

MARKETING

**PROPOSED
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WHAT IS THE MARKETING?

Marketing refers to activities a company undertakes to promote the buying or selling of a product or service. Marketing includes advertising, selling, and delivering products to consumers or other businesses. Some marketing is done by affiliates on behalf of a company



The background features a collage of various business and marketing icons. On the left, there's a lightbulb with a hand inside, a bar chart with an upward arrow, a magnifying glass, and money bags. In the center, there are pie charts and a network diagram. On the right, a hand holds a black marker, and a calculator is visible. The bottom right corner shows a blurred background with bokeh light effects.

PROBLEM DEFINATION

With the work of more than one advertising campaign, we found a discrepancy in the success rate of these campaigns, so we want to study the elements that may lead to the discrepancy in these percentages.

A hand with a light skin tone is pointing its index finger at a world map. The map is dark blue with three rectangular regions highlighted in a lighter blue: North America, Europe, and Asia. The hand is positioned in the bottom left corner, with the index finger pointing towards the highlighted regions. The background is a dark blue gradient with a subtle world map pattern.

MARKETING GOALS

The campaign reaches the desired category to ensure the number of buyers and thus ensure the success of the campaign

FEATURES

ID

customer's unique identifier

Year_birth

Customer's birthyear

Education

Customer education level

Marital status

Customer's martial status

INCOME

Customer's yearly house hold income

KIDHOME

Number of children in customer's house hold

FEATURES CONT.

TEENHOME

Number of teenagers in customer's household

DT-CUSTOMER

Date of customer's enrollment with the company

REGENCY

Number of days since customer last purchases

MNTWINES

Amount spent on wine in the last 2 years

MNTFRUITS

Amount spent on fruit in the last 2 years

MNT MEAT PRODUCTS

Amount spent on meat in the last 2 years

FEATURES CONT.

MNT FISH PRODUCTS

Amount spent on fish in the last 2 years

MNT SWEET PRODUCTS

Amount spent on sweets in the last 2 years

MNT GOLD PRODS

Amount spent on gold in the last 2 years

NUM DEALS PURCHASES

Number of purchases made with a discount

NUM WEB PURCHASES

Number of purchases made through the company's web site

NUM CATALOGUE PURCHASES

Number of purchases made using a catalogue

FEATURES CONT.

Num Store Purchases

Number of purchases made directly in stores

Num Web Visits Month

Number of visits to company's web site in the last month

AcceptedCmp3

1 if customer accepted the offer in the 3rd campaign, 0 otherwise

AcceptedCmp5

1 if customer accepted the offer in the 5th campaign, 0 otherwise

AcceptedCmp1

1 if customer accepted the offer in the 1st campaign, 0 otherwise

AcceptedCmp4

1 if customer accepted the offer in the 4th campaign, 0 otherwise

FEATURES CONT.

☐

AcceptedCmp2

1 if customer accepted the offer in the 2nd campaign, 0 otherwise

☐

Response

1 if customer accepted the offer in the last campaign, 0 otherwise

☐

Complain

1 if customer complained in the last 2 years, 0 otherwise

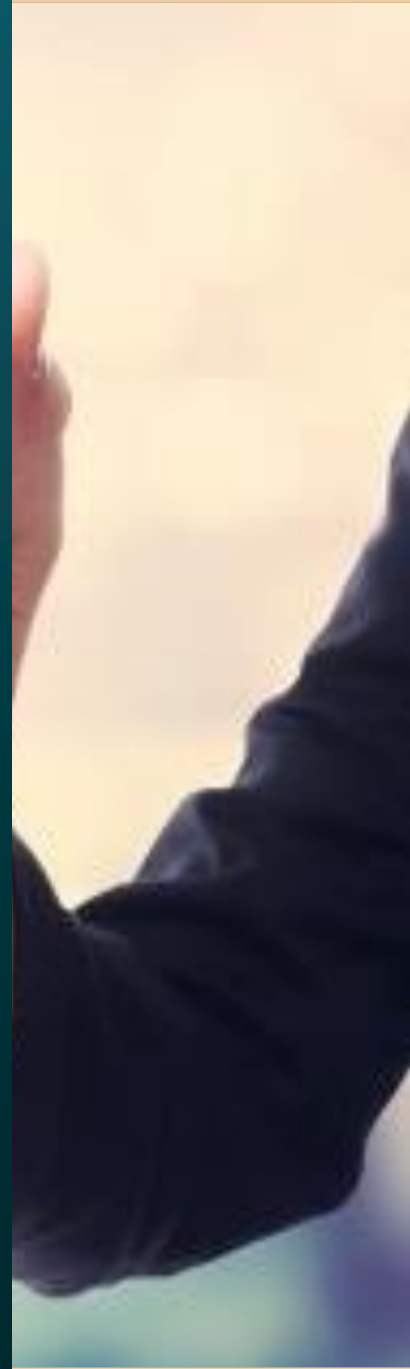
☐

Country

Customer's location

QUESTION

- 1-Are there any null values or outliers? How will you wrangle/handle them?
- 2- Are there any variables that warrant transformations?
- 3- Are there any useful variables that you can engineer with the given data?
- 4- Do you notice any patterns or anomalies in the data? Can you plot them?
- 5-What factors are significantly related to the number of store purchases?
- 6- Does US fare significantly better than the Rest of the World in terms of total purchases?
- 7-what the impact of customer features on the success of the compain?



QUESTIONS CONT.

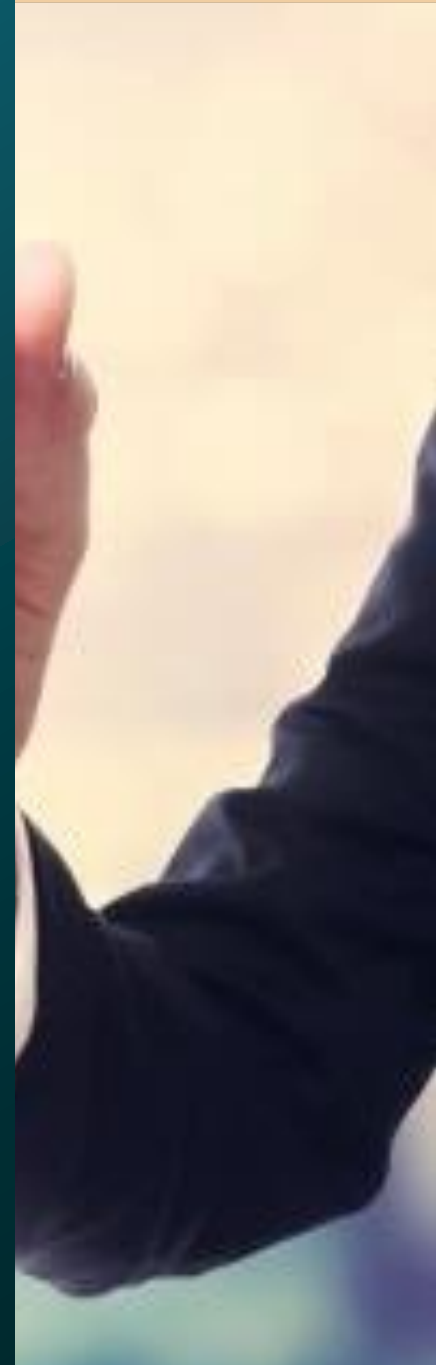
8-Which marketing campaign is most successful?

9-Is there a significant relationship between geographical regional and success of a compain?

10- Which products are performing best?

11-Which channels are underperforming?

12-Does the educational stage make a difference in the percentage of sales?



I-ARE THERE ANY NULL VALUES OR OUTLIERS? HOW WILL YOU WRANGLE/HANDLE THEM?

OUTPUT EXCEEDS THE 1000 ROWS. OPEN THE FULL OUTPUT HERE: [Full Output](#)

```
ID 0.000000
Year_Birth 0.000000
Education 0.000000
Marital_Status 0.000000
Income 1.071429
Kidhome 0.000000
Teenhome 0.000000
Dt_Customer 100.000000
Recency 0.000000
MntWines 0.000000
MntFruits 0.000000
MntMeatProducts 0.000000
MntFishProducts 0.000000
MntSweetProducts 0.000000
MntGoldProds 0.000000
NumDealsPurchases 0.000000
NumWebPurchases 0.000000
NumCatalogPurchases 0.000000
NumStorePurchases 0.000000
NumWebVisitsMonth 0.000000
AcceptedCmp3 0.000000
AcceptedCmp4 0.000000
AcceptedCmp5 0.000000
AcceptedCmp1 0.000000
AcceptedCmp2 0.000000
...
Month 100.000000
Day 100.000000
age_Customer 100.000000
Income 1.071429
dtype: float64
```

```
F:\hvt > epsilon > mid project > mid proj1.ipynb > from sklearn.impute import SimpleImputer, KNNImputer
+ Code + Markdown | Run All | Clear Outputs of All Cells | Restart | Variables | Outline ... base (Python 3.7.6)

AcceptedCmp2 0.000000
...
Month 100.000000
Day 100.000000
age_Customer 100.000000
Income 1.071429
dtype: float64

df.drop(['Income'], axis=1, inplace=True)
[19] ✓ 0.1s Python

numerical=['Kidhome','Teenhome','MntWines','MntFruits','MntMeatProducts','MntFishProducts','MntSweetProducts','MntGoldProds','NumDealsPurchases','NumWebPurchases','NumCatalogPurchases']
[20] ✓ 0.1s Python

from sklearn.impute import SimpleImputer, KNNImputer
[21] ✓ 1.3s Python

imputer = KNNImputer()
[22] ✓ 0.3s Python

for fit in numerical:
    df[fit] = imputer.fit_transform(df[[fit]])
[23] ✓ 0.8s Python

Do you notice any patterns or anomalies in the data
```


2-ARE THERE ANY VARIABLES THAT WARRANT TRANSFORMATIONS?

Are there any variables that warrant transformation?

```
df['Income'] = df[' Income '].str.replace("$", "")  
df['Income'] = df['Income'].str.replace(",", "")  
df['Income'] = df['Income'].astype(float)
```

[17] ✓ 0.6s

Python

3-ARE THERE ANY USEFUL VARIABLES THAT YOU CAN ENGINEER WITH THE GIVEN DATA?

Are there any useful variables that you can engineer with the given data ?

```
df['totalpurchases']=(df['MntWines'])+(df['MntFruits'])+(df['MntMeatProducts'])+(df['MntFishProducts'])+(df['MntSweetProducts'])+(df['MntGoldProds'])
```

Python

```
df['Dt_Customer'] = pd.to_datetime(df['Dt_Customer'], format='%d%mm%y', errors='coerce')
```

Python

```
df['TotalKids'] = df['Kidhome'] + df['Teenhome']  
df.head()
```

Python

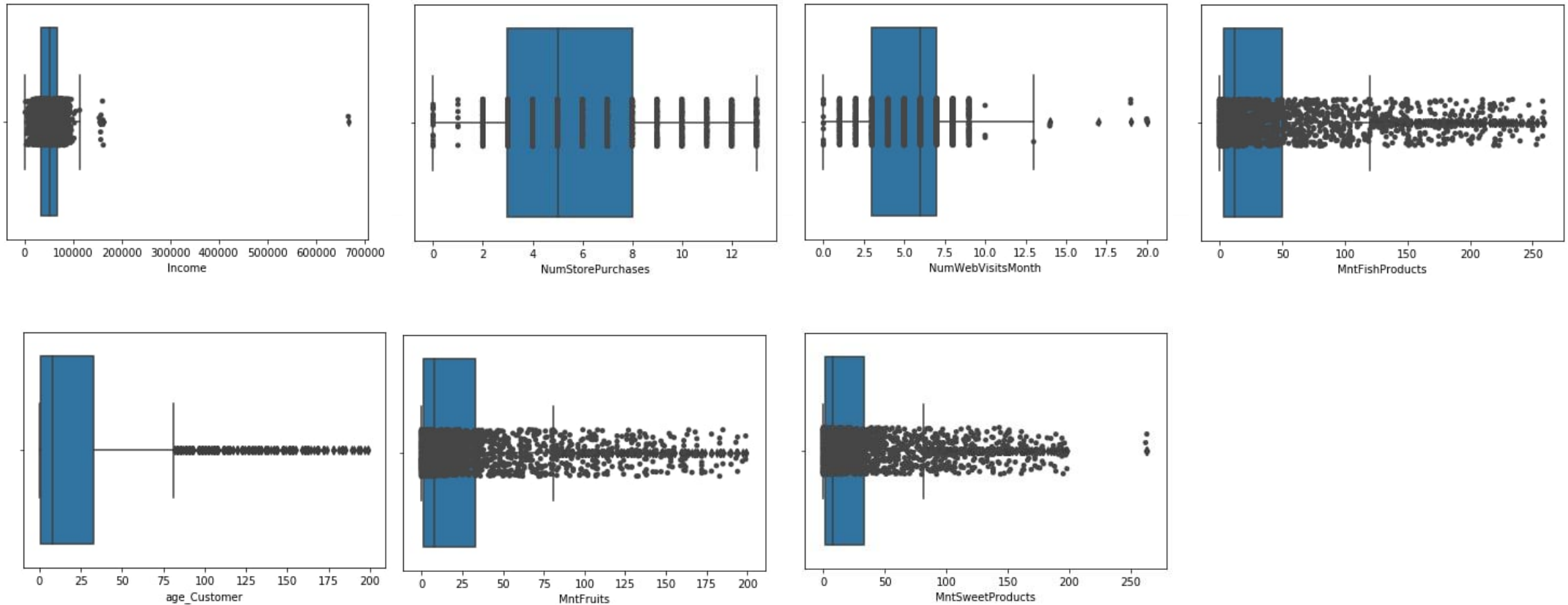
	ID	Year_Birth	Education	Marital_Status	Income	Kidhome	Teenhome	Dt_Customer	Recency	MntWines	...	AcceptedCmp3	AcceptedCmp4	AcceptedCmp5	AcceptedCmp1	AcceptedC
0	1826	1970	Graduation	Divorced	\$84,835.00	0	0	NaT	0	189	...	0	0	0	0	
1	1	1961	Graduation	Single	\$57,091.00	0	0	NaT	0	464	...	0	0	0	0	
2	10476	1958	Graduation	Married	\$67,267.00	0	1	NaT	0	134	...	0	0	0	0	
3	1386	1967	Graduation	Together	\$32,474.00	1	1	NaT	0	10	...	0	0	0	0	
4	5371	1989	Graduation	Single	\$21,474.00	1	0	NaT	0	6	...	1	0	0	0	

5 rows × 30 columns

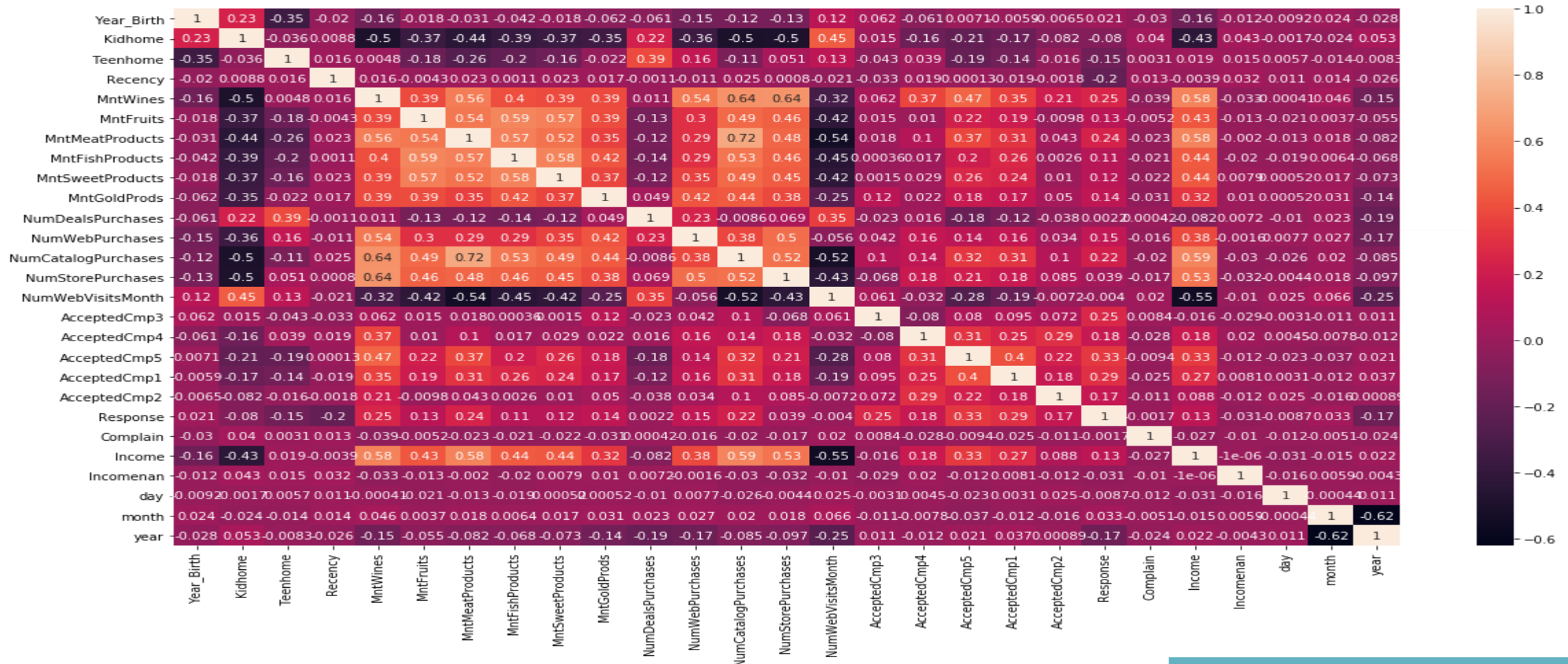
```
df['Year'] = df['Dt_Customer'].dt.year  
df['Month'] = df['Dt_Customer'].dt.month
```

Jupyter Server: Local Cell 42 of 46 Go Live

4- DO YOU NOTICE ANY PATTERNS OR ANOMALIES IN THE DATA? CAN YOU PLOT THEM?



5-WHAT FACTORS ARE SIGNIFICANTLY RELATED TO THE NUMBER OF STORE PURCHASES?



6- DOES US FARE SIGNIFICANTLY BETTER THAN THE REST OF THE WORLD IN TERMS OF TOTAL PURCHASES?

```
df.groupby("Country").sum()['totalpurchases'].transpose
```

[34] ✓ 0.7s

Python

... <bound method IndexOpsMixin.transpose of Country

AUS 89763

CA 168532

GER 74913

IND 79485

ME 3122

SA 211071

SP 662220

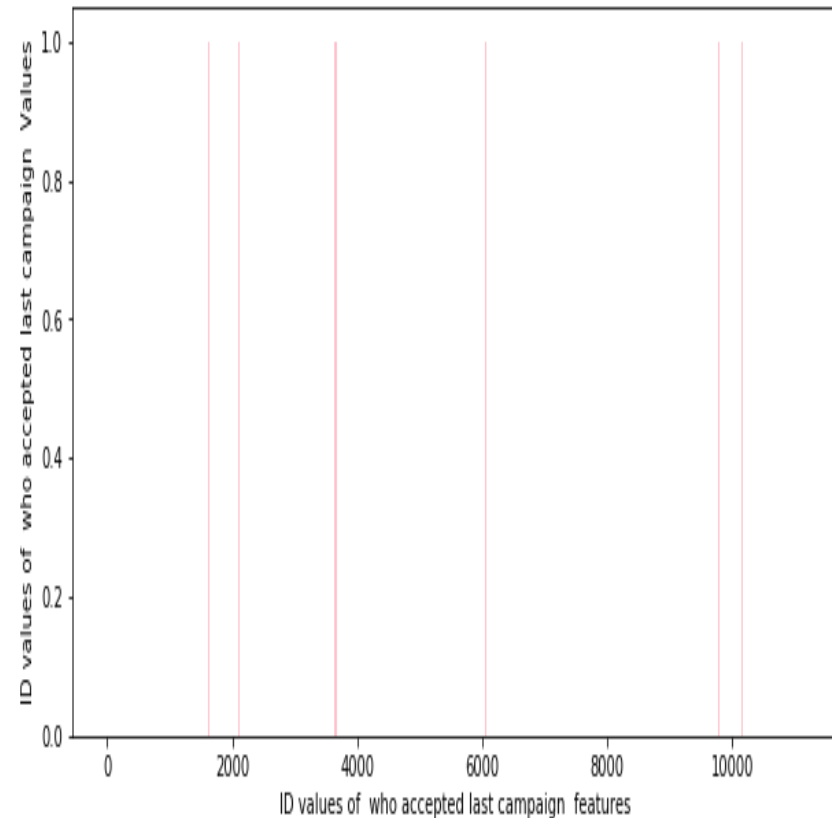
US 67882

Name: totalpurchases, dtype: int64

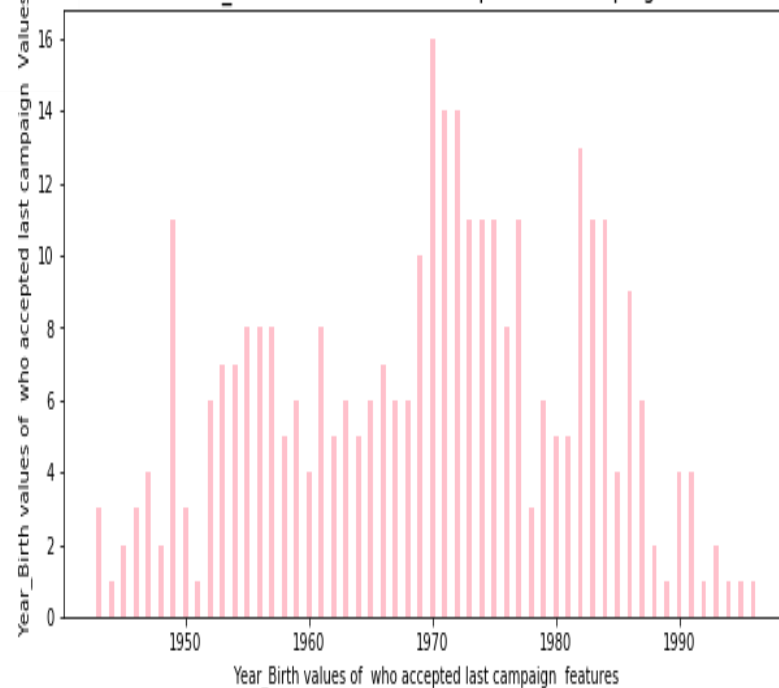
Sp is the best

7-WHAT THE IMPACT OF CUSTOMER FEATURES ON THE SUCCESS OF THE COMPAIN?

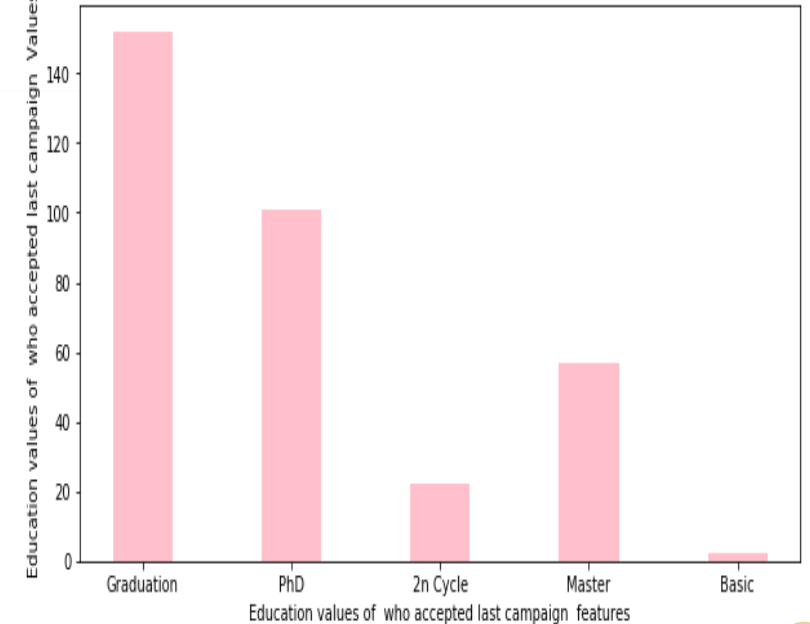
ID values of who accepted last campaign



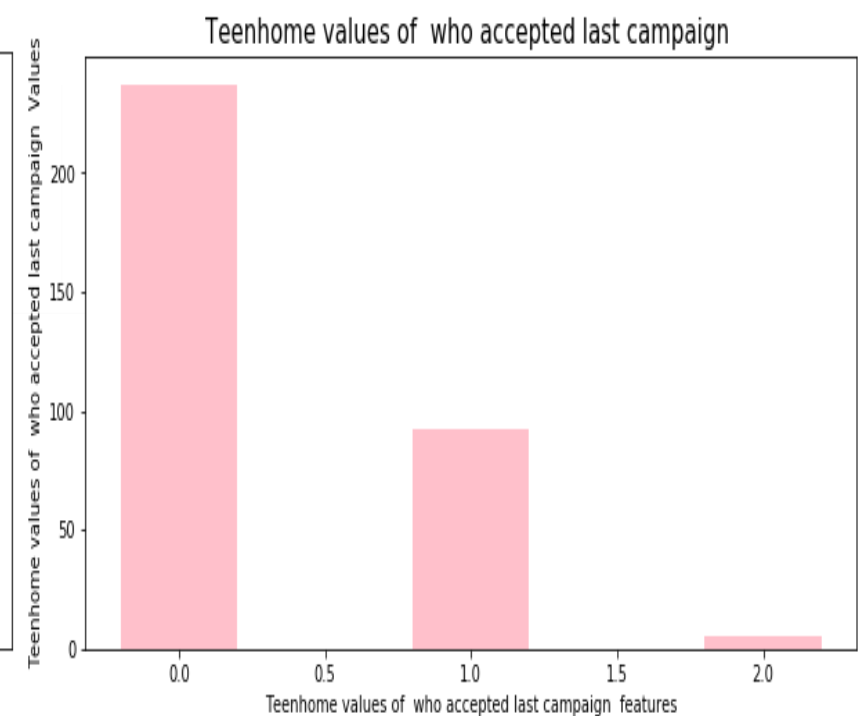
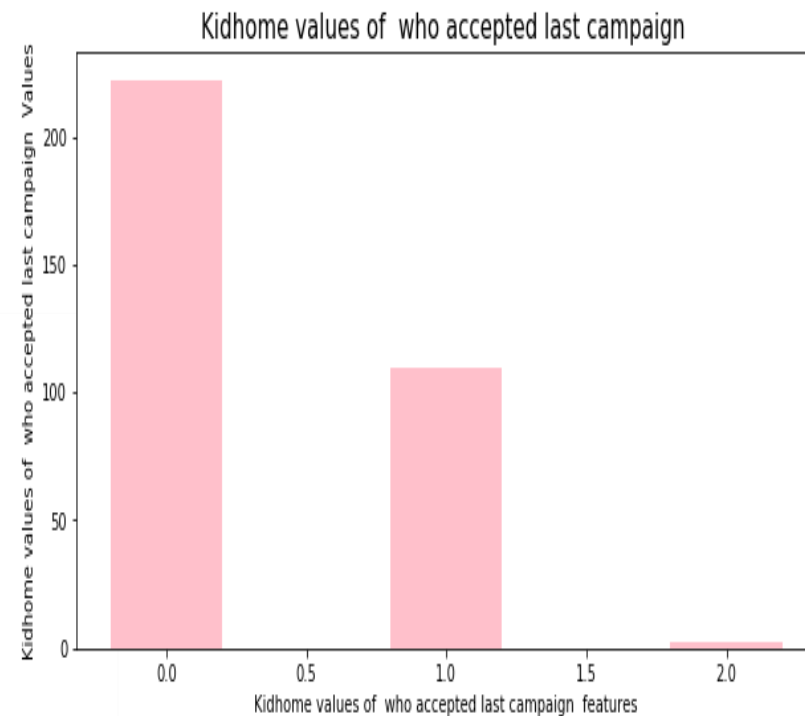
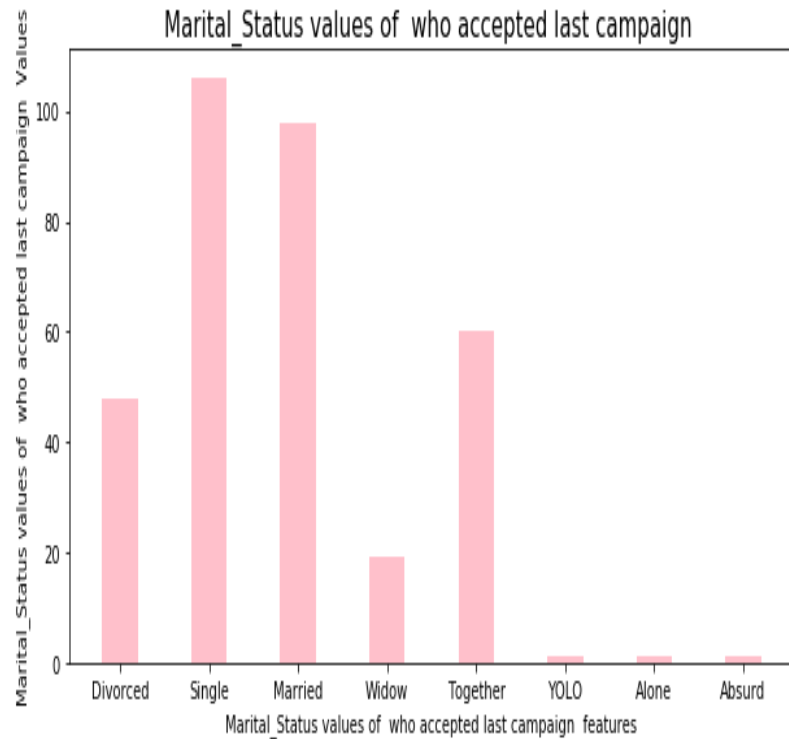
Year_Birth values of who accepted last campaign



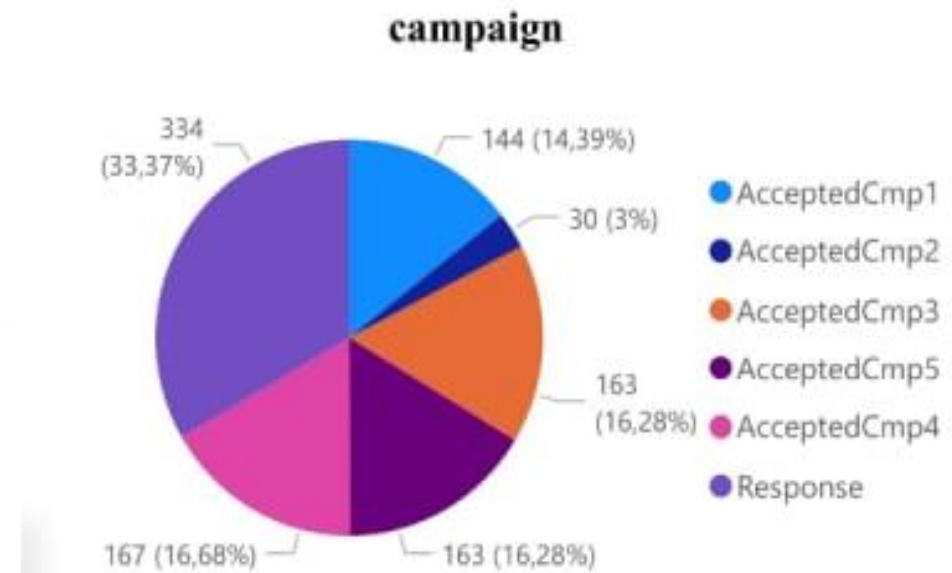
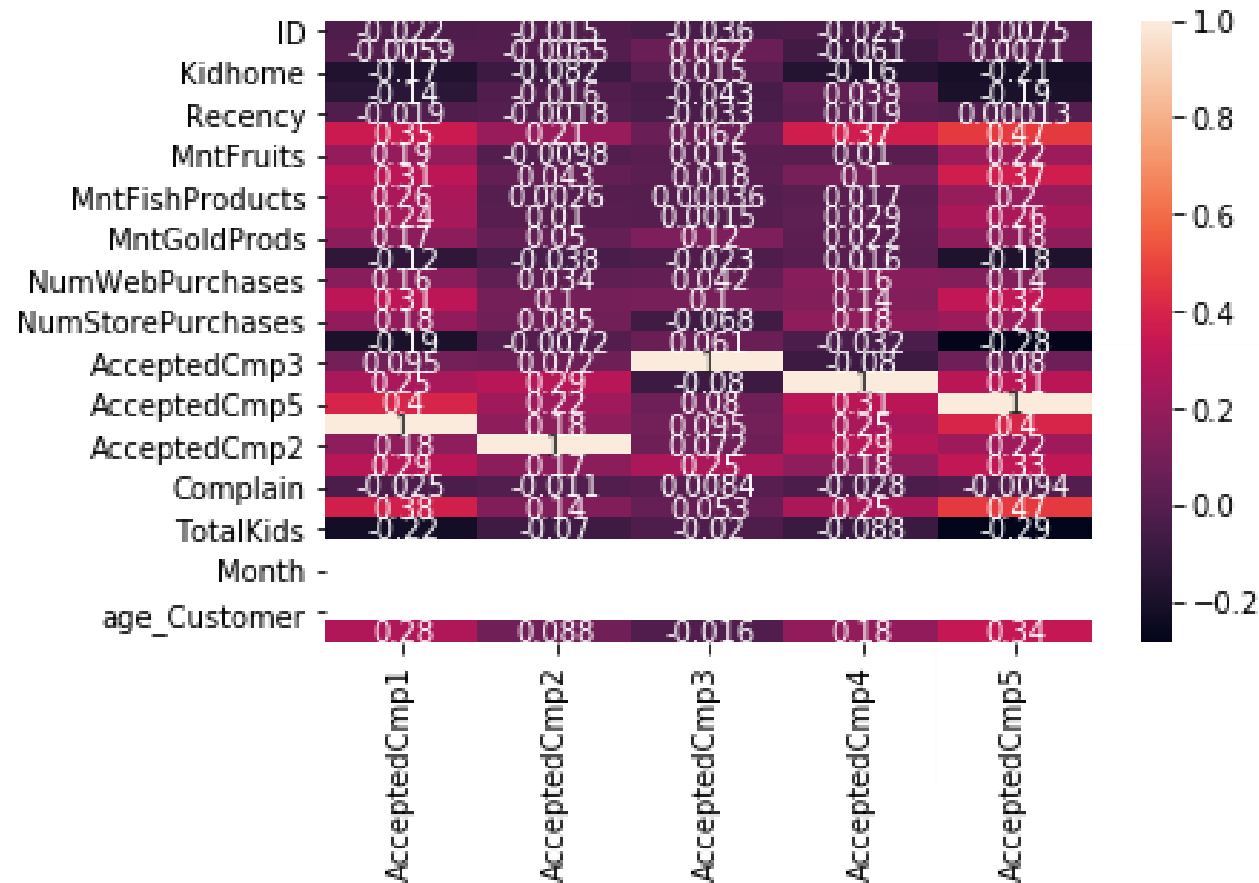
Education values of who accepted last campaign



7-WHAT THE IMPACT OF CUSTOMER FEATURES ON THE SUCCESS OF THE COMPAIN? CONT.



8-WHICH MARKETING CAMPAIGN IS MOST SUCCESSFUL?

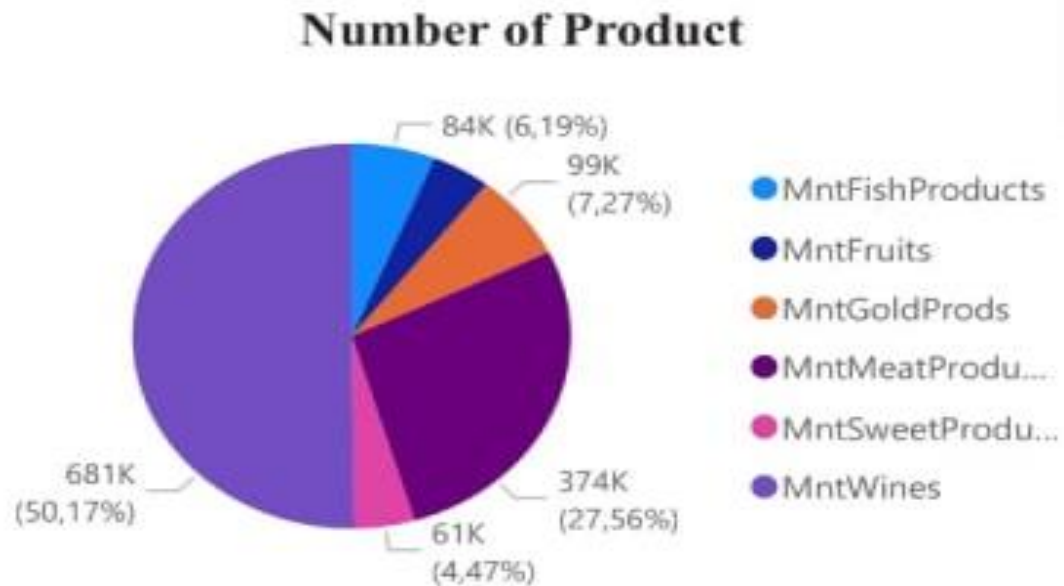


9- IS THERE A SIGNIFICANT RELATIONSHIP BETWEEN GEOGRAPHICAL REGIONAL AND SUCCESS OF A COMPAIN?



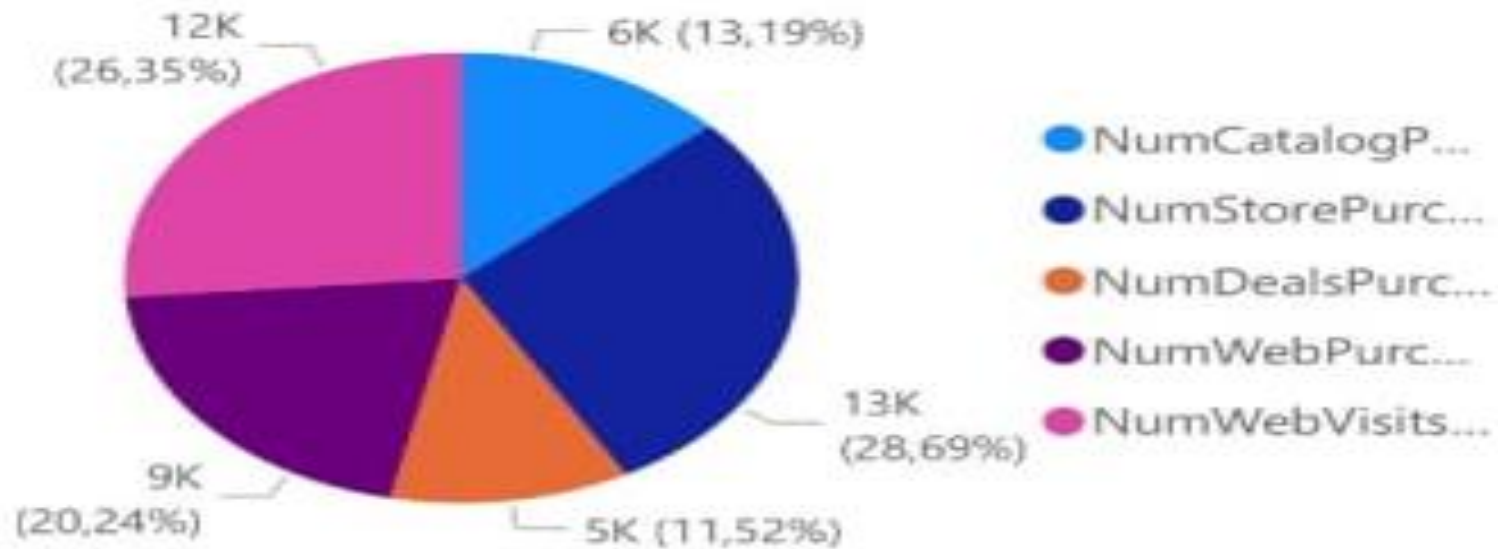
10- WHICH PRODUCTS ARE PERFORMING BEST?

wines

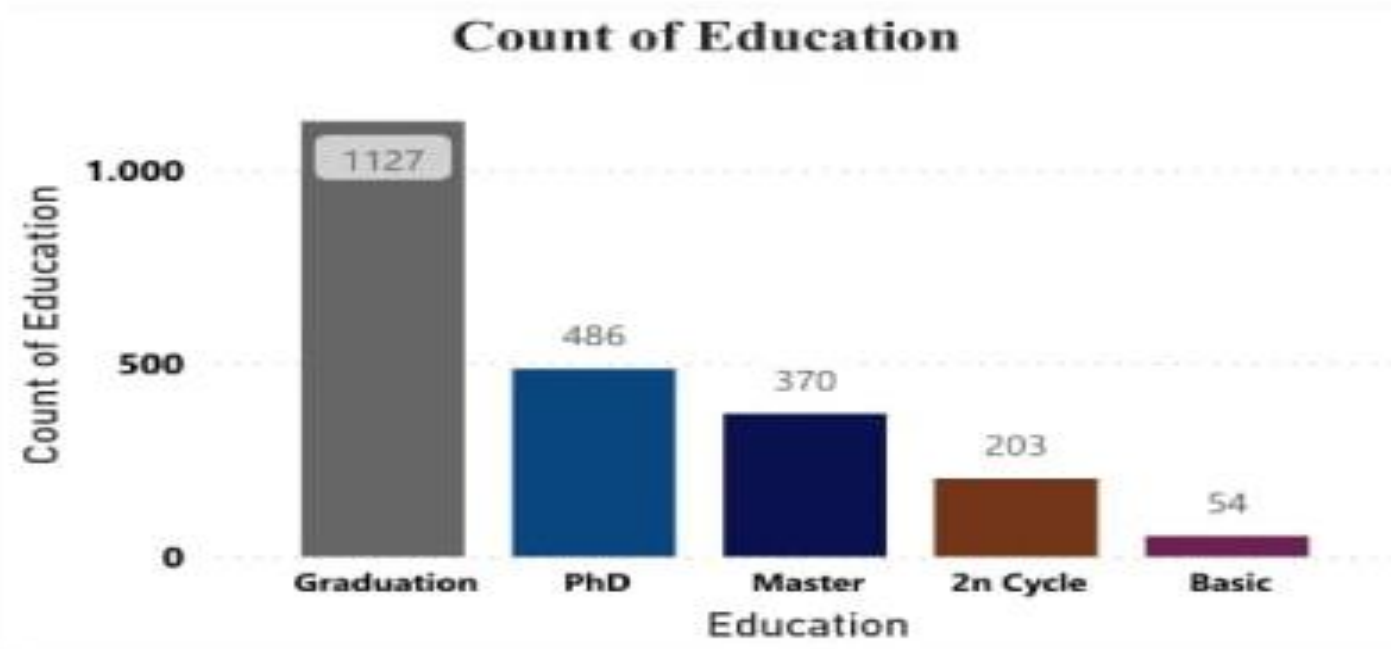


II-WHICH CHANNELS ARE UNDERPERFORMING?

channels of purchase



I2-DOES THE EDUCATIONAL STAGE MAKE A DIFFERENCE IN THE PERCENTAGE OF SALES?



A person's hand is shown typing on a laptop keyboard. The image is overlaid with various semi-transparent digital icons, including an envelope, a magnifying glass, a document with 'AD' on it, a bar chart, and a smartphone. The background is a blurred image of a person's arm and hand. The text 'THANK YOU' is prominently displayed in the center.

THANK YOU