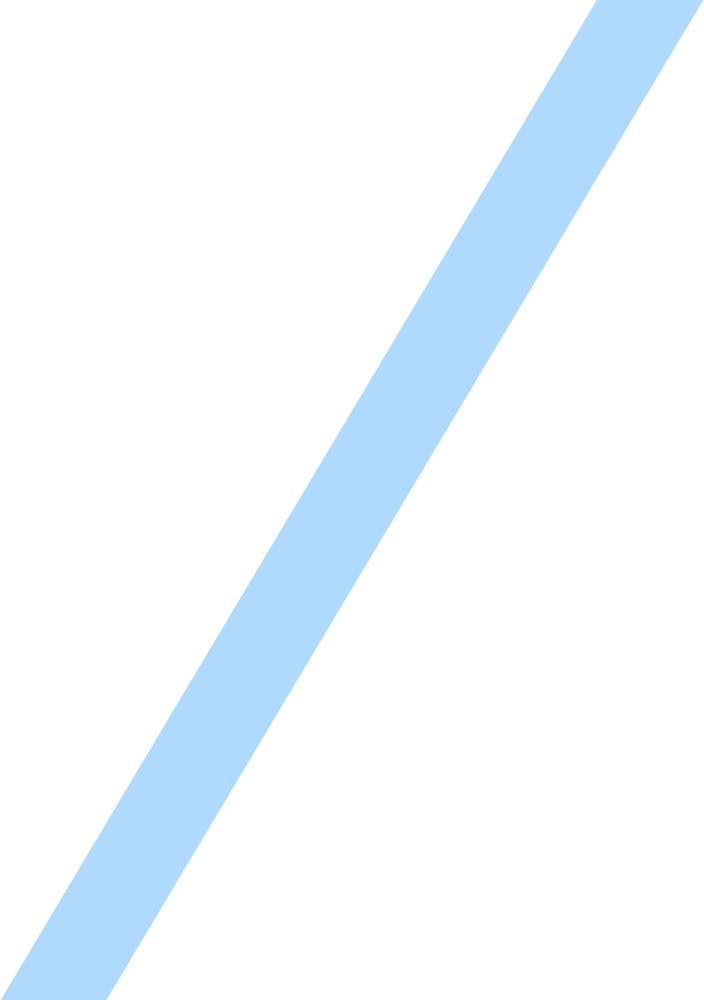
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| --- |
| BUSINESS  REPORT |

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| *HBFC BANK PROJECT* |

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| --- | --- |
|  |  |



By,

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Questions and Answers

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

|  |  |
| --- | --- |
| Personal loan | Count of Personal Loan |
| Yes | 9.60% |
| No | 90.40% |

Ans.

According to data, 9.60% of bank's customers availed personal loan and remaining 90.40% did not availed it.

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

Ans.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Minimum | Maximum | Median | Average |
| Age (in years) | 23 | 67 | 45 | 45.3384 |
| Experience (in years) | 0 | 43 | 20 | 20.1348 |
| Income (in K/year) | 8 | 224 | 64 | 73.7742 |
| Family members | 1 | 4 | 2 | 2.39723 |
| CCAvg | 0 | 10 | 1.5 | 1.937938 |
| Mortgage | 0 | 635 | 0 | 56.4988 |

In this question I used the functions like 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. Plot a bar graph for this new categorical variable.

|  |  |
| --- | --- |
| Experience (in years) | Count of Range |
| 0-10 | 1289 |
| 11-20 | 1253 |
| 21-30 | 1301 |
| 30+ | 1157 |

Ans.

From the above graph it appears that the maximum no. of people are in the group of 21-30 years.

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

Ans.

* From above scatter plot it is observed that the people who are older having more years of professional experience.
* Points on the graph appearing in straight line i.e. age and experience are directly proportional to each other, as age is increasing experience is also increasing.
* Age and experience both are having good positive coorelation.

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

|  |  |
| --- | --- |
| Zip Code | Count of ZIP Code |
| 94720 | 169 |
| 94305 | 127 |
| 95616 | 116 |

Ans.

From pivot table it is obsereved that 94720, 94305 and 95616 are the top 3 areas (zip code) where bank's customers are located.

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

Ans.

* 147 customers have a combination of Fixed Deposits and Credit Cards but not Personal Loan.
* For calculating this “COUNTIFS” function is used in excel.

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?

Ans.

* 142.5 K/year is the median income of the customers who have availed personal loans.
* 59 K/year is the median income of the customers who have not availed personal loans.
* Conclusion made from the above result is that only those people who have higher income have got personal loan.
* For this calculation “MEDIAN” function is used with “IF” function in excel.

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.

Ans.

1. Education vs Personal Loan

|  |  |  |
| --- | --- | --- |
| Count of Personal Loan | Personal loan | |
| Education | No | Yes |
| Graduate | 87.03% | 12.97% |
| Professional | 86.34% | 13.66% |
| Undergraduate | 95.56% | 4.44% |

2. TD Account Vs Personal Loan

|  |  |  |
| --- | --- | --- |
| Count of Personal Loan | Personal loan |  |
| TD account | No | Yes |
| Yes | 53.64% | 46.36% |
| No | 92.76% | 7.24% |

3. Online vs Personal Loan

|  |  |  |
| --- | --- | --- |
| Count of Personal Loan | Personal loan |  |
| Online | No | Yes |
| Yes | 90.25% | 9.75% |
| No | 90.63% | 9.38% |
|  |  |  |

4. Income Category vs Personal Loan

|  |  |  |
| --- | --- | --- |
| Count of Personal Loan | Personal loan | |
| Income ( in K/year) | No | Yes |
| 8 | 100.00% | 0.00% |
| 9 | 100.00% | 0.00% |
| 10 | 100.00% | 0.00% |
| 11 | 100.00% | 0.00% |
| 12 | 100.00% | 0.00% |
| 13 | 100.00% | 0.00% |
| 14 | 100.00% | 0.00% |
| 15 | 100.00% | 0.00% |
| 18 | 100.00% | 0.00% |
| 19 | 100.00% | 0.00% |
| 20 | 100.00% | 0.00% |
| 21 | 100.00% | 0.00% |
| 22 | 100.00% | 0.00% |
| 23 | 100.00% | 0.00% |
| 24 | 100.00% | 0.00% |
| 25 | 100.00% | 0.00% |
| 28 | 100.00% | 0.00% |
| 29 | 100.00% | 0.00% |
| 30 | 100.00% | 0.00% |
| 31 | 100.00% | 0.00% |
| 32 | 100.00% | 0.00% |
| 33 | 100.00% | 0.00% |
| 34 | 100.00% | 0.00% |
| 35 | 100.00% | 0.00% |
| 38 | 100.00% | 0.00% |
| 39 | 100.00% | 0.00% |
| 40 | 100.00% | 0.00% |
| 41 | 100.00% | 0.00% |
| 42 | 100.00% | 0.00% |
| 43 | 100.00% | 0.00% |
| 44 | 100.00% | 0.00% |
| 45 | 100.00% | 0.00% |
| 48 | 100.00% | 0.00% |
| 49 | 100.00% | 0.00% |
| 50 | 100.00% | 0.00% |
| 51 | 100.00% | 0.00% |
| 52 | 100.00% | 0.00% |
| 53 | 100.00% | 0.00% |
| 54 | 100.00% | 0.00% |
| 55 | 100.00% | 0.00% |
| 58 | 100.00% | 0.00% |
| 59 | 100.00% | 0.00% |
| 60 | 98.08% | 1.92% |
| 61 | 100.00% | 0.00% |
| 62 | 100.00% | 0.00% |
| 63 | 100.00% | 0.00% |
| 64 | 98.33% | 1.67% |
| 65 | 98.33% | 1.67% |
| 68 | 100.00% | 0.00% |
| 69 | 97.83% | 2.17% |
| 70 | 100.00% | 0.00% |
| 71 | 97.67% | 2.33% |
| 72 | 100.00% | 0.00% |
| 73 | 97.73% | 2.27% |
| 74 | 100.00% | 0.00% |
| 75 | 97.87% | 2.13% |
| 78 | 100.00% | 0.00% |
| 79 | 100.00% | 0.00% |
| 80 | 100.00% | 0.00% |
| 81 | 98.80% | 1.20% |
| 82 | 98.36% | 1.64% |
| 83 | 90.54% | 9.46% |
| 84 | 98.41% | 1.59% |
| 85 | 96.92% | 3.08% |
| 88 | 100.00% | 0.00% |
| 89 | 94.12% | 5.88% |
| 90 | 97.37% | 2.63% |
| 91 | 94.59% | 5.41% |
| 92 | 96.55% | 3.45% |
| 93 | 89.19% | 10.81% |
| 94 | 92.31% | 7.69% |
| 95 | 88.00% | 12.00% |
| 98 | 92.86% | 7.14% |
| 99 | 79.17% | 20.83% |
| 100 | 90.00% | 10.00% |
| 101 | 83.33% | 16.67% |
| 102 | 81.25% | 18.75% |
| 103 | 77.78% | 22.22% |
| 104 | 85.00% | 15.00% |
| 105 | 85.00% | 15.00% |
| 108 | 75.00% | 25.00% |
| 109 | 83.33% | 16.67% |
| 110 | 84.21% | 15.79% |
| 111 | 68.18% | 31.82% |
| 112 | 88.46% | 11.54% |
| 113 | 85.29% | 14.71% |
| 114 | 76.67% | 23.33% |
| 115 | 70.37% | 29.63% |
| 118 | 68.42% | 31.58% |
| 119 | 72.22% | 27.78% |
| 120 | 64.71% | 35.29% |
| 121 | 90.00% | 10.00% |
| 122 | 70.83% | 29.17% |
| 123 | 50.00% | 50.00% |
| 124 | 75.00% | 25.00% |
| 125 | 69.57% | 30.43% |
| 128 | 83.33% | 16.67% |
| 129 | 65.22% | 34.78% |
| 130 | 42.11% | 57.89% |
| 131 | 57.89% | 42.11% |
| 132 | 61.11% | 38.89% |
| 133 | 53.33% | 46.67% |
| 134 | 65.00% | 35.00% |
| 135 | 44.44% | 55.56% |
| 138 | 72.22% | 27.78% |
| 139 | 62.50% | 37.50% |
| 140 | 68.42% | 31.58% |
| 141 | 62.50% | 37.50% |
| 142 | 46.67% | 53.33% |
| 143 | 55.56% | 44.44% |
| 144 | 71.43% | 28.57% |
| 145 | 73.91% | 26.09% |
| 148 | 63.64% | 36.36% |
| 149 | 80.00% | 20.00% |
| 150 | 81.82% | 18.18% |
| 151 | 75.00% | 25.00% |
| 152 | 66.67% | 33.33% |
| 153 | 63.64% | 36.36% |
| 154 | 57.14% | 42.86% |
| 155 | 73.68% | 26.32% |
| 158 | 44.44% | 55.56% |
| 159 | 42.86% | 57.14% |
| 160 | 66.67% | 33.33% |
| 161 | 56.25% | 43.75% |
| 162 | 70.00% | 30.00% |
| 163 | 77.78% | 22.22% |
| 164 | 46.15% | 53.85% |
| 165 | 45.45% | 54.55% |
| 168 | 25.00% | 75.00% |
| 169 | 14.29% | 85.71% |
| 170 | 33.33% | 66.67% |
| 171 | 55.56% | 44.44% |
| 172 | 27.27% | 72.73% |
| 173 | 38.46% | 61.54% |
| 174 | 44.44% | 55.56% |
| 175 | 58.33% | 41.67% |
| 178 | 40.00% | 60.00% |
| 179 | 47.06% | 52.94% |
| 180 | 55.56% | 44.44% |
| 181 | 50.00% | 50.00% |
| 182 | 15.38% | 84.62% |
| 183 | 50.00% | 50.00% |
| 184 | 25.00% | 75.00% |
| 185 | 33.33% | 66.67% |
| 188 | 30.00% | 70.00% |
| 189 | 50.00% | 50.00% |
| 190 | 36.36% | 63.64% |
| 191 | 46.15% | 53.85% |
| 192 | 33.33% | 66.67% |
| 193 | 33.33% | 66.67% |
| 194 | 50.00% | 50.00% |
| 195 | 66.67% | 33.33% |
| 198 | 100.00% | 0.00% |
| 199 | 100.00% | 0.00% |
| 200 | 100.00% | 0.00% |
| 201 | 80.00% | 20.00% |
| 202 | 50.00% | 50.00% |
| 203 | 50.00% | 50.00% |
| 204 | 100.00% | 0.00% |
| 205 | 100.00% | 0.00% |
| 218 | 100.00% | 0.00% |
| 224 | 100.00% | 0.00% |

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?

Ans. From previous question’s pivot tables,

* If we observe table between Graduates and Personal loan, we can conclude that only 4.44% of the undergraduates have availed the personal loan which is very less as we compare this with the graduates and professional whose percentage are 12.97% and 13.66% respectively.
* If we observe table between TD account and personal loan, we infer that 46.36% of people availed the personal loan who have TD account also. There is huge difference if compare this value the value of people who availed personal loan but don’t have any TD account.
* If we observe table between online bank accounts and personal loan, we infer that there is no much difference in their proportion but from 100% only 9% (approx.) of the people from both, who have online banking and who does not have it, availed personal loan.
* As if we compare personal loan on income basis, people having higher income, does availed the personal loan.

Therefore, from all comparison it is observed that the people having TD account and higher income are more likely to take personal loan because they can get high amount of loan easily and can pay interest easily and also pay EMIs on time.

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?

Ans. After observing all variables and the pivot tables made in 8th question, as a strategic business consultant I would suggest to target those customers who are having high income i.e. more than 1 lakh. There are 36% of people who have income more than 1 lakh and approved for the personal loan. Also people having TD account are 46.36% who availed personal loan and people who are graduates had also approved for the loan. So, the bank can send personal loan offers to the people who have TD account, higher income and those who are graduates.