

How can we increase revenue from Catch the Pink Flamingo?

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Problem Statement

How can we use the following data sets to understand options for increasing revenue from game players?

We have 2 Data Sets and Generated 3rd one by combining Data named combined.csv.

1. [Flamingo-data.zip](#) : contains Advertisements, Purchases, Game(clicks and levels), Users, Teams.
2. [Chat-data.zip](#) : contains the user chatting behaviour and the interaction among other people
3. [Combined.csv](#) : contains the combined dataset of user and user purchases



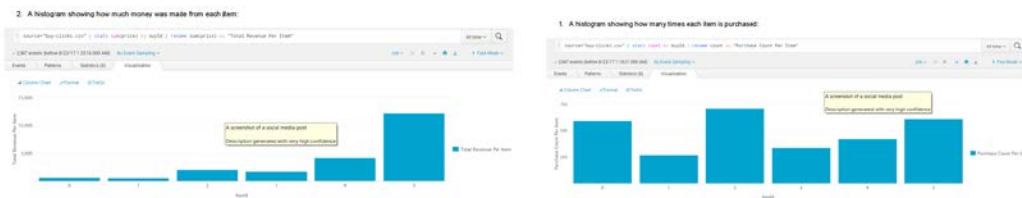
More parameters we have more accurate will be the predictions as we would have more factors to validate the data and the final insights from the data.

We studied Users Chat behaviour using the chat-data zip file and the Flamingo-data zip file for analysing the in-app purchases, team behaviour, which ads are viewed most, different levels, etc.

So different data will provide different view about the data in it and also combining the different parameters in the file can further provide us the hidden insights of data and all this done is through analytics-driven approach.

Data Exploration Overview

- 6(csv) + 8(csv) files consisting of mouse-clicks, ad-clicks, buy-clicks records, player profile, team and chat interactivity.



- The graph on left depicts how much money was made from each item while the second graph (on the right) shows how many times each item is purchased.



Purchase Amount Ranges from 250 to 750 (as shown in the y-axis of the graph on the right) and that revenue generated from each item is from 600 to 12200 (from left graph).

So, item 5 is the most expensive item and also this item is quite very popular as shown in the graph on the right (item 5). But the second item is bought more frequently than the other items.

Putting more resources in studying the impact and benefit of item 5 to understand the sentiment of why user is purchasing this item can drive up the sales. Or having some promotions on this item to sell it to more users. Developing similar products is another option.

Also we can increase the cost of the item 2 as it will increase the revenue of the company. So these factors can be considered.

What have we learned from classification?

There are 5 different platforms and from **Decision Tree Analysis** it's clear that **ios players** are **high spenders** in the game (termed as HighRollers). Thus Platform plays a significant role in predicting whether a player is a high roller or not.

So, Just by knowing player's gaming platform, we can **predict whether the user is a Highroller or not**, with an error rate of 11%



Correct classified: 500	Wrong classified: 65
Accuracy: 88.496 %	Error: 11.504 %
Cohen's kappa (κ) 0.76	

A very amusing fact that we can predict whether a user is a high roller or a penny pincher with an error rate of just over 10%.

Using different data files team-level, platform-type, game-clicks count and hit-count data, we processed all the files into the KNIME Decision Tree workflow.

Different training and testing datasets were used to train and validate our model, and findings ultimately point to platform-type as the sole factor to predict the likelihood of a player being a high-roller.

So the conclusion is that iOS platform(which is very costly itself) has very chances that their players are high rollers based on the data we obtained.

What have we learned from clustering?

Cluster #	Cluster Center
1 <i>Free Loader</i>	Average buy-clicks :: 0.02 Average Expenditure :: 0.03 Average ad-clicks :: 0.23 <i>Cluster size :: 589, 54% of dataset</i>
2 <i>Penny Pincher</i>	Average buy-clicks :: 0.94 Average Expenditure :: 4.30 Average ad-clicks :: 5.83 <i>Cluster size :: 390, 35.7% of dataset</i>
3 <i>High Roller</i>	Average buy-clicks :: 1.58 Average Expenditure :: 20.19 Average ad-clicks :: 5.71 <i>Cluster size :: 112, 10.3% of dataset</i>

- High Rollers *average expenditure* is **5 times** more than the Penny Pinchers.
- Also the *purchases* made by High Rollers are **68% more** than the Penny Pinchers
- **10% proportion** of High Rollers have potential to grow further.

Here, we converted buy-clicks and ad-clicks into average values, and performed a K-means Cluster analysis on this transformed data set.

We found that 54% of players don't spend at all.

Next we have Penny Pinchers, consisting of 35% of the users and almost 1 purchase is made per session, amounting \$4.30 per transaction.

High Rollers consist of 10% of users and almost 1.68 times more purchases are made and spending almost 5 times more per transaction.

This should also be noted that the players who tend to buy items watch 6 times more ad than the freeloaders.

High Rollers are pretty small in number so freeloaders should be targeted in order to make them start purchasing the items by making strategies or giving discounts on different items.

From our chat graph analysis, what further exploration should we undertake?

Most Active Users (based on Cluster Coefficients)

User ID	Coefficient
394	1
461	1
209	0.9523809523809523
516	0.9523809523809523
554	0.9047619047619048
999	0.8666666666666666
1087	0.8
2067	0.7857142857142857
1627	0.7857142857142857
668	0.7

userID	chatNum	teamId	chatNum
394	115	82	1324
2067	111	185	1036
209	109	112	957
1087	109	18	844
554	107	194	836
516	105	129	814
1627	105	52	788
999	105	136	783
668	104	146	746
461	104	81	736

- Chatty users may not necessarily be in the chatty teams
- It turned out that **only one** of the **top 10** chattiest users is from the top 10 chattiest Team.
- This user has a userID of **999** (8th in top 10 chattiest user), and the team for this user has a teamID of **52**.
- Most active users are **394** and **461** (based on cluster coefficients)

During the analysis, we found that longest conversation chain is 9(i.e 10 nodes, using Neo4j Graph Database) and the no. of users participating in this chain are 5.

Next, we found the top 10 chattiest users (Top 3 are: UserID → 394, 2067, 209, 1087 last two with same number of chat items created) and similarly top 10 chattiest teams.

Then we analysed to check if any of the chattiest users are part of any of the chattiest teams and it turned out that only one of the top 10 chattiest users is from the top 10 chattiest Team.

In the end we analysed how active are group of users and we did by finding the clustering coefficient. On the top left the table is shown of the top 10 chattiest users with their Cluster Coefficients.

Recommendation

- Need to focus more on the marketing strategy for iOS platform to promote CTPF to more users and also certain extra features or events can be arranged for them to promote new improvements in game.
- Provide discounts to Android Users to entice them to make more purchases and for freeloaders we can offer them some special discounts for a limited time like 'Once in a lifetime offer'.
- Item 5 is definitely quite popular as it generates almost half of the revenue. So this item should be promoted more among players especially among iOS.
- Item 2 is the most purchased item, we might look into the pricing of it or some discounts to generate revenue from this item too.
- Give some perks to the chattiest users and teams. Also certain task can be given to them like giving review on their respective game store to improve the ranking and popularity of the game thus increasing downloads and rankup in the store.

To conclude, we need to focus more on selling of item 5 by improving it more or developing more similar features for iOS users and later on releasing it to the different platforms.

Item 2 does not generate much revenue despite being purchased more than the item5. So it's pricing needs to be revaluated to get more revenue and if it gets successful like item5 in terms of revenue then we may end up getting almost two times more revenue than before.

We can also advertise whenever a user in a team makes a purchase so that other users in the team might get influenced.

Rewarding some perks to the chattiest users and teams and assigning tasks(like giving rating, attending special events, or unlocking various achievements) to them which will ultimately help in promotion of the game