8fit Data analyst case solution

Question 1. Where to invest? ios or android?

## Solution:

Aiming to analyse platforms performance, I would like to add two new KPIs:

- CAC (Customer Cost of Acquisition): Total_Spending/Total_subscription_count
- NEPC (Net Earning per Customer): Revenue_per_Customer - CAC. In fact, NEPC shows how much we made at the end from each customer. It is a profitibility indicator, the higher it is the better the performance would be.

As there is a potential belief that ios users are more profitable to businesses I defined NEPC to explore the reality with a higher resulotion.

Below Visualizations help us to have a clearer idea on both platforms' perfromance.
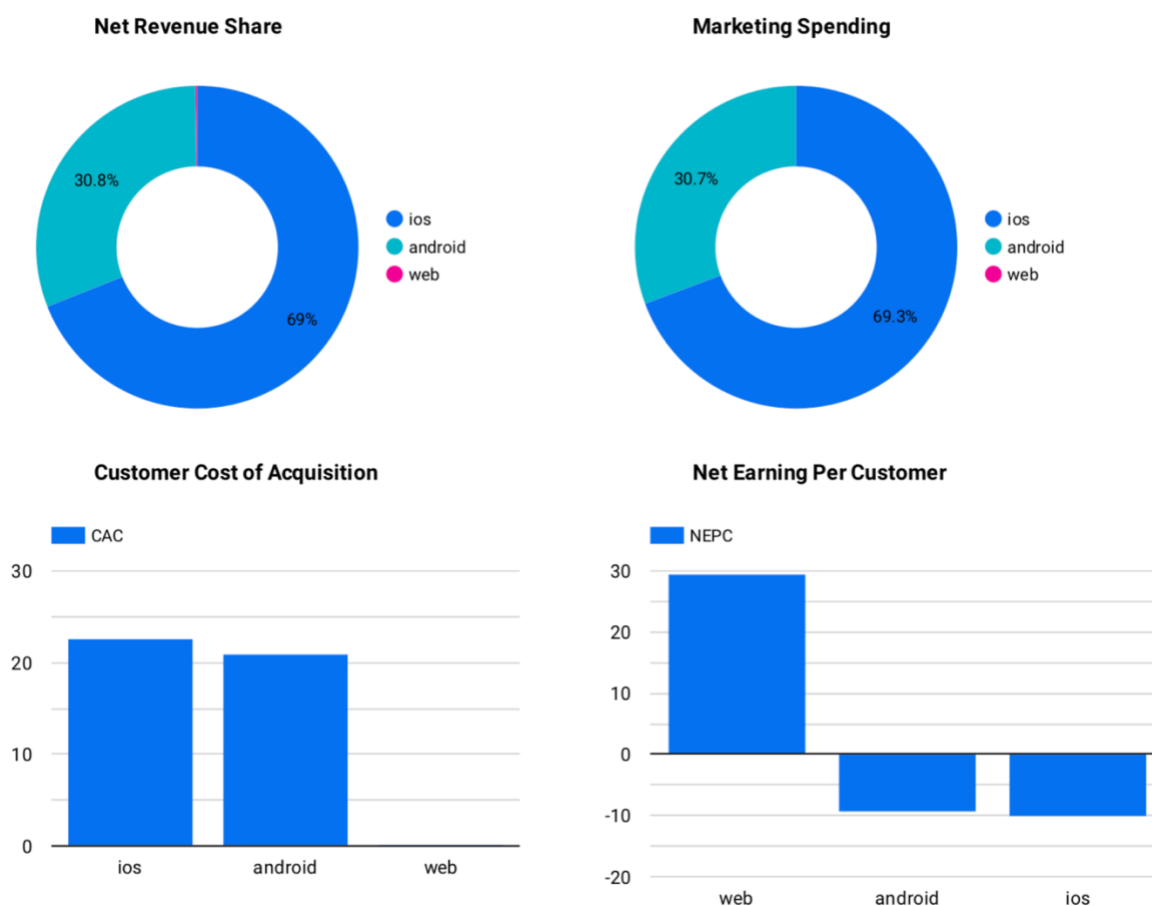
As it is seen above we have spent more in ios and consequently got more revenue from ios. It seems that revnue and marketing spending are highly correlated. In terms of CAC android is doing better. CAC for android is around 7% lower than ios. Also, Net Earning per Customer is 8% less negative for android than ios, which means that marketing ROI would be higher in *android*.

Therefore, I suggest to invest more in android.

Question 2. Is there any specific marketing channel we should be aiming for to get better results? I'm currently thinking that the channel with ID 4 looks promising. What are your thoughts?

Solution: As it is understood from the data, there are some paid and unpaid channels available. So, I would answer to this question for paid and unpaid categories separately. I have also defined a new KPI, Marketing Spendings/Revenue, which could be an indicator of marketing ROI in each channel. The lowest the Marketing Spendings/Revenue, the better.

- **Unpaid Channels:**

  Among unpaid channels, Channel with ID 1 is outperforming both paid and unpaid ones by far. An unpaid channel could be SEO, 8fit's Facebook page or instagram account, which is a cost efficient and organic way of marketing but the drawback is that it takes time and you need to spend a lot on making content. For a startup, rapid growth is of a great importance, therefore, it is better to invest in paid ones like inbound marketing which is also cost efficient.

- **Paid Channels:**

  It seems that Channel with ID 2 is the one doing better than other paid channels; as it has the highest revenue share and lowest CAC among paid channels. Therefore, I would invest in channel 2.

Apart from channel 10, channel 2 has also the lowest Marketing_Spending/Revenue among other paid channels. I would not choose channel 10 because of its low revenue share. From my point of view channel 4 is not a safe bet, as it has a high CAC and high ratio of marketing_spending/revenue compare to channel 2. I would invest in channel 2.
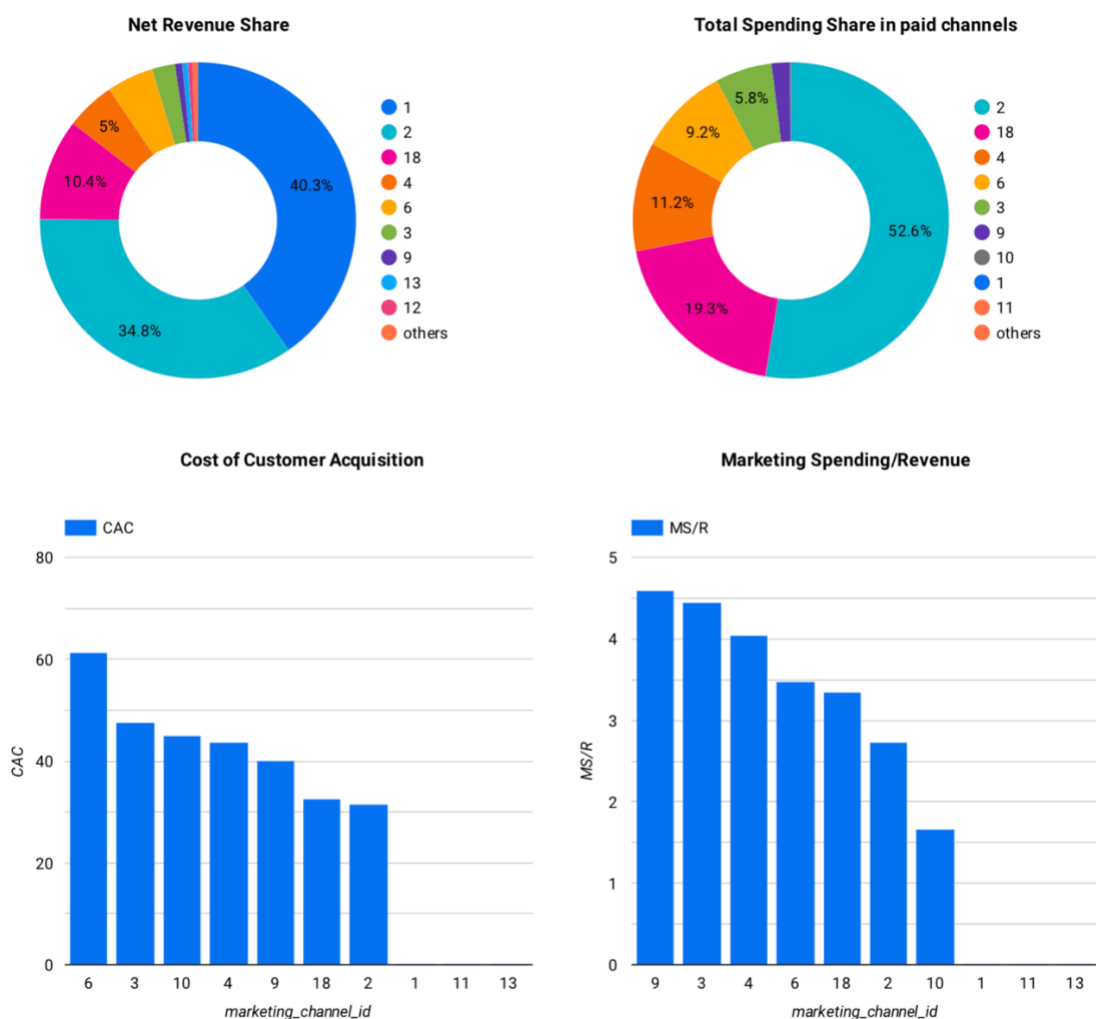
Question 3. Looking further into the data at hand it looks like UK (United Kingdom) would be a good investment. Do you agree?

Solution:

To certain extent, my answer to this question depends on 8fit's strategies. Whether it is :

- Market share growth: in this case we should focus more on CAC, and choose countries with lower CAC.
- Having higher ROI: in this case MarketingCost/REvenue would be more important.

Looking at below map, which shows 8fit's relative marketing spendings per country, it seems that it's target markets are:

- 1.North America
- 2.Europe
- 3.Australia
- 4.Latin America

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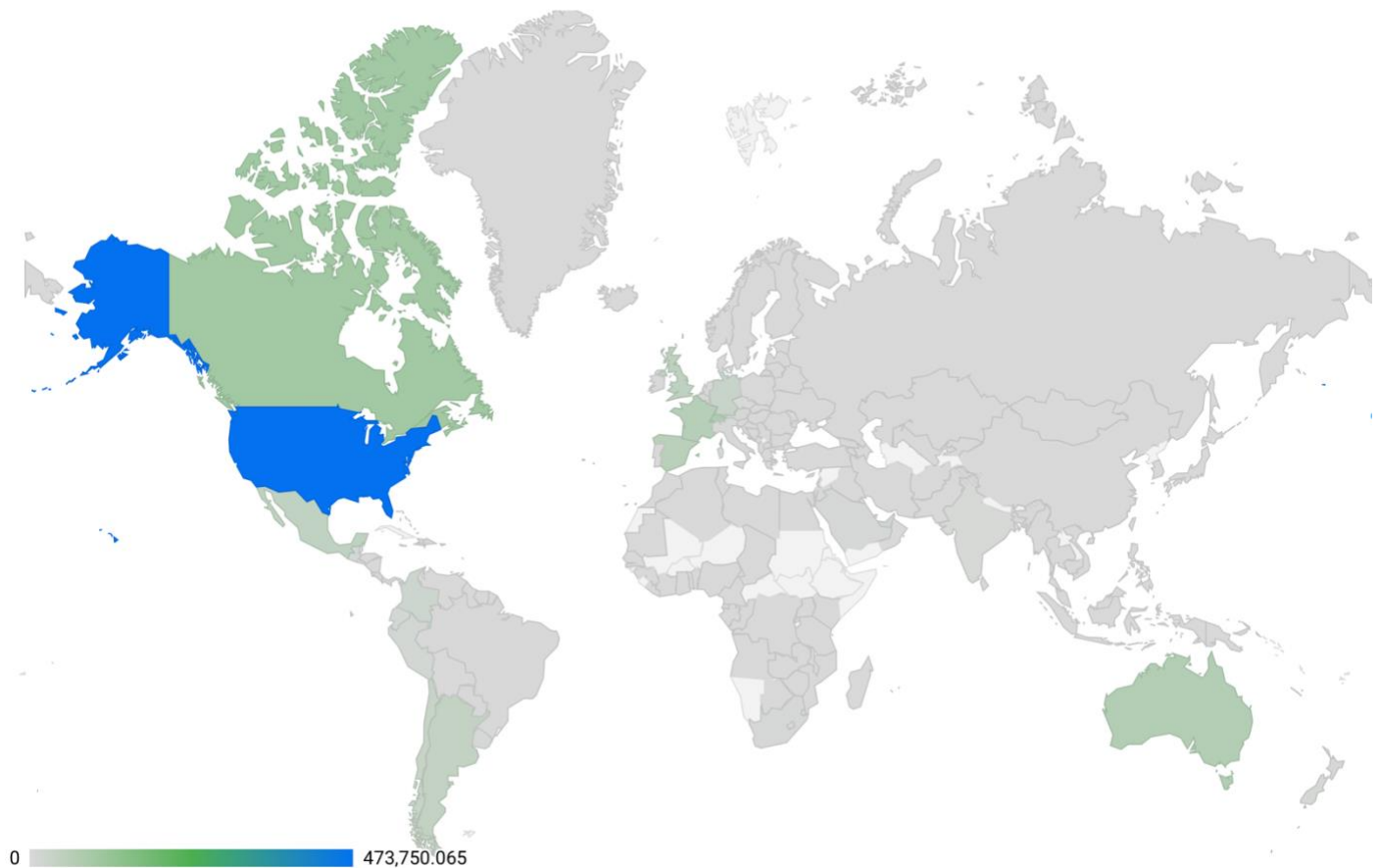
Having aggregated the data on the countries level, I sorted them based on net_revenue.

signup_country_code	spendings	net_revenue	subscription_count	CAC	MarketingCost/Revenue
US	1.101293e+06	474061.606983	38418	28.666061	2.323100
CA	2.176953e+05	91924.064864	7702	28.264778	2.368208
CH	1.070114e+05	69317.169287	3973	26.934656	1.543793
AU	1.104261e+05	64562.365066	4630	23.850130	1.710379
FR	7.299754e+04	56318.861900	4313	16.925003	1.296147
ES	1.172919e+05	52255.592894	5299	22.134715	2.244580
GB	6.887108e+04	43444.365635	4727	14.569723	1.585271
MX	8.220753e+04	41640.531544	4817	17.066126	1.974219
AR	3.425828e+04	37823.633723	2533	13.524785	0.905737
CL	3.057637e+04	30574.486799	1991	15.357293	1.000062
DE	4.432103e+04	28079.971732	2801	15.823288	1.578386
CO	1.813669e+04	18984.989593	1263	14.360008	0.955317
AE	1.874929e+04	16726.046946	1183	15.848935	1.120964
PE	1.204113e+04	11084.823868	1117	10.779884	1.086272
CR	8.829010e+03	9286.575716	742	11.898935	0.950728

Argentina might be a choice?

Among the 15 top countries with highest revenue share AR, Argentina, seems to be an intersting oppotunity. As it shows a low CAC and MarketingCost/Revenue, which means that it would be a profitable market with a high marketing ROI. The only drawback is that Argentina economy has not been stable recently and the exchange rate has been fluctuating a lot, therefore as it exposes high risk to our investment I would not invest there.

UK which is available as GB in this dataset seems also a nice choice for Market share growth, but in terms of Marketing ROI, France seems a better one.

Overal, if we aim to invest in Europe, UK would be a promising choice for gorwth, and France a good choice from a financial point of view. As for startups market share growth is crucial, I would suggest to invest in UK.

Yes, I agree that UK is a good choice.

SQL Question

I did not use the docker setup, therefore; I loaded the two datasets into two tables, subscriptions and spendings, in my local postgresql and did the query.

1. How much did we spend per channel in December?

```
[fit=#  SELECT marketing_channel_id,SUM(spendings) AS total_spendings from spendings
[fit-# WHERE EXTRACT(MONTH FROM report_date)=12
[fit-# GROUP BY marketing_channel_id
[fit-# ORDER BY total_spendings DESC;
 marketing_channel_id | total_spendings
----------------------+-----------------
 2                    |        89519.72
 18                   |        51299.70
 4                    |        35628.32
 6                    |        16128.33
 3                    |         8501.77
 9                    |         1358.80
 10                   |           27.41
 7                    |            0.00
 16                   |            0.00
 1                    |            0.00
 11                   |            0.00
 12                   |            0.00
 13                   |            0.00
 14                   |            0.00
 0                    |            0.00
(15 rows)
```

2. What is the average cost of acquisition for a subscription per country?

```
[fit=# SELECT signup_country_code as country, SUM(spendings)/SUM(subscription_count) AS CAC
[fit-# FROM subscriptions S INNER JOIN spendings M ON
[fit-# S.signup_country_code=M.country_code
[fit-# AND S.marketing_channel_id=M.marketing_channel_id
[fit-# AND S.subscription_date=M.report_date
[fit-# GROUP BY signup_country_code
[fit-# ORDER BY CAC DESC;
```

country	cac
CH	25.9093504338948443
CA	25.8222626582278481
US	24.1238057084978184
AU	23.0793662975550926
ES	20.6060934955455503
PR	19.8725243902439024
PT	18.5336607142857143
IT	18.2452024291497976
AT	16.9960482654600302
MX	16.2406389126712329
DO	16.0030128840436075
BE	15.8589052890528905
GR	15.2043911439114391
HR	14.6883647798742138
FR	13.8385631559898661
GB	13.7378738797106144
AE	13.4770677035681610
AR	13.4017051437829081
CL	13.2485229540918164
NL	12.9488750000000000
SK	12.6101242236024845
ZA	12.5421222606689735
DE	12.3071090387374462
CO	12.2549256993006993
HT	12.1474509803921569
LV	11.7650413223140496
MU	11.3561643835616438
NZ	11.3164256026600166

3. What is our average revenue and spending per day of the week (Monday, Tuesday...)?

```
fit=# SELECT to_char(subscription_date,'Day') as DayOfWeek, AVG(net_revenue) as avg_revenue, AVG(spendings) as avg_spendings
FROM subscriptions S INNER JOIN spendings M ON
S.signup_country_code=M.country_code
AND S.marketing_channel_id=M.marketing_channel_id
AND S.subscription_date=M.report_date
GROUP BY to_char(subscription_date,'Day');
```

dayofweek	avg_revenue	avg_spendings
Saturday	46.2748628589867699	77.1268957728299451
Thursday	44.8652815775448570	69.3086285308225262
Sunday	61.4993571705176197	109.4418071511552859
Monday	59.7555546459271388	88.7108336744439896
Tuesday	55.3313972798854689	86.4103507516105941
Friday	39.3417799889441680	63.8776506357103372
Wednesday	45.9788184841589358	71.2432119726938561

(7 rows)