

Introduction to Web Science

Assignment 11

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This assignment focuses on **Online Advertisement**. As discussed in the class, teams with exact similar answers that give an indication of copying will receive null points for those questions. If you are taking answers from some source, please cite your sources.

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Candidates :

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1 Online advertisement (10 points)

In the videos about online advertisement, you learned about the three different payment methods for online advertisement.

1. Name all three methods.
2. Mention the advantages and disadvantages, for publisher and advertiser, of all the payment methods and explain them in your own words.
3. Provide real world examples for the three payment methods.

Answer 1.1

The three methods are Click per Mille (CPM) , Cost Per Click (CPC) , Cost Per Acquisition(CPA).

Answer 1.2

Click Per Mille (CPM)

Advantage:

Less chances of fraud for Advertiser. Fixed cost for Publisher and can have higher payment.

Disadvantage:

Publisher might have to deal with fraud advertisers. Advertiser might be paying more than he/she needs to.

Cost Per Click (CPC)

Advantage:

Publisher has higher profit rate since advertiser makes payment depending on just click to the advert and even if fraud occurs. Advertiser has an advantage of making an advertisement look attractive in order to obtain more clicks.

Disadvantage:

Click frauds for advertiser. Publisher might be banned if fraud is detected.

Cost Per Acquisition (CPA)

Advantage: Advertiser only pays if a certain performance is met and thus will have controlled payment. Publisher usually will have higher payment.

Disadvantage:

Advertiser might have to pay higher compared to other payment methods although controlled. Publisher can face fraud advertisers.

Answer 1.3

Real Word Example for

CPM = KSG Ltd. Its a shopping company which pays when an advertisement is placed in a website and when there are visitors to the website.

CPC = Google ad-sense

CPA = Google adverts

2 Payments in Online Advertisement(15 points)

Provide the complete calculation with your solutions for the following questions.

1. An online advertisement company offers you to advertise your website on a cost-per-click base (CPC) with a cost of 0.70€ per click. Assuming that in average three out of ten visitors of your website are buying a product from which you are earning 20€, would you accept this offer? What is your average profit/loss per visitor?
2. What would be the minimal conversion rate (CR) to guarantee your profit?
3. Two online advertisement companies A and B are making you offers to advertise your website. Company A follows a cost-per-mille (CPM) model with a cost of 2,40€ for displaying your banner advertisement thousand times. Company B follows a cost-per-action (CPA) model charging a commission of 6% from every profit generated on your website through clicks on the banner ad. Assuming a click-through-rate (CTR) of 0.5%, a conversion rate (CR) of 20% and an average profit of 40€ for every transaction on your website, which offer is the best?
4. Assuming an online advertisement campaign for a website has obviously a high click-through-rate (CTR), but the earnings from the website are still very poor. What do you think could be the problem (please provide your answer in one or two paragraphs)?

Answer 2.1 and 2.2

1. Cost per click = € 0.70.

We have been told that, Our website, when gets 10 visitors, 3 of them buys and we earn €20.

So, To give our website to advertisement company we would require 10 visitor. And to get 10 visitors, I require, 10 clicks.

$$\begin{aligned}\text{So, Cost would be} &= 10 \times 0.7 \\ &= € 7.\end{aligned}$$

Hence, I would accept the offer.

Now,

$$\begin{aligned}10 \text{ visitors would give me profit of } &€20 - 7 \\ &= € 13 \text{ profit}\end{aligned}$$

$$\begin{aligned}\text{Thus, profit from 1 visitor} &= \frac{€13}{10} \\ &= € 1.3 \text{ per visitor.}\end{aligned}$$

2. Let us say €19.99 cost if paid to advertisement company would give us €0.1 profit.

So, To pay Advertisement company €19.99
I pay for, $\frac{19.99}{0.7} \approx 29$ clicks.

Paying for 29 clicks would still get us some profit.

$$\text{Thus, } \underset{\text{minimum}}{CR} = \frac{\text{Number of Goal Achievements}}{\text{Total visits}}$$

$$= \frac{3}{29}$$

$$= 0.103$$

Hence, our minimal conversion rate (CR) to guarantee profit = 0.103 (3 decimal).

Answer 2.3

Here,
 Company A follows Cost Per Mille.
 with a cost of 240 € for 1000 views

Now,
 For Company B., (we deal with 1000 views)
 we have,
 Conversion Rate (CR) = 20%.
 CTR (Click Through Rate) = 0.5%.

i.e., $\frac{\text{Clicks}}{\text{Views}} = \frac{0.5}{100}$
 i.e., $\text{Clicks} = \frac{0.5 \times 1000}{100}$
 $\boxed{\text{Clicks} = 5}$
 \rightarrow Also visits = 5.

Also, CR = 20%.
 i.e. $\frac{\text{Number of Goal achieved}}{\text{Visits}} = \frac{20}{100}$
 i.e. Number of Goal achieved = $\frac{2 \times 5}{100}$
 $= 1$

Thus, Total profit = €40 x 1
 And, cost is 6%.
 i.e., $\frac{6}{100} \times 40 \times 1 = \boxed{2.40 \text{ €}}$
 SAME € for A, B.

Answer 2.4

Click Through Rate (CTR) is total clicks over total views. Higher CTR would mean higher clicks. However higher clicks would not necessarily mean there will a purchase made by the customers when inside the advertised website. i.e. there can be higher bounce rate which might result in less earnings from the website.

3 Online vs. TV Advertisement (10 points)

1. Which of the three payment models is most similar to advertisement on TV (*explain your choice and also why you think other models are not similar*)?
2. What do you think are the most important advantages of online advertisement compared to advertisement on TV (*highlight 5 advantages and explain each of them*)?

Answer 3.1

CPM (Cost Per Mille) is the most similar payment model to advertisement on TV because the TV adverts depends on payment based on views. CPA(Cost per Acquisition) is however not similar because there is no requirement for people who viewed the TV to actually make a purchase for the TV adverts they viewed. Likewise CPC(Cost Per click) is not similar because there is no such click interaction required in TV adverts.

Answer 3.2

Advantages are:

Tracking : Control the cost. And measure for effectiveness.

More number of users : There are more on-line users compared to that of TV.

Generalization : Through cookies you can learn user behavior to generalization or rank the adverts accordingly, unlike TV.

Personalize to user : Make the advert specific to user depending on the surfing behavior on web. This is not possible in TV.

More configuration control: Having different adverts on the same banner with less cost compared to TV adverts.

Important Notes

Submission

- Solutions have to be checked into the github repository. Use the directory name `groupname/assignment11/` in your group's repository.
- The name of the group and the names of all participating students must be listed on each submission.
- Solution format: all solutions as *one* PDF document. Programming code has to be submitted as Python code to the github repository. Upload *all* `.py` files of your program! Use **UTF-8** as the file encoding. *Other encodings will not be taken into account!*
- Check that your code compiles without errors.
- Make sure your code is formatted to be easy to read.
 - Make sure you code has consistent **indentation**.
 - Make sure you comment and document your code adequately in English.
 - Choose consistent and intuitive names for your identifiers.
- Do *not* use any accents, spaces or special characters in your filenames.

Acknowledgment

This latex template was created by Lukas Schmelzeisen for the tutorials of "Web Information Retrieval".

LA_TE_X

Currently the code can only be build using **LuaLaTeX**, so make sure you have that installed. If on Overleaf, there's an error, go to settings and change the **L**A_TE_Xengine to **LuaLaTeX**.