GameFun Analysis

BAX 423 Big Data Analytics

Ruoyi Liang

In this study, we used statistical method to analyze how well did GameFun's recent campaign performed and how could the company improve its strategy in the future.

First, we assess the variation between the control and treatment groups. The methods that I used are descriptive analysis and statistical analysis. For the statistical analysis part, I used 2 methods due to the give data's characteristics:

1. T-test for the control and treatment group for income;
2. Z-test for the control and treatment group for both gender and gamer.

A visualization to the descriptive analysis could be found in below table:

	Test	Control	Difference_ratio
Income_average	54.94	55.17	0.41%
Gender_balancing	64.73%	64.79%	0.10%
Gamer_balancing	60.13%	60.18%	0.08%

Table 1. Observations Descriptive Comparison

Based on the result, I couldn't find any observable difference between the two groups. If I had run this analysis before executing an experiment and found a large difference between the test and control groups, I would randomly select subsets from the groups and make the proportion of the subsets to be balances.

Then, I calculated the statistical significance for each segment. The results are:

1. Income: p-value > 0.05, should not reject null hypothesis. The two samples have equal variation.
2. Gender: |z| < 1.96, the difference between female and male is not significant at 5%.
3. Gamer: |z| < 1.96, the difference between non-gamer and gamer is not significant at 5%.

However, when the customer base increases, a large sample size could push the p-value towards 0. The problem here is the test results could be meaningless while the samples size is too big to be able to represents most of the population. Hence, before executing the test, it could be important to report the effect size.

Second, according to the experiment results, gamers were showing a better adoption rate compared to the other segments when seeing the advertisement. The difference between control and treatment group reached 6.91%. On the other hand, the non-gamers are showing a decreasing in adoption when seeing the campaign site, which means GameFun should not target this segment anymore. A detailed comparison between segments could be found in below table:

Purchase rate	Control	Test	Diff
Overall	3.62%	7.68%	4.06%
Female	3.44%	8.09%	4.65%
Male	3.72%	7.46%	3.74%
Gamer	3.54%	10.45%	6.91%
Non-gamer	3.74%	3.51%	-0.23%

Table 2. Purchase Rate Comparison

Finally, within the gamer category, the expected revenue from female gamer was presenting a strong growth compared to the male gamers. Although the base is relatively small in the female gamer segment, the strong influence of the campaign is still an evidence that

GameFun could keep on investing in this segment to receive a better financial outcome. The results of the comparisons are showing as below table:

Expected Revenue	Control	Test	TTL
Overall	16,237.50	80,925.00	97,162.50
Female gamer	3,037.50	24,750.00	27,787.50
Male gamer	6,525.00	41,437.50	47,962.50

Table 3. Expected Revenue Summary for Gamers

In conclusion, GameFun could use different strategies to target each segment. For the female gamers, the company could continue the investment in similar campaign since it gave the best ROI. For the male gamers, the growth was not as strong as female gamers, but the customer base was larger. GameFun should not give up on harvesting revenue from this segment as well but may think about using a different method to increase the return. For the rest segment, GameFun could make small to none investment until the company could see any marketing trend in practical.

Reference:

1. Jalayer Khalilzadeh and Asli D.A.Tasci.

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