ABC Inventory Analysis

By

Tasneem Alnaasan

This project analyzes inventory data. There are two tables Stock and Past Orders. Stock table contains six columns; SKUID, Current Stock Quantity, Units, Average Lead Time, Max Lead Time and Unit price.

The Past Orders table contains three columns; Order Date, SKUID and Order Quantity.

SQL was used to conduct ABC analysis for the period 2019-01-30 to 2020-01-30.

1. Calculating Annual Sales Quantity

```
SELECT  SKUID, round(SUM( OrderQuantity),2) AS Annual_Sale_Quantity

FROM Inventory1..PastOrders

WHERE OrderDate  Between '2019-01-30 00:00:00.000' AND '2020-01-30 00:00:00.000'

GROUP BY SKUID
```

	SKUID	Annual_Sale_Quantity
1	1497CA	49022.2
2	2212AA	1040
3	2646AA	4504
4	2326CA	36085.32
5	3551CA	139150
6	1317BA	996.95
7	1265CA	30
8	1990AA	13402
9	1083AA	543280
10	1967BA	64122
11	2117BA	7051.9
12	3205AA	194.25
13	2236CA	432
14	1908AA	198
15	2234AA	112

2.Calculating Revenue

```
WITH AnnualSaleQuantity AS( SELECT SKUID, round(SUM( OrderQuantity),2) AS
                                Annual_Sale_Quantity
                                 FROM Inventory1..PastOrders
                                 WHERE OrderDate  Between '2019-01-30 00:00:00.000'
                                          AND '2020-01-30 00:00:00.000'
                                 GROUP BY SKUID)

SELECT ROW_NUMBER() OVER(ORDER BY ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) DESC)
AS SKUID_Rank_by_Revenue,s.SKUID, ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) AS
'Annual_Revenue'

FROM Inventory1..Stock s

JOIN AnnualSaleQuantity A

ON s.SKUID = A.SKUID

GROUP BY s.SKUID
```

	SKUID_Rank_by_Revenue	SKUID	Annual_Revenue
1	1	1244AA	34450066.2
2	2	1295CA	27954500
3	3	1193BA	26833060
4	4	1116CA	22366516.8
5	5	1281BA	21981015
6	6	1126CA	19597344
7	7	2117BA	17093805.6
8	8	1077CA	16571241.51
9	9	1964BA	16217488.34

3.Calculating Cumulative Revenue, Total Revenue, Cumulative Percentage of Revenue and Cumulative Percentage of Inventory

```
WITH AnnualSaleQuantity AS( SELECT  SKUID, round(SUM( OrderQuantity),2) AS
                                Annual_Sale_Quantity
                               FROM Inventory1..PastOrders
                               WHERE OrderDate  Between'2019-01-30 00:00:00.000' AND
                                    '2020-01-30 00:00:00.000'
```

```
                        GROUP BY SKUID),

                t1  AS (SELECT ROW_NUMBER() OVER(ORDER BY
ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) DESC) AS SKUID_Rank_by_Revenue,

                        s.SKUID, ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) AS

                            'Annual_Revenue'

                        FROM Inventory1..Stock s

                        JOIN AnnualSaleQuantity A

                        ON s.SKUID = A.SKUID

                        GROUP BY s.SKUID),

                t2 AS (SELECT SKUID_Rank_by_Revenue, SKUID, Annual_Revenue

                       From t1)

SELECT SKUID_Rank_by_Revenue, SKUID, Annual_Revenue,

                            SUM(Annual_Revenue) OVER(ORDER BY Annual_Revenue

                                DESC) AS Cumulative_Revenue,

                            SUM(Annual_Revenue) OVER() AS Total_Revenue,

                            ROUND(100*SUM(Annual_Revenue) OVER(ORDER BY

                             Annual_Revenue DESC)/SUM(Annual_Revenue) OVER(),2)

                             AS Cumulative_Percentage_of_Revenue,

                           Cast (100*1.0*SKUID_Rank_by_Revenue/(SELECT COUNT(*)

                              FROM t2) AS Decimal (10, 0)) AS

                               Cumulative_Percentage_of_Inventory

From t2
```

	SKUID_Rank_by_Revenue	SKUID	Annual_Revenue	Cumulative_Revenue	Total_Revenue	Cumulative_Percentage_of_Revenue	Cumulative_Percentage_of_Inventory
1	1	1244AA	34450066.2	34450066.2	689213963.78	5	0
2	2	1295CA	27954500	62404566.2	689213963.78	9.05	1
3	3	1193BA	26833060	89237626.2	689213963.78	12.95	1
4	4	1116CA	22366516.8	111604143	689213963.78	16.19	1
5	5	1281BA	21981015	133585158	689213963.78	19.38	2
6	6	1126CA	19597344	153182502	689213963.78	22.23	2
7	7	2117BA	17093805.6	170276307.6	689213963.78	24.71	2
8	8	1077CA	16571241.51	186847549.11	689213963.78	27.11	3
9	9	1964BA	16217488.34	203065037.45	689213963.78	29.46	3
10	10	1083AA	15765985.6	218831023.05	689213963.78	31.75	3
11	11	3205AA	14821275	233652298.05	689213963.78	33.9	4
12	12	1921AA	13800000	247452298.05	689213963.78	35.9	4

4.Specifying the segment of each SKUID

```
WITH AnnualSaleQuantity AS( SELECT  SKUID, round(SUM( OrderQuantity),2) AS
                                Annual_Sale_Quantity
                            FROM Inventory1..PastOrders
                            WHERE OrderDate  Between'2019-01-30 00:00:00.000' AND
                                    '2020-01-30 00:00:00.000'
                            GROUP BY SKUID),
                  t1  AS (SELECT ROW_NUMBER() OVER(ORDER BY
ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) DESC) AS SKUID_Rank_by_Revenue,
                            s.SKUID, ROUND(SUM(s.UnitPrice*A.Annual_Sale_Quantity),2) AS
'Annual_Revenue'
                            FROM Inventory1..Stock s
                            JOIN AnnualSaleQuantity A
                            ON s.SKUID = A.SKUID
                            GROUP BY s.SKUID),
                 t2 AS (SELECT SKUID_Rank_by_Revenue, SKUID, Annual_Revenue
                           FROM t1)
            ABC_Analysis AS (SELECT SKUID_Rank_by_Revenue, SKUID, Annual_Revenue,
                               SUM(Annual_Revenue) OVER(ORDER BY Annual_Revenue
                                   DESC) AS Cumulative_Revenue,
                               SUM(Annual_Revenue) OVER() AS Total_Revenue,
                               ROUND(100*SUM(Annual_Revenue) OVER(ORDER BY
                                Annual_Revenue DESC)/SUM(Annual_Revenue) OVER(),2)
                                AS Cumulative_Percentage_of_Revenue,
                              Cast (100*1.0*SKUID_Rank_by_Revenue/(SELECT COUNT(*)
                                 FROM t2) AS Decimal (10, 0)) AS
                                  Cumulative_Percentage_of_Inventory
                                 FROM t2)
```

```
SELECT

SKUID_Rank_by_Revenue, SKUID, Annual_Revenue,

Cumulative_Revenue, Total_Revenue, Cumulative_Percentage_of_Revenue,
Cumulative_Percentage_of_Inventory,

Case When Cumulative_Percentage_of_Revenue <= '40' Then 'A'

      When Cumulative_Percentage_of_Revenue <= '70' Then 'B' Else 'C'  End  AS
ABC_Segment

FROM ABC_Analysis;
```

	SKUID_Rank_by_Revenue	SKUID	Annual_Revenue	Cumulative_Revenue	Total_Revenue	Cumulative_Percentage_of_Revenue	Cumulative_Percentage_of_Inventory	ABC_Segment
1	1	1244AA	34450066.2	34450066.2	689213963.78	5	0	A
2	2	1295CA	27954500	62404566.2	689213963.78	9.05	1	A
3	3	1193BA	26833060	89237626.2	689213963.78	12.95	1	A
4	4	1116CA	22366516.8	111604143	689213963.78	16.19	1	A
5	5	1281BA	21981015	133585158	689213963.78	19.38	2	A
6	6	1126CA	19597344	153182502	689213963.78	22.23	2	A
7	7	2117BA	17093805.6	170276307.6	689213963.78	24.71	2	A
8	8	1077CA	16571241.51	186847549.11	689213963.78	27.11	3	A
9	9	1964BA	16217488.34	203065037.45	689213963.78	29.46	3	A
10	10	1083AA	15765985.6	218831023.05	689213963.78	31.75	3	A
11	11	3205AA	14821275	233652298.05	689213963.78	33.9	4	A
12	12	1921AA	13800000	247452298.05	689213963.78	35.9	4	A
13	13	1993AA	13488055.06	260940353.11	689213963.78	37.86	4	A
14	14	2331CA	13267451.48	274207804.59	689213963.78	39.79	5	A
15	15	1224AA	13260604	287468408.59	689213963.78	41.71	5	B
16	16	1283CA	13127499.55	300595908.14	689213963.78	43.61	6	B
17	17	2418CA	11808086.19	312403994.33	689213963.78	45.33	6	B
18	18	1967BA	11455395.3	323859389.63	689213963.78	46.99	6	B
19	19	2317CA	10208993.6	334068383.23	689213963.78	48.47	7	B
20	20	2565CA	10157607.74	344225990.97	689213963.78	49.94	7	B