1) What percentage of the bank's customers (according to the data) have availed Personal Loans vs the ones who have not availed it?

Among the 5000 customers, only 480 (9.6%) customers have accepted the personal loan in the last year campaign.

5000 customers
4520 (90.4%) customers not availed personal loans
480 (9.6%) customers have accepted the personal loan

OBSERVATION:

2) Generate a table with min, max, median & average for all numeric variables (age, experience, income, fa members, CCAvg, Mortgage)

	Age (in years)	Experience (in years)	Income (in K/year)	Family members	CCAvg
Min	23	0	8	1	0
Max	67	43	224	4	10
Median	45	20	64	2	1.5
Average	45.3384	20.1348	73.7742	2.397230028	1.937938

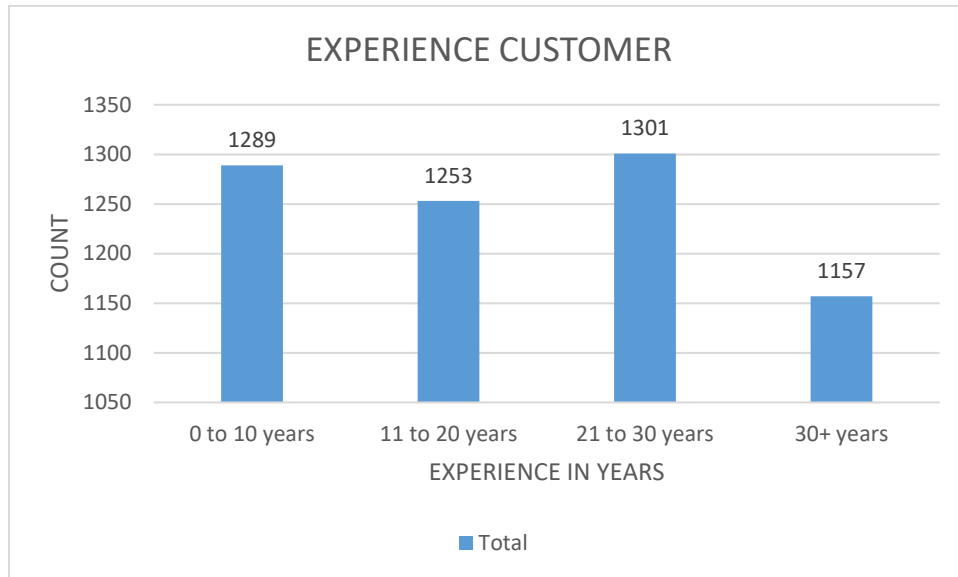|	Mortgage
Min	0
Max	635
Median	0
Average	56.4988

OBSERVATION:
DATA TAB---ANALYSIS—DESCRIPTIVE STATISTICS –MIN, MAX, MEDIAN, AVERAGE.

3) Create a new categorical variable for Experience using 4 categories –

• 0 to 10 years • 11 to 20 years • 21 to 30 years • 30+ years.

EXPERIENCE CUSTOMER

Experience Categorical	Count of Experience Categorical
0 to 10 years	1289
11 to 20 years	1253
21 to 30 years	1301
30+ years	1157
	5000

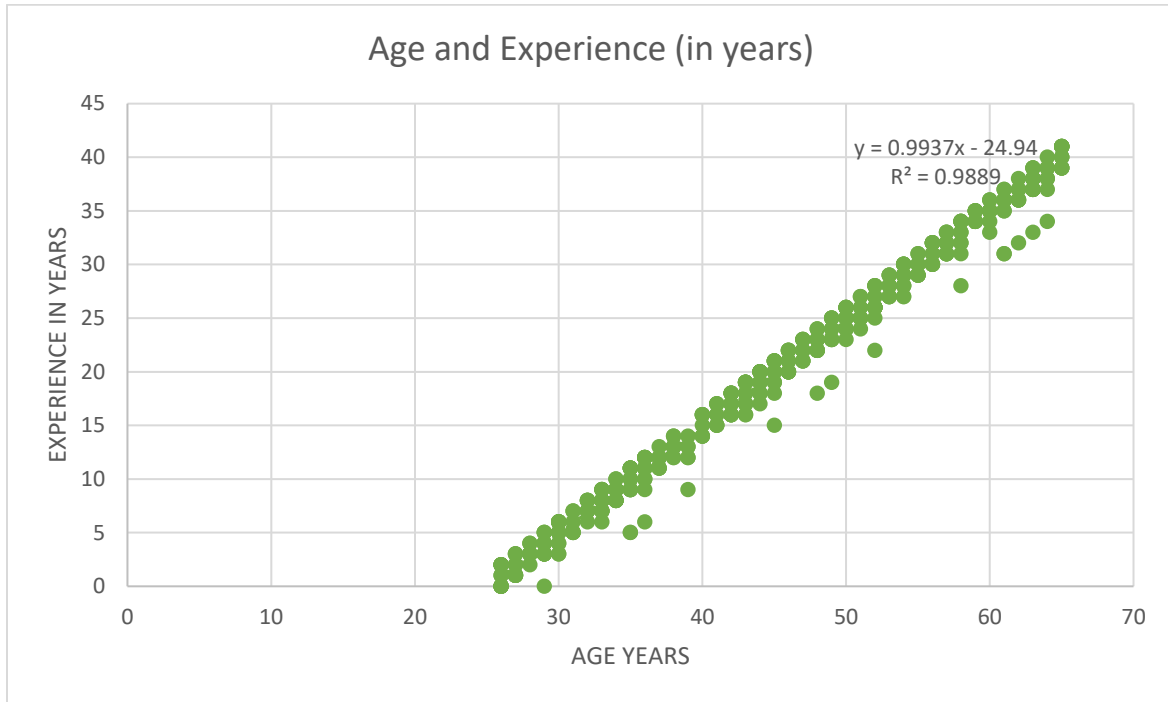1) **OBSERVATION:**
2) **Out of 5000 customers**
3) **0 to 10 years- experience customer count 1289**
4) **11 to 20 years- experience customer count 1253**
5) **21 to 30 years-experience customer count 1301**
6) **30+ years -experience customer count 1157**

4) Create a scatter plot of the Age and the Experience variable. What do you observe?

Age and Experience (in years)

$y = 0.9937x - 24.94$
$R^2 = 0.9889$

Y-axis: EXPERIENCE IN YEARS (0 to 45)
X-axis: AGE YEARS (0 to 70)

OBSERVATION:
Scatter plot chart for age and experience customers

5) What are the top 3 areas (ZIP Codes) where the bank's customers are located?

Top 3 areas (ZIP Codes) where the bank's customers are located

Row Labels	Count of ZIP Code
94720	169
94305	127
95616	116

OBSERVATION:

In HBSC bank personal loan taken customer visit again and again bank these 3 location

6) How many customers have a combination of Fixed Deposits and Credit Cards but not Personal Loan?

OBSERVATION:

147 customers have a combination of Fixed Deposits and Credit Cards but not Personal Loan

Personal Loan	No

Row Labels	Count of TD Account	Count of CreditCard
No	**4358**	**4358**
No	3178	3178
Yes	1180	1180
Yes	**162**	**162**
No	15	15
Yes	147	147
Grand Total	**4520**	**4520**

7) What is the median income of the customers who have availed personal loans and compare it with the median income of those customers

 who have not availed personal loans? What do you infer?

OBSERVATION:

MEDIAN
142.5
 median income of the customers who have availed personal loans

MEDIAN
59
median income of the customers who have not availed personal loans

MEDIAN   MEDIAN
142.5   59

8) Create 4 separate Pivot Tables. Summarize your data by percentage values

• Education vs Personal Loan • TD Account Vs Personal Loan • Online vs Personal Loan • Income_ Category vs Personal Loan

OBSERVATION:
Education customer holding personal loan 9.60% in bank account

TD customer holding personal loan 9.60% in bank account
Online customer holding personal loan 9.60% in bank account
Income category holding personal loan 9.60% in bank account

Count of Education	Column Labels		
Row Labels	No	Yes	Grand Total
Graduate	24.42%	3.64%	28.06%
Professional	25.92%	4.10%	30.02%
Undergraduate	40.06%	1.86%	41.92%
Grand Total	**90.40%**	**9.60%**	**100.00%**

- **Education vs Personal Loan**

Count of TD Account	Column Labels		
Row Labels	No	Yes	Grand Total
No	87.16%	6.80%	93.96%
Yes	3.24%	2.80%	6.04%
Grand Total	**90.40%**	**9.60%**	**100.00%**

- **TD Account Vs Personal Loan**

Count of Online	Column Labels		
Row Labels	No	Yes	Grand Total
No	36.54%	3.78%	40.32%
Yes	53.86%	5.82%	59.68%
Grand Total	**90.40%**	**9.60%**	**100.00%**

- **Online vs Personal Loan**

Count of Income Categorical	Column Labels		
Row Labels	No	Yes	Grand Total
0-50	38.28%	0.00%	38.28%
100+	15.48%	8.76%	24.24%
51-100	36.64%	0.84%	37.48%
Grand Total	**90.40%**	**9.60%**	**100.00%**

- **Income Category vs Personal Loan**

9) Analyze the Pivot tables created in the previous question and state any anomaly that you observe.

Which categorical variables appear most important for your further study if you want to analyze which customers are most likely to take personal loans and why?
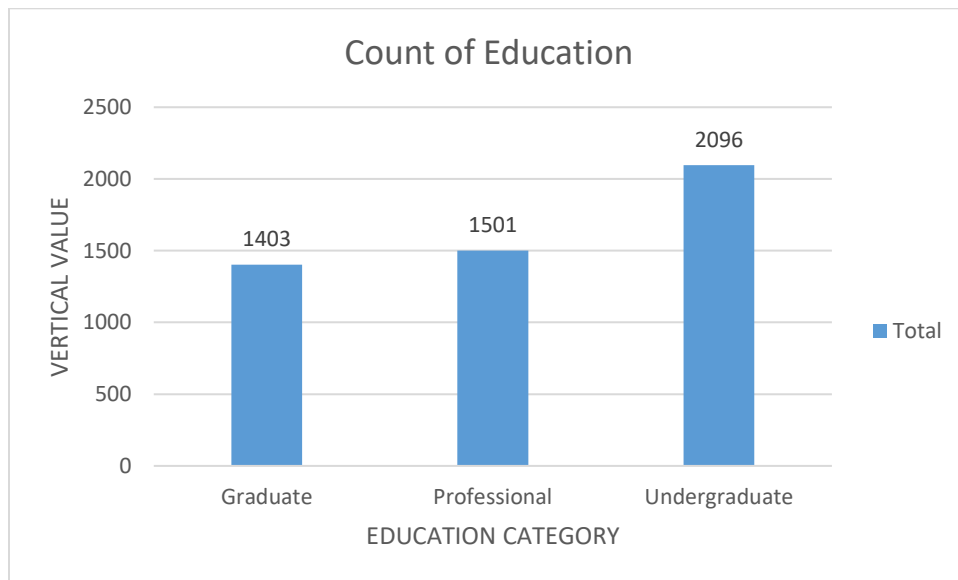
Education	Count of Education
Graduate	1403
Professional	1501
Undergraduate	2096

OBSERVATION:
Graduate and professional customer are most likely take personal loan.
Students often rely on bank loans to pay for their education or meet the basic expenses of their education.

Personal loans can be a good option for students who want to take some online courses or develop a new skill to help advance their career.

Customer having term deposit with the bank chance of accepting th e offer personal loan

10) In the last campaign, bank reached out to 5000 customers out of which 480 customers accepted the personal loan offer.

The bank incurred a huge cost in running a marketing campaign to reach out to so many customers.

This is where you as a strategic business consultant step in. You are tasked to optimize the cost of this campaign by identifying the correct target base

(without significant reduction in number of acceptances of offers). The bank can then send Personal Loan offers to these target customers who have a higher chance of accepting the offer

. Based on your analysis, what strategy would you suggest to the management of HBFC bank

OBSERVATION:

1) BANK FOCUS ON GRADUATE AND PROFESSIONAL EDUCATIONAL BACKGROUND CUSTOMERS HIGHER CHANCE OF ACCEPTING THE OFFER PERSONAL LOAN

2) CUSTOMER HAVING TERM DEPOSIT WITH THE BANK CHANCE OF ACCEPTING THE OFFER PERSONAL LOAN