# E-Commerce Data Analysis and Visualizations

An E-commerce company ran marketing campaigns to generate sales. They collected information on the type of device each customer used, the sale amount, total transaction for each day, etc. Here, we need to analyse the performance of the various marketing campaigns and understood its relationship with respect to user interaction and total sales. Finally, steps to improve campaign performance are discussed.

## Exploratory Data Analysis

### Data Dictionary

Data Dictionary explains what each column of the dataset represents

Column Name | Description

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device\_created\_on | Device creation Timestamp

device\_type | Type of Device

operating\_system | Operating System on which user accessed the app

attribution\_created\_on | Attribution Campaign Timestamp

campaign | Marketing campaign name

user\_id | User Id

user\_created\_on | User creation Timestamp

name | User name

amount | Transaction amount

sale\_created\_on | Sale creation Timestamp

sale\_id | Sale Id

date | Sale created day

weekday | Day on which sale happened

item\_id | Item Id

**Task needs to be achieved**:

1. Acquire the data, dump the data into some of the databases (SQL, Mongo DB, Casandra local or cloud version)
2. Connect with the business user and try to get the understanding of the data attribute
3. Connect with the business user and try to get the understanding about the KPI (Key performance indicator)  
   A Key Performance Indicator (**KPI**) is a measurable value that demonstrates how effectively a company is achieving key business objectives
4. Connect with the business user with raw visualization and gather user experience and expectations feedback based on ease of use
5. Decide total number of dashboards based on user hierarchy and organization
6. Start building production-based dashboard
7. Below are the KPI which need to be captured

1. Relationship between Device Type and User Creation

2. Relation between Marketing Campaigns and User creation

3. Relation between Campaigns and Weekday

4. trend between sum amount of sale for top 10 campaigns across weekdays.

1. Send the Dashboard for a review for the stockholder
2. Performed UAT (user acceptance testing)
3. Go for the random test
4. Make it live
5. Share link and authorization for the user
6. Keep it in Hypercare for any modification

**Lastly, as a chronic over-achiever:**

* Find at least two unexpected phenomena in the data and provide a visualization and analysis to document their presence.

**Considerations**

Remember, the people reading your analysis will NOT be data analysts. Your audience will be general public . Your data and analysis need to be presented in a way that is focused, concise, easy-to-understand, and visually compelling. Your visualizations should be colourful enough to be included in press releases, and your analysis should be thoughtful enough for dictating programmatic changes.

**Assessment**

Your final product will be assessed on the following metrics:

* Analytic Rigor
* Readability
* Visual Attraction

**Hints**

* You may need to get creative in how you combine each of the CSV files. Don't just assume Tableau is the right tool for the job. At this point, you have a wealth of technical skills and research abilities. Dig for an approach that works and just go with it.
* Don't just assume the CSV format hasn't changed since 2013. Subtle changes to the formats in any of your columns can blockade your analysis. Ensure your data is consistent and clean throughout your analysis. (Hint: Start and End Time change at some point in the history logs).
* Consider building your dashboards with small extracts of the data (i.e. single files) before attempting to import the whole thing. What you will find is that importing all 20+ million records of data will create performance issues quickly. Welcome to "Big Data."
* While utilizing all of the data may seem like a nice power play, consider the time-course in making your analysis.
* Remember, data alone doesn't "answer" anything. You will need to accompany your data visualizations with clear and directed answers and analysis.
* As is often the case, your clients are asking for a LOT of answers. Be considerate about their need-to-know and the importance of not "cramming in everything". Of course, answer each question, but do so in a way that is organized and presentable.
* Keep a close eye for obvious outliers or false data. Not everyone who signs up for the program is answering honestly.
* In answering the question of "why" a phenomenon is occurring, consider adding other pieces of information on socioeconomic or other geographic data. Tableau has a map "layer" feature that you may find handy.
* Don't be afraid to manipulate your data and play with settings in Tableau. Tableau is meant to be explored. We haven't covered all that you need -- so you will need to keep an eye out for new tricks.
* The final "format" of your deliverable is up to you. It can be an embedded Tableau dashboard, a Tableau Story, a Tableau visualization + PDF -- you name it. The bottom line is: This is your story to tell. Use the medium you deem most effective. (But you should definitely be using Tableau in some way!)
* Treat this as a serious endeavour! This is an opportunity to show future employers that you have what it takes to be a top-notch analyst.
* Good luck!

### **REQUIREMENTS**

Submissions must meet the following requirements:

* Include a Project built with the required developer tools and meets the above Project Requirements.
* Include a text description that should explain the problem your Project is attempting to solve and its features and functionality.
* Include a demonstration video of your Project. The video portion of the submission:
* should be less than three (3) minutes
* should include footage that shows the Project functioning on the device for which it was built
* must be uploaded to and made publicly visible on YouTube and a link to the video must be provided.
* must not include third party trademarks, or copyrighted music or other material unless the Entrant has permission to use such material.
* Include a URL to a code repository on GitHub or another code repository platform. If the code repository is private, Entrant must provide access to the GitHub account
* Include a list of the APIs and Development tools used within the project.
* Include potential further improvements to your Project if more time were permitted.
* Be the original work of the submitter, be solely owned by the submitter, and not violate the IP rights of any other person or entity.
* Multiple Submissions: An Entrant may submit more than one Submission; however, each submission must be unique and substantially different from each of the Entrant’s other Submissions.