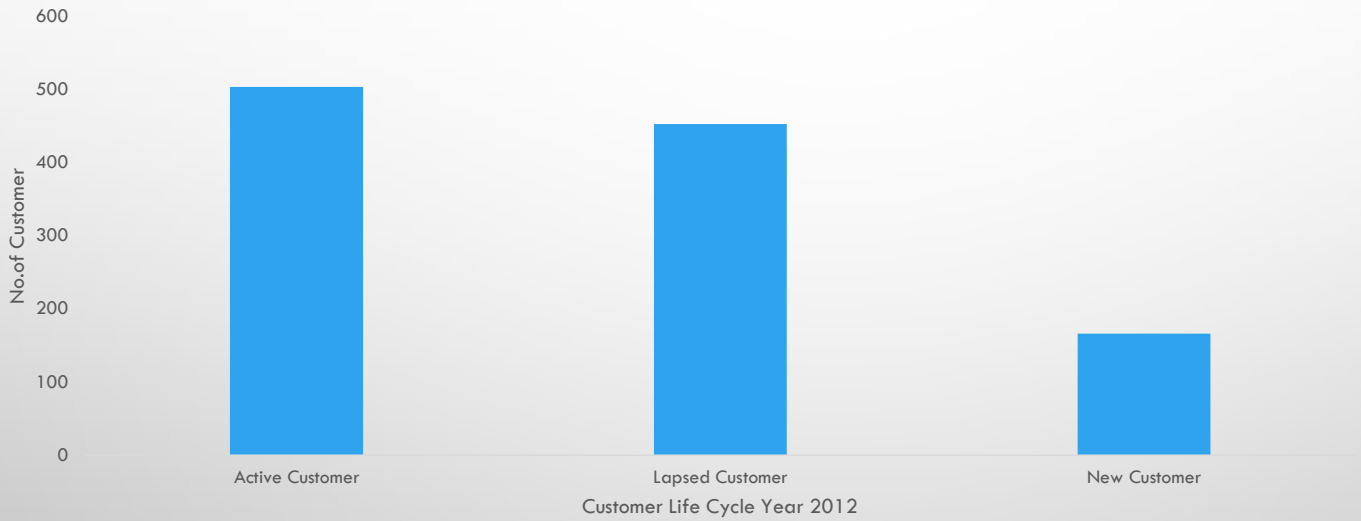
Avg Daystoship



LOSSES FROM PRODUCT SUB CATEGORY



CUSTOMER LIFE CYLCE



PROBLEMS

- LATE ORDER PROCESSING TO SHIP THE PRODUCTS TO CUSTOMER WITH SOME ORDER WERE SHIP TO CUSTOMER > 7 DAYS
- SOME PRODUCTS WERE SOLD BELOW PRO DUCT MARGIN AND INCURRED LOSSES

RECOMMENDATION

- IMPROVE THE ORDER PROCESSING TO SHIP DAYS TO CUSTOMER
- IMPROVE THE SUPPLY CHAIN SYSTEMS
- OPT FOR DELIVERY MODE WITH MORE EFFICIENT SHIPPING COST
- IMPROVE CUSTOMER RETENTION BY MAINTAINING THE CUSTOMER LIFE CYCLE DATA

THANK YOU