## **Biz Consultancy Performance Analysis**

### 1. Project Overview: -

#### INTRODUCTION

Our client company "Biz Consultancy" is a B2B digital marketing and an IT company with thousands of clients from all over India. Their requirement was to analyze the client database and overall performance of the company including sales, employee performance, products in demand, client's requirements and market trends.

Initially, meeting data was received from the S3 bucket in AWS, provided by the client and communicated by our Project Manager, Mr. Makode. This data was extracted to an Excel sheet for cleaning and analysis. The Excel data was then cleaned by removing unnecessary data and processed, separating the pin code, city, and state from the address column into new columns.

Special symbols were removed from the data to eliminate anomalies, particularly in business names and address columns, ensuring the meeting data was properly structured. All columns were checked for inconsistencies, and the meeting and calling dates were arranged in the correct sequence when discrepancies were found.

Once the data has been prepared then it was imported into the MySQL database. On the basis of Business Id which were the primary key columns; connections were built in between the columns. Considering the problem statements provided by the client we run various queries and got the numbers required in order to draw conclusions.

The MySQL database were imported into the Power Bi so the dashboard can be made to represent the key performance indicators. Considering the problem statements the proper interactive dashboard has been built and handed over to the manager for further review.

## **AIMS & OBJECTIVES OF THE PROJECT**

- 1. Analyze the demographic profile of clients and its variation across districts.
- 2. Evaluate the business's year and month-wise performance over the years.
- 3. Identify common client types and compare their usage patterns and profitability.
- 4. Determine the most frequently used products by clients and assess overall profitability.
- 5. Identify major business expenses and propose strategies for reduction to improve profitability.
- 6. Analyze the client portfolio and its variation across different purposes and segments.
- 7. Evaluate current customer service levels and propose improvements to enhance satisfaction.
- 8. Explore the potential for introducing new products or services to attract more customers and increase profitability.
- 9. Analyze the role of tele-callers in the sales process and their effectiveness.
- 10. Evaluate the individual performance of Business Development Managers (BDMs) across various client segments.
- 11. Analyze business retention rates with the same or different products over time.
- 12. Identify the best-selling products and categories and analyze factors contributing to their success.
- 13. Determine the most popular selling amounts and optimize pricing strategies.

### 2. Data Wrangling: -

Initially, in meeting we received the data from the S3 bucket in AWS, provided by the client and informed by our Project Manager Mr. Makode. The data was extracted to an Excel sheet for the analysis.

The extracted data was cluttered & very unstructured manner. We analyzed the data in excel sheet and arranged it into a structured manner. The pin code, city, and state were separated from the address column into new separate columns. Special symbols were removed from the data to eliminate anomalies, especially in business names and addresses, and the meeting data was properly structured. Unnecessary and irrelevant columns were removed. All columns were checked for anomalies, and the meeting date and calling date were arranged in sequence when found differently. The column names were as follows,

- Sr. No.
- Business\_ID
- Business name
- Business category
- Contact\_person
- Contact address
- City
- Pincode
- State
- Calling\_date
- Meeting\_date
- Meeting\_time
- Product proposal
- Meeting\_status
- Tellercaler name
- BDM\_name
- Map
- Telecaller\_feedback
- BDM feedback

### a) Challenges faced: -

- Extracting the pin code from the address was difficult as its location varied, but it was eventually separated out using conditional formatting in excel.
- The dates were not in the proper format, and there was a considerable difference between the meeting date and the calling date. Since the calling date should be earlier than the meeting date, it was corrected.
- The main challenge was structuring the data into the proper format, which required significant time and effort.
- There were many spelling mistakes throughout the meeting data, which were corrected as required.

### b) Imputation: -

the login data received from the manager was extracted from the S3 bucket in AWS to an Excel sheet. Again, the pin code, city, and state were removed from the Address column, and new columns were created for them. Anomalies in all columns were checked and corrected, and then the login data was structured into the required format. Values were imputed column-wise as follows:

- Blank calling date and meeting date values were imputed using the mode.
- Blank meeting time values were imputed using the mode.
- Blank Tele caller name and BDM name values were imputed by considering the values in the cells above and below and imputing the appropriate one.
- The Map column had three values: Unverified, Done, and Not Done.
- The Meeting Status was distributed between "call and go" and "Confirm."
- Remaining blank values in the Business Category were filled according to the business names.
- Blank values for city, state, and pin code were imputed according to the local address.
- Remaining blank values in the Meeting table were replaced with "No Data."

#### c) Challenges Faced: -

- Extracting the pin code from the address was difficult as its location varied, but it was eventually separated out using formulas after significant effort.
  - The dates were not in the proper format, with some being in dd-mm-yyyy and others in dd/mm/yyyy, so they were converted to dd-mm-yyyy.
  - The main challenge was faced in structuring the data into the proper format, which required significant time and effort.
  - There were many spelling mistakes throughout the meeting data, which were corrected as required.

- d) Imputation: Values were imputed column-wise as follows:
  - Blank login date values were imputed using the mode.
  - Blank values for city, state, and pin code were imputed according to the local address.
  - Blank Tele caller name and BDM name values were imputed by considering the values in the cells above and below and imputing the appropriate one.
  - Remaining blank values in the Business Category were filled according to the business names.
  - The Tele caller name and BDM name were in one column, so they were extracted into two columns named Tele caller and BDM, and blank values were filled down in Excel.
  - Two columns, Expense and Profit, were created from the Total Sales amount, which were 70 percent and 30 percent of the Total Sales, respectively.

### 3. Data Structuring: -

After Data Wrangling, I put my hands-on data structuring process, which involved following,

- Checking the data from two tables revealed a data imbalance, so blank spaces were replaced with "No data" to balance the data.
- Blank spaces from Contact Person were replaced by "Unknown".

### a) Challenges Faced: -

- For many cities, the state was written incorrectly, so it was corrected.
- In some cases, "No data" was written between names, e.g., "Ad. ManNo dataish Aggrawal," so it was corrected to "Ad. Manish Aggrawal."
- Some dates were found to be in the future, beyond 2024, while the meeting date was in the past, so they were corrected according to the meeting date.
- The meeting time was in the 12-hour format, which created issues, so it was converted to the 24-hour format.

#### b) Final Check: -

- After balancing the data, a Business ID was created to connect both tables, making it
  common to both tables for creating a database. For this, a 4-alphabet temporary ID
  was created, which included the first letter of the Business name, the first letter of the
  Business Category, the first letter of the BDM name, and the first letter of the City
  name from the meeting table.
- We had to link all tables in MySQL for the relational database, so we had to make a primary key to connect all these tables in MySQL.
- After creating the temporary ID, a unique ID was created from all the data by assigning a row number to that unique ID, and thus, using VLOOKUP, a permanent Unique ID was created as the Business ID.
- Again, using VLOOKUP, the Business ID from the meeting table was assigned to the Login Table.
- After analyzing the Business Category and Product Category columns, many categories were found to be the same and repeated. To normalize them into a single category for

better analysis, many categories were reduced to a minimum number of categories, and the same was done for the Product Proposal column.

After discussion with the Manager, it was decided to create four tables from the two datasets. The four tables are described below:

- Table 1: Business\_ID (PK), Business\_Name, Contact\_Person, Address, PinCode, City, State, GST\_Number
- Table 2: Business\_ID (FK), Telecaller, BDM, Calling\_Date, Meeting\_Time, Meeting\_Status
- Table 3: Business\_ID (FK), Business\_Category, Map, Product\_Proposal
- Table 4: Business\_ID (FK), Login\_Date, Sales\_Amount, Advanced\_Amount, GST\_Amount, Payment\_Mode, Expense and Profit

As discussed with the Manager, the GST is 18% of the total sales amount in table 4, so we created and imputed values using formulas. These four tables were created in Excel using this format. Thus, the data is ready to import into MySQL.

### 4. Analysis using MySQL: -

Created a database and four table with appropriate column names and data types. All four tables were exported and saved as CSV format and then imported into MySQL database.

### a) Challenges Faced: -

- Importing tables into MySQL created a problem as Table 1 had duplicate Business\_ID values due to many instances of the same Business\_Name. So, after assigning the primary key, it gave a primary key-foreign key constraint failure error. To resolve this, duplicates were removed from Table 1 based on the Business\_Category, and then it was imported into MySQL.
- The remaining tables were successfully imported into MySQL.
- The date format of the Meeting Date and Calling Date columns in Table 1 was changed from VARCHAR to DATE, and the time format of the Meeting Time column was changed to TIME.
- The Login Date column was changed from VARCHAR to DATE format.
- Again, after discussing with Manager and Client we have to create Expense and Profit column which is 70% and 30% of Total Sales Respectively so again using formulas and created Two Columns as required.

Thus, after importing to MySQL we have run various query to Analyze data as follow,

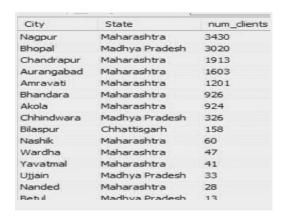
### 1) What is the demographic profile of the clients and how does it vary across districts?

SELECT b.City, b.State, COUNT(DISTINCT b.Business\_ID) AS num\_clients

FROM business\_info b

GROUP BY b.City, b.State

ORDER BY num\_clients DESC;



Thus, we get to know that what city and state the client belongs.

2) How the Biz consultancy have performed over the years? Give their detailed analysis year & month-wise.

SELECT YEAR(t.Login\_Date) AS year, MONTH(t.Login\_Date) AS month, SUM(t.Sales\_Amount) AS total\_sales FROM transaction\_data GROUP BY YEAR(t.Login\_Date), MONTH(t.Login\_Date) ORDER BY Total\_sales;

year	month	total_sales
2019	11	3874020
2019	12	3633383
2020	1	2059820
2020	2	1130044
2019	10	973696
2019	8	918796
2023	2	812107
2019	9	748760
2023	6	730741
2019	6	728310
2023	3	688987
2019	7	634380
2023	8	633627

Biz consultancy performed better in November 2019, December 2019 followed by January 2020.

# 3) What are the most common types of clients and how do they differ in terms of usage and profitability?

SELECT Category\_type, COUNT(\*) AS Client\_Count, AVG(Sales\_Amount)

AS Average\_Sales, AVG(profit) AS Average\_Profit

FROM business\_info b

JOIN product\_info p ON b.Business\_ID = p.Business\_ID

JOIN transcation\_data t ON b.Business\_ID = t.Business\_ID

GROUP BY Category\_type

ORDER BY client\_count DESC;

Category_type	Client_Count	Average_Sales	Average_Profit
Hospital	628	18145.6210	5443.6783
Clinic	460	12471.4217	3741.4261
Real Estate	329	19243.3131	5772.9878
Educational Classes	315	13792.2063	4137.6635
Banquet Hall	193	15968.5130	4790.5648
School	145	15152.2414	4545.7034
Jewellery Shop	133	9181.2030	2754.3609
Agro Product	129	24716.5891	7414.9767
College	117	22482.0427	6744.6154
Enterprises	90	15307.0889	4592.2000
Doctourant	00	15570 6667	4672 0000

Most Common type of client is from Hospital, Clinic and Educational classes and Client which gives most profit Is from Agency and Tourism.

## 4) Which types of product are most frequently used by the clients and what is the overall profitability of the client need?

SELECT New\_Product, COUNT(\*) AS Usage\_Count, SUM(profit) AS Total\_Profit

FROM product\_info p

JOIN transaction\_data t ON p.Business\_ID = t.Business\_ID

GROUP BY New\_Product

ORDER BY Usage\_Count DESC;

New_Product	num_dients	total_sales
Gmvt	4289	26059590
Gmvt + Facebook Lead	2713	813520
Gmvt + Social Media	2161	199100
No Data	2017	803565
Gmvt+Social Media	1096	85200
Social Media Management	813	11203885
Gmvt	310	4745742
Vps	301	26260
Gmvt + Social Media + Facebook Lead	232	34160
Gmvt + Google ads	159	2472700
Google ads	140	2227505
Gmvt + Website	91	1873520
Gmvt + Social Media + Website	74	NULL

Gmvt product is most used by client having highest usage and most profitable product followed by Gmvt+Facebook lead.

# 5) What are the major expenses of the Biz and how can they be reduced to improve profitability?

SELECT bi.Business\_Name, SUM(td.expense) AS Total\_Expenses,

SUM(td.profit) AS Total\_Profits

FROM business\_info bi

JOIN transaction\_data td ON bi.Business\_ID = td.Business\_ID

GROUP BY bi.Business\_Name

ORDER BY Total\_Expenses DESC;

Business_Name	Total_Expenses	Total_Profits
Ayushman Hospital	388920.00	166680.00
Maitreya Developers	208250.00	89250.00
Farme	189728.00	81312.00
Nibe College Of Hotel Management	130403.00	55887.00
Gandhi Nursing Home	123900.00	53100.00
Indian Institute Of Fire Engineering	115080.00	49320.00
Central India Public School	106361.50	45583.50
Sky Agency	99890.00	42810.00
Mahalaxmi Devlopers	86800.00	37200.00
Lotus Garden And Celebration	86730.00	37170.00
Aprilla Escara	00004.00	2016 00

Major Expense is from Ayushman Hospital, Maitreya Developers, Farm, we should focus on Meeting Confirmation of Customer and should reduce cost by searching alternative in market.

# 6) What is the client portfolio and how does it vary across different purposes and client segments?

SELECT Category\_type, New\_Product, COUNT(\*) AS Client\_Count

FROM business info b

JOIN product\_info p ON b.Business\_ID = p.Business\_ID

GROUP BY Category\_type, New\_Product

ORDER BY Client\_Count Desc;

Category_type	New_Product	Client_Count
Clinic	Gmvt	1109
Hospital	Gmvt	957
Clinic	Gmvt + Facebook Lead	679
Clinic	No Data	536
Hospital	Gmvt + Facebook Lead	361
Hospital	No Data	309
Educational Classes	Gmvt + Facebook lead	282
Clinic	Gmvt + Social Media	275
Educational Classes	Gmvt	271
Hospital	Social Media Management	221
Hospital	Gmvt + Social Media	189
Educational Classes	Gmvt + Social Media	160
Clinic	Social Media Management	146

Maximum Client is of Clinic using GMVT product followed by Hospital then Education Classes.

### 7) How can the Biz improve its customer service and satisfaction levels?

SELECT b.Business\_Name, m.BDM\_name, m.Telecaller\_name, m.Meeting\_Status,

DATEDIFF(m.meeting\_date, m.calling\_date)

AS days\_to\_meeting, t.Sales\_Amount, t.profit

FROM business\_info b

JOIN meeting\_details m ON b.Business\_ID = m.Business\_ID

LEFT JOIN transcation\_data t ON b.Business\_ID = t.Business\_ID

ORDER BY days\_to\_meeting DESC;



Biz should concentrate on above mentioned business for good customer services.

# 8) Can the Biz introduce new products or services to attract more customers and increase profitability?

SELECT Business\_Category,

COUNT(DISTINCT New\_ProductI) AS Product\_Types

FROM product\_info

GROUP BY Business\_Category

ORDER BY Product\_Types desc;

Category_type	Product_Types
Clinic	53
Hospital	49
Educational Classes	48
Real Estate	43
Beauty Parlour	29
Restaurant	28
School	27
Tour And Travel	26
Interior Decor	25
Cloth Store	24
Salon	24
Hardware And Ply Store	23
Co-Curricular Classes	22
College	22

Biz should introduce new products targeting Clinics, Hospitals, Educational Classes for more profit.

#### 9) How is tele caller's role in the sales?

SELECT md.Telecaller\_name, pi.Category\_type,

COUNT(\*) AS Sales\_Count, SUM(td.Sales\_Amount) AS Total\_Amount

FROM meeting\_details md

JOIN product\_info pi ON md.Business\_ID = pi.Business\_ID

LEFT JOIN transcation\_data td ON md.Business\_ID = td.Business\_ID

WHERE md.Meeting\_Status = 'Confirm'

GROUP BY md.Telecaller\_name, pi.Category\_type

ORDER BY Total\_Amount desc;

Telecaller_name	Category_type	Sales_Count	Total_Amount
Gaurav	Real Estate	1171	28767400
Jitesh	Agro Product	484	11925760
Gaurav	Hospital	441	11735080
Dheeraj	Real Estate	288	7140000
Dheeraj	Hospital	71	6227200
Sunidhi	Agro Product	244	5987580
Gayatri	Agro Product	257	5975880
Mayuri	Banquet Hall	290	4409096
Gayatri	Real Estate	346	3801000
Priti	Real Estate	148	3570000
Dhupendra	Hospital	74	3480040
Varsha	Agro Product	124	3104160
Diksita	Agro Product	122	3018020
Shreya	Agro Product	121	2981440
Shital	Hospital	455	2976616

Gaurav makes most of profit followed by Jitesh and Dheeraj.

### 10) What is BDM's individual performance with various segments of client?

SELECT m.BDM\_name, p.Category\_type,

COUNT(m.Business\_ID) AS num\_clients, SUM(t.Sales\_Amount) AS total\_sales

FROM meeting\_details m

JOIN product\_info p ON m.Business\_ID = p.Business\_ID

LEFT JOIN transaction\_data t ON m.Business\_ID = t.Business\_ID

GROUP BY m.BDM\_name, p.Category\_type

ORDER BY total\_sales DESC;

BDM_name	Category_type	num_dients	total_sales
Dheeraj	Real Estate	1186	28697440
Gaurav	Hospital	405	18883506
Vikrant	Agro Product	370	8962020
Gaurav	Real Estate	302	7283400
Prateek	Agro Product	261	6105600
Shreya	Agro Product	243	5972880
Dheeraj	Hospital	583	5183080
Vikrant	Real Estate	560	4070220
Praful	Real Estate	154	3698100
Gaurav	College	120	3586280
lochana	Dool Estate	150	2254700

Dheeraj have the greatest number of client and makes most sales in Real Estate same as Gaurav in Hospital and Vikrant in Agri-Product.

## 11) How many businesses retain with same or different product?

SELECT COUNT(b.Business\_ID)

AS num\_businesses, p.New\_Product

FROM business\_info b

JOIN product\_info p ON b.Business\_ID = p.Business\_ID

GROUP BY p.New\_product;

num_businesses	New_Product
5779	Gmvt
3816	Gmvt + Facebook Lead
2682	Gmvt + Social Media
2496	No Data
1442	Gmvt+Social Media
1011	Social Media Management
371	Vps
362	Gmvt
351	Gmvt + Social Media + Facebook Lead
202	Gmvt + Google ads
100	Concle ade

Most of business is retained by GMVT product followed by Gmvt+Facebook lead.

### 12) Which is best-selling product and category?

SELECT p.Product\_Proposal, p.Business\_Category, SUM(t.Sales\_Amount) AS total\_sales

FROM product\_info p

LEFT JOIN transaction\_data t ON p.Business\_ID = t.Business\_ID

GROUP BY p.Product\_Proposal, p.Business\_Category

ORDER BY total\_sales DESC LIMIT 1;

New_Product	Business_Category	total_sales
Social Media Management	Real Estate Builders & Construction	3570000
Social Media Management	Agriculture	2710400
Gmvt	Hospital	2309920
		23

Social Media Management is best-selling product followed by GMVT.

### 13) What is popular selling amount?

SELECT t.Sales\_Amount, COUNT(\*) AS num\_transactions

FROM transaction\_data t

GROUP BY t.Sales\_Amount

ORDER BY num\_transactions DESC LIMIT 1;

Sales_Amount	num_transactions
10000	233

Maximum Amount of transaction is of 10000 which is of 233 times.

### 5. Data Visualization using Power Bi

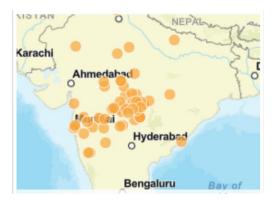
Thus, I imported data into Power Bi in order to prepare a data visualization dashboard by connecting MySQL to Power Bi.

### a) Challenges Faced: -

- Connector problem (error shown requires one or more connector to establish connection thus after installing required connector problem resolved.
- Relationship establishing Table is not mutually connected with each other, all 3 table is only connected by Table 1 using Business ID so mutually establishing relationship between Table2, Table3 and Table4.

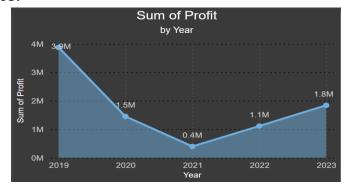
### b) Problem Statements: -

1) What is the demographic profile of the clients and how does it vary across districts?



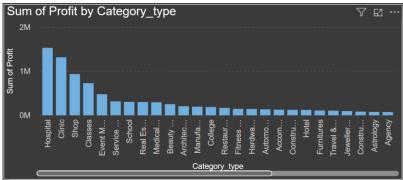
Thus, here we get to Know Most of Clients is from Nagpur, Chandrapur and Bhopal.

2) How the Biz have performed over the years. Give their detailed analysis year & month-wise?



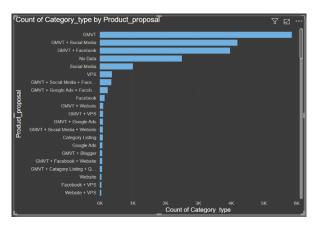
Thus, Biz have most sales in 2019 followed by 2023.

3) What are the most common types of clients and how do they differ in terms of usage and profitability?



Most of the common type of Client are from Hospital, Clinic and Educational Classes and Most profitable product is GMVT, Social Media Management and Google Ads.

4) Which types of product are most frequently used by the clients and what is the overall profitability of the client need?



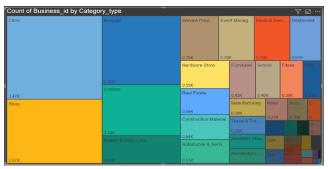
Most frequently used products are Gmvt, Social Media Management and Gmvt + Google Ads.

5) What are the major expenses of the Biz and how can they be reduced to improve profitability?



Major Expense is from Hospitals, Clinics, Event Management & Real Estate etc. so we need to analyze those Business to find why expense is getting higher & figure out a way to do cost cutting.

## 6) What is the client portfolio and how does it vary across different purposes and client segments?



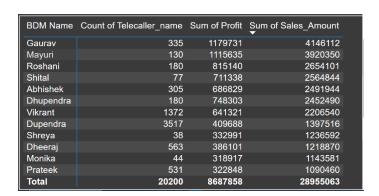
Thus, we get to Know that Clinics, Hospitals and Educational Classes have most profit in category.

### 7) How is tele caller's role in the sales?



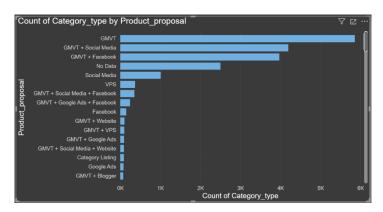
Mayuri has scheduled the maximum number of meetings followed by Shital and Gayatri.

#### 8) What is BDM's individual performance with various segments of client?



Gaurav is most effective Business Development Manager followed by Mayuri and Roshni.

## 9) Which are best selling products and category?



GMVT is most Selling Product and in Category Hospital is Trending one.