



ASSIGNMENT 1

HBFC BANK PERSONAL LOAN FINAL BUSINESS REPORT

BY

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ABSTRACT

This Case study mainly focus on HBFC Bank objective of expanding it's customers base of assest customers by implementing a more effective and targeted marketing campaign for personal loans. To achieve this goal, the bank has sought assistance in analysing data from previous marketing campaign. Currently bank has a limited number of asset customers and aims to increase the numbers strategically. The main purpose of HBFC Bank aims to use this comprehensive approach to refine its marketing strategy to attract more customers and to increase income while staying within budget constraints.

Problem Statement (Situation):

“Finding out potential target customers for personal loans”

In this case study, the goal of HBFC bank is to sell more personal loans to their savings account holders. The bank wants to start a campaign to sell the personal loans, but before that they want to analyze last marketing campaign data to understand the profile of potential loan customers. This will help them in doing a targeted approach to the prospective customers in future. The bank has approached you, to help them with the analysis of the previous campaign data. The bank basically has two customers,

- **Liability customers** – They deposit the money in the bank and pays interest against the deposited money.
- **Asset customers** - They borrow money (take different types of loan) from the bank and the bank charges interest against the borrowed money.

At present the bank has small number of asset/loan customers. The bank wants to increase their income by increasing the customer base of “asset customers”. Last year the bank ran a campaign where they successfully converted 9% of the existing “liability customers” to “asset customers”. This has encouraged the bank to have a better targeted marketing campaign to increase the success ratio with minimum budget.

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

| Row Labels | Count of Personal Loan |
|--------------------|------------------------|
| No | 90.40% |
| Yes | 9.60% |
| Grand Total | 100.00% |

Table 1. Percentage of Customers who availed and not availed for Loans

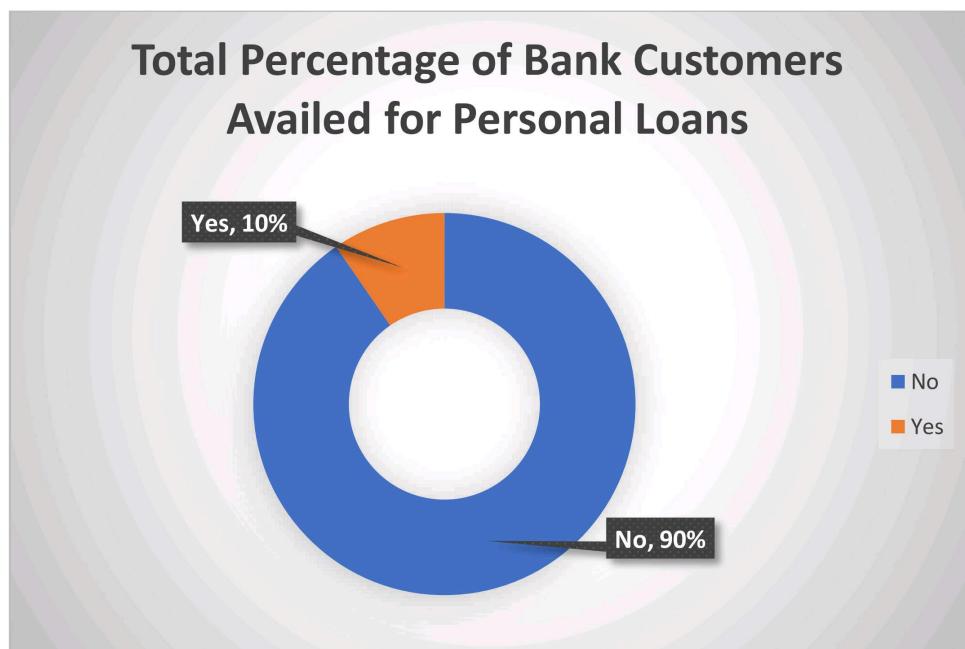


Chart 1. Pie Chart for Percentage of customers who availed for Loans

According to data, Only **9.6%**(approx.10%) of people who availed for personal loan. Remaining **90.40%** (90%) Of people who did not availed for personal loan.

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

| Calculation | Age (in years) | Experience (in years) | Income (in k/years) | Family Members | CCAvg | Mortgage |
|--------------------|-----------------------|------------------------------|----------------------------|-----------------------|--------------|-----------------|
| MIN | 23 | 0 | 8 | 1 | 0 | 0 |
| MAX | 67 | 43 | 224 | 4 | 10 | 635 |
| MEDIAN | 45 | 20 | 64 | 2 | 1.5 | 0 |
| AVERAGE | 45.34 | 20.13 | 73.77 | 2.40 | 1.94 | 56.50 |

Table 2. Calculation for MIN, MAX, MEDIAN, AVERAGE

From the dataset we can calculate MIN,MAX,MEDIAN,AVERAGE for all numerical variables.

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.

| Row Labels | Count of Experience Categorical |
|--------------------|---------------------------------|
| 0 to 10 years | 1289 |
| 11 to 20 years | 1253 |
| 21 to 30 years | 1301 |
| 30+years | 1157 |
| Grand Total | 5000 |

Table 3. Count of Experience Categorical

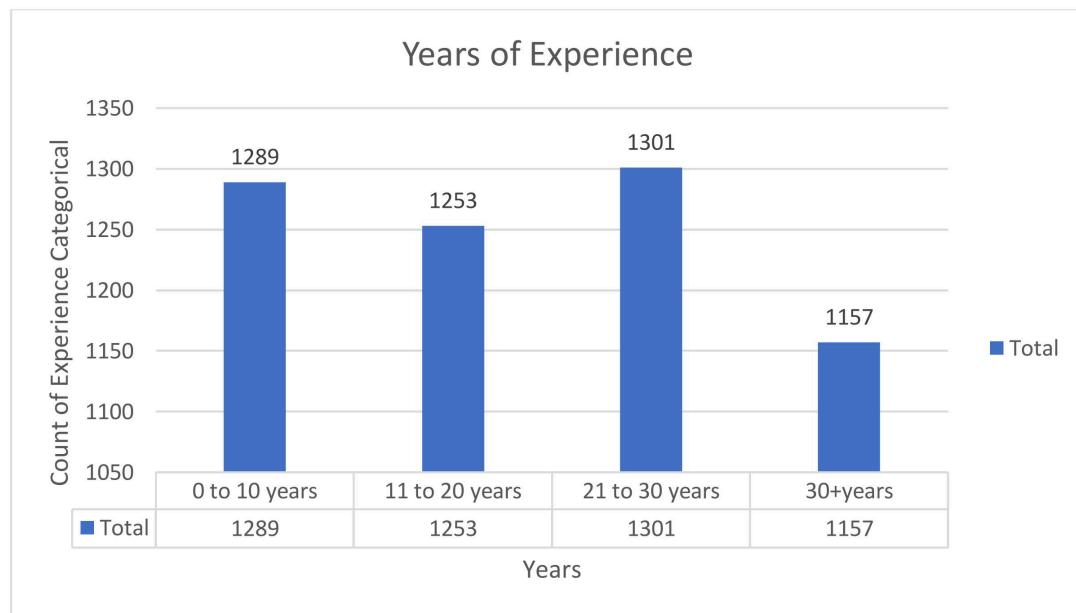


Chart 2. Bar Chart for Years of Experience

According to data, we have maximum count of 1301 Customers who experience range between 21 to 30 years and minimum count of 1157 Customers who experience is 30+ years.

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

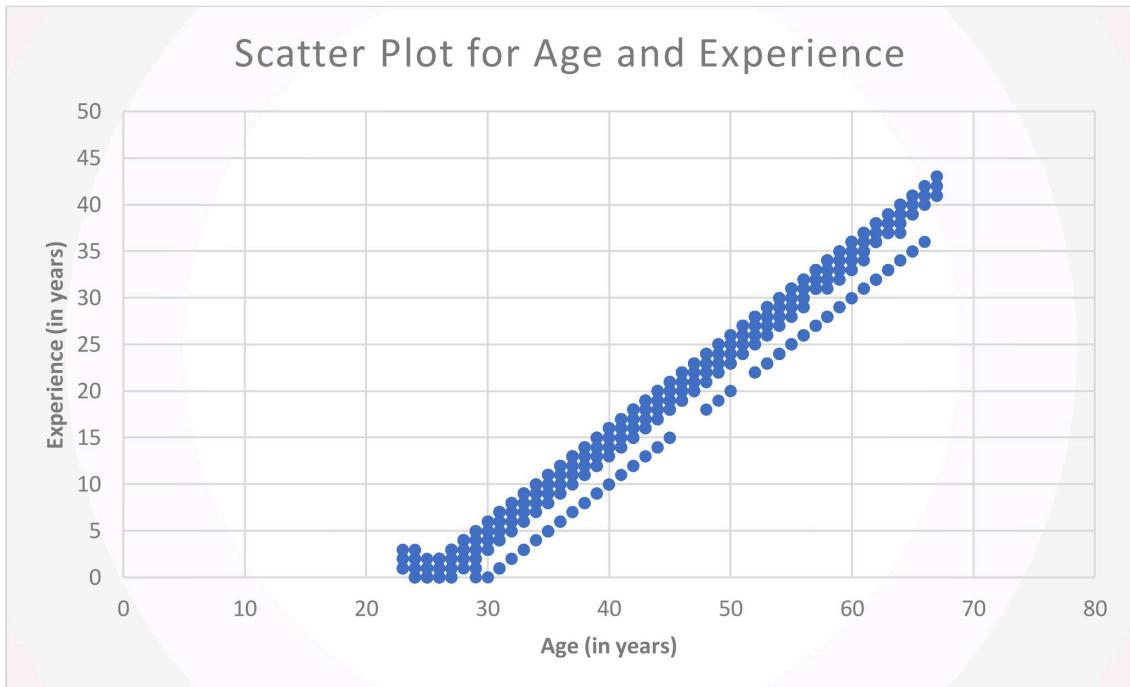


Chart 3. Scatter Plot for Age and Experience

By observing the Scatter Plot for Age and Experience, if the Age of the Customer increases, automatically customer Experience also increases.

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

| Top 3 Zip Code | Count of Bank Customers |
|----------------|-------------------------|
| 94720 | 169 |
| 94305 | 127 |
| 95616 | 116 |

Table 4. Count of Top 3 area where Customers Located

According to data, the top 3 area where Bank Customers are located in **94720,94305,95616** zip codes. We can easily target these zip code peoples for getting the personal loan from HBFC Bank.

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

| |
|--|
| Combination of Fixed Deposits and Credit Cards but not personal Loan |
| 147 |

According to data, we have only 147 Customers having the Combination of Fixed Deposits and Credit Cards but not the Personal Loan out of 5000 Customers.

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?

| Median of Income of Customers Who Availed Personal Loan | Median of Income of customers who not availed for Personal Loan |
|---|---|
| 142.5 | 59 |

Table 5. Median of Customers who Availed and Not Availed for Personal Loans

The median income of the customers who have availed personal loans is **142.5**

The median income of the customers who have not availed for personal loan is **59.**

I Inferred that the median income of customers who availed for personal Loan is 142.5 whereas the median income of customers who have not availed for personal loan is 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

Education Vs Personal Loan

| Count of Securities Account | 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% |

Table 6.1. Education Vs Personal Loan

In Education Vs Persoanl Loan Table, By Observing we have only 4.10% of Professionals have accept the personal Loan and 3.64% of Graduate Customers who accept the personal Loan.

TD Account Vs Personal Loan

| Count of Personal Loan | 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% |

Table 6.2 TD Account Vs Personal Loan

By Observing the TD Account Vs Personal Loan, only 2.80% of customers having TD Account accepts the personal loan.

Online Vs Personal Loan

| Count of Personal Loan | 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% |

Table 6.3 Online Vs Personal Loan

By Observing the online Vs personal Loan, We have only 5.82% customers who availed for personal loan from bank.

Income Category Vs Personal Loan

| Count of Personal Loan | 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% |

Table 6.4 Income Category Vs Personal Loan

By Observing the Income Category Vs Personal Loan, We have 8.76% of getting 100+ k income customers who availed for personal loan and 0.84% of getting 51-100k income customers who availed for 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?

| Count of Personal Loan | Column Labels | | |
|------------------------|---------------|------------|-------------|
| Row Labels | No | Yes | Grand Total |
| Graduate | 1221 | 182 | 1403 |
| Professional | 1296 | 205 | 1501 |
| Undergraduate | 2003 | 93 | 2096 |
| Grand Total | 4520 | 480 | 5000 |

Table 7. Count of Education Criteria from Personal Loan

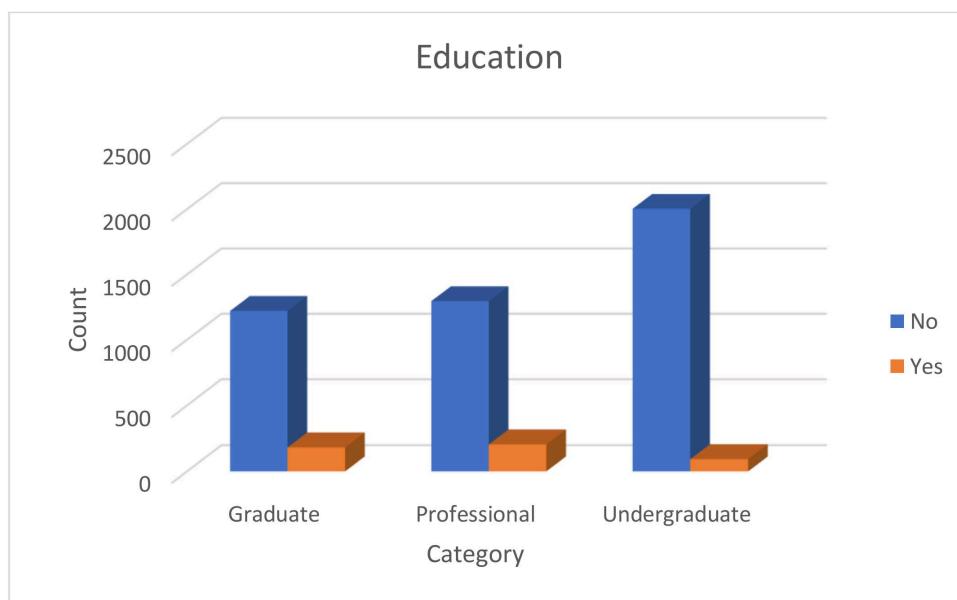


Chart 4. Bar Chart for Education and Personal Loan

By Observing the previous Pivot Table, Education Categorical are important. In addition to these customers who having the Income in K per year category between 51-100k and 100+k having the high possibility of getting personal Loan. In Education Category of Professional and Graduate are most likely to take 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?

1. To efficiently use our resource & get our product sold to the customer's, we need to target some specific groups of customers instead of putting all our resources at Whole Dataset.
2. By Considering the Education Criteria we should focus on graduates & professionals. If we observe the maximum customers as classified on education criteria are undergraduates but the conversion rate is the least in this. So we should focus on graduates & Professionals.
3. The customers earning range between 100k have the maximum chances of buying our product.
4. While analyzing, I came to know that the customers who are not using online banking tend to take more personal loan rather than the one's who are using online banking. We should focus more on them .

| Count of Personal Loan | Column Labels | | | |
|------------------------|---------------|---------------|---------------|----------------|
| Graduate | 13.10% | 4.24% | 10.72% | 28.06% |
| No | 13.10% | 0.88% | 10.44% | 24.42% |
| Yes | 0.00% | 3.36% | 0.28% | 3.64% |
| Professional | 12.78% | 4.92% | 12.32% | 30.02% |
| No | 12.78% | 1.10% | 12.04% | 25.92% |
| Yes | 0.00% | 3.82% | 0.28% | 4.10% |
| Undergraduate | 12.40% | 15.08% | 14.44% | 41.92% |
| No | 12.40% | 13.50% | 14.16% | 40.06% |
| Yes | 0.00% | 1.58% | 0.28% | 1.86% |
| Grand Total | 38.28% | 24.24% | 37.48% | 100.00% |

Table 8. Percentage for Education from Income category and Personal Loan

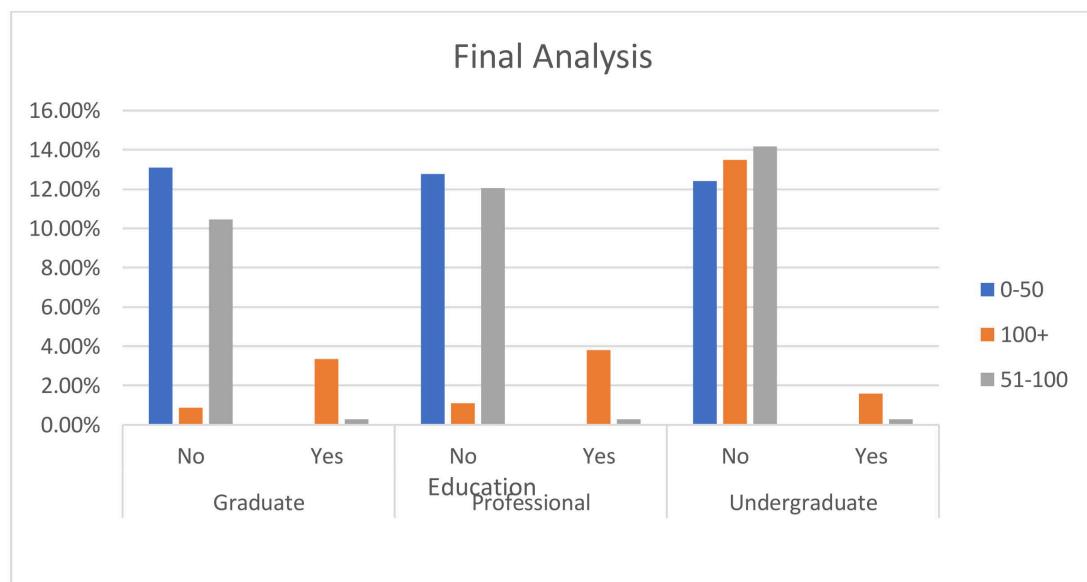


Chart 5. Final Analysis