-- Create a Non-Clustered Columnstore Index

CREATE NONCLUSTERED COLUMNSTORE INDEX [IX\_NCC\_FactSales]

ON [dbo].[FactSales]

(

DateKey,

channelKey,

StoreKey,

ProductKey,

PromotionKey,

CurrencyKey,

UnitCost,

UnitPrice,

SalesQuantity,

ReturnQuantity,

ReturnAmount,

DiscountQuantity,

DiscountAmount,

TotalCost,

SalesAmount

);

--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 [dbo].[FactSales] 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 : 396 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 [dbo].[FactSales] 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 : 128 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 [dbo].[FactSales] 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 : 106 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 [dbo].[FactSales] 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 : 5480 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 [dbo].[FactSales] 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 : 6264 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 [dbo].[FactSales] 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 : 6529 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 [dbo].[FactSales] 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 : 248 ms

--Rank Sales By Year

SELECT Date1.CalendarYear,

SUM(Sales.SalesAmount) TotalSalesAmount,

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

FROM [dbo].[FactSales] AS Sales

JOIN dbo.DimDate AS Date1

ON Date1.Datekey = Sales.DateKey

Group By Date1.CalendarYear

Elapsed Time : 167 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 [dbo].[FactSales] 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 : 115 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 [dbo].[FactSales] 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 : 6697 ms