**Understanding Users Choices in Alliances, Knights, Fights and Chats.**

**AIM**:

We want to understand the How users make their choices in the Alliances, Knights and Organized politics in the Game of Kingdom of Camelot.

**ABSTRACT**:

1. **66%** of ***Users*** have **No Alliance. 28%** of Users have **one Alliance** per User. Remaining have more than one alliances to the maximum of 27 alliances per user.
2. Users are associated with ***only one alliance in the chats*** data.
3. ***69.44%*** of the ***Knights*** are associated with only ***one Alliance*** either in the defense or attacking side.***21%*** of the *Knights* are associate with ***two Alliances****.* Remaining have more than two to 14 alliances supported by a single Knight (both defense and offense).
4. ***22.8%*** of the all the ***Alliances*** who uses Knights {Both Defense and Attack} is associated with ***only one Knight***.**11.2%**

of those Alliances have two knights supporting them. The remaining of those alliances have more than two Knights up to 4495 different Knights per alliance {for both Defense and Attacks}.

1. There has ***not been a single fight*** amongst the members of the same alliance in the given data set***.***
2. There is considerable amount of rivalry developing amongst the Users and longstanding marathon fights in one day features in those rivalries.
3. **More than 99%** of the times ***attacking*** army ***had a Knight*** in their troop be it a single User or an alliance.
4. **More than 96%** of the times the ***defending*** army ***did not have a knight*** in their troop.
5. For a Defending army, Knights are chosen from within the Alliance **97%** of the times and outside the alliance for the remaining. This shows that the alliances are ***more cohesive in nature*** and the possibility of external alliance partnerships through a knight is minimal.
6. For an Attacking army, Knights are chosen from within the Alliance **99%** of the times and outside the alliance for the remaining. This shows that the alliances are ***more cohesive in nature*** and the possibility of external alliance partnerships through a knight is minimal.
7. We established GeoPolitics, rather a GeoFriensdhip in The Attacks data. Based on count of provisioning of the Knights to other Alliances, we establish a distance between two alliances. Using this distance we cluster the alliances using K means Clustering Procedure. We found ***9 clusters in Attacking Alliances (S1Alliances)*** and ***12 clusters from the defending Alliances (S0Alliance).***

**PURPOSE**:

1. Understanding User’s choices on Alliances, gives us their user behavior on what they prefer to do.
2. It helps understand their strategies and customization to prepare for the war.
3. We can get to know them better and helps us understand their decision criteria.
4. We can take advantage using their behavior and apply predictive analytics and create recommendation engines to recommend choices.
5. Observing the level of partnerships between the Alliances helps us to create partner alert system which could alert trouble /victory for the partner alliances.
6. We can recommend Knights for the Troops based on the Knights past performance.
7. We can advise the Alliance to be more cohesive rather than adhesive or vice versa.
8. We could recommend new Friends/partners to a common enemy.
9. **USER-ALLIANCE ASSOCIATION IN ATTACKS**:

We want to study the Associations between the users and the Alliances. The following graph shows the count of

Alliances per User vs Number of Users with that many Alliances.

**X AXIS**: COUNT OF ALLIANCES PER USER

**Y AXIS**: NUMBER OF USERS HAVING SUCH MANY ALLIANCES in LOG SCALE.

**DATA**: It is obtained from the Attacks.txt

**OBSERVATION:**

We assume only one UserID per User. The graph shows that

1. Total Users: 110652
2. 66% of Users with No alliance: 77406
3. 28% of Users have only one Alliance.
4. 4% of Users have 2 Alliances.
5. <.5% of Users have 3 Alliances.
6. Negligible amount of users have more than 3 Alliances. The max is 27 alliances per User.

**USER ALLIANCE ASSOCIATION FROM CHATS:**

* The Alliance\_chats.txt reveal that the Users are associating with more than one team. There are totally 6160 users in the chats Data and **they are associated with only one alliance in the given dataset.**
* As expected users with no Association don’t have any chat logs.

1. **Users Fights amongst the members of the Alliance members.**

**DATA**: Attacks2.txt.

***There has not been a single fight amongst the members of the same alliance***. It is counterproductive to the alliance total Might and resources. There has not been any betrayal of Users to their alliance seen in the data. There had not been any insurgents from different alliances into the host alliance in order to gain info/acquire tactics/gain resources.

1. **USER RIVALRIES AND MARATHONS :**

We want to see if the Users have got their rival and archenemies with whom they keep on fighting again and again. We found the following User pairs who kept fighting and became really contentious.

**TOP USER RIVALRY**

|  |  |  |  |
| --- | --- | --- | --- |
| No | S0UserID | S1UserID | Match Count |
| 1 | 25112 | 2486380 | 19256 |
| 2 | 21536 | 6745138 | 2691 |
| 3 | 9114900 | 1508200 | 2114 |
| 4 | 9114900 | 2794084 | 2112 |
| 5 | 7452322 | 1458478 | 1444 |
| 6 | 938459 | 3478024 | 1149 |
| 7 | 18291 | 509761 | 1052 |

The following is the table of best Alliance Rivalries: *Alliance Id is appended with Server number using ‘|*’.

**TOP ALLIANCE RIVALRY**

|  |  |  |  |
| --- | --- | --- | --- |
| No | S0AllianceID | S1AllianceID | Match count |
| 1 | 336|1 | 20118|1 | 20230 |
| 2 | 8647|2 | 21114|2 | 5103 |
| 3 | 336|1 | 516|1 | 4558 |
| 4 | 25180|1 | 516|1 | 4409 |
| 5 | 23415|21 | 22587|21 | 4160 |
| 6 | 19427|2 | 21114|2 | 4126 |
| 7 | 21114|2 | 8647|2 | 3364 |

We want to understand if there is any Knight rivalries between the Knights. The following is the Best Knight Rivalries.

**TOP KNIGHT RIVALRY**

|  |  |  |  |
| --- | --- | --- | --- |
| No | S0kid | S1kid | Match Count |
| 1 | 387954 | 363484 | 19144 |
| 2 | 6436 | 450049 | 75 |
| 3 | 6436 | 452700 | 67 |
| 4 | 6436 | 452695 | 54 |
| 5 | 541169 | 541148 | 44 |
| 6 | 329673 | 340527 | 41 |
| 7 | 541169 | 413686 | 38 |

**MARATHON FIGHTERS:** The following Users, Alliances and Knights have been relentless on a single day with maximum number of matches per day with their rivalries (possible).

**TOP 3 USER MARATHONS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | S0Userid | S1UserID | Year | Month | Day | Match Count |
| 1 | 25112 | 2486380 | 2013 | 10 | 26 | 19152 |
| 2 | 7452322 | 1458478 | 2013 | 11 | 1 | 785 |
| 3 | 5573073 | 7384945 | 2013 | 11 | 15 | 658 |

**TOP 3 ALLIANCE MARATHONS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | S0Alliance | S1Alliance | Year | Month | Day | Match Count |
| 1 | 336|1 | 20118|1 | 2013 | 10 | 26 | 19160 |
| 2 | 19527|21 | 15805|21 | 2013 | 12 | 15 | 752 |
| 3 | 22211|21 | 23227|21 | 2013 | 11 | 15 | 702 |

**TOP 3 KNIGHT MARATHONS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | S0kid | s1kid | year | Month | Day | Match Count |
| 1 | 387954 | 363484 | 2013 | 10 | 26 | 19144 |
| 2 | 6436 | 450049 | 2013 | 12 | 13 | 75 |
| 3 | 6436 | 452700 | 2013 | 12 | 13 | 67 |

**OBSERVATION:**

There was one huge marathon of fighting on 10/26/2013 which dominated the dataset.

**PURPOSE:** We can create new trophies to make their fights more enjoyable:

1. We can inform & provoke the rivals for a challenge.
2. We can have Rivalry Leaderboard with scores on both sides.
3. We can congratulate and celebrate their valor.
4. **PRESENCE/ABSENCE OF KNIGHTS :** Knights represent the addition of a Hulk to an army. We want to understand the different preferences of Users/Alliances and the number of matches played with or without Knights.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Categories | Match  Side | Matches with No Knights | Matches with  Knights | % of Matches with No Knights | % of Matches with Knights |
| Users | Defending | 110330 | 4030 | 96.47% | 3.54% |
| Attacking | 14 | 5955 | 0.23% | 99.76% |
| Alliance | Defending | 18946 | 698 | 96.44% | 3.56% |
| Attacking | 7 | 1315 | .5% | 99.5% |
| Total Matches | Defending | 2929282 | 123014 | 96% | 4% |
| Attacking | 21 | 3052275 | 99.99% | 0.00% |

**OBSERVATION:**

Attack Side of a match almost always uses a Knight. Defense Side of the match almost always does not use one.

1. **INTERNAL OR EXTERNAL KNIGHTS**

We want to see how the users prefer a Knight from the same alliance to a Knight from a different alliance.

The following matrix gives a summary of the Matches with internal vs external Knights for defense and attacks sides.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | Matches with Same Alliance Knight | Matches with External Alliance Knight | % of Matches with Internal Knight | % of Matches with  External Knight |
| Defense side of the matches | 119341 | 3673 | 97.01% | 2.98% |
| Attack Side  of the  Matches | 3047421 | 4854 | 99.84% | 0.15% |

* Most of the Knights are internal. i.e from the same Alliance. For a Defending army, Knights are chosen from within the Alliance **97%** of the times and outside the alliance for the remaining.
* This shows that the alliances are ***more cohesive in nature*** and the possibility of external alliance partnerships through a knight is minimal.
* For an Attacking army, Knights are chosen from within the Alliance **99%** of the times and outside the alliance for the remaining. This shows that the alliances are ***more cohesive in nature*** and the possibility of external alliance partnerships through a knight is minimal.

1. **KNIGHTS-ALLIANCE ASSOCIATION IN FIGHTS:**

**For all the Alliances with Knights and for all the knights with real Alliances we perform the following study:**

We want to study the Associations between the Knights and the Alliances in terms of the distribution of count of alliances. The following graph shows the count of Alliances supported per Knight (both Defence and Attack sides) vs Number of Knights with such many number of Alliances.

**X AXIS**: COUNT OF ALLIANCES SUPPORTED BY AN KNIGHT

**Y AXIS**: NUMBER OF KNIGHTS HAVING SUCH MANY NUMBER OF ALLIANCES in LOG SCALE.

**DATA**:Dataset is obtained from the Attacks.txt. Total real Knights(not having ‘0’ as kid) : 96590

**OBSERVATION:**

1. **69.44%** of Knights support one Alliance either in Defense or in Attack side. (67074)
2. 21% of Knights support two Alliances either in Defense or in Attack side. (20792).
3. ~6% of Knights support three Alliances either in Defense or in Attack side.
4. Negligible amount of users have more than 3 Alliances. The max is 16 alliances supported by a knight.
5. **ALLIANCE-KNIGHT ASSOCIATION :**

**For all the knights with real Alliances we perform the following study:**

The Previous Graph discusses the number of alliances supported by a single Knight.

The following graph will discuss the number of knight equipped by a single alliance from the data set.

The knights and alliances hold a many-to-many cardinality relationship.

The following graph shows the count of Knights used by an Alliance (both Defence and Attack sides) vs Number of Alliances with such many number of Knights.

**X AXIS**: COUNT OF KNIGHTS USED BY AN ALLIANCE (Log Scale base 2)

**Y AXIS**: NUMBER OF ALLIANCES USING SUCH MANY KNIGHTS (Log Scale base 2).

**DATA**:Dataset is obtained from the Attacks.txt.

**OBSERVATION:**

1. Total number of Alliances who have used real Knights (Both Attacking and Defending sides): 1478
2. 22% of the Alliances have used only one Knight.
3. 11% of the Alliances have used two Knights.
4. 4.8% of the alliances have used three Knights.
5. 4.5% of the alliances have used for four knights.
6. Remaining are all in <4 for each number of knights up to 4495 different Knights for their fight.

**GEOPOLITICS? GREAT FRIENDS:**

We have established ***friendship between two alliances if they help each other with a Knight***. So whenever there is a knight from Alliance A helps an alliance B. A & B are now friends. The ***number of Knights*** shared by the Alliances is the ***friendship strength***. The more the count of Knights given by B to A or A to B, the more the friendship between them.

**CLUSTERING ATTACKING ALLIANCES:**

**Data**: Attacks2.txt

**Objects Clustered**: Attacking Alliances (S1Alliance)

**Distance Metric**: Number of Knights Shared between each other. {we clustered only the positive number of knights shared between the Allainces).

**Result:** 9Clusters

**CLUSTERING DEFENDING ALLIANCES:**

**Data**: Attacks2.txt

**Objects Clustered**: Defending Alliances (S0Alliance)

**Distance Metric**: Number of Knights Shared between each other. {we clustered only the positive number of knights shared between the Allainces).

**Result:** 12CLUSTERS

For each of the Attacking and Defending friendships we cluster them friendships based on their strength using ***K –means Clustering***. -means clustering is a partitioning method. The function partitions data into *k* mutually exclusive clusters based on the distances provided in matrix. We found there are ***9 clusters in Attacking Alliances***. There are ***12 Clusters amongst the Defending Alliances***.

**CONCLUSION:**

1. **66%** of ***Users*** have **No Alliance. 28%** of Users have **one Alliance** per User. Remaining have more than one alliances to the maximum of 27 alliances per user.
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