Data Marketing module

Session 4

To summarize

GA simplified overview

Acquisition:
- Traffic sources
- Campaign performance

Audience:
- Demographics
- Interest
- Technology

Reports & Dashboards:
- Customizable reports
- Real-time data
- AI powered insights

Conversions:
- Goal tracking
- Ecommerce tracking

Measure & Analyze: Tracks website and app user interactions to provide insights into audience behavior and marketing effectiveness

Behavior:
- Page views & engagement
- User flow & navigation
- Site search

Data-Driven Decisions: Enables optimization of marketing strategies and website/app experiences for improved performance and ROI.

+ Google Analytics provides the data you need to understand your users, improve your online presence, and achieve your business goals.

KPI definition

AUDIENCE

Users: Total number of users interacting with your website or app.
New Users: Number of first-time visitors.
Returning Users: Number of users who have visited before.
Demographics: Age, gender, location, and interests of your audience.
User Lifetime Value (LTV): Predicts the total value a user will bring to your business over their lifetime.

ACQUISITION

Sessions: Total number of visits to your website or app.
Traffic Sources: Where your traffic comes from (organic search, paid ads, social media, referrals, direct).
Channel Performance: Performance of each traffic channel in terms of user engagement and conversions.

Conversion

Conversions: Number of completed goals (e.g., purchases, sign-ups, form submissions).
Conversion Rate: Percentage of users who complete a goal.

BEHAVIOR

Engagement Rate: Measures the percentage of sessions with meaningful engagement (e.g., time spent, page views, conversions). This is a key metric in GA4, replacing bounce rate to give a better view of user interaction.
Average Engagement Time: Average time users spend actively engaged with your website or app.
Events per Session: Number of actions users take during a session.
Pageviews: Total number of pages viewed.
Bounce Rate: The percentage of single-page sessions in which there was no interaction with the page.
Page Load Time: The time it takes for a page to load.

E-commerce

Revenue: Total sales generated.
Average Order Value (AOV): Average amount spent per order.
Cart Abandonment Rate: Percentage of users who abandon their shopping carts.
Return on Ad Spend (ROAS): Amount of revenue earned for every dollar spent on advertising.

BigQuery exercice

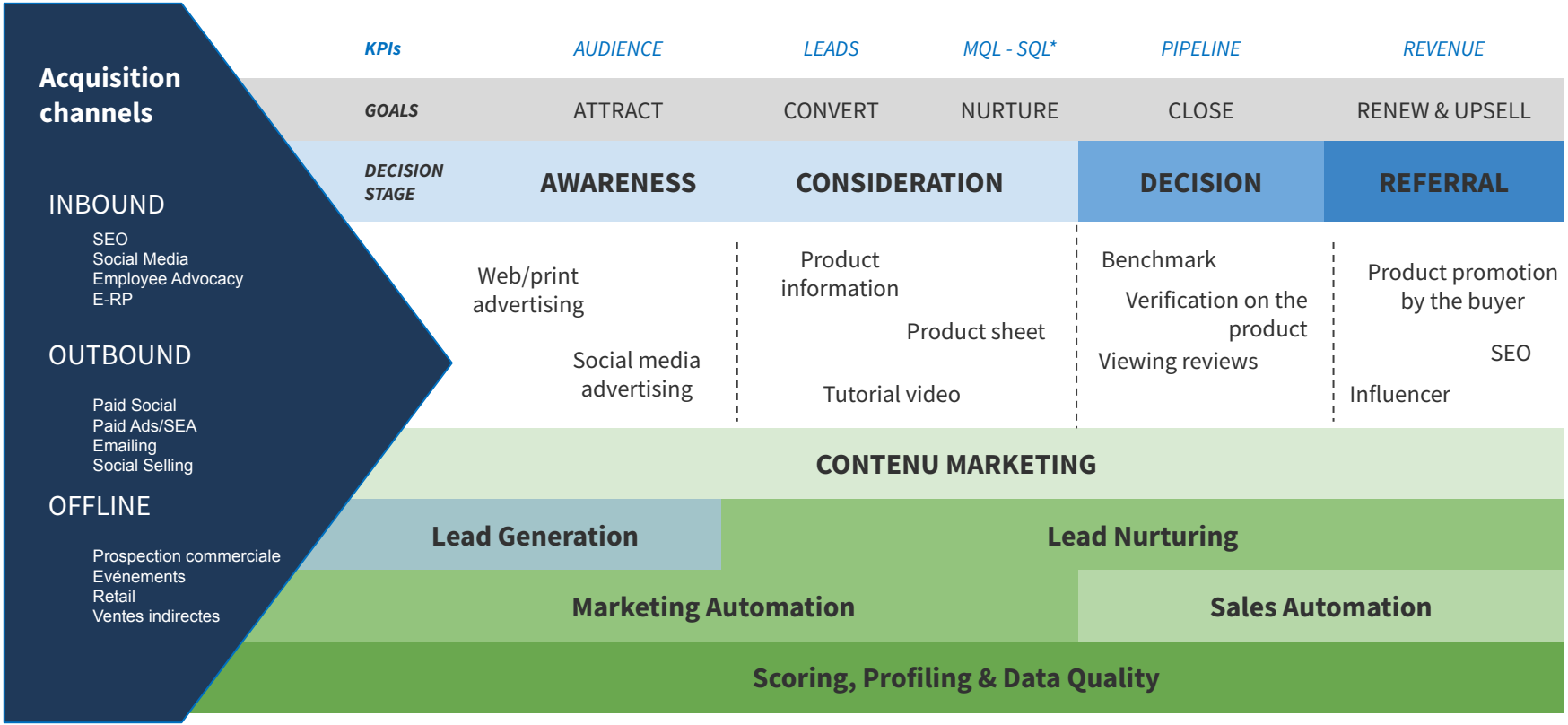
For each KPI’s section, build a BigQuery SQL (4 in total) query for one definition.
Parameters:

- Table: `bigquery-public-data.ga4_obfuscated_sample_ecommerce.events_*`
- Period: 2020 Q4

Additional concepts

Steven VINCENT - Burgundy School of Business -
March. 2025 -

Demand generation and acquisition strategy



*MQL: Marketing Qualified Leads - SQL: Sales Qualified Leads

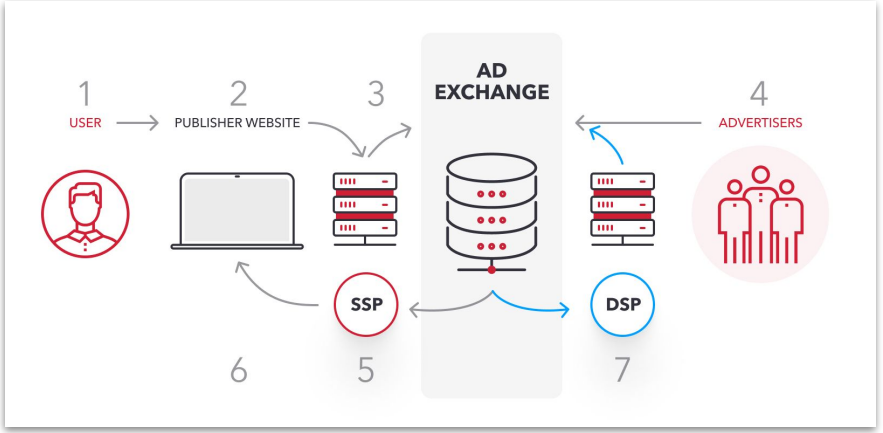
Real Time Bidding - campagne RTB

Real-time bidding (RTB) : A method of programmatic advertising where advertisers purchase digital advertising space in real time.
- Auctions take place when users access websites or mobile applications.
- SSPs, DSPs and ad marketplaces facilitate this real-time bidding process.

Supply-side Platform (SSP) : Intended for publishers to sell advertising impressions.
Connects publishers to multiple ad marketplaces, DSPs and ad networks.

DSP Console (Demand Side Platform) : Intended for advertisers to buy advertising automatically.
Allows you to access a large advertising inventory and target relevant audiences.

Advertising market : Online marketplace for buyers (advertisers, agencies, DSPs) and sellers (publishers, SSPs).
Allows bidding on ad inventory via real-time bidding and provides visibility into the location of ads served.



What is Real-Time Bidding (RTB)? Definition and Importance

Sentiment analysis

Sentiment analysis : systematic and automated evaluation of emotions, opinions and attitudes in textual sources (social networks, press articles).

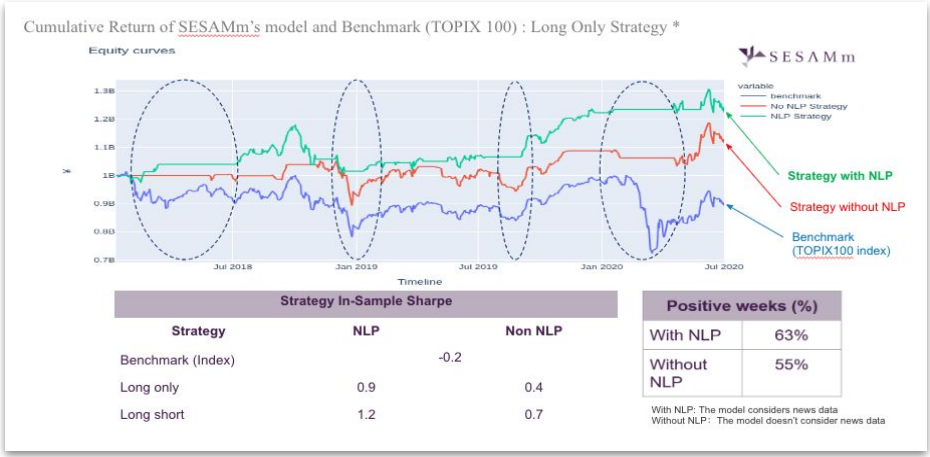
Example of Sesamm

Development of a machine learning model based on PNL (Profit and Loss) data to study the impact of news and social networks on financial markets.

- Using sentiment analysis to predict future stock price movements and anticipate market trends.
- Ability to predict market downturns and adjust positions based on proactive and reactive sentiment analysis.

[Predicting stock price movements using news and social media data]

Evolution of sentiment analysis regarding the income statement of the 500 largest American companies



Strategy In-Sample Sharpe

Strategy	NLP	Non NLP
Benchmark (Index)	-0.2	
Long only	0.9	0.4
Long short	1.2	0.7

Positive weeks (%)

With NLP	63%
Without NLP	55%

With NLP: The model considers news data
Without NLP: The model doesn't consider news data

Result on the performance of the sentiment analysis model

Product recommendation

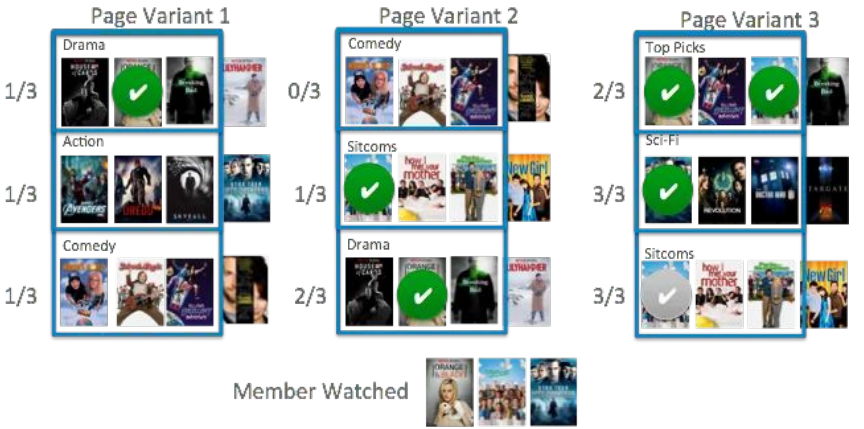
Product recommendation : Algorithms that analyze the preferences and past behaviors of each user to select products relevant to their needs.

Example of the Netflix homepage

Netflix adapts the homepage for each member, recommending content from its extensive catalog of films and series. The recommendation algorithm takes into account various factors such as preferred genres, previous ratings, previous views, and even recommendations from friends.

- Optimize the relevance and diversity of recommendations for each user in order to discover new content that matches their tastes.
- Develop recommendation methods using advanced techniques such as machine learning to improve the user experience by providing more accurate and relevant recommendations.

The Next Step in Personalization: Dynamic Sizzles | by Netflix Technology Blog



Learning a Personalized Homepage. how to best tailor each member's… | by Netflix Technology Blog

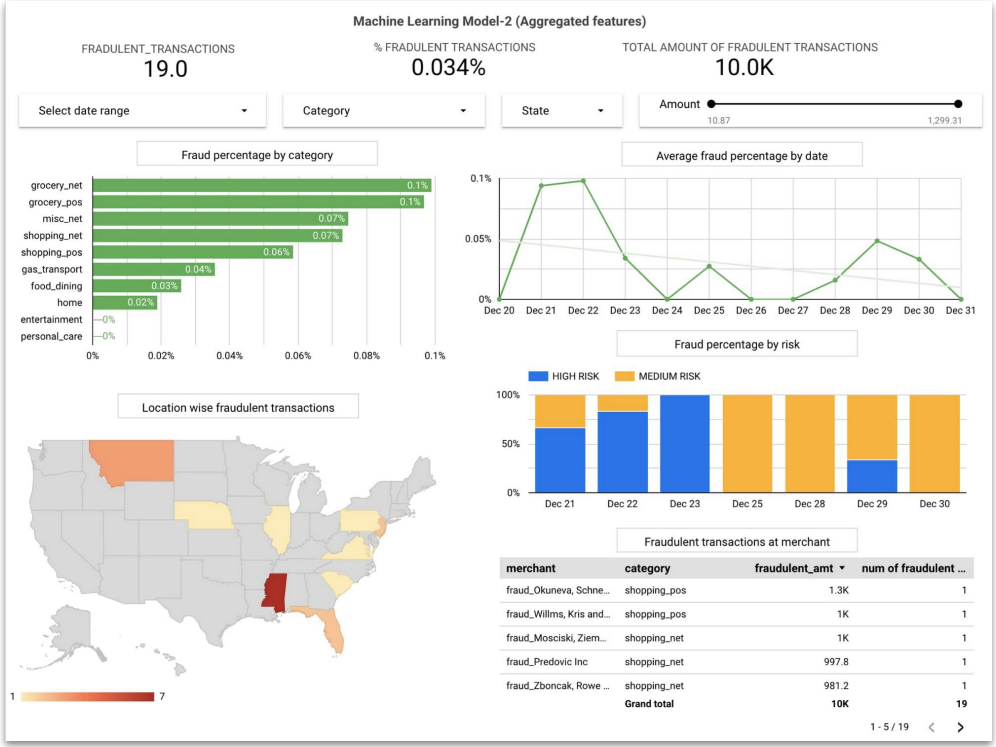
Fraud detection

Fraud detection : identify and prevent malicious activities such as fraudulent transactions, identity theft and fraudulent behavior.
This helps minimize financial losses and protect customer trust.

Example of Real-Time Fraud Detection with XGBoost on Google Cloud:

Predict the likelihood of fraud associated with each transaction and provide real-time alerts whenever fraudulent activity is detected.

- Analyze transactional data and identify potential fraud patterns.
- Use a dataset that includes various characteristics such as transaction category, amount, and user demographic information.



How to build a fraud detection solution | Google Cloud Blog