Siemens India

Channel Partner Sales Dashboard

Jun 2023

Neha Preneeth

Madireddy Keerthika Reddy

Somu Swapna Reddy

Marri Ramya Sree

CONTENTS

1 Introduction 3

2 Project Scope and Deliverables 3

3 Data Sources 4

4 Data Modeling 6

5 Report Architecture & Design 8

6 Report Interactivity 9

6.1 INCENTIVE CALCULATION 9

6.2 SALES DASHBOARD 9

7 Data Security and Privacy 11

8 Conclusion 11

9 Appendices 12

9.1 Steps to Refresh Dashboard with new Data 12

1 INTRODUCTION

This project report presents the development of a sales dashboard and incentive calculation system for Siemens. Our goal is to create an efficient reporting solution that allows for effective monitoring and analysis of sales data while automating the calculation of incentives for channel partners. The report provides an overview of Siemens, outlines the requirements for the reporting solution, and explains the purpose of the accompanying documentation.

Siemens, a global technology company operating in various sectors, relies on robust sales management and strong partnerships with channel partners to achieve its business objectives. Our reporting solution aims to address the need for intuitive visualizations and reports that enable stakeholders to monitor sales performance effectively.

Furthermore, the documentation provides insights into the system architecture, including data sources, data flow, data transformation processes, and the Power BI components utilized to build the sales dashboard and incentive calculation system. It also describes the data model in Power BI, encompassing relationships between tables, measures, calculated columns, and the data refresh schedule. By providing this comprehensive documentation, stakeholders will gain a clear understanding of the project's objectives, requirements, and deliverables, empowering them to leverage the reporting solution efficiently.

Please note that the calculation of incentives for channel partners is limited to a Proof of Concept (POC) phase to evaluate Power BI's viability as a technology for automated incentive calculation. Siemens will make a decision regarding the implementation of automated incentive calculation based on the POC's outcomes.

2 PROJECT SCOPE AND DELIVERABLES

The scope of the project is confined to:

- The calculation of incentives for channel partners is confined to Proof of Concept for using Power BI as a technology for Incentive calculation. Based on the POC, siemens will take a decision on implementing automated incentive calculation.
- The solution should provide intuitive visualizations and reports that enable stakeholders to monitor sales performance. The reporting solution that allows stakeholders to monitor sales performance, analyze trends.

The solution will be designed to provide near real-time updates to reflect the latest sales data, ensuring that stakeholders have access to up-to-date information for decision-making.

The following deliverables will be produced as part of this project:

- **Incentive Calculation System:** An automated system for calculating incentives for channel partners, integrated with the sales dashboard, ensuring accurate and timely incentive payouts.
- **Sales Dashboard:** A fully functional sales dashboard developed using Power BI, featuring visualizations, reports, and filters to analyze and monitor sales performance.

3 DATA SOURCES

We have received the sales data from the Siemens team, which includes both raw data and master data for various parameters.

RAW DATA:

Parameters	Significance
Bill Doc	Represents the bill document number associated with each transaction
Positions	Indicates the positions or line items within a bill document
Customer-Price Billing	Reflects the billing amount for each customer
Profit Center	Represents the profit center associated with each transaction
Customer Group	Indicates the group to which the customer belongs
Sold to Code	Represents the unique code for the customer
Channel Partner Name	Indicates the name of the channel partner involved in the transaction
Invoice Date	Represents the date on which the invoice was generated

PROFIT CENTER:

Parameters	Significance
Office Code	Represents the code for the specific office associated with the profit center
Business Segment	Indicates the segment to which the profit center belongs
Office Description	Provides a description or name for the office
Region	Represents the region to which the profit center belongs

ORDER TYPES:

Parameters	Significance
Fixed	This order type includes transactions with the AF customer group
Non-Fixed	This order type includes transactions with all other customer groups

PARENT CHILD CODES:

Parameters	Significance
Parent Code	Represents a hierarchical structure where each parent code has multiple child codes associated with it

PLAN:

Parameters	Significance
Parent Code	Represents a hierarchical structure where each parent code has multiple child codes associated with it
Channel Partner Name	Indicates the name of the channel partner involved in the transaction
Office Area	Indicates the location of the office
Buildings	Indicates the count of buildings
Power	Indicates the count of power
Control	Indicates the count of control

IMP NOTE: The above 'Plan' data was transposed and created a new table as 'New Plan'.

Parameters	Significance
Parent Code	Represents a hierarchical structure where each parent code has multiple child codes associated with it
Channel Partner Name	Indicates the name of the channel partner involved in the transaction
Office Area	Indicates the location of the office
Segment	Indicates the buildings, power and control
Planned	Indicates the planned amount for each segment

DATA TRANSFORMATIONS:

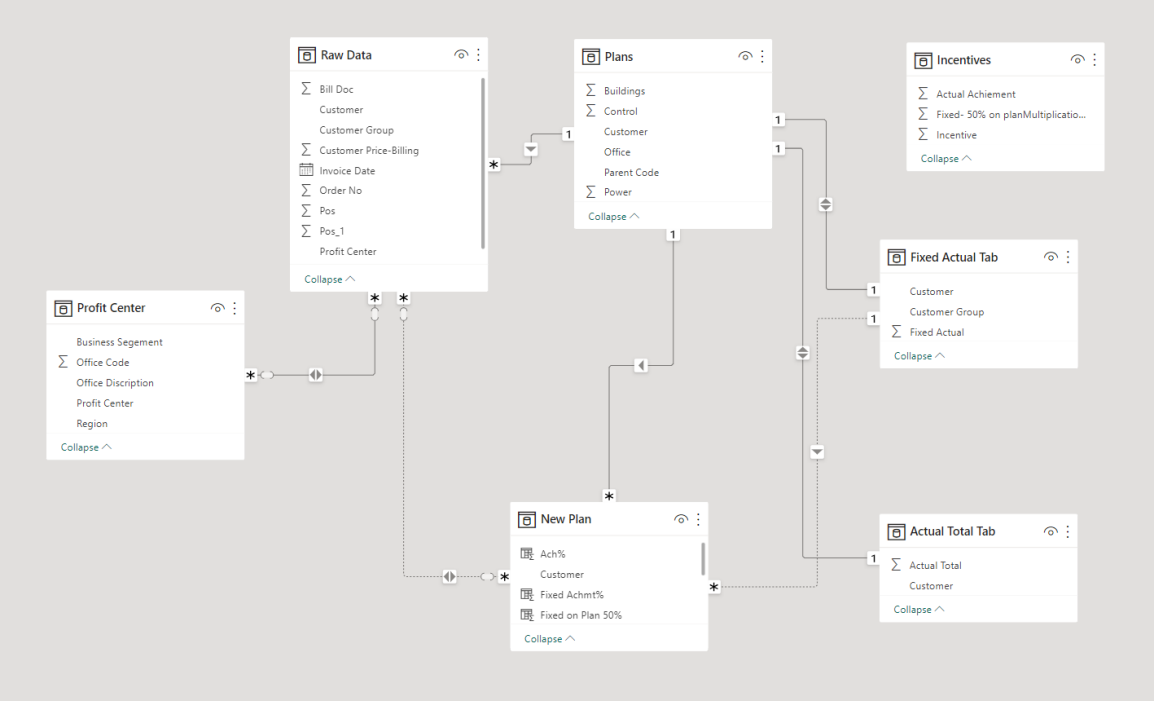
Parameters	Significance
Data Cleaning	Checking for missing values, inconsistencies, and errors in the data, and rectifying them accordingly
Data Integration	Combining the raw data with the relevant master data to enrich the analysis
Data Aggregation	Summarizing the sales data based on different parameters like profit center, order type, customer group, etc., to gain insights at a higher level
Data Visualization	Creating charts, graphs, or dashboards to visualize the sales data and identify trends, patterns, and anomalies

4 DATA MODELING

Data modeling in Power BI involves structuring and organizing the data in a way that allows for efficient analysis and reporting within the Power BI environment. It involves creating relationships between tables, defining hierarchies, and creating calculated columns and measures to enhance the data analysis capabilities.

The process of data modeling in Power BI typically involves the following steps:

- **Data Source Connection:** Connect to the data source(s) containing the raw data that you want to analyze in Power BI. Power BI supports a wide range of data sources such as Excel files, databases, online services, and more.
- **Data Transformation:** Perform data transformations and cleaning operations as needed. This may involve removing unnecessary columns, filtering rows, renaming columns, splitting columns, or applying advanced transformations using Power Query Editor, which is built into Power BI.
- **Creating Relationships:** Identify the relationships between different tables in your data model. You can define relationships based on common fields or keys between tables.
- **Defining Hierarchies:** Define hierarchies to enable drill-down capabilities in your data model. Hierarchies allow users to navigate through different levels of data, such as year -> quarter -> month, or country -> region -> city. This provides an intuitive way to explore data and perform detailed analysis.
- **Calculated Columns and Measures:** Create calculated columns and measures to enhance data analysis. Calculated columns are computed based on an expression or formula that uses values from other columns in the same table. Measures, on the other hand, are calculations performed on aggregated data, such as sums, averages, or ratios. These calculated columns and measures can be used in visualizations and reports.



Throughout the data modeling process, it's important to ensure data integrity, accuracy, and consistency. Regular maintenance and updates may be required as new data becomes available or business requirements change. Power BI provides tools and features to facilitate data modeling, such as the Power Query Editor, Relationship View, and DAX (Data Analysis Expressions) language for creating calculations and measures.

The relationships created are as following:

Relationship	Cardinality
New Plan (Customer) → Raw Data (Customer)	Many to many
Raw Data (Customer) → New Plan (Customer)	Many to many
Raw Data (Profit Center) → Profit Center (Profit Center)	Many to many
Raw Data (Customer) → Plans (Customer)	Many to one
New Plan (Parent Code) → Plans (Parent Code)	Many to one
New Plan (Customer) → Fixed Actual Tab (Customer)	Many to one
Plans (Customer) → Fixed Actual Tab (Customer)	One to one
Plans (Customer) → Actual Total Tab (Customer)	One to one

Column Name	Remarks
Customer	Name of the Channel Partner
Business Segment	Under each customer there will be 3 segments – buildings, control, power
Total Planned	Value should be taken from Plan
Fixed on Plan 50%	Total Planned / 2
Actual Total	Customer Price Billing from Raw Data
Fixed Actual	Customer Price Billing from Raw Data where Customer Group = AF
Achievement %	Actual Total / Total Planned
Fixed Achievement %	Total Fixed Actual / Total Fixed on Plan 50%
Incentive	It is taken from Incentive table
Multiplication Factor %	It is taken from Incentive table
Total Incentive	Actual Total * Incentive * Multiplication Factor

- A new table named Fixed Actual Cal was created which included the parameters Customer, Customer Group and Fixed Actual.
- A measure named Fixed on Plan 50% was created in the New Plan table.
- Fixed on Plan 50% = 'New Plan'[Planned]*.5

DAX queries are used to calculate some of the columns. We couldn’t calculate from Achievement % onwards as the inputs required for their calculation were in different tables. DAX queries can be explored more in the future for the solution.

5 REPORT ARCHITECTURE & DESIGN

The source data from the excel is loaded into the Power BI for transformations and analysis.

Parameters	Type	Significance
Sum of Building, Control, Power **Actual Total vs Total Planned**	Pie Chart	Represents the total count of buildings, power and control Represents the actual total and total planned
Total Planned vs Customer **Actual Total by Year and Quarter**	Column Chart	Represents the total planned for each customer in vertical bars Represents actual total for each month
Actual Total vs Customer	Area Chart	Represents the cumulative value for each customer
Buildings vs Customer	Bar Graph	Represents the count of buildings for each customer in horizontal bars
Count of Office, Customer, Customer Group, Region	Card	Represents the total count or summary statistic
Total Planned vs Customer Group	Donut Chart	Represents the total planned for each customer group

6 REPORT INTERACTIVITY

Power BI provides various interactive features that allow users to interact with reports and drill down into the data to gain deeper insights. Some of the features are:

6.1 INCENTIVE CALCULATION

Feature	Significance
Slicers	Users on selecting the slicer 'Customer' for a particular customer the entire table on left hand side will filter out the data for the selected customer
Sorting of Columns	Clicking on the Column name in the table sorts the data in the increasing or decreasing order

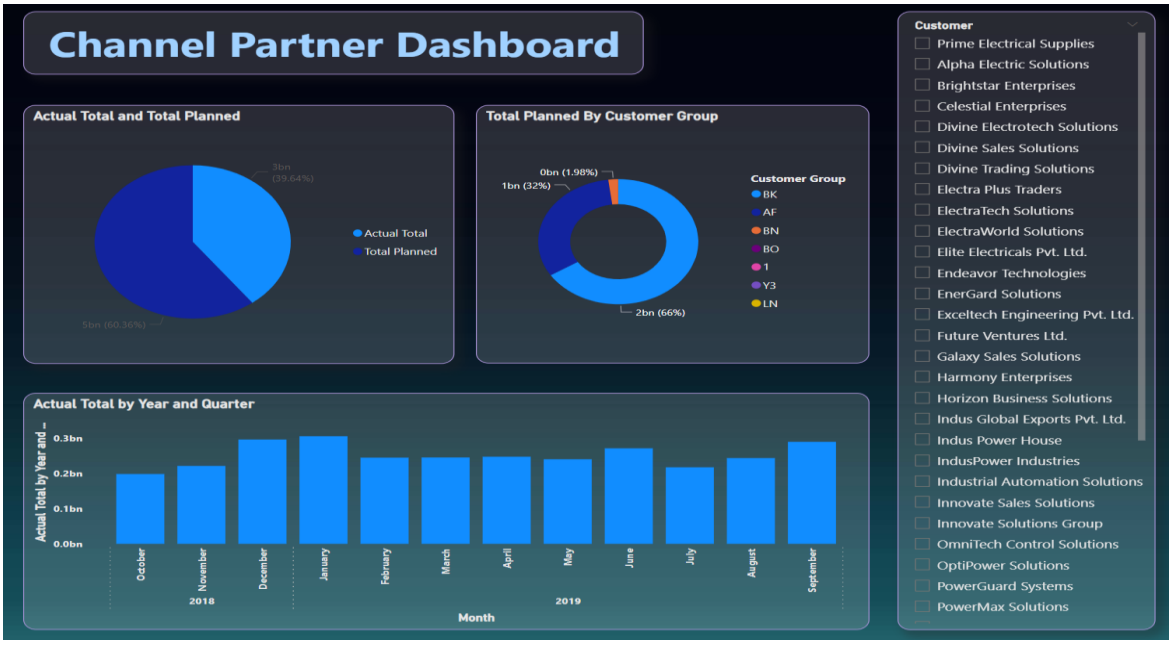
Customer	Segment	Total Plan	Fixed on Plan 50%	Actual Total	Fixed Actual	Ach%	Fixed Achmt%	Incentive	MF	Total Incentive
Prime Electrical Supplies	Buildings	40565830	2,02,82,915.00	7,41,95,850.00	2,09,33,547.00	182.90	103.21	5	1.00	37,09,79,250.00
Prime Electrical Supplies	Control	27931791	1,39,65,895.50	7,41,95,850.00	2,09,33,547.00	265.63	149.89	5	1.60	59,35,66,800.00
Prime Electrical Supplies	Power	11646500	58,23,250.00	7,41,95,850.00	2,09,33,547.00	637.07	359.48	5	2.00	74,19,58,500.00
Alpha Electric Solutions	Buildings	5000000	25,00,000.00	2,14,16,278.00	1,98,42,204.00	428.33	793.69	5	2.00	21,41,62,780.00
Alpha Electric Solutions	Control	2500000	12,50,000.00	2,14,16,278.00	1,98,42,204.00	856.65	1,587.38	5	2.00	21,41,62,780.00
Alpha Electric Solutions	Power	2500000	12,50,000.00	2,14,16,278.00	1,98,42,204.00	856.65	1,587.38	5	2.00	21,41,62,780.00
Brightstar Enterprises	Buildings	60842060	3,04,21,030.00	6,59,73,961.00	4,06,07,412.00	108.43	133.48	2	1.60	21,11,16,675.20
Brightstar Enterprises	Control	30848522	1,54,24,261.00	6,59,73,961.00	4,06,07,412.00	213.86	263.27	5	2.00	65,97,39,610.00
Brightstar Enterprises	Power	10668395	53,34,197.50	6,59,73,961.00	4,06,07,412.00	618.41	761.27	5	2.00	65,97,39,610.00
Celestial Enterprises	Buildings	57230453	2,86,15,226.50	8,77,10,475.00	4,27,18,266.00	153.26	149.29	5	1.60	70,16,83,800.00
Celestial Enterprises	Control	56528810	2,82,64,405.00	8,77,10,475.00	4,27,18,266.00	155.16	151.14	5	2.00	87,71,04,750.00
Celestial Enterprises	Power	6397469	31,98,734.50	8,77,10,475.00	4,27,18,266.00	1,371.02	1,335.47	5	2.00	87,71,04,750.00
Divine Electrotech Solutions	Buildings	24962910	1,24,81,455.00	1,66,33,385.00	52,02,028.00	66.63	41.68	0	0.00	0.00
Divine Electrotech Solutions	Control	681307	3,40,653.50	1,66,33,385.00	52,02,028.00	2,441.39	1,527.07	5	2.00	16,63,33,850.00
Divine Electrotech Solutions	Power	3472087	17,36,043.50	1,66,33,385.00	52,02,028.00	479.06	299.65	5	2.00	16,63,33,850.00
Divine Sales Solutions	Buildings	115869000	5,79,34,500.00	9,13,55,824.00	3,97,94,084.00	78.84	68.69	0	0.00	0.00
Divine Sales Solutions	Control	144928000	7,24,64,000.00	9,13,55,824.00	3,97,94,084.00	63.04	54.92	0	0.00	0.00
Divine Sales Solutions	Power	19269000	96,34,500.00	9,13,55,824.00	3,97,94,084.00	474.11	413.04	5	2.00	91,35,58,240.00
Divine Trading Solutions	Buildings	20413114	1,02,06,557.00	93,67,836.00	73,07,924.00	45.89	71.60	0	0.00	0.00
Divine Trading Solutions	Control	33529465	1,67,64,732.50	93,67,836.00	73,07,924.00	27.94	43.59	0	0.00	0.00
Divine Trading Solutions	Power	2667539	13,33,769.50	93,67,836.00	73,07,924.00	351.18	547.92	5	2.00	9,36,78,360.00
Electra Plus Traders	Buildings	32991541	1,64,95,770.50	1,71,88,283.00	64,96,120.00	52.10	39.38	0	0.00	0.00
Electra Plus Traders	Control	17231534	86,15,767.00	1,71,88,283.00	64,96,120.00	99.75	75.40	1	0.00	0.00
Electra Plus Traders	Power	3157420	15,78,710.00	1,71,88,283.00	64,96,120.00	544.38	411.48	5	2.00	17,18,82,830.00
ElectraTech Solutions	Buildings	138807671	6,94,03,835.50	25,98,33,409.00	5,46,82,795.00	187.19	78.79	5	0.00	0.00
ElectraTech Solutions	Control	206580155	10,32,90,077.50	25,98,33,409.00	5,46,82,795.00	125.78	52.94	4	0.00	0.00
ElectraTech Solutions	Power	38296048	1,91,48,024.00	25,98,33,409.00	5,46,82,795.00	678.49	285.58	5	2.00	2,59,83,34,090.00
ElectraWorld Solutions	Buildings	4233997	21,16,998.50	78,17,018.00	44,56,366.00	184.63	210.50	5	2.00	7,81,70,180.00
ElectraWorld Solutions	Control	8912604	44,56,302.00	78,17,018.00	44,56,366.00	87.71	100.00	0	1.00	0.00
Total		**4609141905**	**2,30,45,70,952.50**	**3,02,66,00,430.00**	**96,84,83,119.00**					**50,82,41,43,051.60**

Customer

- Prime Electrical Supplies
- Alpha Electric Solutions
- Brightstar Enterprises
- Celestial Enterprises
- Divine Electrotech Solutions
- Divine Sales Solutions
- Divine Trading Solutions
- Electra Plus Traders
- ElectraTech Solutions
- ElectraWorld Solutions
- Elite Electricals Pvt. Ltd.
- Endeavor Technologies
- EnerGard Solutions
- Exceltech Engineering Pvt. Ltd.
- Future Ventures Ltd.
- Galaxy Sales Solutions
- Harmony Enterprises
- Horizon Business Solutions
- Indus Global Exports Pvt. Ltd.
- Indus Power House
- IndusPower Industries
- Industrial Automation Solutions

6.2 SALES DASHBOARD

Feature	Significance
Filters	Allow users to limit the data displayed or they can use advanced filtering options such as top N or relative date filtering.
Slicers	Users can click on a slicer item to apply a filter and instantly see how it impacts the other visuals in the report
Cross-Filtering	Allows users to filter data in one visual based on the selection made in another visual
Drill-Through	Enables users to navigate to more detailed information by clicking on a data point or a specific section of a visualization
Drill-Down	Allows users to progressively explore hierarchical data by expanding or collapsing levels of detail
Tooltips	Display additional information when users hover over data points or elements within a visualization



In our report, we have applied filters on the bar and column charts to find out the top 15 customers. A slicer for customers has been added to see how the visualization charts change for a particular customer. These features enhance the interactivity and flexibility of the report, empowering users to perform deeper analysis, compare different scenarios, and gain more valuable insights from the data.

7 DATA SECURITY AND PRIVACY

There is no specific security requirements for this dashboard as it is a POC.

Some of the key security features available in Power BI for Authentication and Authorization are:

- **Azure Active Directory (Azure AD) Integration:** Power BI integrates with Azure AD, allowing for centralized user authentication and access control. Users can sign in to Power BI using their Azure AD credentials, enabling IT administrators to manage user access and permissions effectively.
- **Role-based Access Control (RBAC):** Power BI supports RBAC, allowing administrators to define roles and assign appropriate permissions to users or groups. This ensures that only authorized individuals can access and interact with specific reports, dashboards, and datasets.
- **Row-Level Security (RLS):** RLS enables data-level access control by restricting the rows of data that users can see based on their role or membership in specific groups. This ensures that users can only view the data that is relevant to their role or responsibilities.

8 CONCLUSION

Based on the requirements from Siemens, we have successfully created an interactive incentive calculator and additionally created a comprehensive sales analysis dashboard showcasing various trends.

9 APPENDICES

The source code and document are available in github link provided below :

https://github.com/nehapreneeth/Siemens-Internship

Documents	Description
Siemens Channel Partner Analysis.doc	It provides the complete documentation of the project
Channel Partner Sales Analysis Dashboard.pbix	It contains the interactive dashboard for channel partner analysis
Siemens Incentive Calculation.pbix	It contains the incentive calculation
Siemens Invoice Data.xlsb	It contains the sample source data used for dashboard

9.1 STEPS TO REFRESH DASHBOARD WITH NEW DATA

Step 1: Copy 'Siemens Invoice data.xlsb' , 'Channel Partner Sales Analysis Dashboard.pbix' and 'Siemens Incentive Calculation.pbix 'into a folder (ex: C://dashboards).

Step 2: Update the source data if required in specified format.

Step 3: Open any .pbix file. Ensure that excel file is closed.

Step 4: Click on Get Data → Excel Workbook

Step 5: Select the excel file in C://dashboards

Step 6: Select the sheets and click on load. Wait till all the sheets are loaded

Step 7: Click on the dashboard page to view the updated data