**DAX FUNCTIONS**

**USED IN CUSTOMER SEGMENTATION ANALYSIS**

**POWER QUERY EDITOR MEASURE:**

**TRANSFORMING AND CLEANING DATA:**

**CUSTOMER TABLE:**

1."Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),

2."Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"CustomerID", type text}, {"FirstName", type text}, {"LastName", type text}, {"Email", type text}, {"Phone", type text}, {"Address", type text}, {"City", type text}, {"State", type text}, {"Country", type text}, {"ZipCode", Int64.Type}, {"Gender", type text}, {"Age", Int64.Type}, {"JoinDate", type date}, {"LastPurchaseDate", type date}, {"TotalSpent", type number}, {"LoyaltyPoints", Int64.Type}, {"PurchaseFrequency", Int64.Type}, {"CustomerSegment", type text}, {"PreferredPaymentMethod", type text}, {"MaritalStatus", type text}, {"Education", type text}, {"Occupation", type text}, {"Hobbies", type text}, {"AccountCreationDate", type date}, {"AccountStatus", type text}, {"LastUpdated", type date}, {"Notes", type text}, {"ReferrerID", type text}, {"PromotionalEmails", type logical}, {"FeedbackRating", type number}}),

3."Lowercased Text" = Table.TransformColumns(#"Changed Type",{{"Email", Text.Lower, type text}}),

4."Replaced Value" = Table.ReplaceValue(#"Lowercased Text",null,0,Replacer.ReplaceValue,{"ZipCode"}),

5."Replaced Value1" = Table.ReplaceValue(#"Replaced Value","","other",Replacer.ReplaceValue,{"Gender"}),

6."Replaced Value2" = Table.ReplaceValue(#"Replaced Value1",null,0,Replacer.ReplaceValue,{"Age"}),

7."Changed Type1" = Table.TransformColumnTypes(#"Replaced Value2",{{"JoinDate", type date}}),

8."Removed Errors" = Table.RemoveRowsWithErrors(#"Changed Type1", {"JoinDate"}),

9."Removed Errors1" = Table.RemoveRowsWithErrors(#"Removed Errors", {"Email"}),

10.Replaced Value3" = Table.ReplaceValue(#"Removed Errors1",null,0,Replacer.ReplaceValue,{"FeedbackRating"}),

11."Replaced Value4" = Table.ReplaceValue(#"Replaced Value3","","other",Replacer.ReplaceValue,{"ReferrerID"}),

12."Replaced Value5" = Table.ReplaceValue(#"Replaced Value4","","other",Replacer.ReplaceValue,{"Notes"}),

13."Replaced Value6" = Table.ReplaceValue(#"Replaced Value5","","other",Replacer.ReplaceValue,{"AccountStatus"}),

14."Replaced Value7" = Table.ReplaceValue(#"Replaced Value6","","other",Replacer.ReplaceValue,{"Hobbies"}),

15."Replaced Value8" = Table.ReplaceValue(#"Replaced Value7","","other",Replacer.ReplaceValue,{"Occupation"}),

16."Replaced Value9" = Table.ReplaceValue(#"Replaced Value8","","other",Replacer.ReplaceValue,{"Education"}),

17."Replaced Value10" = Table.ReplaceValue(#"Replaced Value9","","other",Replacer.ReplaceValue,{"CustomerSegment", "PreferredPaymentMethod", "MaritalStatus"}),

18."Replaced Value11" = Table.ReplaceValue(#"Replaced Value10",null,0,Replacer.ReplaceValue,{"LoyaltyPoints", "PurchaseFrequency"}),

19."Added Custom" = Table.AddColumn(#"Replaced Value11", "Custom", each Text.Contains([Email],".com")),

20."Removed Blank Rows" = Table.SelectRows(#"Added Custom", each not List.IsEmpty(List.RemoveMatchingItems(Record.FieldValues(\_), {"", null}))),

21."Merged Columns" = Table.CombineColumns(#"Removed Blank Rows",{"FirstName", "LastName"},Combiner.CombineTextByDelimiter(" ", QuoteStyle.None),"Merged"),

22."Renamed Columns" = Table.RenameColumns(#"Merged Columns",{{"Custom", "valid email"}}),

23."Split Column by Delimiter" = Table.SplitColumn(#"Renamed Columns", "Email", Splitter.SplitTextByDelimiter("@", QuoteStyle.Csv), {"Email.1", "Email.2"}),

24."Changed Type2" = Table.TransformColumnTypes(#"Split Column by Delimiter",{{"Email.1", type text}, {"Email.2", type text}}),

25."Filtered Rows" = Table.SelectRows(#"Changed Type2", each ([Email.2] <> "none")),

26."Renamed Columns1" = Table.RenameColumns(#"Filtered Rows",{{"Merged", "name"}}),

27."Merged Columns1" = Table.CombineColumns(#"Renamed Columns1",{"Email.1", "Email.2"},Combiner.CombineTextByDelimiter(".", QuoteStyle.None),"valid email.1"),

28."Filled Down" = Table.FillDown(#"Merged Columns1",{"AccountCreationDate"})

**REGIONS TABLE:**

29."Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),

30."Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"RegionID", Int64.Type}, {"RegionName", type text}, {"ManagerName", type text}, {"Sales", Int64.Type}, {"TotalCustomers", Int64.Type}, {"AveragePurchase", Int64.Type}, {"CreatedAt", type date}, {"UpdatedAt", type date}, {"IsActive", type logical}}),

31."Replaced Value" = Table.ReplaceValue(#"Changed Type",null,0,Replacer.ReplaceValue,{"TotalCustomers"})

**TRANSACTION TABLE:**

32."Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),

33."Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"TransactionID", type text}, {"CustomerID", type text}, {"ProductID", type text}, {"TransactionDate", type date}, {"Quantity", Int64.Type}, {"PricePerUnit", type number}, {"TotalAmount", type number}, {"PaymentMethod", type text}, {"RegionID", Int64.Type}, {"Discount", type number}, {"TransactionStatus", type text}, {"ShippingAddress", type text}, {"ShippingCost", type number}, {"OrderNotes", type text}, {"RefundedAmount", type number}, {"ShippingDate", type date}, {"DeliveryDate", type date}, {"CreatedAt", type date}, {"UpdatedAt", type date}, {"ProductRating", type number}, {"LoyaltyPointsEarned", Int64.Type}, {"GiftCardUsed", type logical}, {"GiftCardAmount", type number}, {"TransactionType", type text}}),

34."Replaced Value" = Table.ReplaceValue(#"Changed Type","","other",Replacer.ReplaceValue,{"TransactionType"}),

35."Replaced Value1" = Table.ReplaceValue(#"Replaced Value",null,0,Replacer.ReplaceValue,{"ProductRating", "LoyaltyPointsEarned", "GiftCardAmount"}),

36."Filled Up" = Table.FillUp(#"Replaced Value1",{"ShippingDate", "DeliveryDate"}),

37."Replaced Value2" = Table.ReplaceValue(#"Filled Up",null,0,Replacer.ReplaceValue,{"ShippingCost", "RefundedAmount"}),

38."Replaced Value3" = Table.ReplaceValue(#"Replaced Value2","","other",Replacer.ReplaceValue,{"OrderNotes"}),

39."Replaced Value4" = Table.ReplaceValue(#"Replaced Value3",null,0,Replacer.ReplaceValue,{"RegionID", "Discount"}),

40."Replaced Value5" = Table.ReplaceValue(#"Replaced Value4","","other",Replacer.ReplaceValue,{"TransactionStatus"}),

41."Replaced Value6" = Table.ReplaceValue(#"Replaced Value5","","other",Replacer.ReplaceValue,{"PaymentMethod"}),

42."Replaced Value7" = Table.ReplaceValue(#"Replaced Value6",null,0,Replacer.ReplaceValue,{"Quantity", "PricePerUnit", "TotalAmount"}),

43."Filled Up1" = Table.FillUp(#"Replaced Value7",{"TransactionDate"})

**PRODUCT TABLE:**

44."Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),

45."Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"ProductID", type text}, {"ProductName", type text}, {"Category", type text}, {"Price", type number}, {"StockQuantity", Int64.Type}, {"SupplierID", type text}, {"Rating", type number}, {"ReleaseDate", type date}, {"IsActive", type logical}, {"DiscountedPrice", type number}, {"Weight", type number}, {"Dimensions", type text}, {"Color", type text}, {"WarrantyPeriod", Int64.Type}, {"CreatedAt", type date}, {"UpdatedAt", type date}}),

46."Replaced Value" = Table.ReplaceValue(#"Changed Type","","other",Replacer.ReplaceValue,{"ProductName"}),

47."Replaced Value1" = Table.ReplaceValue(#"Replaced Value","","other",Replacer.ReplaceValue,{"Category"}),

48."Changed Type1" = Table.TransformColumnTypes(#"Replaced Value1",{{"Price", Int64.Type}}),

49."Replaced Value2" = Table.ReplaceValue(#"Changed Type1",null,0,Replacer.ReplaceValue,{"Price"}),

50."Replaced Value3" = Table.ReplaceValue(#"Replaced Value2",null,0,Replacer.ReplaceValue,{"StockQuantity"}),

51."Replaced Value4" = Table.ReplaceValue(#"Replaced Value3",null,0,Replacer.ReplaceValue,{"Rating"}),

52."Filled Up" = Table.FillUp(#"Replaced Value4",{"ReleaseDate"}),

53."Changed Type2" = Table.TransformColumnTypes(#"Filled Up",{{"DiscountedPrice", Int64.Type}}),

54."Replaced Value5" = Table.ReplaceValue(#"Changed Type2",null,0,Replacer.ReplaceValue,{"DiscountedPrice"}),

55."Replaced Value6" = Table.ReplaceValue(#"Replaced Value5",null,0,Replacer.ReplaceValue,{"Weight"}),

56."Replaced Value7" = Table.ReplaceValue(#"Replaced Value6","","0",Replacer.ReplaceValue,{"Dimensions"}),

57."Replaced Value8" = Table.ReplaceValue(#"Replaced Value7","0","other",Replacer.ReplaceText,{"Dimensions"}),

58."Replaced Value9" = Table.ReplaceValue(#"Replaced Value8","","other",Replacer.ReplaceValue,{"Color"}),

59.”Replaced Value10” = Table.ReplaceValue(#”Replaced Value9”,null,0,Replacer.ReplaceValue,{“WarrantyPeriod”})

**DAX MEASURES:**

1.Total sales = SUM(Orders[Sales])

2.Customer Count = DISTINCTCOUNT(People[PERSON])

3.Return Rate by orderid = DIVIDE(COUNTROWS(FILTER(Returns,Returns[returnvalue]="yes")),DISTINCTCOUNT(Returns[orderid]),BLANK())

4.Total Orders = COUNTROWS(Orders)

5.Total Sales for furniture = CALCULATE(SUM(Orders[Sales]),Orders[Category]="office supplies")

6.Total Sales for office supllies = CALCULATE(SUM(Orders[Sales]),Orders[Category]="Furniture")

7.Total Sales for technology = CALCULATE(SUM(Orders[Sales]),Orders[Category]="technology")

8.Previous MTD = CALCULATE(TOTALMTD(SUM(Orders[Sales]),DimDate[Date]),DATEADD(DimDate[Date],-1,MONTH))

9.Previous QTD = CALCULATE(TOTALQTD(SUM(Orders[Sales]),DimDate[Date]),DATEADD(DimDate[Date],-1,QUARTER))

10.Previous YTD = CALCULATE(TOTALYTD(SUM(Orders[Sales]),DimDate[Date]),DATEADD(DimDate[Date],-1,YEAR))

11.sales last month = CALCULATE(SUM(Orders[Sales]),DATESINPERIOD(DimDate[Date],MAX(DimDate[Date]),-1,MONTH))

12.Total order same period last year = CALCULATE(COUNTROWS(Orders),SAMEPERIODLASTYEAR(DimDate[Date]))

**DIMDATE TABLE DAX:**

DimDate =

ADDCOLUMNS(

    CALENDAR(

        MIN(Orders[Order Date]),

        MAX(Orders[Ship Date])

    ),

    "Year", YEAR([Date]),

    "Month", FORMAT([Date], "MMMM"),

    "Month Number", MONTH([Date]),

    "Quarter", "Q" & QUARTER([Date]),

    "Weekday", FORMAT([Date], "dddd"),

    "Weekday Number", WEEKDAY([Date], 2),

    "Is Weekend", IF(WEEKDAY([Date], 2) > 5, "Yes", "No")

)

**TEXT DAX :**

CompanyOrder =

SELECTCOLUMNS(

    Orders,

    "CustomerCity", CONCATENATE(Orders[Customer Name], " - " & Orders[City]),

    "FormattedOrderDate", FORMAT(Orders[Order Date], "MMMM DD, YYYY"),

    "ProductID\_Part", RIGHT(Orders[Product ID], 4),

    "Category\_Upper", UPPER(Orders[Category]),

    "TotalSales", Orders[TotaL Sales]  )

**ADDITIONAL COLUMN MEASURE:**

1."Added Conditional Column" = Table.AddColumn(#"Filtered Rows", "PROFIT(BIN)", each if [Profit] <= 8400 then "HIGH PROFIT" else if [Profit] <= 5000 then "AVERAGE PROFIT" else if [Profit] <= 2000 then "LESS PROFIT" else if [Profit] <= 1000 then "ALMOST LEAST PROFIT" else if [Profit] <= 500 then "NEAR LEAST PROFIT" else if [Profit] <= 89 then "LEAST PROFIT" else "LOSS"),

2."Added Conditional Column1" = Table.AddColumn(#"Changed Type2", "Custom", each if [Profit] >= 5000 then "HIGH PROFIT" else if [Profit] >= 2000 then "AVERAGE PROFIT" else if [Profit] >= 1000 then "LESS PROFIT" else if [Profit] >= 500 then "NEAR LEAST PROFIT" else if [Profit] >= 89 then "LEAST PROFIT" else "LOSS"),

3."Renamed Columns" = Table.RenameColumns(#"Added Conditional Column1",{{"Custom", "PROFIT(BIN)"}})

**DAX MEASURES USED FOR DASHBOARD:**

1.SalesByCategory = SUM(Orders[Sales])

2.CustomerCount = DISTINCTCOUNT(Orders[Customer ID])

3.TotalQuantitySold = SUM(Orders[Quantity])

4.New Customers 2014 =

CALCULATE(

    DISTINCTCOUNT('Orders'[Customer ID]),

    'DimDate'[Year] = 2014

)

5.New Customers 2015 =

CALCULATE(

    DISTINCTCOUNT('Orders'[Customer ID]),

    'DimDate'[Year] = 2015

)

6.New Customers 2016 =

CALCULATE(

    DISTINCTCOUNT('Orders'[Customer ID]),

    'DimDate'[Year] = 2016,

    NOT 'Orders'[Customer ID] IN CALCULATETABLE(VALUES('Orders'[Customer ID]), 'DimDate'[Year] IN {2014, 2015})

)

7.New Customers 2017 =

CALCULATE(

    DISTINCTCOUNT('Orders'[Customer ID]),

    'DimDate'[Year] = 2017,

    NOT 'Orders'[Customer ID] IN CALCULATETABLE(VALUES('Orders'[Customer ID]), 'DimDate'[Year] IN {2014, 2015, 2016})

)

8.SalesByCategory = SUM(Orders[Sales])

9.TotalPurchaseValue =

CALCULATE(

    SUM(Orders[Sales]),

    ALLEXCEPT(Orders, Orders[customer id])

)

10.CustomerSegmentByValue =

SWITCH(

    TRUE(),

    [TotalPurchaseValue] <= 1000, "Low Value",

    [TotalPurchaseValue] <= 2500, "Below Average",

    [TotalPurchaseValue] <= 5000, "Average",

    [TotalPurchaseValue] <= 10000, "High Value",

    [TotalPurchaseValue] > 10000, "Very High Value"

)

11.AOV per Customer =

DIVIDE(

    SUM(Orders[Sales]),

    DISTINCTCOUNT(Orders[Customer ID]),

    0

)

12.AOV per Order =

DIVIDE(

    SUM(Orders[Sales]),

    DISTINCTCOUNT(Orders[Order ID]),

    0

)

13.NewCustomers =

CALCULATE(

    DISTINCTCOUNT(Orders[Customer ID]),

    Orders[FirstPurchaseYear] = SELECTEDVALUE(DateTable[Year])

)

14.FirstPurchaseYear =

CALCULATE(

    YEAR(MIN(Orders[Order Date])),

    ALLEXCEPT(Orders, Orders[Customer ID])

)

15.SPLY Sales =

CALCULATE(

    [TotalSales],

    SAMEPERIODLASTYEAR('DateTable'[Date])

)

16.Profit Margin = DIVIDE(SUM('Orders'[Profit]), SUM('Orders'[Sales]), 0)

Delivery Days = DATEDIFF('Orders'[Order Date], 'Orders'[Ship Date], DAY)

Avg Delivery Days = AVERAGE('Orders'[Delivery Days])

Return Rate = DIVIDE(SUM('Orders'[Return Status]), COUNT('Orders'[Order ID]), 0)

17.Sales Growth % =

DIVIDE(

    [TotalSales] - [SPLY Sales],

    [SPLY Sales],

    0

) \* 100

18.Profit Growth % =

DIVIDE(

    [Total Profit] - [SPLY Profit],

    [SPLY Profit],

    0

) \* 100

19. Purchase Frequency = DIVIDE([Total Orders], [Years Active], 0)

20. Customer Lifespan = AVERAGEX(VALUES('Orders'[Customer ID]), DATEDIFF(MIN('Orders'[Order Date]), TODAY(), YEAR))

21. CLV = [AOV per Customer] \* [Purchase Frequency] \* [Customer Lifespan]

22. Churn Rate =

DIVIDE(

    [Returned Customers],

    [CustomerCount],

    0

) \* 100

23. Returned Customers =

CALCULATE(

    DISTINCTCOUNT(Orders[Customer ID]),

    RELATEDTABLE(Returns)

)

24. Years Active = DATEDIFF(MIN('Orders'[Order Date]), MAX('Orders'[Order Date]), YEAR)

25. RMF Score = [Recency] + [Frequency] + [Monetary]

26. Recency = DATEDIFF(MAX('Orders'[Order Date]), TODAY(), DAY)

27. Frequency = DISTINCTCOUNT('Orders'[Order ID])

28. Monetary = SUM('Orders'[Sales]).