CASE STUDY – Data Analyst Marketing Intelligence

Welcome to the challenge! In trivago we base our marketing decisions on the analyis of data. Data is used to understand the performance of all marketing campaigns and channels and to drive optimisation of our spend. We tailor marketing efforts to user needs through quantitive analysis to maximise value of marketing spend both for us and for our users.

As a Data Analyst in Marketing, you would primarily interact with media teams alongside Data Engineers and other Data Analysts. A key skill is to be able to dive into data, spot trends, find anomalies and turn insights into actions. Then present this in a clear and concise way tailored to the audience.

We are also responsible for analysing tests that we run with different publishers (Randomised Control Trials, geo experiments and pre-post tests). This includes giving consulting services regarding statistics and the setup of tests for those who wants to estimate incremental effect of advertising with new marketing channels as well as effect of the change in strategy with existing ones.

This assignment is designed to give you a glimpse of some of the challenges you will be facing in this role. Please be aware there are no perfect solutions - for us, it's more important to see how you find solutions, process your ideas, structure your thoughts and how you make your decision paths. Good luck!

SUBMISSION DEADLINE: 7 days from receipt.

HOW TO SUBMIT: Please submit your document via the link sent by your recruiter in the email. There you can upload your files.

Expected output is a report provided as a PDF or notebook or presentation containing answers to the stated questions, visualizations, and descriptions, supporting your answers along with a description of your approach to the task. Aim to provide a report that you would have also used to present the analysis to your colleagues. Please additionally provide your code if not included in the report (you can use tool and programming language of your choice)

Note: The data provided is a generated sample which doesn't represent actual trivago performance metrics. It is understood that challenge involves large amounts of data than you may not have resources to process- a partial submission is acceptable, but try to use your skills to work with the resources that you have.

THE CHALLENGE

trivago

In the resources section, you will find some information about performance of different keywords, adgroups and campaigns that we run in SEM, stored as a csv file. We would like you to perform a deep dive into this data using the tools of your choice and address each of the following questions:

- Give an overview of the dataset and highlight interesting findings in the data
    - Select breakouts (e.g., market_code, device type, theme_name, etc..) and metrics (e.g., any of the provided or engineered ones like conversion) you think are relevant
- What is the best performing Market for trivago?
    - Give your definition of performance and explain why we need to look at performance using your proposed definition
- What are the global and market average trivago revenue per clickin?
    - What does it measure?
    - Which metric(s) would you consider as other valuable KPI for measuring performance? Why?
- How can we use `user_engagement` to explain `pub_keyword_id` or `theme_name` value?
- What are the Clickout to Booking ratios by locale and what are possible explanations for observed differences? What could the SEM team do, to increase the C2B?
- What should be the average price to pay for a conversion (defined as clickouts) if we wanted a 125% ROAS (clickout_rev/cost)?
- SEM team has tested a new bidding algorithm only in the Australian market (AU) during Oct-Nov.
    - Please summarize the business impact of the test, and explain what you would suggest as next steps.
    - Describe how we can ensure that your findings are statistical significant?

Description of the Dataset

- ymd: Date
- market_code: Alpha-2 country code
- account_id: Marketing account id
- pub_campaign_id: Marketing campaign id
- pub_adgroup_id: Marketing group id
- pub_keyword_id: Marketing keyword id
- pub_device: Users device type
- match_type: Type of keyword matching during searches
- theme_name: Groups of keywords
- replacement_type: Placeholder for keyword category
- (e.g. the keywords 'hotel Berlin' would be a replacement type 'City' while 'hotel Eiffel Tower' would be a replacement type 'Poi')
- impressions: Number of times trivago has been shown on SEM platform
- cost: Keyword bidding cost * clickins (in Euro cents)
- clickins: Number of clicks leading to trivago platform
- clickouts: Number of clicks users make on trivago
- bookings: Number of bookings users make on trivago
- clickout_rev: trivago Revenue (in Euro cents)
- booking_amount: Average booking amount in Euros
- user_engagement: Average time users engage with trivago website (in seconds)

What factors do we consider while evaluating your case study?

- Your capabilities to explore and make sense of our datasets while generating meaningful and clearly presented insights that our leadership team can use to drive marketing strategy
- The reasons behind the answers that you submit, amount and conclusiveness of evidence you provide to support them
- For open-ended questions: explanation why proposed solutions/strategies are better than alternatives and feasibility of them
- How you use visualizations and data tools to clearly convey and summarize insights
- Your ability to use different analytical and statistical tools/techniques/methodologies to extract most impactful insights from the dataset
- Approach you use to find solutions to each question, how did you come up with your conclusions, were you able to spot potential caveats