**Applied Database Systems Project**

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**Data Set**

The data set use for this project are information collected on a small sample of customer that purchase 6 types of products from a business. The data set contain the customer information on 1995 observations which was original 2250 but 4 row was omitted as the income for these rows were x6 the largest income from the data set used which was 98777 and 251 where duplicate data sets.

The information in the data set contained Year of birth, Education, Marital status, Income ($), Number of children, the product types they purchase from the business and their total quantities (Wine, Fruit, Meat, Fish, Sweet), the method that was used for purchase and total occurrence for each customer (Catalog, Store and Web) and the number of deals claimed by each customer.

**Database ER diagram**

Graphical user interface, text, application

Description automatically generated

The data base was broken down into 4 tables, one table with all the customer personal information, which is related to all the other tables, a table for all the products bought for each customer, table for all total count of different purchase methods and a table for the customer deal claiming class.

As the query that will be runed for this will require calling different tables with large number of contents each and different variables, to make the query run faster the table where index and bellow is an example of the result of indexes making queries run more effectively.

Before Indexing



After Indexing



The purchase total and purchase method tables are related to the customer profile table by the customer id and could have been one table but were divided for more flexibility and reduce the burden on the system. The customer deal class table containing the customer classes base on the amount of deals they have claimed and their definitions which are referenced in the customer profile table by class keys.

**Data Analysis**

**Introduction**

You must comprehend and get to know your clients/customers for a successfully business in relation to marketing and providing the goods they like. Marketing, stock purchasing and offering deals and discount could cost a business a large sum of money if it not targeted toward the right people and lead to wasted time and closed-lost deals. Giving the best experience possible to old and new can make it more likely that they will return to do more business. This can be done efficiently by constructing a client/customer profile.

The customer profiles can be developed from your existing customer base. Rather of creating ideal and fictitious traits for a buyer persona, you would conduct a poll of your present customers to determine the types of customers who are most likely to purchase from you.

By looking at what customers buy the most from the observations can be used to determine the customer profile description. Just taking the top buying customer and using them to create a profile will not be effective as more potential customer will be missed but by looking at customer that buy above the average amount will be a better for optimal potential customer description.

|  |
| --- |
| **Average amount of purchase for each product** |
|  |

By looking at each product separately and the what the customer that buys this product have in common can be used to create a profile can be used to increase the sale of specific product when needed. This can then be used to create a broader base customer base. Wine sold will be use in the analysis example, but the same steps will work for the other product.

The analysis will be use in the identification characteristics of the top wine buying customers and then identify customers that already buys from the business with similar characteristics to target for deals and offer to entice them to start buying wine from the business.

This analysis can also be used to determined what type of people the business should target with their marketing with a higher chance of a response.

**Wine Product customer profiling**

Table

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Wine Product Customer Profile Value Occurrence | | | |
|  | Table  Description automatically generated | Table  Description automatically generated | Table  Description automatically generated |

By looking at the customer that buy above the average amount (305) of meat products and getting the occurrence of the different attribute in this customer profile the top customer that buys meat product earn above 69000, have the education level of either graduates or PhD, are married or together and have 0 child.

By isolating the customers that fit into the profile determined above and finding the average total of the wine and how they make their purchases it can be see that they have a higher average of wine purchase than the overall observations wine purchase average.

There are customers in this observation that fit this description that are not buying as much wine this customer can be targeted with offers and deals to convince them try wine selection offer by the business.



Knowing what method they use in buying can help focus what media is used to target this customers type.

The same analysis can be done for each product to better market them and increase their total sale.