Business Questions

## 1) Customer Purchase Patterns

Part of the results table :

full_visitor_id	month	monthly_revenue
1957458976293878100	2017-04	1533025.8
5632276788326171571	2016-09	672997.5
1957458976293878100	2017-02	571376.0
9417857471295131045	2017-07	508737.28
1957458976293878100	2017-03	86778.3
1814166460229302850	2017-04	57313.92

monthly_revenue by month for the top 5 customers

monthly_revenue by month
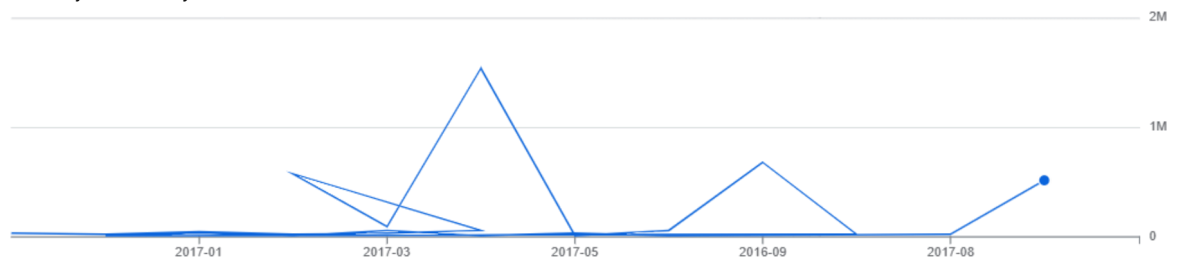
We can notive a big spike across multiple customers in April
Why ? People may be buying for spring events, or planning for summer campaigns.
April is clearly the strongest revenue month, it's an opportunity to double down with campaigns or promotions there.

September also has a spike that may be due to people getting ready to return to work or school after summer.

-> We can plan marketing, inventory, or sales pushes ahead of these months to maximize revenue.

The low revenues in December and January could be due to many people being on vacation and companies pausing operations.

2) Product Performance Analysis

Part of the result table :

product_sku ▾	product_name ▾	year ▾	month ▾	total_quantity ▾	mom_growth_rate ▾
GGOEGBMJ013399	Sport Bag	2017	6	747	*null*
GGOEGBMJ013399	Sport Bag	2017	7	652	-0.13
GGOEGBMJ013399	Sport Bag	2017	8	16	-0.98
GGOEGCBQ016499	SPF-15 Slim & Slender Lip Balm	2017	6	171	*null*
GGOEGCBQ016499	SPF-15 Slim & Slender Lip Balm	2017	7	678	2.96
GGOEGCBQ016499	SPF-15 Slim & Slender Lip Balm	2017	8	25	-0.96
GGOEGDHC018299	Google 22 oz Water Bottle	2017	6	1325	*null*
GGOEGDHC018299	Google 22 oz Water Bottle	2017	7	1358	0.02
GGOEGDHC018299	Google 22 oz Water Bottle	2017	8	3	-1.0

mom_growth_rate by product_name
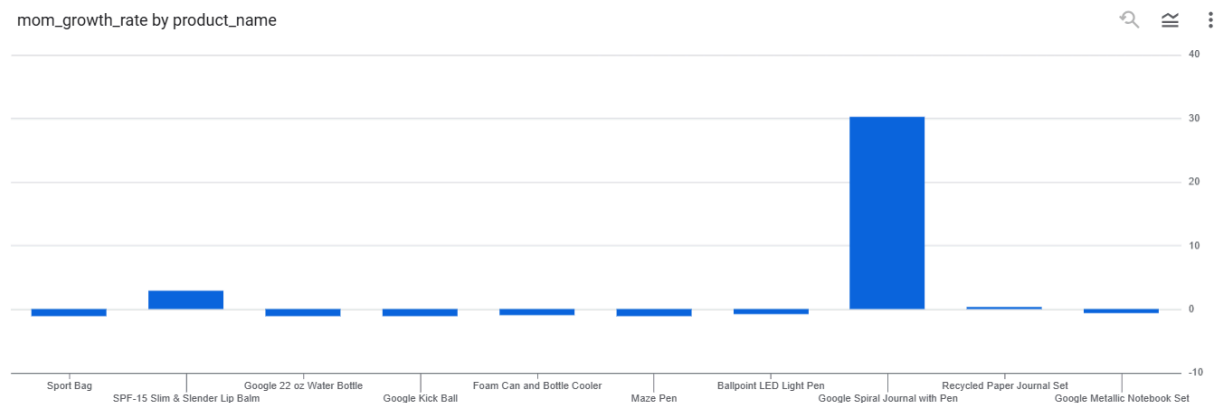
mom_growth_rate by month
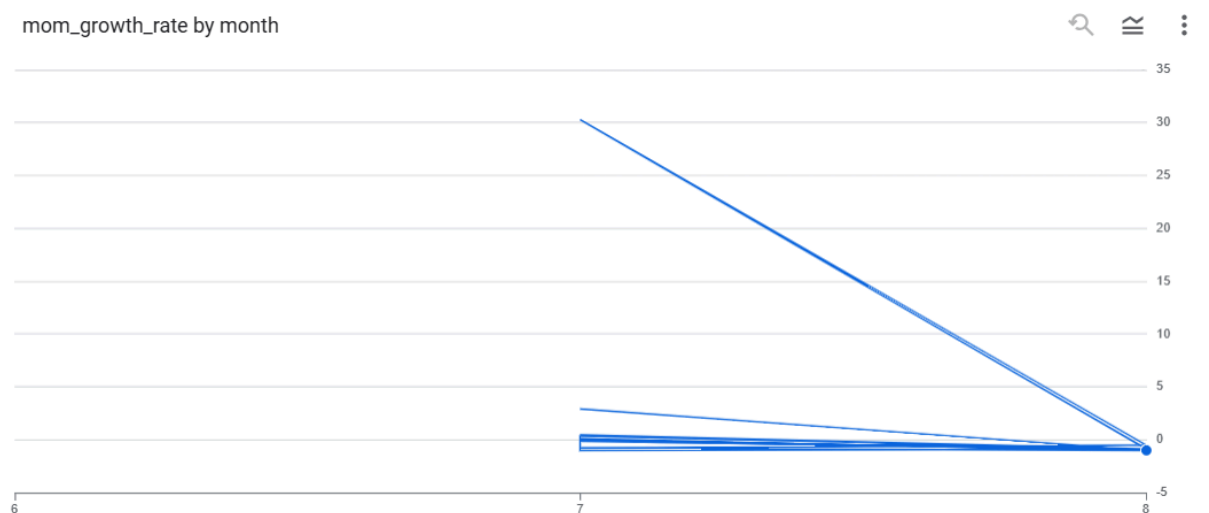
We can see that many products experienced a decrease in quantity sold during August, could be due to stockouts or seasonal demand drop.

We have a major spike in July +2.96% possibly because of a promotion or marketing push that didn't continue.

The Google Kick Ball product drops almost completely in August -1% after a small growth of 4% in July, which suggest that it is a seasonal product used in a lot in summer activities.

Most top-selling products saw a big drop in sales in August, which could be due to seasonality, running out of stock, or less marketing.

3) Traffic Source Effectiveness

Parts of the table result :

traffic_source	month	total_sessions	converting_sessions	conversion_rate
l.facebook.com	2017-03	3	146	48.6667
mail.google.com	2017-03	4	118	29.5
dfa	2017-04	8	210	26.25
dealspotr.com	2017-03	2	38	19.0
siliconvalley.about.com	2017-04	2	38	19.0
bing	2017-05	4	66	16.5

| traffic_source	month	total_sessions	converting_sessions	conversion_rate
(direct)	2017-03	524	3638	6.9427
(direct)	2017-04	598	3684	6.1605
(direct)	2017-05	732	4430	6.0519
(direct)	2017-06	777	4612	5.9356
(direct)	2017-07	653	4770	7.3047
(direct)	2017-08	42	394	9.381
google	2017-03	334	2011	6.021
google	2017-04	297	1870	6.2963
google	2017-05	321	1882	5.8629
google	2017-06	140	832	5.9429
google	2017-07	351	2420	6.8946

conversion_rate by month
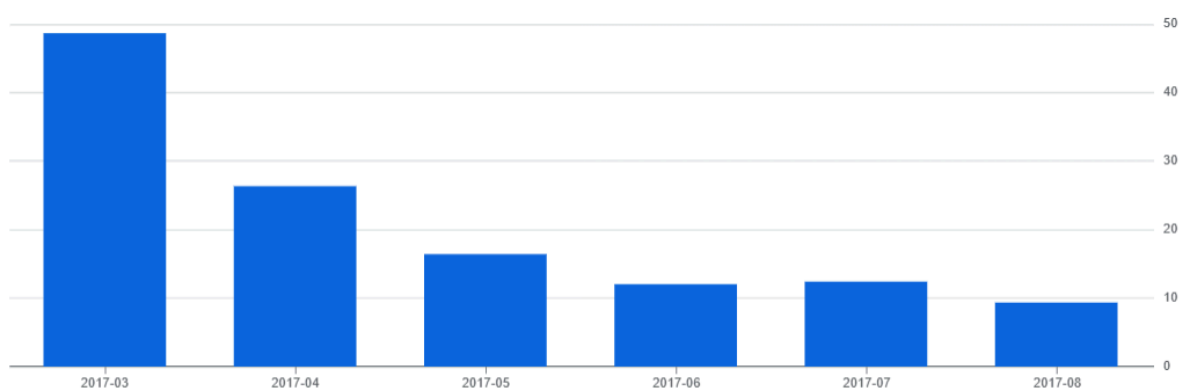
- March and April were strong months for conversion, possibly there were more active compaigns.
- These traffic sources l.facebook.com or mail.google.com performed very well early but weren't maintained.
- Traffic sources with both high conversion and consistent volume (like google and (direct)) are most reliable for long-term strategy.

4) User Engagement Segmentation

engagement_segment	total_revenue	avg_revenue_per_use
High	10252416.56	33072.31
Medium	8194090.82	1708.53
Low	1023224.57	208.14

total_revenue, avg_revenue_per_user by engagement_segment
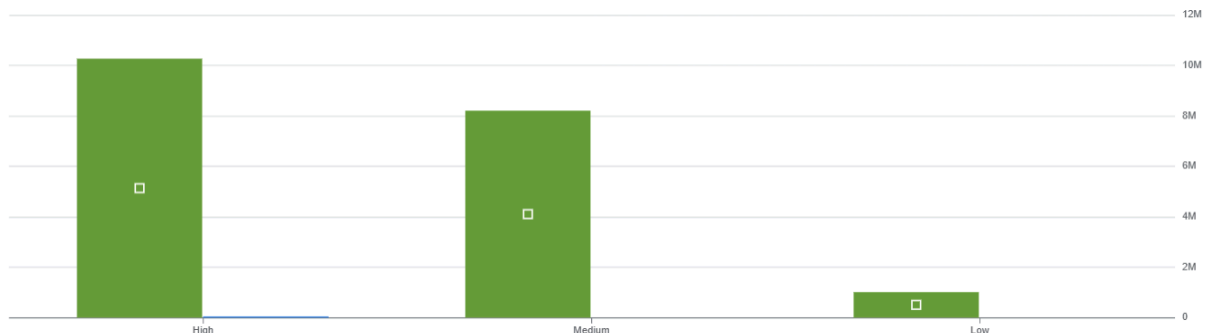
There is a strong positive correlation here: highly engaged users spend significantly more, both per user and in total.
Someone who keeps navigating has more chances to make a purchase : they are exposed to more ads, and more products are suggested to them. They might even end up buying something they didn't come for in the first place.

Also, someone who intends to buy is likely to engage more. This suggests that a low-engagement user might not have planned to buy at all, may have just been checking something quickly, wasn't satisfied with the products, or didn't have a good user experience.

For these users, it's important to find ways to keep them engaged : whether by showing more captivating ads or offering special deals through remarketing.

5) Churn Rate Analysis

month	users_in_month	users_retained_next	churned_users	churn_rate
2016-08	1046	46	1000	0.956
2016-09	793	34	759	0.9571
2016-10	818	48	770	0.9413
2016-11	864	52	812	0.9398
2016-12	1318	44	1274	0.9666
2017-01	662	29	633	0.9562
2017-02	666	45	621	0.9324
2017-03	809	51	758	0.937
2017-04	870	54	816	0.9379
2017-05	1055	40	1015	0.9621
2017-06	878	45	833	0.9487
2017-07	964	6	958	0.9938
2017-08	42	0	42	1.0

users_in_month, users_retained_next_month, churned_users by month
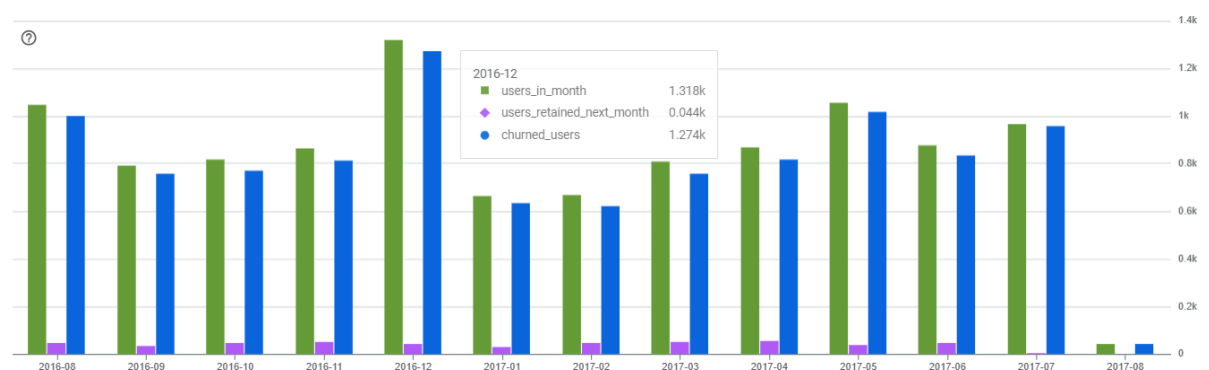
Churn rates are extremely high throughout the year, ranging between 93% and 100%, indicating a lack of user retention strategy.
In August 2017, we observe the highest churn rate (100%) with a significant drop in user count, this could be influenced by seasonal behavior, it's also worth noting that several tragic events occurred in Europe during this month including attacks in France, Spain, and Belgium. Such events can, in real-world scenarios, affect online behavior : people may spend less time shopping or engaging online while being preoccupied with the news.