National College of Ireland

BUSINESS INTELLIGENCE

&

BUSINESS ANALYTICS

PROJECT SPECIFICATION REPORT

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Company Name: Carrefour SA

1. BACKGROUND OF THE ORGANIZATION:

This report is about the business process for the organisation - Carrefour SA, which was launched by Marcel Fournier, Denis Defforey and Jacques Defforey in 1960.Carrefour SA was started as a French initiative which has now grown its roots across the globe. It extensively deals with supermarket products and is one of the paramount organisations in retail sector. It was the first organisation to provide departmental, hypermarket and supermarket services under one roof in Europe. Carrefour SA not only offers customer services via offline stores but also provides door service if ordered online. Its steadfastness to provide quality products at decent rates to the customers has proven itself to be a peerless firm among other competitors. It not only ensures customer satisfaction by offering promotions and quality products but also focuses on the weaker section of the society and has hence joined hands with many NGO's to provide employment to needy people in order to drive the change.

Considering the customer service, Carrefour SA significantly stands out from all the other competitors. Carrefour SA observed that people are busy with their daily tasks and hence forget about the day to day necessities. The auto reminder in the Carrefour SA app reminds the users to buy the day to day household products based on their average usage. Easy EMI options, Pickup, and delivery options in the rural areas too where customers can choose them accordingly.

2. STRATEGIES OF IMPLEMENTATION:

The initial strategy that we have adopted here is to create a customer database, to detect the top customers over each month across various categories and send them updates and promotional offers regarding the latest offers and further increasing their interest by providing them promocodes, so that the top customers can be retained and the overall sales can be improved.

The second strategy is to obtain details from the product database, and to detect the low selling products, across various categories and combine the products with other high selling products or to add additional offers to the products and sell them across to the customers, so that the product wastage can be avoided drastically and overall sales can also be improved.

3. SCOPE OF THE PROJECT:

The Main aspect of the solution is to drastically address 2 main issues in the overall business process namely the Customer segment and Product segment.

3.1 CUSTOMER SEGMENTATION:

This segment addresses the main feature of identifying the top purchasing and profitable customers across various business verticals/ categories over a particular time frame (i.e. month or quarter) and provide them with promotional offers and coupons, which are being announced by the firm during various seasons. This helps us to retain the top customers in the business and to increase the overall revenue and profit as well.

3.2 PRODUCT SEGMENTATION:

When it comes to product perspective, we analyse the products which are sold across the stores by various categories and identify products, which are being sold poorly or don't sell at fast rate when compared with other similar products. These low selling products are identified and combined with other products of similar type or with high selling products. (i.e. they can be purchased as a whole combination) to increase the product sales. And, in addition to it, the individual low selling products which cannot be combined can be subsidised, so that the product wastage can be reduced drastically and thereby improving overall revenue as well. Thus, Both the customer as well the firm gets benefitted.

4. PROJECT OBJECTIVES:

The objectives of this project are to,

- Increase the Customer Inflow into the retail's stores across the country.
- Retain the Potential customers (Top revenue and profitable customers) across various categories over the time period.
- Avoid Product wastage and take appropriate steps to overcome this problem.

5. SYSTEM DESIGN:

The entire system is designed in such a way, that after a customer makes a purchase with the retail store, the entire billing details are stored in the SQL Sales database, which is connected to the Dynamic CRM for analysing the entire system, then also to PowerBI for Visualization of the data, and developing reports and business insights. The data from SQL database is then moved to the Product database and Customer Database where the corresponding implementation changes can be identified. Below figure Fig.1 shows the systematic design of implementation of this project.

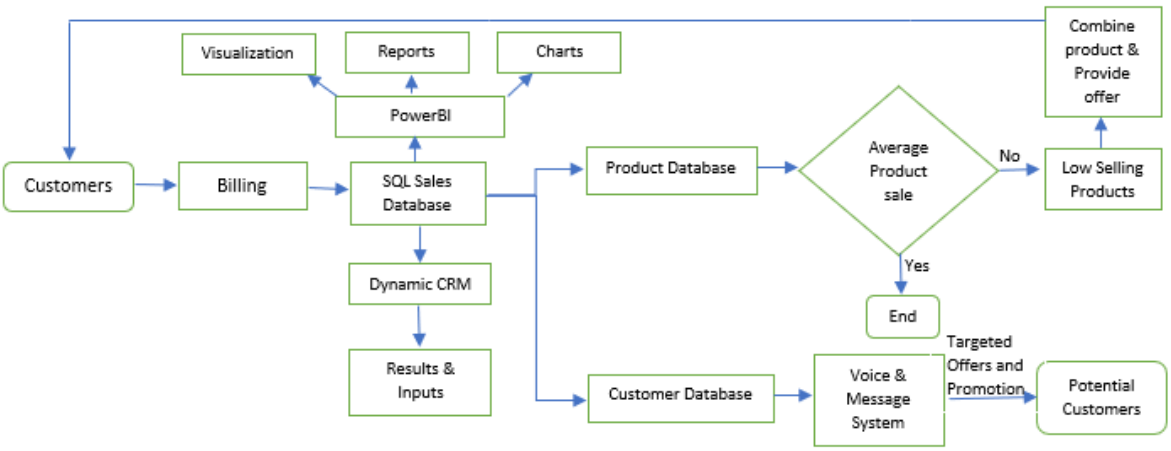

Fig. 1 System design of implementation

5.1 BILLING SYSTEM:

After the purchase has been made by the customer, billing and transaction details are stored in the Billing system, along with the details about the product, customer, quantity, and region. The data from billing system gets stored in the main SQL Sales Database, which acts as a hub and maintains details about the entire system.

5.2 SQL SALES DATABASE:

SQL sales database acts as a source hub, where the details about the entire transactions, product, customer, region, and order wise details are captured and stored in respective tables/ databases. It provides data to Dynamic CRM, PowerBI and data for analysis to be performed.

5.3 PRODUCT DATABASE:

The Product database contains details about entire summary of the product like Product name, category, sub-category, quantity sold, and discount provided for each respective product along with sales and profits from each individual product. The low selling products used for analysis is extracted from this database and corresponding steps are performed.

5.4 CUSTOMER DATABASE:

The Customer database contains details about the Customers and the past purchase records like, the amount of profit & sales generated by each customer to the firm. This data is used to find the potential customers across each category and over the time, to be used for analysis.

5.5 DATA CAPTURE POINTS:

The entire data that has been stored in the SQL database, were obtained from a single source i.e. (in the form of billing), where the entire data is stored respectively in appropriate databases.

5.6 ANALYTICS REQUIREMENT:

For the Implementation of the proposed BI Solution, we have to analyse the customer Database to segregate the top customers across each category and identify them as potential targets and in case of products Database, to identify low selling products across various categories and find suitable products associated with it, so that they can be combined or combine with other similar high selling products so that the products movement increases.

6. DATABASE DESIGN:

The database design plays a very important role in every business firm. An ideal database is one which avoids redundancy over time, provides the data efficiently without any lag and gets connected with other databases using suitable joins. Here this System Database contains around 5 tables as shown in Fig.2. The tables are chosen to be utilised in this project are Transaction details, Customer details, Order details, Region wise sales and Product wise details.

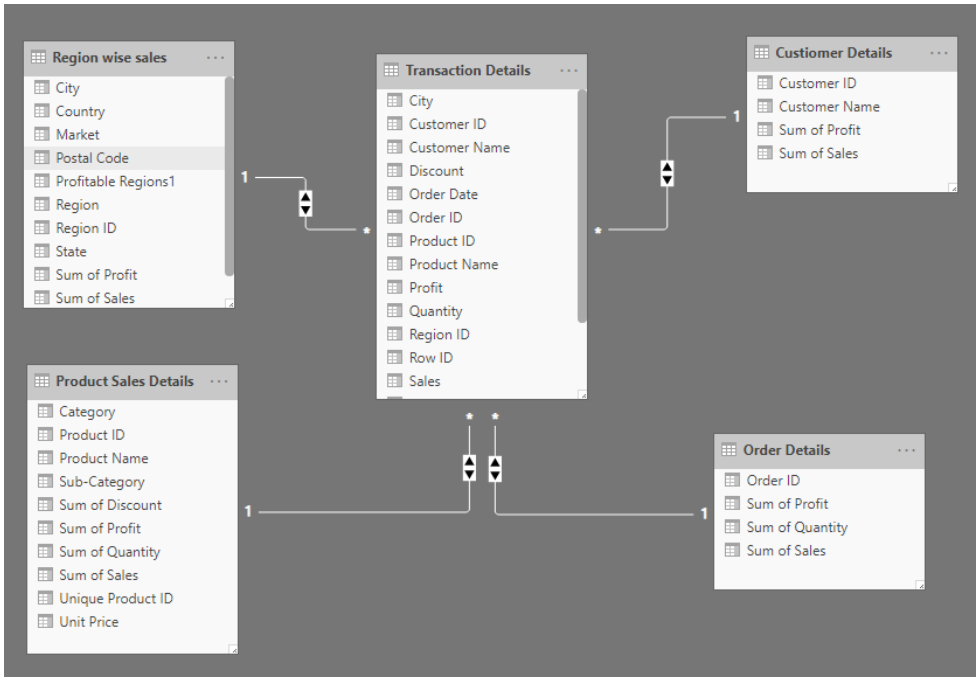

Fig.2 Database design of implementation

The following details explains the way they are combined using the primary and foreign keys present in the database,

- **The transaction table and Customer Details** table are joined by keeping the **Customer ID** as Primary Key, using the many-to-one relationship.
- **The Transaction and Order details** table are combined by keeping the **Order ID** column as Primary Key, using the many-to-one relationship.
- The **Transaction Details** table is combined with **Product Sales Details and Region wise sales** table by keeping the Primary Key as **Product ID column and Region ID** column. Both the tables are combined using the many-to-one relationship.

6.1 TRANSACTION DETAILS:

The transaction details table acts a main source where all the subsequent tables are connected. It has details about City where the transaction takes place, Customer ID and Customer Name, Order ID and Order details, Product ID, Product Name, Profit, Discount, Sales amount along with the Product unit price and Profit margin for the overall sales.

6.2 CUSTOMER DETAILS:

This table contains information about the customer ID, customer Name along with details about total sales and profits made by each customer.

6.3 ORDER DETAILS:

The order details table contains value about Order ID, total quantity sold along with profits and sales obtained from each product.

6.4 PRODUCT SALES DETAILS:

The product sales table contains details about Product ID, Product name, category, sub-category, discount for each product along with the sales, profit and per unit price of the product.

6.5 REGION WISE SALES:

This table deals with information about Regional information namely city, state, country, region and market where the retails stores are located along with their profits and sales obtained from each regional store.

7. DATA DICTIONARY:

Data Dictionary is a description of the fields in the dataset, where the corresponding field names, their datatypes along with data length (width) are mentioned. The data dictionary for the corresponding data tables have been mentioned below for your reference,

Name	Type	Width
CustomerID	String	8
CustomerName	String	22
SumofSales	Numeric	18
SumofProfit	Numeric	19

Fig.3 Customer table

Name	Type	Width
OrderID	String	15
SumofSales	Numeric	18
SumofQuantity	Numeric	3
SumofProfit	Numeric	19

Fig.4 Order details

Name	Type	Width
RowID	String	6
OrderID	String	15
OrderDate	Date	10
CustomerID	String	8
CustomerName	String	22
RegionID	String	5
City	String	35
State	String	27
ProductID	String	16
UniqueProductID	String	22
ProductName	String	131
Sales	Numeric	10
Quantity	Numeric	3
Discount	Numeric	5
Profit	Numeric	10
UnitPrice	Numeric	18

Fig.7 Transaction details

Name	Type	Width
UniqueProductID	String	22
ProductID	String	16
ProductName	String	131
Category	String	15
SubCategory	String	11
SumofSales	Numeric	18
SumofQuantity	Numeric	3
UnitPrice	Numeric	19
SumofDiscount	Numeric	17
SumofProfit	Numeric	19

Fig.5 Product Sales Details

Name	Type	Width
RegionID	String	5
City	String	35
State	String	27
Country	String	20
Market	String	6
Region	String	14
PostalCode	String	6
SumofSales	Numeric	18
SumofProfit	Numeric	19

Fig. 6 Region-wise details

8. DATASET DESCRIPTION:

The sample test data for the retail firm Carrefour SA, which was used for analysis and Visualization in PowerBI was taken from Kaggle, and corresponding modification and processing were done to make the test data compatible for the analysis and meet the requirements.

Data source from Kaggle – https://www.kaggle.com/jr2ngb/superstore-data

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