Business report on hbfc bank personal loans

An analysis report to HBFC Bank Personal Loans

**Q1. What percentage of the bank’s customers (according to the data) have availed Personal Loans?**

**According to the data**

|  |  |
| --- | --- |
| **Row Labels** | **Count of ID** |
| No | 90.40% |
| Yes | 9.60% |
| **Grand Total** | **100.00%** |

**Out of 100% only 9.60 have availed the loan and remaining 9.40 haven’t availed loan**

###### Q2. Generate a table with min, max, median & average for all numeric variables (age, experience, income, family members, CCAvg, Mortgage). What are your observations?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Column1** | **Age (in years)** | **Experience (in years)** | **Income (in K/year)** | **Family members** | **CCAvg** | **Mortgage** |
| MEAN | 45.3384 | 20.1348 | 73.7742 | 2.370572207 | 1.937938 | 56.4988 |
| MEDIAN | 45 | 20 | 64 | 2 | 1.5 | 0 |
| MIN | 23 | 0 | 8 | 1 | 0 | 0 |
| MAX | 67 | 43 | 224 | 4 | 10 | 635 |

* **The customers have an average age of 45, and an average experience of 20,The also have an average income of 73k/per year and their cc average is 1.93 and a mortgage is 56.49**
* **These customer's also have median of 45 and 20 as their median in their experience an income of 64k per/year an cc average is 1.5**
* **The min age of age of the customer's is 20 and the income per/year is 8k and some of them don't have any CCAVG no mortgage and their ae some customers who have an CCAVG of 10 and 635 Mortgage**

**Q3. Create a new categorical variable for Experience using 4 categories – 0 to 10 years 11 to 20 years 21 to 30 years and 30+ years. Plot a bar graph for this new categorical variable [Hint – You may make use of if else/nested if statements to accomplish this tasks. You can refer how Income Category has been created in the dataset**

|  |  |
| --- | --- |
| categories | |
| 0-10 | 1289 |
| 11-20 | 1253 |
| 21-30 | 1301 |
| 30+ | 1154 |

###### Q4.Create a scatter plot of the Age and the Experience variable. What do you observe?

We can observed that the age and experience are co related, when the age is increasing the experience is also increasing.

###### Q5.What are the top 3 areas (ZIP Codes) where the bank’s customers are located?

|  |  |
| --- | --- |
| Zip codes | ID's |
| 94720 | 169 |
| 94305 | 127 |
| 95616 | 116 |

**The highlighted cells are the top zip codes where Bank's customers are located**

**Q6.How many customers have a combination of Fixed Deposits and Credit Cards but not Personal Loan?**

|  |
| --- |
| 147 |
| 4853 |

**Out of 5000 customer’s 147 customers have the fixed deposits and credit cards but not personal loan**

**147 customers have TD Account, Credit Card and don't have any Personal loans**

**And remaining 4853 either have a personal loan or maybe they don’t have a combination of Fixed deposits and credit cards**

###### Q7. 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?

**147.5 is the median income who have availed the personal loan and**

**59 is the median income who haven’t availed the personal loan.**

**The median income of the customers who have availed the personal loan is 142.5k/per year and the median income of the customers who haven't availed the loan is 59k/per year.**

**Because the customers who have high income can easily avail the loan compare to the customers who have low and also they can easily repay the loan.**

**Q8. Create 4 separate Pivot Tables. Summarise your data by percentages. Education vs Personal Loan TD Account vs Personal Loan Online vs Personal Loan Income\_Category vs Personal Loan [Hint: Please drag Personal Loan to the Columns area while creating the Pivot Table to get the required values?**

|  |  |  |  |
| --- | --- | --- | --- |
| Education vs personal loan | | |  |
| **Count of ID** | **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%** |

|  |  |  |  |
| --- | --- | --- | --- |
| TD account vs personal loan | | |  |
| **Count of ID** | **Column Labels** |  |  |
| **Row Labels** | **No** | **Yes** | **Grand Total** |
| No | 87.16% | 3.24% | 90.40% |
| Yes | 6.80% | 2.80% | 9.60% |
| **Grand Total** | **93.96%** | **6.04%** | **100.00%** |

|  |  |  |  |
| --- | --- | --- | --- |
| ONLINE VS Personal loan | |  |  |
| **Count of ID** | **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%** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Income Categorical vs personal loan | | | |
| **Count of ID** | **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%** |

###### Q9. Analyse 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 analyse which customers are most likely to take personal loans and why?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Count of ID** |  |  | **Personal Loan** |  |  |
| **Education** | **TD Account** | **Income Categorical** | **No** | **Yes** | **Grand Total** |
| **Graduate** | **No** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 26.25% | 73.75% | 100.00% |
|  |  | 51-100 | 98.27% | 1.73% | 100.00% |
|  | **Yes** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 3.85% | 96.15% | 100.00% |
|  |  | 51-100 | 70.59% | 29.41% | 100.00% |
| **Professional** | **No** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 27.08% | 72.92% | 100.00% |
|  |  | 51-100 | 97.98% | 2.02% | 100.00% |
|  | **Yes** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 5.56% | 94.44% | 100.00% |
|  |  | 51-100 | 90.91% | 9.09% | 100.00% |
| **Undergraduate** | **No** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 92.44% | 7.56% | 100.00% |
|  |  | 51-100 | 98.84% | 1.16% | 100.00% |
|  | **Yes** | 0-50 | 100.00% | 0.00% | 100.00% |
|  |  | 100+ | 50.94% | 49.06% | 100.00% |
|  |  | 51-100 | 81.82% | 18.18% | 100.00% |
| **Grand Total** |  |  | **90.40%** | **9.60%** | **100.00%** |

**To issue a personal loan bank's normally check their customer's income ,and the background qualification weather the person is eligible for loan or not so, in that situation income play's a major role for bank and customer from the data in table we can say that Graduate ,professional and undergraduate who have availed loan have 100+ in their income categorical which makes bank to give them a loan.**

###### Q10. 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 optimise the cost of this campaign by identifying the correct target base (without significant reduction in number of acceptance 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?

|  |  |  |  |
| --- | --- | --- | --- |
| **Education** | **TD Account** | **Income Categorical** | **Yes** |
| Graduate | Yes | 100+ | 96.15% |
| Professional | Yes | 100+ | 94.44% |
| Graduate | No | 100+ | 73.75% |
| Professional | No | 100+ | 72.92% |
| Undergraduate | Yes | 100+ | 49.06% |
| Graduate | Yes | 51-100 | 29.41% |
| Undergraduate | Yes | 51-100 | 18.18% |
| Professional | Yes | 51-100 | 9.09% |
| Undergraduate | No | 100+ | 7.56% |
| Professional | No | 51-100 | 2.02% |
| Graduate | No | 51-100 | 1.73% |
| Undergraduate | No | 51-100 | 1.16% |
| Graduate | No | 0-50 | 0.00% |
| Graduate | Yes | 0-50 | 0.00% |
| Professional | No | 0-50 | 0.00% |
| Professional | Yes | 0-50 | 0.00% |
| Undergraduate | No | 0-50 | 0.00% |
| Undergraduate | Yes | 0-50 | 0.00% |

**Based on my analysis. The bank should reach out for the customers who have higher income rather than reaching out for all. These customers have higher level of chance of accepting the loan compare to the other customers, not only that these customers can repay the loan. The bank can be free from the risk thinking that can these customers will pay or not it helps bank saving the money and time.**

**These customers are mostly like Graduates, professionals, and undergraduates and some of them also have TD account which helps these to repay the loan in time of crisis.**

**The point which makes my analysis to reach out for these customers like Graduates, professional, undergraduate is because these people have good income so, they ae more likely to create assets, for graduate it may be to start a business, and for professional them may be likely to buy properties, and not but least for undergraduate loan helps them for their higher education and these people have less probability of not paying the loan in time.**