PLARUIM DATATHON PROJECT

Preamble:

At the end of April 2020, Plaruim noticed a drop in their company's profit. About 2 weeks later, a sharp drop was detected in Retention rates and resulting in only a small share of players continuing to play beyond the first day of downloading the game.

The objective of this project is to analyze the data set provided and identify the source/cause of these changes in their KPI and provide suggestions for recovery/improvement.

Picking up trends from different Markets can identify areas of weakness.

Thought Process

As a Data Analyst, various why questions come into mind to assist in the analytical process and derive various insights.

1. Which affiliates are bringing in the highest rate of revenueD30 and decide which affiliates to invest and divest?
2. Is Language a barrier for foreign language markets i.e. Are the tutorials being completed by non-English Markets
3. What are the changing metrics in ARPDAU vs Market Spend Per User?
4. What is the Retention Rate from Reg to Day1 and Day7? If there is a rapid decrease, why?

The above will demonstrate curiosity and the desire to know more about the problem being experienced.

Thereafter, understanding the context and how the information provided fits into the bigger picture. Domain knowledge is vital.

Breakdown the data into smaller defined groups, segment it

Methodology

The process below will describe my process from beginning to end

1. Assess the Data set provided and wrangle with it (cleaning, correcting format, etc)
2. Upload the Data in Microsoft SQL and perform the necessary queries to breakdown the data even further (SQL scripted attached)
3. Copy Outputs in SQL back to Excel and wrangle it.
4. Create Visualizations using Excel and Tableau

Question 1:

Which affiliates are bringing in the highest rate of revenueD30 and decide which affiliates to invest and divest?

Return on Investment (ROI) is a popular profitability metric used to evaluate how well an investment has performed (Revenue D30 / Marketing Spend). Referring to the Graph below, we notice an upward curve in ROI until the 20th April (second dairy axis), where we start to notice a downward trend in ROI. The running Average ROI (7 over Days) will illustrate the continued downward trend till the end of June.
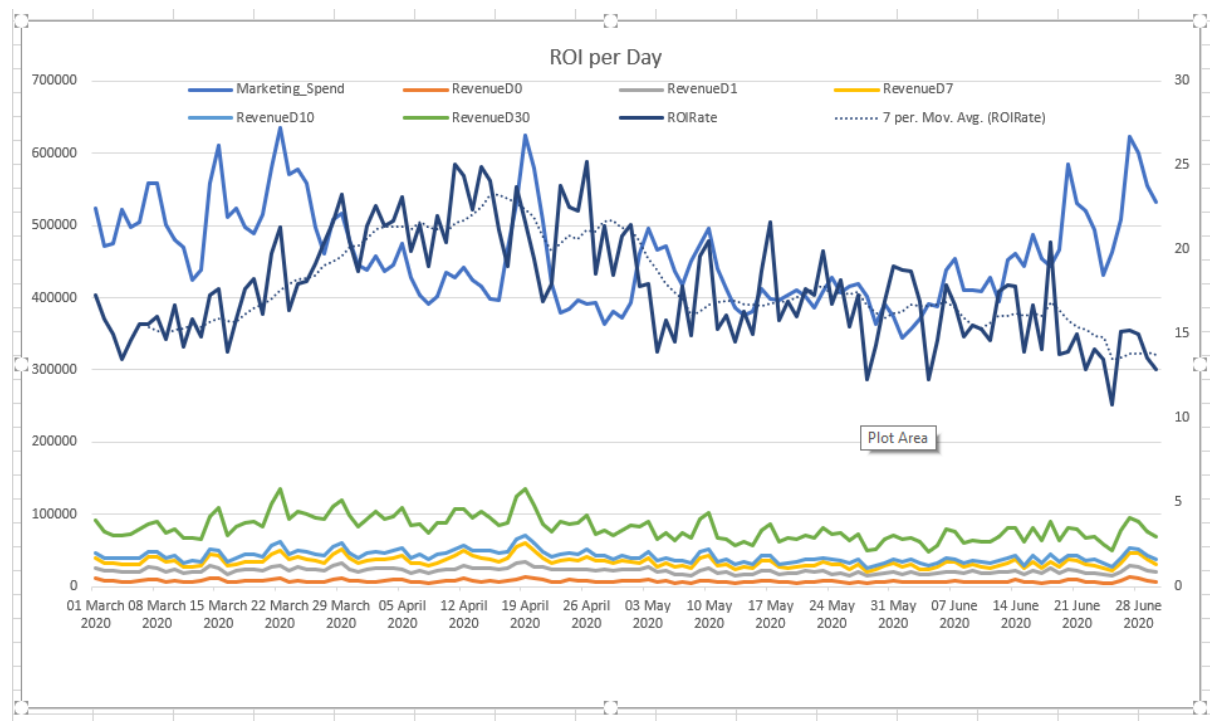
To further analyze the downward curve, By the 10th May, the average ROI run rate stabilizes to approximately 20%, however we see another dip in ROI from the 20th June to approximately 13%. The significance of this ''secondary downward dip'' is that Marketing Spend increases.

<u>Increase in Marketing Spend (Running Average of 30 days for each parameter)</u>

The difference between both downwards curves is that first one, we see that Marketing spend decreases, where we can rationalize that ROI will reduce (decrease in investment), however the second downward trend is concerning as Marketing Spend is increases and the correlation that ROI should also increase is lacking… this is evident because RevenueD30 remains stagnant.
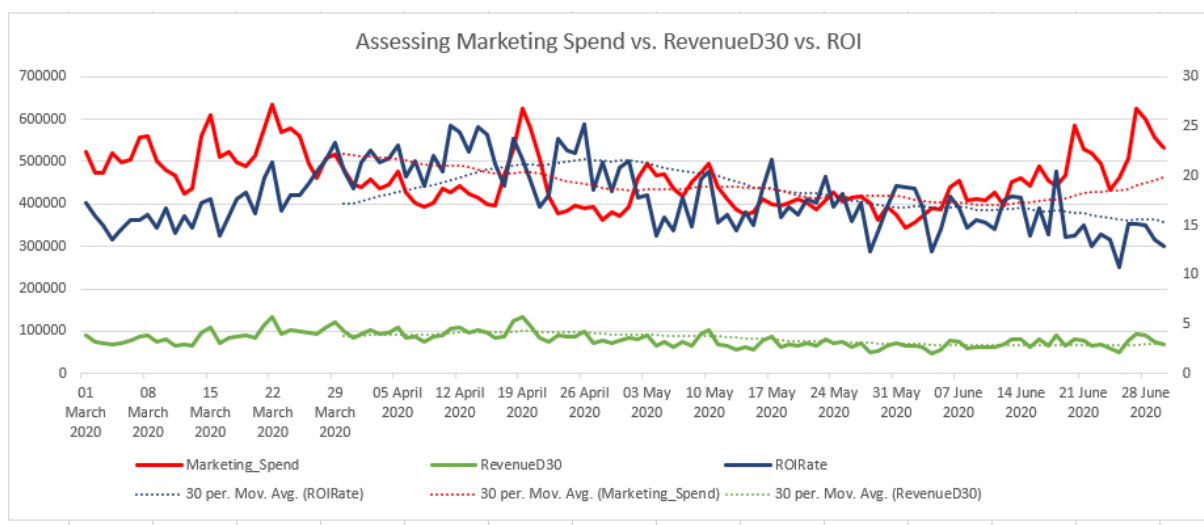
Summary:

<u>First ROI downward trend:</u>

      Date: 20th April to 10th May

      ROI Rate Average: 19.13%

      ROI Rate Min: 13.9%

<u>Second ROI downward trend:</u>
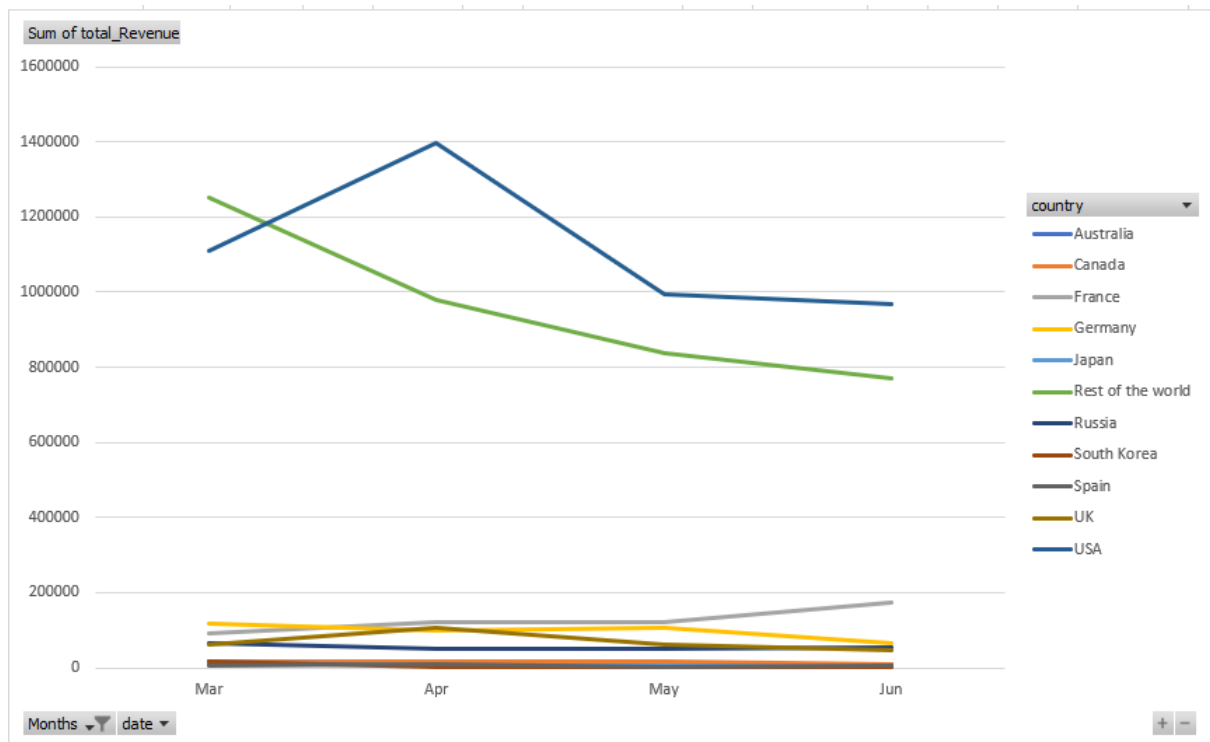
      Date: 20th June to 30th June

      ROI Rate Average: 13.18%

      ROI Rate Min: 10.8%

Based on the above we can consider looking into the Markets at our Affiliates are targeting and finding what will help us understand the downward trends.

The next of the analysis is to understand which markets are contributing towards our drop in Revenue. Let's assess the graph below.

As we can clearly see, the markets that are mostly affecting revenue are USA and ROW.

Let's identify which affiliates bring in the most users from USA and ROW, by using the metrics, Market Spend and Total Revenue

As we noted earlier, we see affiliates 29 and 32 receiving the greatest Marketing Spend and bring in the most revenue.

Let's take a closer look at the numbers the above-mentioned affiliates:

	Affiliate 29		Affiliate 32	
	Total Spend	Total Rev	Total Spend	Total Rev
March	4,729,629	909,085	4,109,051	592,789
April	3,783,199	873,915	2,808,702	557,993
May	3,317,399	600,216	3,409,638	504,747
June	3,299,270	526,656	3,895,946	537,757
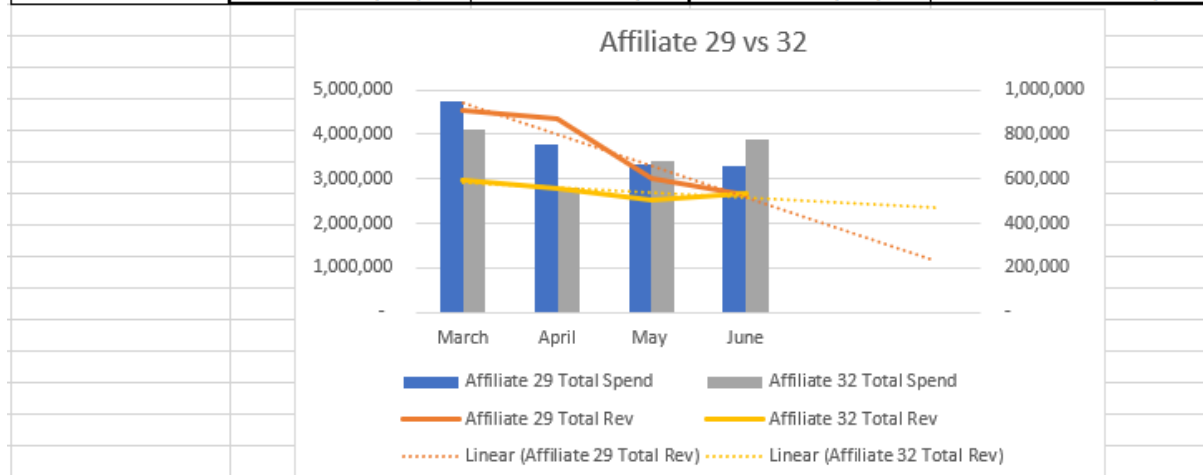
Insights:

In summary, it seems that the strategy of affiliate 29 is failing to continually maintain its monthly total revenue. Using the linear forecast function in excel, we see a highly regressive trend and therefore divesting is recommended. Affiliate 32 appears to be successful in maintaining is level of revenue and continued investment is recommended.

Question 2:

Is Language a barrier for foreign language markets i.e. Are the tutorials being completed by non-English Markets

date	country	Regs	Comp_tut	Comptut_rate			
01-Mar	UK	1410	1206	85.53%			
01-Mar	France	2073	1766	85.19%	Average Rate	78.37%	
01-Mar	Germany	2254	1813	80.43%	**Average Rate by Country**		
01-Mar	Canada	141	115	81.56%	UK	79.33%	
01-Mar	Rest of the	17842	14210	79.64%	France	83.15%	
01-Mar	South Kor	798	625	78.32%	Germany	79.18%	
01-Mar	Spain	259	220	84.94%	Canada	78.68%	
01-Mar	Russia	4189	4051	96.71%	Rest of the worl	66.39%	
01-Mar	USA	10151	7757	76.42%	South Korea	85.84%	
01-Mar	Japan	185	141	76.22%	Spain	77.86%	
01-Mar	Australia	91	78	85.71%	Russia	88.82%	
02-Mar	Rest of the	16065	12810	79.74%	USA	69.64%	
02-Mar	South Kor	590	477	80.85%	Japan	76.15%	
02-Mar	Spain	233	184	78.97%	Australia	77.01%	
02-Mar	France	1525	1274	83.54%			
02-Mar	UK	976	788	80.74%			
02-Mar	Russia	3494	3375	96.59%			

From the analysis above, the average rate of users registering and completing tutorials from all countries is 78.37%. We can rule out language being an issue and do further Market research as to why 'USA and ROW' are below average.

Insights:

We can rule out language being a problem and focus our attention to understand why USA and ROW has a lower Completion Tutorial rate. The Marketing team can carry out a customer survey for all markets and analyse feedback to improve the product.

Question 3

What are the changing metrics in ARPDAU vs Market Spend Per User?

Calculating the exact value of each install is a critical component of F2P business planning. This is especially true when each install may be costing you $1-2 in marketing. Using ARPDAU and the current cost of each install will deliver a KPI worth monitoring.

KPI Report

	March	April	May	June	May vs June Change %
Total_Regs	1,316,661	1,037,064	1,153,520	1,310,413	11.97%
Total_DepCount	241,840	257,286	200,381	185,561	-7.99%
Total_Depositors	44,229	41,867	35,571	35,510	-0.17%
Total_Income	$2,757,647	$2,800,937	$2,202,682	$2,109,299	-4.43%
Total_Spent	$15,968,117	$13,012,167	$12,979,648	$13,854,855	6.32%
DAU_D1	419,555	344,044	328,775	354,790	7.33%
DAU_D7	147,589	126,986	108,641	114,152	4.83%
Paying_User	241,840	257,286	200,381	185,561	-7.99%
KPIs					
ARPDAU	$2.09	$2.70	$1.91	$1.61	-18.63%
Marketing Spend per Reg/install	$0.08	$0.08	$0.09	$0.09	6.04%
ARPPU	$11.40	$10.89	$10.99	$11.37	3.30%

Insights

We need to ask the product developers/Monetization department, what features were the most popular/price point in the month of March and review why this feature failed in June or look to improve/restore features or understand players' behaviour in March.

Question 4

*What is the Retention Rate from Reg to Day1 and Day7? If there is a rapid decrease, why?*

Among the common free to play (F2P) performance metrics, Day 1 Retention may be the one that game developers obsess over the most. This is for good reason; if most players fail to return promptly then how can they possibly be expected to progress and monetize?

Our Focus will be on USA and ROW only as these are our biggest Markets

Below is a table of our retention rate trends:

Week	Registrations		Retention D1		Retention D7		Total Regs	Total D1	Total D7
	USA	ROW	USA	ROW	USA	ROW			
01/03/2020 - 07/03/2020	63,046	114,477	33%	32%	12%	11%	177,523	33%	11%
08/03/2020 - 14/03/2020	71,950	144,446	33%	29%	12%	10%	216,396	31%	11%
15/03/2020 - 21/03/2020	81,305	178,916	34%	29%	12%	10%	260,221	31%	11%
22/03/2020 - 28/03/2020	93,257	173,025	34%	29%	12%	10%	266,282	31%	11%
29/03/2020 - 04/04/2020	87,604	144,541	33%	29%	12%	10%	232,145	31%	11%
05/04/2020 - 11/04/2020	79,124	116,450	34%	30%	13%	11%	195,574	32%	12%
12/04/2020 - 18/04/2020	79,743	118,909	34%	30%	13%	10%	198,652	32%	12%
19/04/2020 - 25/04/2020	85,482	94,554	34%	31%	13%	11%	180,036	32%	12%
26/04/2020 - 02/05/2020	65,925	94,514	31%	30%	11%	10%	160,439	30%	10%
03/05/2020 - 09/05/2020	74,358	119,275	28%	27%	10%	9%	193,633	28%	9%
10/05/2020 - 16/05/2020	97,446	135,007	24%	25%	8%	8%	232,453	24%	8%
17/05/2020 - 23/05/2020	85,116	109,457	25%	26%	8%	7%	194,573	25%	8%
24/05/2020 - 30/05/2020	73,275	128,210	28%	26%	10%	7%	201,485	27%	9%
31/05/2020 - 06/06/2020	77,425	116,157	27%	28%	9%	9%	193,582	27%	9%
07/06/2020 - 13/06/2020	113,915	101,798	24%	29%	8%	9%	215,713	27%	8%
14/06/2020 - 20/06/2020	144,565	107,933	19%	29%	6%	9%	252,498	24%	7%
21/06/2020 - 27/06/2020	144,774	120,856	20%	29%	6%	9%	265,630	24%	8%
28/06/2020 - 01/07/2020	58,808	55,467	19%	27%	6%	9%	114,275	23%	7%
Grand Total	**1,577,118**	**2,173,992**	**28%**	**29%**	**10%**	**9%**	**3,751,110**	**29%**	**10%**

Registrations by Geo (USA & ROW)
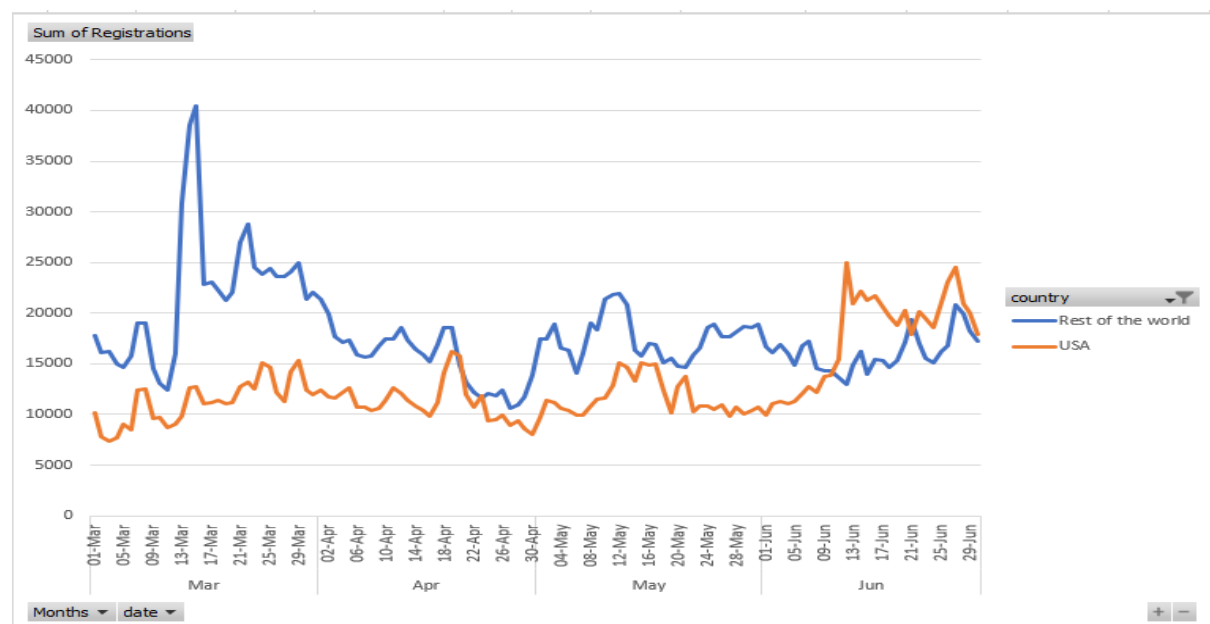
We can observe there was a shift to bring in a more users from the USA, however the quality of the users are questionable (perhaps incorrect target marketing by the affiliates) as the USA retention rates continue to experience a downward trend.

Furthermore, ROW retention rates are more stable than USA thus, increase Market Spend on ROW should be considered.

Conclusion

One thing to keep in mind, is that if the business is growing fast, it has the potential to hide user-engagement issues. If you focus primarily on new user acquisition and revenues, but avoid analysis of engagement during this growth, you run the risk of a dramatic drop in engagement as users encounter issues during their initial months of use. In this case you'll be hiding poor performance behind rapid growth and a positive bottom line, which will eventually become unsustainable.

Further analysis of engagement during growth is required as March is seen as a successful month for the business.