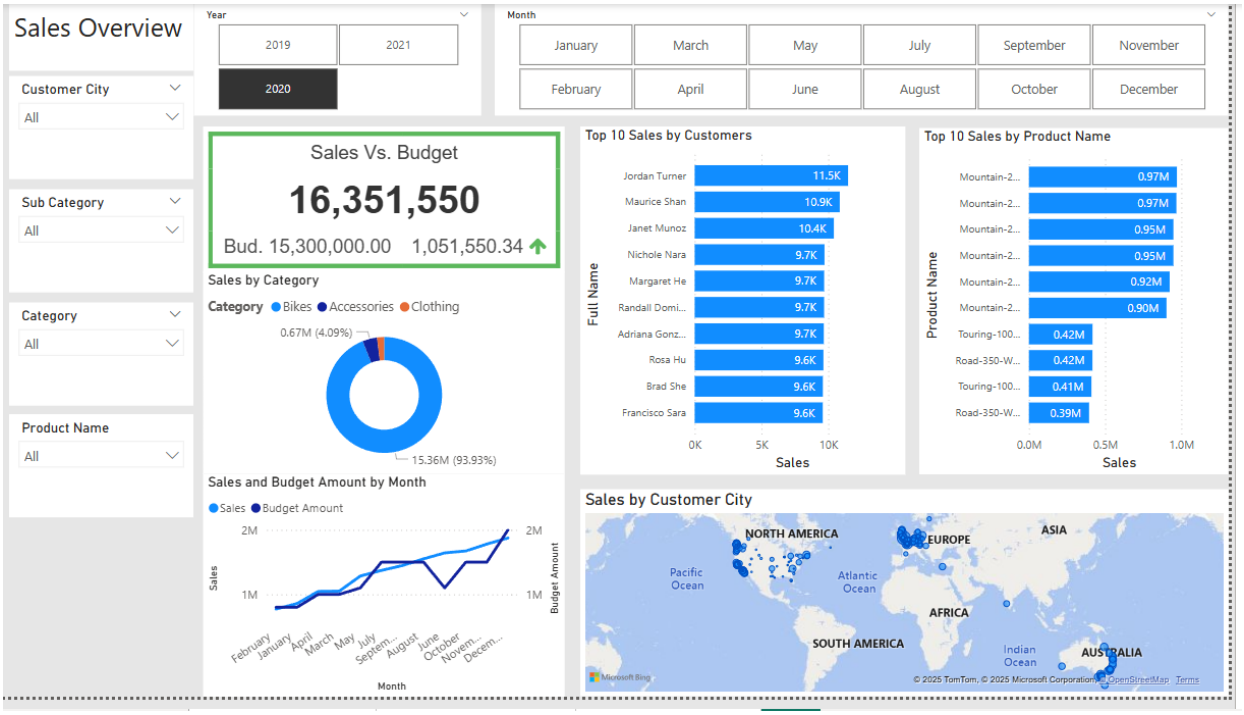
A Self-Made Data Analysis Project in SQL and Power BI

Made by – Abhisheke Chakrabortty



Problem Description

At first, we got a request like below via e-mail:

From: Sales Manager

Hi Abhisheke,

We need to improve our **internet sales reports** and want to move from static reports to **visual dashboards.**

Essentially, we want to focus on how much we have **sold of what products**, to **which clients**, and **how it has been over time**.

We measure our numbers against **budget**, so I added that in a **spreadsheet** so we can compare our values against performance.

The budget is for **2021**, and **we usually look 2 years back** in time when we do the analysis of sales.

Let me know if you need anything else!

Steven

Business Request & User Stories

The business request for this data analyst project was an executive sales report for sales managers. Based on the request that was made from the business the below user stories were defined to fulfill delivery and ensure that acceptance criteria's were maintained throughout the project:

No #	As a (role)	I want (request / demand)	So that I (user value)	Acceptance Criteria
1	Sales Manager	To get a dashboard overview of internet sales	Can follow better which customers and products sells the best	A Power BI dashboard which updates data once a day
2	Sales Representative	A detailed overview of Internet Sales per Customers	Can follow up my customers that buys the most and who we can sell ore to	A Power BI dashboard which allows me to filter data for each customer

3	Sales Representative	A detailed overview of Internet Sales per Products	Can follow up my Products that sells the most	A Power BI dashboard which allows me to filter data for each Product
4	Sales Manager	A dashboard overview of internet sales	Follow sales over time against budget	A Power Bi dashboard with graphs and KPIs comparing against budget.

Data Cleansing & Transformation (SQL)

To create the necessary data model for doing analysis and fulfilling the business needs defined in the user stories the following tables were extracted using SQL.

One data source (sales budgets) was provided in Excel format and were connected in the data model in a later step of the process.

Below are the SQL statements for cleansing and transforming necessary data:

Data Cleaning for Dimension Table:

```
--Data_Cleaning_Dimension_Table
SELECT
  [DateKey],
  [FullDateAlternateKey] as Date,
  --[DayNumberOfWeek],
  [EnglishDayNameOfWeek] as Day,
  --  ,[SpanishDayNameOfWeek]
  --,[FrenchDayNameOfWeek]
  --,[DayNumberOfMonth]
  --,[DayNumberOfYear]
  [WeekNumberOfYear] as Week_Number,
  [EnglishMonthName] as Month,
  --,[SpanishMonthName]
  --,[FrenchMonthName]
  --,[MonthNumberOfYear]
  [CalendarQuarter] as Quarter,
  [CalendarYear] as Year
  --,[CalendarSemester]
  --,[FiscalQuarter]
```

```
  --,[FiscalYear]
  --,[FiscalSemester]
FROM
  [AdventureWorksDW2019].[dbo].[DimDate]
  where CalendarYear>= 2019
```

Data Cleaning for Customer Table

```
SELECT
  [CustomerKey]
  -- ,[GeographyKey]
  -- ,[CustomerAlternateKey]
  -- ,[Title]
  ,
  [FirstName] as [First Name],
  -- ,[MiddleName]
  [LastName] as [Last Name],
  [FirstName] + ' ' + [LastName] AS [Full Name],
  -- ,[NameStyle]
  [BirthDate],
  -- ,[MaritalStatus]
  -- ,[Suffix]
  -- [Gender]
  Case Gender when 'M' then 'Male' when 'F' then 'Female' end as Gender,
  [EmailAddress],
  -- ,[YearlyIncome]
  -- ,[TotalChildren]
  --   ,[NumberChildrenAtHome]
  --   ,[EnglishEducation]
  --  ,[SpanishEducation]
  --  ,[FrenchEducation]
  --  ,[EnglishOccupation]
  --  ,[SpanishOccupation]
  -- ,[FrenchOccupation]
  --  ,[HouseOwnerFlag]
  --  ,[NumberCarsOwned]
  --  ,[AddressLine1]
  --  ,[AddressLine2]
  --  ,[Phone]
  --  ,[DateFirstPurchase]
  -- ,[CommuteDistance]
  g.City AS [Customer City] -- Assuming this is the geography info you're joining on
FROM
```

```
 dbo.DimCustomer AS c
 LEFT JOIN dbo.DimGeography AS g ON g.Geographykey = c.GeographyKey -- Joining the
Geography table(This is in the database) on GeographyKey
ORDER BY
 CustomerKey ASC;
```

Data Cleaning for Product Table

```
-- Cleansed Product Key--
SELECT
p.[ProductKey],
    -- ,[ProductAlternateKey]
    -- ,[ProductSubcategoryKey]
    -- ,[WeightUnitMeasureCode]
   --  ,[SizeUnitMeasureCode]
     p.[EnglishProductName] as [Product Name],
           ps.[EnglishProductSubcategoryName] as [Sub Category],
           pc.[EnglishProductCategoryName] as [Category],
     --,[SpanishProductName]
    -- ,[FrenchProductName]
     p.[StandardCost],
     --[FinishedGoodsFlag]
     p.[Color] as [Product Color],
    -- ,[SafetyStockLevel]
     --,[ReorderPoint]
     --,[ListPrice]
     p.[Size] as [Product Size],
    -- ,[SizeRange]
     p.[Weight] as [Product Weight],
    -- ,[DaysToManufacture]
    p.[ProductLine] as [Product Line],
    -- ,[DealerPrice]
    -- ,[Class]
    -- ,[Style]
    p.[ModelName] as [Product Model Name],
     --,[LargePhoto]
     p.[EnglishDescription] as [Product Description],
     --,[FrenchDescription]
     --,[ChineseDescription]
     --,[ArabicDescription]
    -- ,[HebrewDescription]
    -- ,[ThaiDescription]
```

```
   -- ,[GermanDescription]
   -- ,[JapaneseDescription]
   -- ,[TurkishDescription]
   -- ,[StartDate]
   -- ,[EndDate]
        ISNULL (p.Status, 'Outdated') AS [Product Status] --This rewrites all the null status as OUTDATED..this is just for better understanding..as the current one are now in use.
 FROM [AdventureWorksDW2019].[dbo].[DimProduct] as p
  LEFT JOIN dbo.DimProductSubcategory AS ps ON ps.ProductSubcategoryKey= p.ProductSubcategoryKey
 LEFT JOIN dbo.DimProductCategory AS pc ON ps.ProductCategoryKey= pc.ProductCategoryKey
 order by
 p.ProductKey asc
```

Data Cleaning for Internet Sales

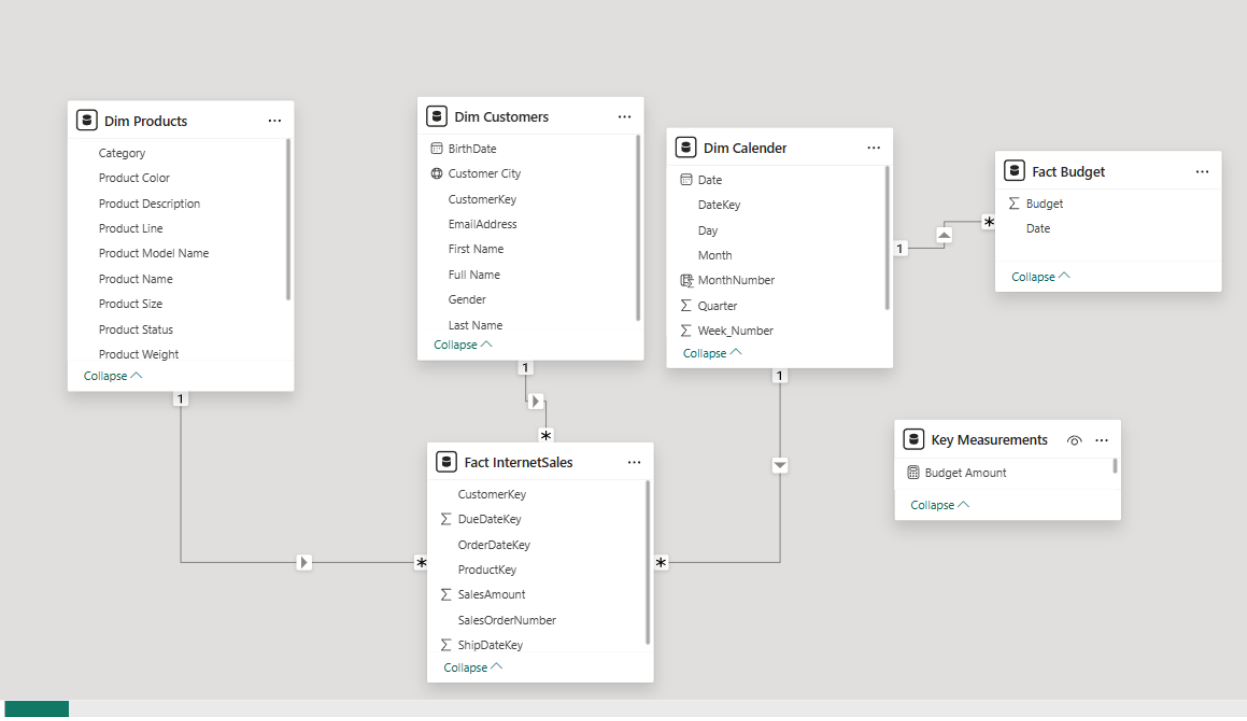
```
-- Cleansed FACT_InternetSales Table --
SELECT
 [ProductKey],
 [OrderDateKey],
 [DueDateKey],
 [ShipDateKey],
 [CustomerKey],
 --  ,[PromotionKey]
 --  ,[CurrencyKey]
 --  ,[SalesTerritoryKey]
 [SalesOrderNumber],
 --  [SalesOrderLineNumber],
 --  ,[RevisionNumber]
 --  ,[OrderQuantity],
 --  ,[UnitPrice],
 --  ,[ExtendedAmount]
 --  ,[UnitPriceDiscountPct]
 --  ,[DiscountAmount]
 --  ,[ProductStandardCost]
 --  ,[TotalProductCost]
 [SalesAmount]
 --  ,[TaxAmt]
 --  ,[Freight]
 --  ,[CarrierTrackingNumber]
```

```
 -- ,[CustomerPONumber]
 -- ,[OrderDate]
 -- ,[DueDate]
 -- ,[ShipDate]
FROM
 [AdventureWorksDW2019].[dbo].[FactInternetSales]
WHERE
 LEFT (OrderDateKey, 4) >= 2019
ORDER BY
 OrderDateKey ASC
```

Data Model

Below is a screenshot of the data model after cleansed and prepared tables were read into Power BI.

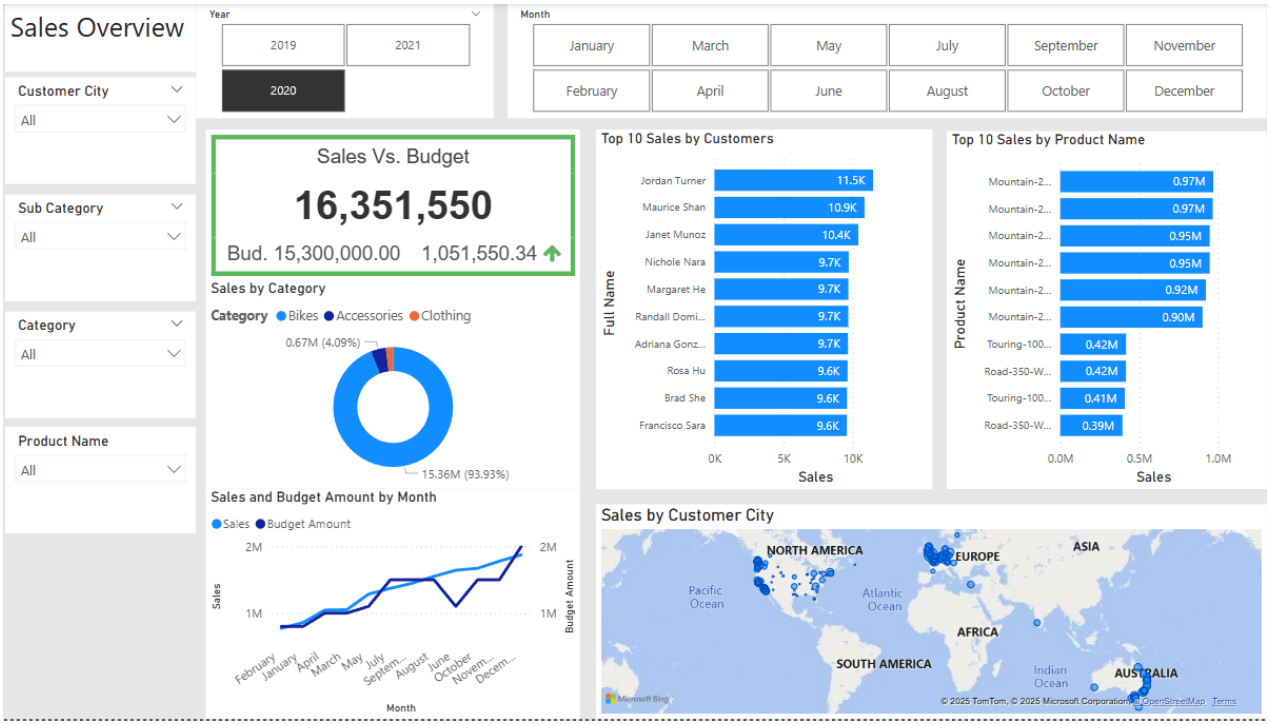
This data model also shows how FACT_Budget hsa been connected to FACT_InternetSales and other necessary DIM tables.



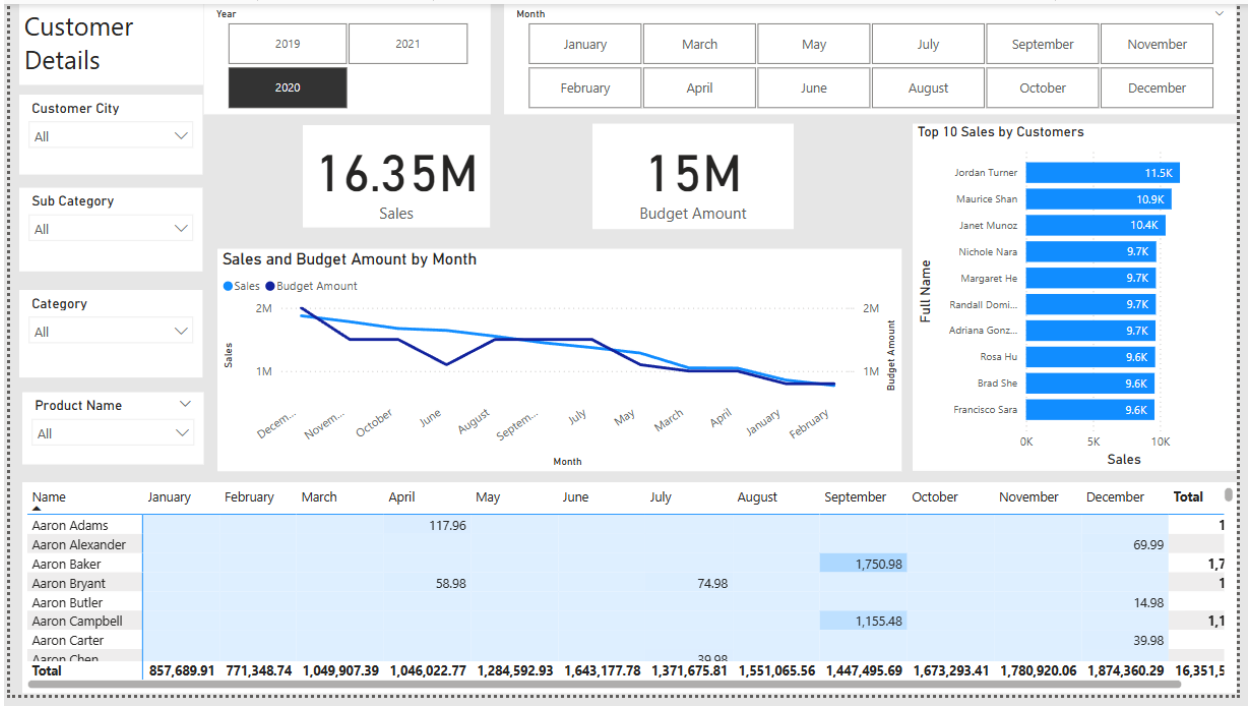
Sales Management Dashboard

The finished sales management dashboard with one page with works as a dashboard and overview, with two other pages focused on combining tables for necessary details and visualizations to show sales over time, per customers and per products.

Sales Overview Dashboard

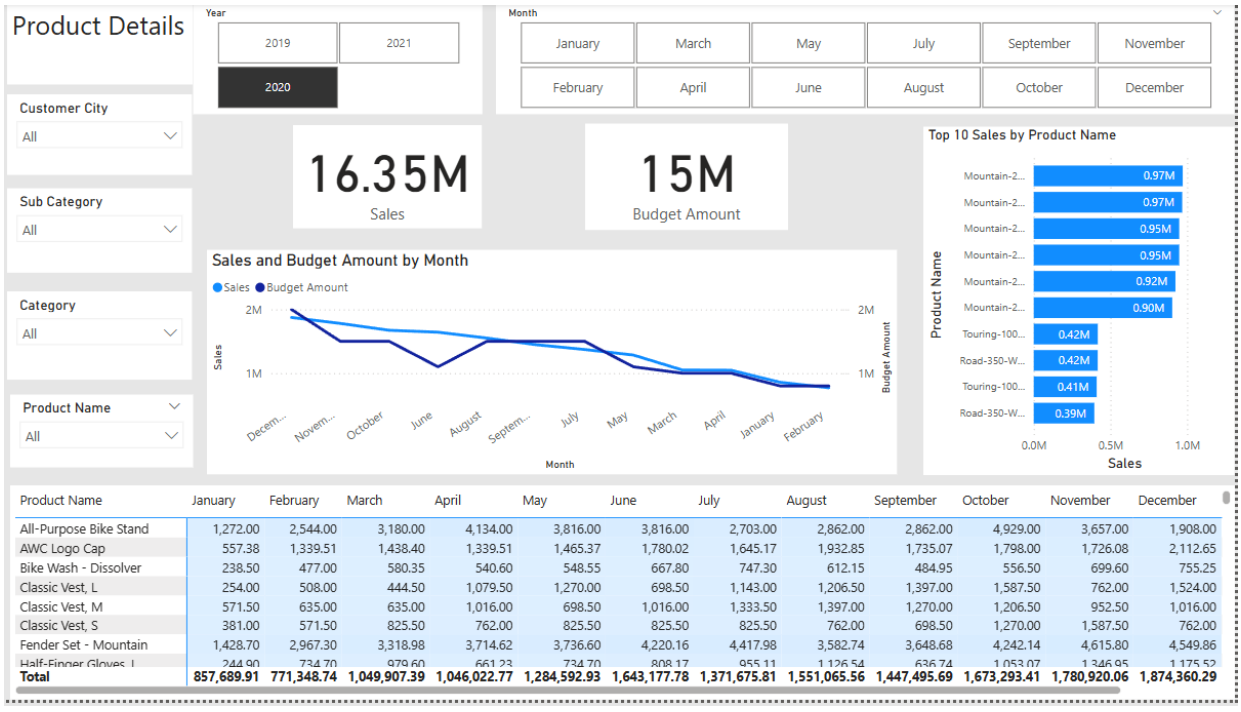


Customer Details Dashboard



Name	January	February	March	April	May	June	July	August	September	October	November	December	Total
Aaron Adams				117.96									1
Aaron Alexander												69.99	
Aaron Baker									1,750.98				1,7
Aaron Bryant				58.98			74.98						1
Aaron Butler												14.98	
Aaron Campbell									1,155.48				1,1
Aaron Carter												39.98	
Aaron Chen							39.98						
Total	**857,689.91**	**771,348.74**	**1,049,907.39**	**1,046,022.77**	**1,284,592.93**	**1,643,177.78**	**1,371,675.81**	**1,551,065.56**	**1,447,495.69**	**1,673,293.41**	**1,780,920.06**	**1,874,360.29**	**16,351,5**

Product Details Dashboard



Product Name	January	February	March	April	May	June	July	August	September	October	November	December
All-Purpose Bike Stand	1,272.00	2,544.00	3,180.00	4,134.00	3,816.00	3,816.00	2,703.00	2,862.00	2,862.00	4,929.00	3,657.00	1,908.00
AWC Logo Cap	557.38	1,339.51	1,438.40	1,339.51	1,465.37	1,780.02	1,645.17	1,932.85	1,735.07	1,798.00	1,726.08	2,112.65
Bike Wash - Dissolver	238.50	477.00	580.35	540.60	548.55	667.80	747.30	612.15	484.95	556.50	699.60	755.25
Classic Vest, L	254.00	508.00	444.50	1,079.50	1,270.00	698.50	1,143.00	1,206.50	1,397.00	1,587.50	762.00	1,524.00
Classic Vest, M	571.50	635.00	635.00	1,016.00	698.50	1,016.00	1,333.50	1,397.00	1,270.00	1,206.50	952.50	1,016.00
Classic Vest, S	381.00	571.50	825.50	762.00	825.50	825.50	825.50	762.00	698.50	1,270.00	1,587.50	762.00
Fender Set - Mountain	1,428.70	2,967.30	3,318.98	3,714.62	3,736.60	4,220.16	4,417.98	3,582.74	3,648.68	4,242.14	4,615.80	4,549.86
Half-Finger Gloves, L	244.90	734.70	979.60	661.23	734.70	808.17	955.11	1,126.54	636.74	1,053.07	1,346.95	1,175.52
Total	**857,689.91**	**771,348.74**	**1,049,907.39**	**1,046,022.77**	**1,284,592.93**	**1,643,177.78**	**1,371,675.81**	**1,551,065.56**	**1,447,495.69**	**1,673,293.41**	**1,780,920.06**	**1,874,360.29**