--Table to implement Clustered Column Store Index

CREATE TABLE FactSalesWithClusteredColumnStoreIndex(

[SalesKey] [int] IDENTITY(1,1) NOT NULL,

[DateKey] [datetime] NOT NULL,

[channelKey] [int] NOT NULL,

[StoreKey][int] NOT NULL,

[ProductKey] [int] NOT NULL,

[PromotionKey] [int] NOT NULL,

[CurrencyKey] [int] NOT NULL,

[UnitCost] [money] NOT NULL,

[UnitPrice] [money] NOT NULL,

[SalesQuantity] [int] NOT NULL,

[ReturnQuantity] [money] NOT NULL,

[ReturnAmount] [money],

[DiscountQuantity] [int],

[DiscountAmount] [money],

[TotalCost] [money],

[SalesAmount] [money],

[ETLLoadID] [int],

[LoadDate] [datetime],

[UpdateDate] [datetime]

) ON [PRIMARY]

GO

--Insert into table

INSERT INTO FactSalesWithClusteredColumnStoreIndex (DateKey, channelKey,StoreKey,ProductKey,PromotionKey,

CurrencyKey,UnitCost,UnitPrice,SalesQuantity,ReturnQuantity,ReturnAmount,DiscountQuantity,DiscountAmount,TotalCost,

SalesAmount,ETLLoadID,LoadDate,UpdateDate)

SELECT DateKey, channelKey,StoreKey,ProductKey,PromotionKey,

CurrencyKey,UnitCost,UnitPrice,SalesQuantity,ReturnQuantity,ReturnAmount,DiscountQuantity,DiscountAmount,

TotalCost,SalesAmount,ETLLoadID,LoadDate,UpdateDate

FROM [dbo].[FactSales]

--Creating Clustered Index

SET STATISTICS TIME OFF;

SET STATISTICS IO OFF;

GO

CREATE CLUSTERED COLUMNSTORE INDEX [IX\_CC\_FactSalesWithClusteredColumnStoreIndex]

ON FactSalesWithClusteredColumnStoreIndex

GO

--Queries

SET STATISTICS TIME ON;

SET STATISTICS IO ON;

--Sales Amount,Profit,Profit Margin by SubCategory

SELECT SubCategory.ProductSubcategoryName,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct AS Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.DimProductSubcategory SubCategory

ON Product.ProductSubcategoryKey = SubCategory.ProductSubcategoryKey

GROUP BY SubCategory.ProductSubcategoryName

ORDER BY SubCategory.ProductSubcategoryName;

Elapsed Time : 174 ms

--Sales Amount,Profit,Profit Margin by Category

SELECT Category.ProductCategoryName,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct AS Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.DimProductSubcategory SubCategory

ON Product.ProductSubcategoryKey = SubCategory.ProductSubcategoryKey

JOIN dbo.DimProductCategory Category

ON Category.ProductCategoryKey = SubCategory.ProductCategoryKey

GROUP BY Category.ProductCategoryName

ORDER BY Category.ProductCategoryName;

Elapsed Time : 159 ms

--Sales Amount,Profit,Profit Margin by Category and SubCategory

SELECT Category.ProductCategoryName,

SubCategory.ProductSubcategoryName,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct AS Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.DimProductSubcategory SubCategory

ON Product.ProductSubcategoryKey = SubCategory.ProductSubcategoryKey

JOIN dbo.DimProductCategory Category

ON Category.ProductCategoryKey = SubCategory.ProductCategoryKey

GROUP BY Category.ProductCategoryName,SubCategory.ProductSubcategoryName

ORDER BY Category.ProductCategoryName,SubCategory.ProductSubcategoryName;

Elapsed Time : 151 ms

--Sales Amount,Profit,Profit Margin by Customer Demographics(Education)

SELECT Customer.Education,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct As Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.FactOnlineSales AS OnlineSales

ON OnlineSales.ProductKey = Product.ProductKey

JOIN dbo.DimCustomer AS Customer

ON OnlineSales.CustomerKey = Customer.CustomerKey

GROUP BY Customer.Education

ORDER BY Customer.Education

Elapsed Time : 5441 ms

--Sales Amount,Profit,Profit Margin by Customer Demographics(Income)

SELECT Customer.YearlyIncome,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct As Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.FactOnlineSales AS OnlineSales

ON OnlineSales.ProductKey = Product.ProductKey

JOIN dbo.DimCustomer AS Customer

ON OnlineSales.CustomerKey = Customer.CustomerKey

GROUP BY Customer.YearlyIncome

ORDER BY Customer.YearlyIncome

Elapsed Time : 5471 ms

--Sales Amount,Profit,Profit Margin by Customer Demographics(Occupation)

SELECT Customer.Occupation,

SUM(Sales.SalesAmount) As SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct As Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.FactOnlineSales AS OnlineSales

ON OnlineSales.ProductKey = Product.ProductKey

JOIN dbo.DimCustomer AS Customer

ON OnlineSales.CustomerKey = Customer.CustomerKey

GROUP BY Customer.Occupation

ORDER BY Customer.Occupation

Elapsed Time : 5362 ms

--Sales Amount,Profit,Profit Margin by Channel and Year

SELECT Date1.CalendarYear,

Channel.ChannelName,

SUM(Sales.SalesAmount) SalesAmount,

SUM(Sales.SalesAmount)-SUM(Sales.TotalCost) AS Profit,

(((SUM(Sales.SalesAmount)-SUM(Sales.TotalCost)) / SUM(Sales.TotalCost)) \* 100) AS ProfitMargin

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimChannel As Channel

ON Sales.channelKey = Channel.channelKey

JOIN dbo.DimDate AS Date1

ON Date1.Datekey = Sales.DateKey

GROUP BY Date1.CalendarYear,Channel.ChannelName

ORDER BY Date1.CalendarYear,Channel.ChannelName

Elapsed Time : 604 ms

--Rank Sales By Year

SELECT Date1.CalendarYear,

SUM(Sales.SalesAmount) TotalSalesAmount,

RANK() OVER(ORDER BY SUM(Sales.SalesAmount) DESC) AS Rank

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimDate AS Date1

ON Date1.Datekey = Sales.DateKey

Group By Date1.CalendarYear

Elapsed Time : 141 ms

--Rank Sales By Product Category

SELECT Category.ProductCategoryName,

SUM(Sales.SalesAmount) As SalesAmount,

RANK() OVER(ORDER BY SUM(Sales.SalesAmount) DESC) AS Rank

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct AS Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.DimProductSubcategory SubCategory

ON Product.ProductSubcategoryKey = SubCategory.ProductSubcategoryKey

JOIN dbo.DimProductCategory Category

ON Category.ProductCategoryKey = SubCategory.ProductCategoryKey

GROUP BY Category.ProductCategoryName

Elapsed Time : 171 ms

--Rank Sales By Country and State

SELECT Geography1.RegionCountryName,

Geography1.StateProvinceName,

SUM(Sales.SalesAmount) As SalesAmount,

RANK() OVER(ORDER BY SUM(Sales.SalesAmount) DESC) AS Rank

FROM FactSalesWithClusteredColumnStoreIndex AS Sales

JOIN dbo.DimProduct As Product

ON Sales.ProductKey = Product.ProductKey

JOIN dbo.FactOnlineSales AS OnlineSales

ON OnlineSales.ProductKey = Product.ProductKey

JOIN dbo.DimCustomer AS Customer

ON OnlineSales.CustomerKey = Customer.CustomerKey

JOIN dbo.DimGeography Geography1

ON Geography1.GeographyKey = Customer.GeographyKey

GROUP BY Geography1.RegionCountryName,Geography1.StateProvinceName

Elapsed Time : 5668 ms