Pocket Gems Project

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Group of Users:

Newly installed the game:

For the group of people newly installed the game, but haven't used it for a while. In this group, people can be categorized into three sub groups:

1. The group of users who recently installed and have started playing already.
2. Those users newly installed the game and not sure to continue playing or not. For instance, the group of people who have created account when they installed the game may have a higher chance of start playing in a short time. This group of people are in grey areas, and it is worthwhile to give them promotion to stimulate their initiates to start playing the game.
3. Group of users not interested in start playing anymore.

People already started playing the game:

For the group of users have already start playing the games:

1. Consistent players.
2. Intermittent players for different reasons: this group of players can be classified according to other features to see if they could be converted. (Main features include: Point 1, 2, 3, 4, 5, 6, 7,8 of Important Features)
3. Players discontinue for a while: this group of players can be classified according to other features to see if they could be converted as well, and such features include more of the person's personal information, especially his/her financial condition. So different from intermittent players, players discontinue might (Main features include: Point 2, 4, 5, 6, 7 of Important Features)

Target group of Users (Ranking in ascending importance level below):

1. Intermittent players: Even though intermittent players are the group of people in grey area, which means they might come back to continue playing anytime or they might forgot. So giving promotions to some of users in this group could improve the revenue as well. Especially the active users in this group, but haven't played for a while after his/her last login. Such promotion can be a reminder for them when they forgot.
2. Players discontinue for a while: Different from intermittent players, players discontinue might be less active in his playing history; might be the type of users use older version of device, because that means they are not the group of people that into new technologies. So giving more promotions to players want to discontinue

permanently could actually save more users and increase the revenue, instead of letting many users take advantage of the sale.

3. <u>Those users continue playing but never purchase:</u> A user continue playing but never purchase a game means he/she is interested in the game and is very active in playing, maybe due to financial issue the user haven't purchased any product yet. So a sale can be a good stimulus for this group of people.

4. <u>Those users newly installed the game and not sure to play or not:</u> Since this group of people are in grey area as well. So giving them promotion as a stimulus for them to start is a good investment.

5. <u>Group of users not interested in start playing anymore:</u> Since this group of users do not have plans of continuing in playing, so it wouldn't cost much to give them promotions. It would benefit if they accept the sale. Even if they don't, we don't lose much.

Important Features:

I selected the features of the data may be relevant to see if they would convert. The features include:

1. Installation: Use for tracking the length of the time they install and start playing
2. Hw_ver to infer if they might be group of people in good financial condition.
3. os_ver to infer if they might be group of people are active in playing games, purchasing the newest technology products.
4. Revenue: One of the key information, highly infers the user's interests in the game and his/her financial condition.
5. ts in iaps: If the purchase happens in late night or day time, might reflects if the person is impulse buyer or not. Impulse buys could have a higher chance of being converted by promotion. Also, we can keep the record of last few times the user is active in buying to infer if the user is intermittent player or a player really wants to discontinue in playing the game.
6. Spendtype: we can infer if the user has strong intersts in earning gems or not, and if the user is an active player.
7. Amount: further implies the user's activity extent in the game.
8. Story and chapter: When users reach certain level, they might be more likely to spend because it would be a waste if they give up

Test and evaluation protocol:

Data Cleaning:
1. We want to record of the length of time a user last login to current time.
2. We also want to record the user's number of login time/purchase times two weeks before his/her last login, in order record how active the user is in this game.

Experiments:
1. We need to pay attention on the opportunity sizing, which means how many people are affected from the promotion. For instance, if less than 5% of users

can be affected, then normally the 5% could be the result of randomness. Therefore, we need to check how much revenue can be generated from the 5% users. If the 5% users can generate millions of revenues, then it is definitely worthwhile to give promotions.

Metrics Define:

1   The Net Incremental Revenue: Randomly separate the target users into two groups, and only give one group promotions. By comparing the revenue generated between the two groups and the revenue, we might gauge the effectiveness from promotions to some extent. And The Net Incremental Revenue = Revenue with promotion- cost of promotion- revenue without promotion.

2   MSE measures the square of error in deviations, which could take consider both the variance and bias, but it is sensitive to outliers at the same time.

3   MAE: not that sensitive to outliers, and all individual differences are weighted equally.

4   AUCPR measures the precision under precision recall curve. Since in our data, there are more user not purchase than users purchase, so in order handle this imbalance data, we can use AUCPR as our evaluation metrics.