

Case Interview Questions

1. Credit Card Pricing

A. How do Credit Card Companies make money?

- Interest Revenue
- Membership Fees
- Interchange fees

B. What are the costs involved in Providing Credit Cards?

- Operations Cost in servicing a card (salaries, call centre)
- IT infrastructure Costs
- Marketing Costs
- Cost of Capital (capital used for lending to card customers)
- Default Costs

C. We offer the following vanilla Credit Cards (no additional services, no frills cards). Which of these is profitable ?

	Card A	Card B
APR	5%	6%
Membership Fee	\$300	\$300 annually
Interchange Fees	3%	3% earned by CC Co. per transaction
Discount Fee	1.5%	1.5% paid to CC network by CC Co. per transaction
Average Balance	\$1000	\$2000 per month
Marketing Costs	\$0.50	\$0.50 per mail solicitation sent
Response rate of customers	3%	2% of all customers who receive mail
Operations Costs	\$600	\$400 per customer annually
Cost of Capital	4%	4%
Average spend	\$20,000	\$30,000 annually

No other costs or revenues

Suppose 10,000 customers were sent marketing solicitation

	Card A	Card B
Marketing Costs	$0.5 \times 10,000 = \$5000$	\$5000(similarly)
No of customers	$3\% \text{ of } 10,000 = 300$	200
Operation Costs	\$600	\$400
Cost of Capital	$4\% \text{ of } 1000 = \$40$	$4\% \text{ of } 2000 = \$80$
Total Costs	$5000 + (600 + 40) \times 300 = \$197,000$	$5000 + (400 + 80) \times 200 = \$101,000$
Membership Fee	\$300	\$300
Interchange Revenue	$(3\% - 1.5\%) \times \$20,000 = 1.5\% \times \$15,000 = \$300$	$(3\% - 1.5\%) \times \$30,000 = 1.5\% \times \$20,000 = \$300$
Interest Revenue	$5\% \times \$1000 = \50	$6\% \times \$2000 = \120
Total Revenue	$(300 + 50 + 300) \times 300 = \$195,000$	$(300 + 450 + 120) \times 200 = \$174,000$
Profit(Loss)	$(\$195,000 - \$197,000) = (\$2,000)$	$(\$174,000 - \$101,000) = \$73,000$

Card B is profitable

D. What should be the response rate for Customers of Card A to make card A profitable ?

$$5000 + 640X = 650X$$

$$5000 = 10X$$

$$X = 500$$

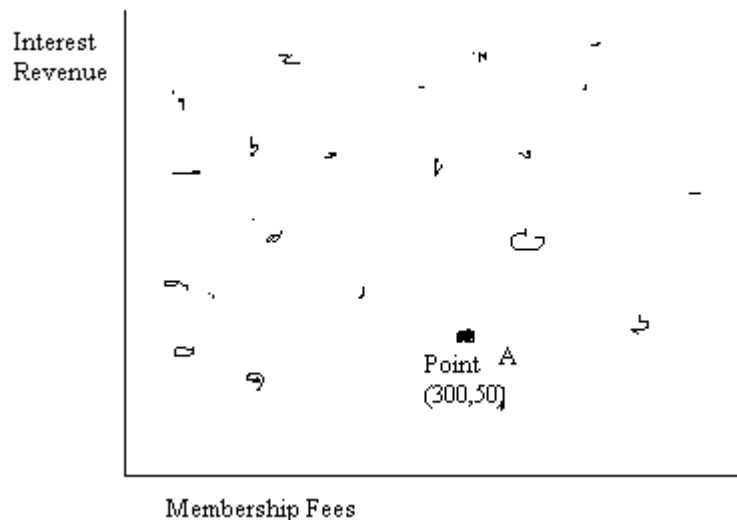
$$500/10,000 = 5\%$$

Greater than 5 % response rate for profitable

E. How can we increase the profitability on the cards?

- Increase APR
- Negotiate for higher Interchange rate with merchants or lower discounts rates with Credit Cards network
- Increase Membership Fee
- Get people to increase their annual spend by increasing their credit limit or increasing coverage with retailers
- Get people to carry over more of their spend i.e. increase average monthly balance
- Reduce operating Costs per card
- Reduce Customer Acquisition costs
- Try to secure cheaper capital

F. If we are currently marketing Card A with 5% response rate and we have the following plot of customers, how can we decide which are the profitable customers?



The Point A is a point which is breakeven at 5% response rate. It is neither profit nor loss.

There will be a break-even line which will pass through line A. Points above it will be profitable customers, those on it will be no loss-no profit customers and points will be non-profitable customers ?

G. Why do you think it will be a line?

- Because I understand that our costs are fixed in this scenario and the Membership Fees & Interest Revenue total add up to cancel out the costs.

H. Ok. Can you plot the line for me?

At 5% response rate I get 500 customers

$$\text{Marketing Costs} = 5000 + 640 \times 500 = 5000 + 320,000 = 325,000$$

If I earn no Interest Revenue then Membership Fees will have to take care of balancing the costs

$$\text{So Revenue} = (X + 300 + 0) \times 500 = 500X + 150,000$$

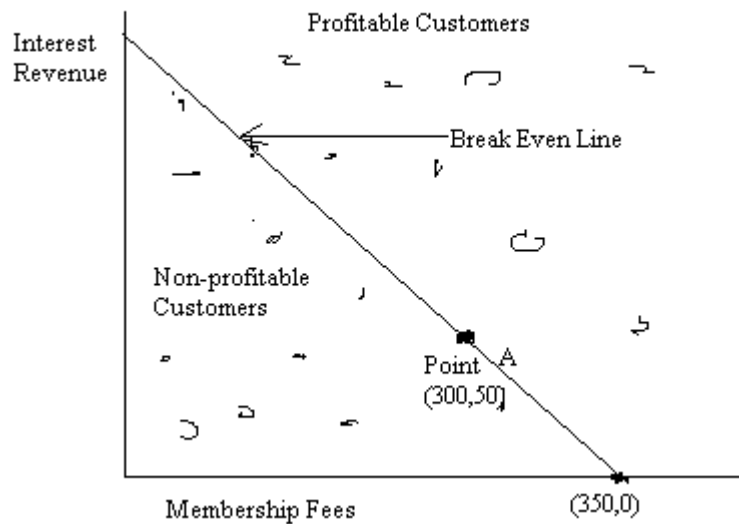
Break Even

$$500X + 150,000 = 325,000$$

$$500X = 175,000$$

$$X = 350$$

So this point on the graph is (350,0) & the line will be as below :



2. Credit Insurance

Our Bank provides a product called Credit Insurance. Basically the product is a form of insurance that helps you maintain a good credit history. If an individual cannot pay his credit card payments or mortgage payments then the insurance makes a payment to protect the credit history.

To test the product we made the following tests. We mailed mail solicitations to the following test groups

Cost per mail solicitation = 50c

	A	B
Response Rate	1%	2%
Average Balance	2000	3000
Premium Rate	6%	6%
Operations cost	500 per cust	500 per cust
Cost of Capital	4.5%	4.5%
Incidence Rate	3%	5%

A. Which of these is a profitable product?

If 10,000 customers were mailed

Marketing Costs	5000	5000
No of Customers	100	200
Yearly Premium	6% of 2000 x 12	6% of 3000 x 12
Operation Cost		
Cost of Capita;		
Insurance payment cost	3% of 100 x 2000	5% of 200 x 3000

Policy A came out to be the profitable product. Policy B made a loss.

However the above nos. might give different results as they have not been exactly reproduced from actual case. But use these 2 results for further on in the case.

B. Why was product A profitable?

Because even though the Response rate was low for A & hence marketing costs were more the more significant cost was Insurance paid. The Insurance costs were more because the card B population defaulted more.

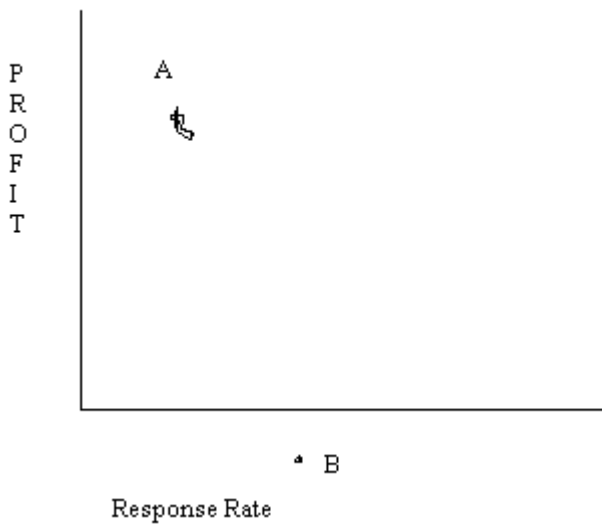
C. Why do you think that was the case ?

It was the case because set of people who, think they are more susceptible to defaults will respond to such products more. So customer acquisition costs were low, but you end up paying more coverage.

C. That's correct we have found that on an average the default rate is 5 times the Response rate on an average. Your thoughts & discussion on that.

D. Can you plot profit vs. Response Rate?

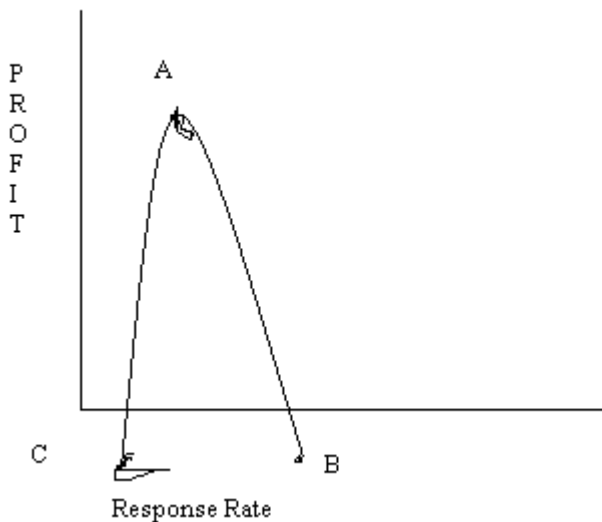
From the calculations done above we can plot the following graph. A is at 1 on x & B is at 2 on x.



I am wondering if this will be a line or some other curve. To make sure of that I am going to plot a few more points.

I am going to plot a point on other side of than where is B. So I will plot at 0.5% response rate by using information from point C.

The C point also gives a negative profit. Looking from the equations in our calculations and plot we will get the following curve.



This is a parabolic curve with peak at profit when Response rate is 1 %.

This is a parabola with the equations $(x-1)^2 = 4a(y-\text{Profit at point A})$

E. How can you make this more profitable?

- To make this more profitable we can
 - Increase Premium
 - Reduce Operational Costs
 - Reduce Customer Acquisition Costs

Get Cheaper Capital
Try to reduce delinquency

F. Good. Let's Focus on reducing customer acquisition costs. How would you do that?

I am sure that when we target people we reach out to customer who are from 2% response rate. So what we can do is segment customers according to their types & do marketing to them based on their types. So for customers from 0.5% or 2% response rate we can use email or online advertising or TV advertising which will be cheaper. Hence we are doing segment focused marketing to reduced costs.

G. Ok. Sounds goods. Let's brainstorm for some more ideas to make this product profitable.

- We can give people incentives in terms of points not to default
- We can reduce their premiums next year as an incentive to not default.
- We can pay them money in 1 month & give them the option of repaying next month & constitute that as no default.
- We can include spouses in policy & if 1 of them has the ability to not default then we do not pay either.
- We can pay only a portion of their monthly payment i.e. minimum payment

Sounds Good. Thank You !!

3. Credit Card Profitability

A. We have 3 credit cards A, B & C at the below mentioned APRs. Which do you think we should market?

	A	B	C
APR	11%	12%	13%

We should market the credit card which is most profitable. Since we cannot judge profitability of credit cards based on their APRs only, commenting on this will be like a shot in the dark.

We have the following things to think about before we can choose 1

- Average Balances per card depending on how people view credit as costly or cheap
- Average annual spend per card depending on how people view credit as costly or cheap
- Membership fees charged if any for different kind of cards
- Customer Acquisition / Marketing costs
- Cost in servicing each card depending on the customer profile
- The default rate that will exist on each type of card.

Given these considerations I cannot express a fully qualified opinion.

B. Can you still pick one ?

I recommend going with the 13% APR card, because that has the potential to maximize revenue. This will be because both 13% is numerically greater than 11% or 12% as well as that people who go for the 13% credit card are likely to carry higher average monthly balance.

However the default rate on this also might be higher.

C. Who do you think will be the people who will go for the 13% card ?

The people who do not have access to cheaper sources of credit. This will be dependent on their credit history. These will be the people who are more likely to default too.

D. We have the following figures. Which card should we market?

Cards marketed by mail solicitation. Cost per mail solicitation \$0.50.

	A	B	C
Response Rate	2%	3%	4%
Interchange Rate	1.5%	1.5%	1.5%
Avg. Monthly balance	1000	2000	3000
Membership fees	350	350	350
Average Yearly Spend	30,000	25,000	15,000
Operations cost per card per year	700	700	700
Cost of Funds	5%	5%	5%
Default rate	4%	4%	4%

I assume 10,000 mail solicitations per group are sent out

No Of Customers	200	300	400
Interest Fee	11% of 1000 x 200 110 x 200 = 22,000	12% of 2000 x 300 240 x 300 = 72,000	13% of 3000 x 400 390 x 400 = 156,000
Membership Fee	350 x 200 = 70,000	350 x 300 = 105,000	350 x 400 = 140,000
Interchange Fee	1.5% of 30,000 x 200 450 x 200 = 90,000	1.5% of 25,000 x 300 375 x 300 = 112,500	1.5% of 15,000 x 400 225 x 400 = 90,000
Marketing Costs	5,000	5,000	5,000
Operations Cost	700 x 200 = 140,000	700 x 300 = 210,000	700 x 400 = 280,000
Cost of Funds	5% of 1000 x 200 50 x 200 = 10,000	5% of 2000 x 300 100 x 300 = 30,000	5% of 3000 x 400 150 x 400 = 60,000
Default Cost	4% of 200 x 1000 8,000	4% of 300 x 2000 24,000	4% of 400 x 3000 48,000
Total Rev	182,000	289,500	386,000
Total Cost	163,000	269,000	393,000
Profit(Loss)	19,000	20,500	(7,000)
Profit per card	19000/200= \$95	20,500/300=\$68.33	(17.5)

Based on our above calculations Card C is unprofitable & we should not market it.

Based on our calculations both Card A & Card B are profitable & we should market those.

E. Should we market Card A or Card B? Should we look at overall profit or profit per card?

Card A is more profitable per card. Card B brings in more total profit. Instead of looking at per card profit we should look at utilizing the biggest possible opportunity. Since the no. of customers in Card B is more it will bring us the biggest profit & we should go for Card B.

F. Are all the costs in successive years constant? What Costs will reduce in later years?

The biggest reduction will be Marketing or Customer Acquisition cost in later years.

We might also reduce our default costs due to a point / incentive based system & also might reduce our operation costs as we build a good relationship with customers. If the economy improves & we have access to cheaper capital our Cost of Funds will also reduce.

G. Given that the other costs remain constant & only our marketing costs will reduce what will you do?

I will look at the Lifetime Value of the customer. I will look at once money has been spent in acquiring the customer, how do I maximize my returns.

H. If customers who get 11% stay with us for 3 years, 12 % stay for 2 years & 13 % stay for 1 year, what card will you choose?

Total Rev	182,000x3=546,000	289,500x2=579,000	386,000
Total Costs	158,000x3+5,000=479,000	264,000x2+5,000=533,000	393,000
Profit(Loss)	67,000	46,000	(7,000)

Based on this calculation we should market Card A.

Capital One Behavioral Interviews

Each Behavioral Interview consisted of 3 questions each followed by an open ended discussion on what questions you had for them. The questions are as follows:

1. Describe a situation when you had a different viewpoint from your team and how did you convince them?
2. Describe a situation when you had to quickly adapt to changing priorities at work?
3. How do you ensure you meet deadlines?
4. Describe a situation when you had to adapt to changing requirements during a project at work?
5. Describe a situation when you reached out to someone for help?
6. Describe a situation when you had to quickly make a decision?
7. Does the kind of cases we did, sound interesting to you? Would you like to do that on a daily basis?
8. Where do you see yourself fitting in within Capital One? What kind of roles?