

HBFC BANK PROJECT

BUSINESS REPORT

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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?

Ans.

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

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.

Ans.

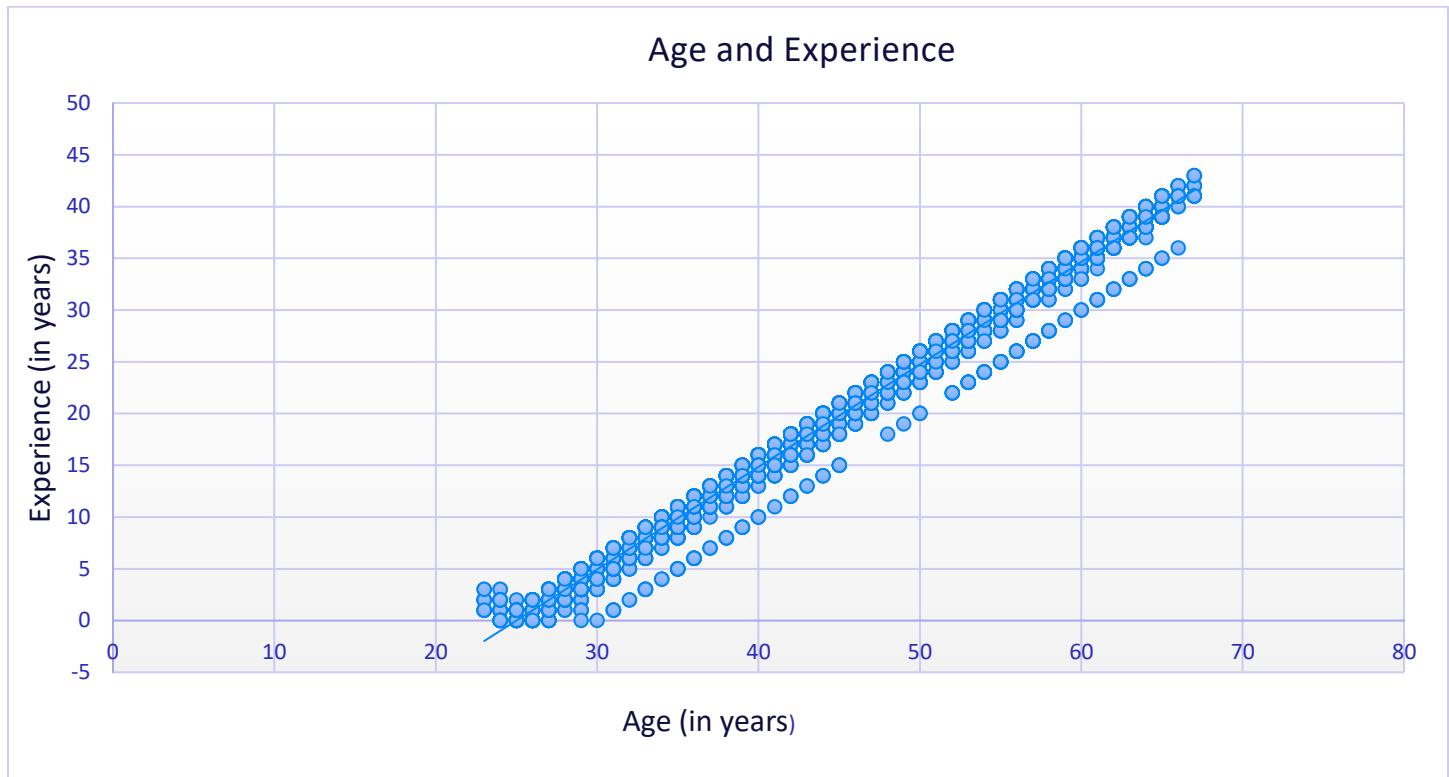
Experience (in years)	Count of Range
0-10	1289
11-20	1253
21-30	1301
30+	1157



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?

Ans.

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

From pivot table it is obseerved 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.