Business Requirements Document (BRD)

1. Project Objective:

OpenPlay Technologies is a Hyderabad-based gaming company that pioneers multiplayer skill games, has provided a dataset containing user-level data for their platform. The objective is to analyse this data and derive valuable insights that can aid in understanding user behaviours, engagement, monetization, and overall business performance.

2. Dataset Overview:

2.1 Description: User-level data for a mobile application.

2.2 Columns: The dataset includes the following columns:

- ***userid***: Unique identifier for each user
- ***Average Screen Time (mins)***: Average time spent by the user on the app
- ***Average Spent on App (INR***): Average amount spent by the user within the app
- ***Left Review***: Indicates whether the user left a review (1) or not (0)
- ***Ratings***: Rating given by the user to the app
- ***New Password Request***: Number of times the user requested a new password
- ***Last Visited Minutes***: Time elapsed since the user's last visit (in minutes)
- ***Status***: Indicates whether the user has the app installed or uninstalled

2.3 Instructions:

- Create user cohorts based on the provided metrics.
- Explain the rationale for cohort creation.
- List the top 5 insights derived from the analysis.

3. Business Objectives:

- Understand user behaviour and engagement patterns.
- Identify key user segments for targeted marketing and product improvements.
- Improve user retention and conversion rates.
- Optimize business performance through data-driven decision-making.

4. User Cohorts Creation

4.1 Metrics Used:

1. Average Screen Time
2. Average Spent on App
3. Ratings
4. New Password Request
5. Last Visited Minutes
6. Status
7. User Cohorts

5. Cohort Creation Rationale

Cohort 1 - Average Screen Time

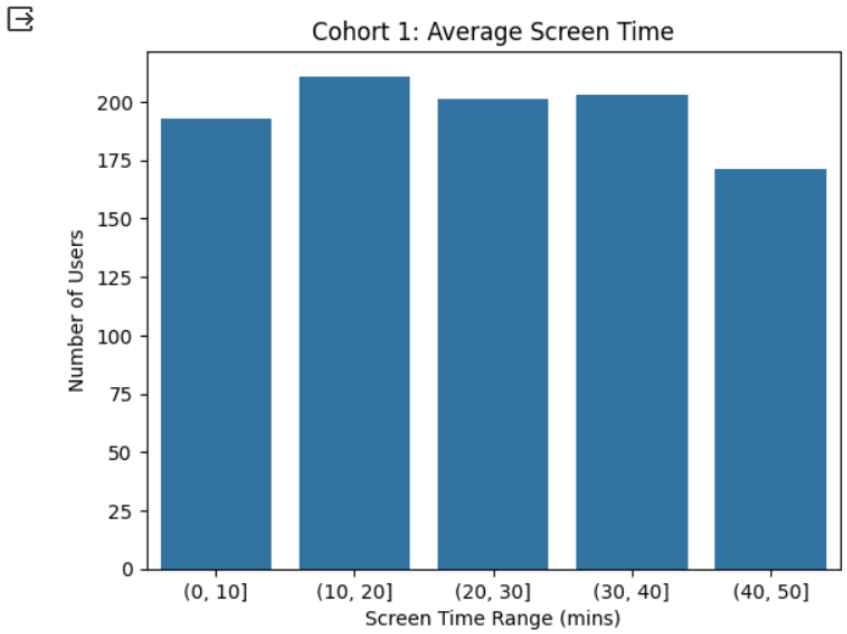
This metric provides insights into user engagement levels. Users with higher screen time are likely more engaged with the app, while those with lower screen time may need additional incentives or improvements to retain their interest.

Criteria: Users are grouped based on their average screen time in minutes.

Screen Time Ranges:

- 0-10 mins
- 10-20 mins
- 20-30 mins
- 30-40 mins
- 40-50 mins

Size: The number of users in each screen time range.



Cohort 2 - Average Spent on App

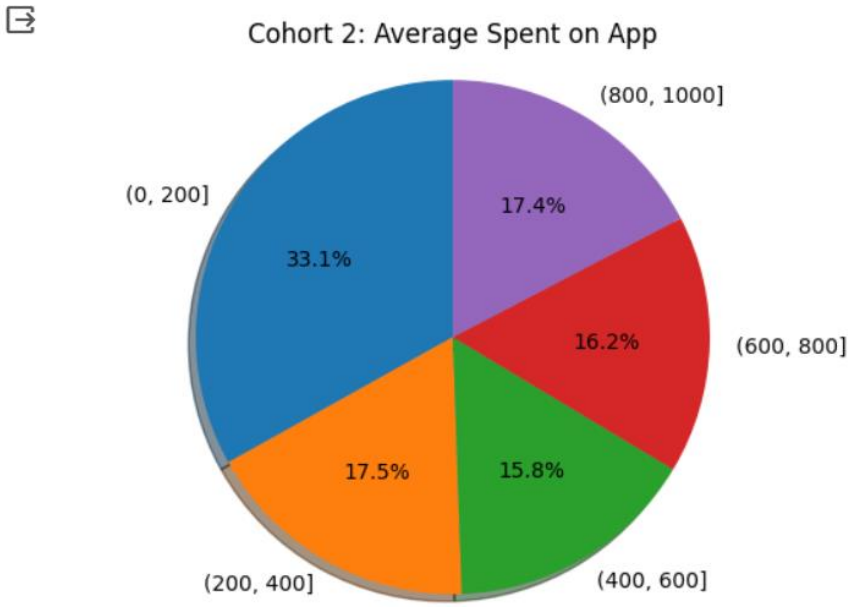
This metric directly impacts the revenue generated from the app. Understanding the spending patterns of users can help in targeting specific segments with tailored marketing campaigns or product offerings.

Criteria: Users are grouped based on their average spending on the app (in INR).

Spend Ranges:

- 0-200 INR
- 200-400 INR
- 400-600 INR
- 600-800 INR
- 800-1000 INR

Size: The number of users in each spends range.



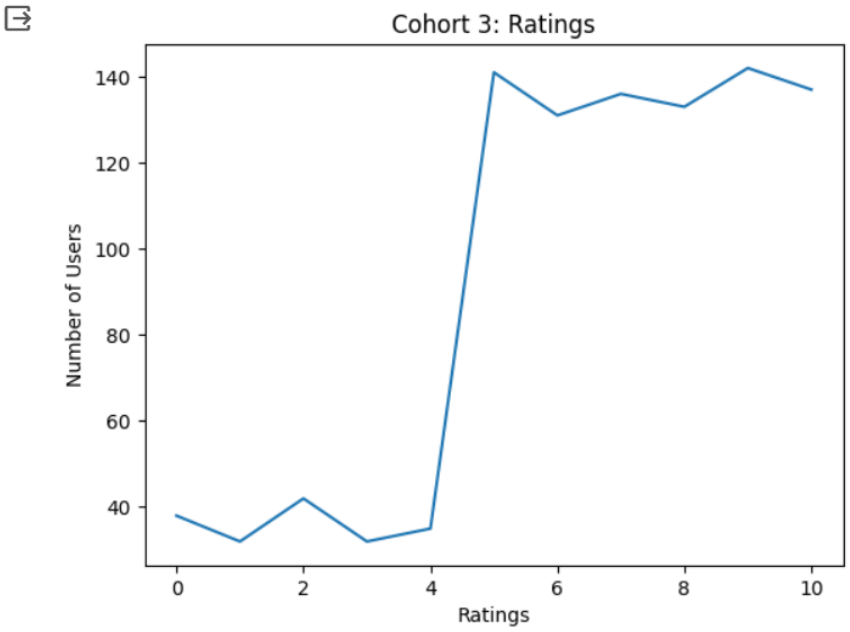
Cohort 3 – Ratings

User ratings are a direct reflection of their satisfaction with the app. Analysing the distribution of ratings can help identify areas for improvement and prioritize features or functionalities that users value the most.

Criteria: Users are grouped based on their ratings given to the app.

Ratings: Scores from 0 to 10.

Size: The number of users for each rating score.



Cohort 4 - New Password Request

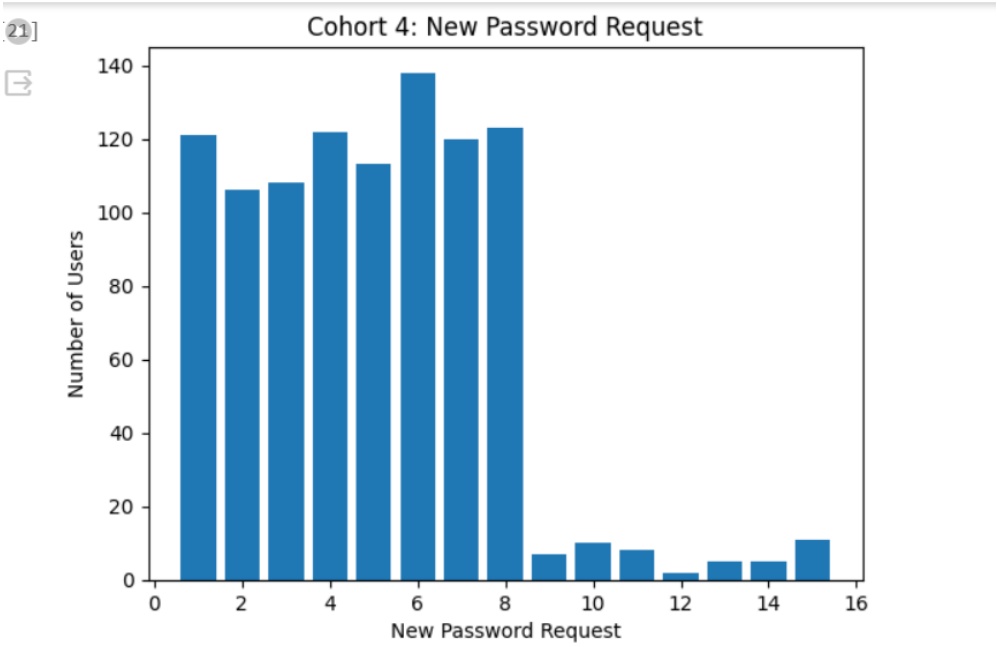
A high number of passwords reset requests may indicate usability issues or security concerns. Analysing this metric can help identify potential pain points in the user experience and address them accordingly.

Criteria: Users are grouped based on whether they requested a new password.

New Password Request:

- Yes
- No

Size: The number of users in each category.



Cohort 5 - Last Visited Minutes

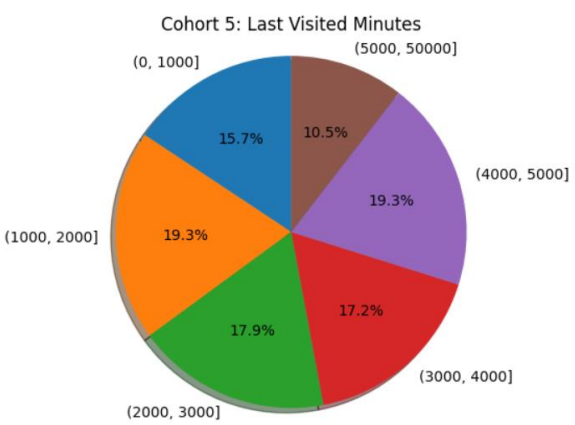
This metric provides insights into user retention and churn. Users who have not visited the app for an extended period may be at risk of churning, and targeted re-engagement strategies can be developed based on this analysis.

Criteria: Users are grouped based on the minutes since their last visit to the app.

Last Visited Ranges:

- 0-1000 mins
- 1000-2000 mins
- 2000-3000 mins
- 3000-4000 mins
- 4000-5000 mins
- 5000+ mins

Size: The number of users in each range.



Cohort 6 – Status

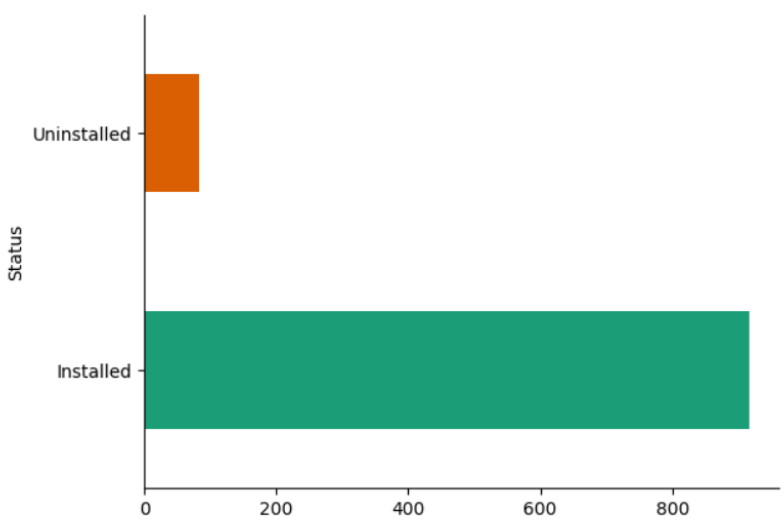
Segmenting users based on their app installation status (installed or uninstalled) can help identify potential reasons for uninstallation and develop strategies to prevent or mitigate churn.

Criteria: Users are grouped based on their status (e.g., active, inactive).

Status:

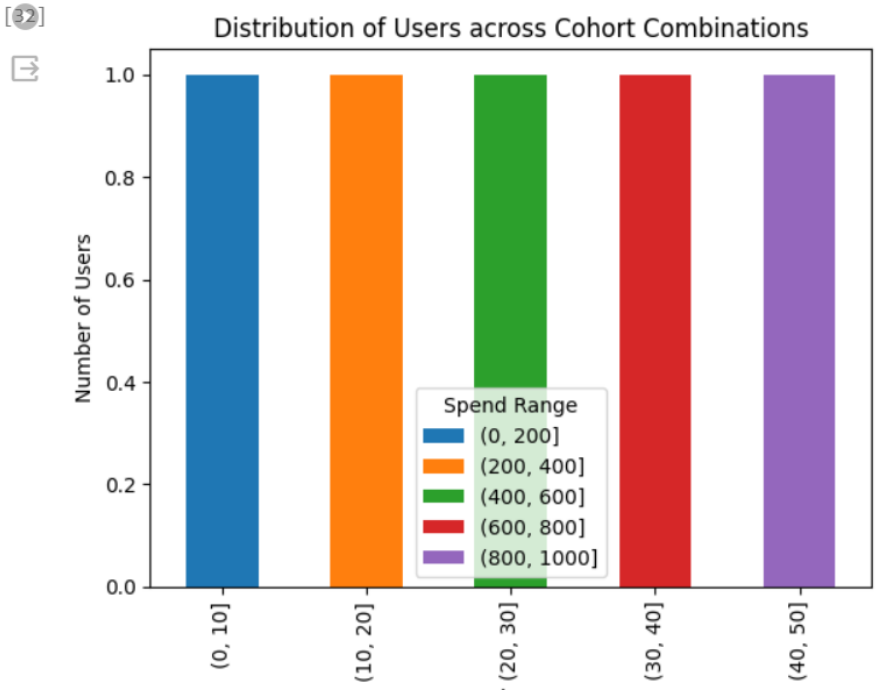
- Active
- Inactive

Size: The number of active and inactive user



Cohort 7 - Combined Users Cohort

Combining these cohorts can provide valuable insights into user behaviour, engagement, monetization, and satisfaction levels, which can be useful for analysing business performance, targeting specific user segments, and identifying areas for improvement or growth opportunities.



5. Analysis of User Behaviour on Openplay

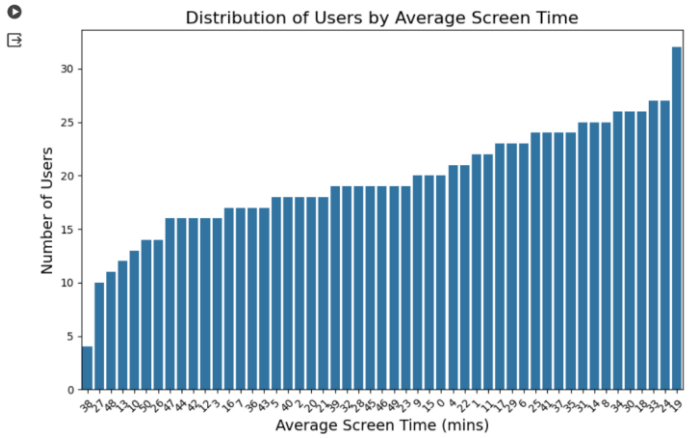
This foundation of this report is based on the analysis of the user behaviour on the Openplay on these 5 metrics:

1. User Engagement and Retention
2. Revenue Potential
3. User Satisfaction
4. User Experience Optimization
5. Churn Analysis

5.1. User Engagement and Retention

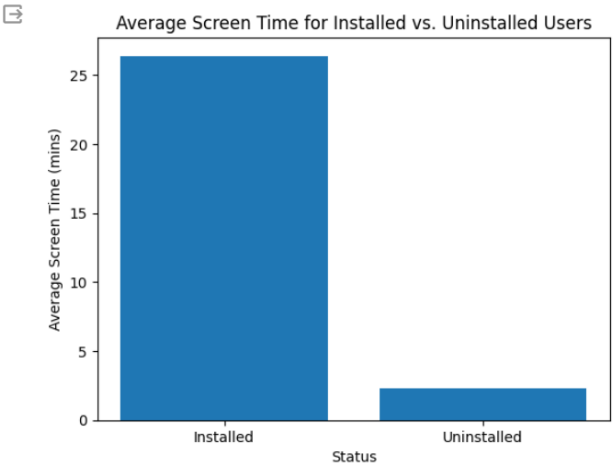
Distribution of Users by Average Screen Time

- This count plot shows the distribution of users based on their average screen time. It can help identify the engagement levels of users and potential groups that may need additional attention or incentives to increase their engagement.
- The graph shows that the most common average screen time falls between 10 and 20 minutes. This suggests that a significant portion of users spend a relatively short amount of time using the Openplay platform.
- The distribution appears somewhat symmetrical, with a tail extending towards higher screen times. This indicates that while most users tend to have low screen time, there is a smaller group of users who spend a considerably longer time using the platform



Average Screen Time for installed vs. uninstalled users

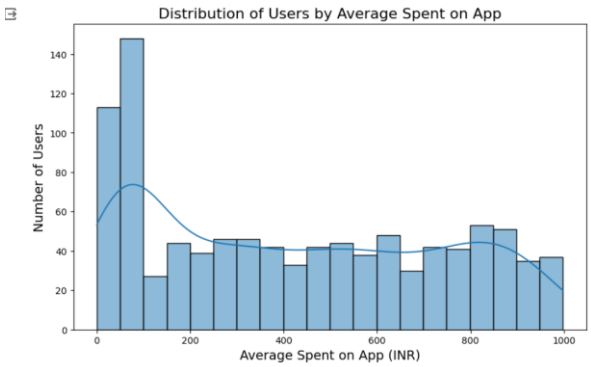
- Users who keep apps installed on their devices tend to spend significantly more time using those apps compared to uninstalled apps. Installed users average around 20 minutes of screen time, whereas uninstalled users average close to zero.
- This suggests that users find more value in apps they keep installed, likely because they use them more frequently. Uninstalled apps may have been found to be irrelevant, cumbersome, or offer a poor user experience.



5.2 Revenue Potential

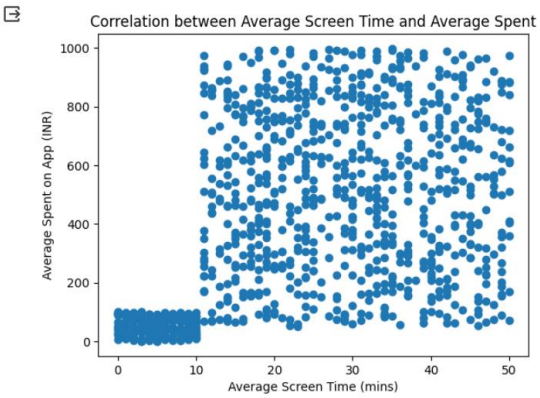
Distribution of Users by Average Spent on App

- This histogram displays the distribution of users based on their average spending on the app. It can help identify high-value user segments and potential opportunities for revenue growth.



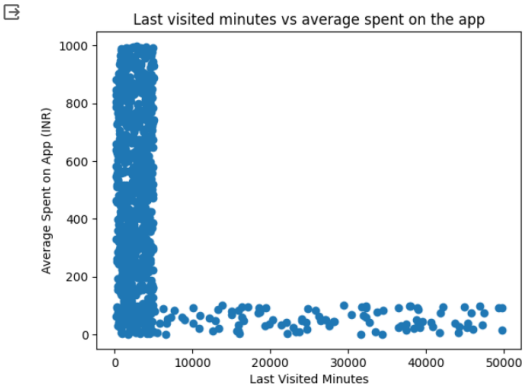
Correlation between Average Screen Time and Average Spent

- There is a weak positive correlation between average screen time and average spent on apps. This means that as the average screen time increases, the average spent on apps also tends to increase, but not necessarily in a straight line.
- This Scatter plot shows us that if the user is spending more than 10 minutes on the platform, then the user is likely to spend more on the app.



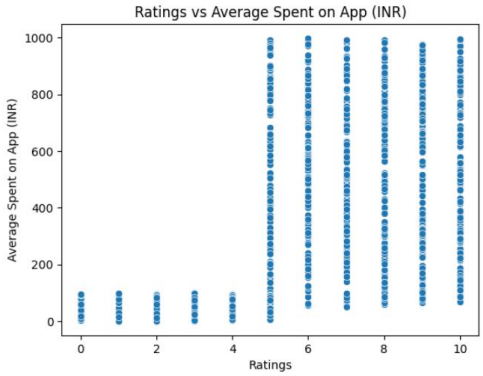
Last Visited Minutes vs Average Spent on the App

- This scatter plot shows that as the duration of last visited minutes increases beyond 5000 minutes mark, the spending behaviour of the user decreases.



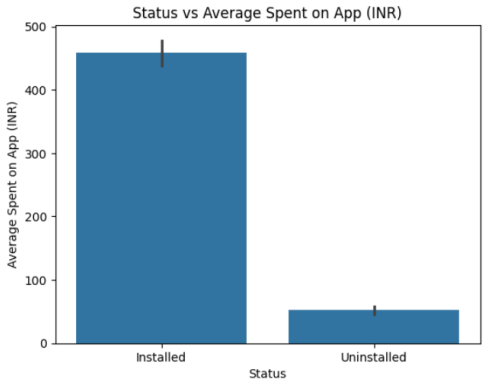
Ratings vs Average Spent on App (INR)

- Users tend to spend more money on apps that they rate more highly.
- This plot shows us that the average spending behaviour of the users is more likely to come from the users who have given the rating of 5 and above. There is 90% distribution difference in spending of users of below 4 rating.



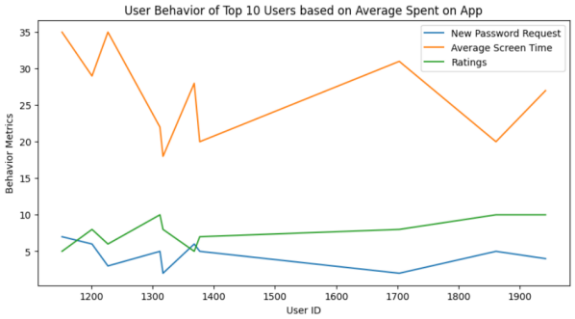
Status vs Average Spent on App (INR)

- The graph shows that users spend significantly more money on apps that they keep installed on their devices than on apps that they uninstall.
- The average amount spent on installed apps is around 400 INR, while the average amount spent on uninstalled apps is around 100 INR.
- There is a much larger spread in the data for installed apps than for uninstalled apps. This suggests that some users spend a lot of money on installed apps, while others spend very little.



Spending patterns of high-value users

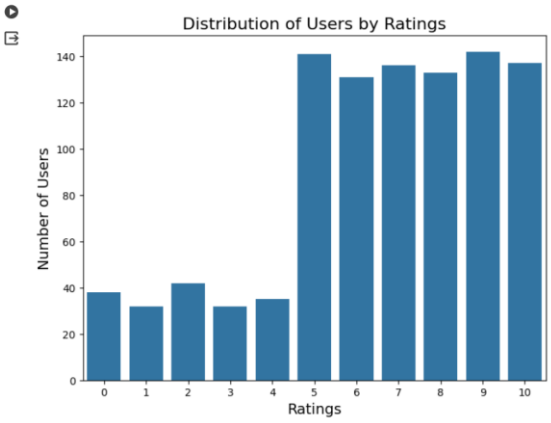
- This line graph shows us that high value users spend more time on screen and the satisfaction level of the users is reflected in the ratings and for maximum users the number of new password request generated is low as compared to other users



5.3 User Satisfaction

Distribution of Users by Ratings

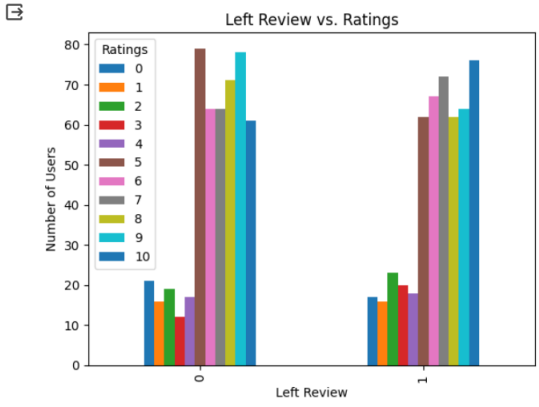
- This count plot shows the distribution of users based on their ratings for the app. It can provide insights into user satisfaction levels and areas that may require improvement or enhancement.
- The graph shows a bell-shaped curve, with the most users giving ratings of 4 or 5 stars. This suggests that a majority of users have a positive experience with the apps they use. There is a smaller group of users who rate apps with 1 or 2 stars, and another smaller group who rate apps with 7 or higher stars.
- This distribution is consistent with a normal distribution, and it suggests that the majority of ratings fall around the average rating, with fewer ratings falling outside the normal range.



Relation between User Review on Ratings

- The vast majority of users (around 70%) do not leave ratings for the app. This could be for a number of reasons, such as:
  - ✓ Users may not feel strongly compelled to leave a rating, especially if they have a neutral experience with the app.
  - ✓ The app's rating system may be difficult or inconvenient to use.
  - ✓ Users may not be aware that they can leave a rating.

- A smaller portion of users (around 30%) do leave ratings for the app. This suggests that some users find value in leaving feedback and ratings for the app developer.

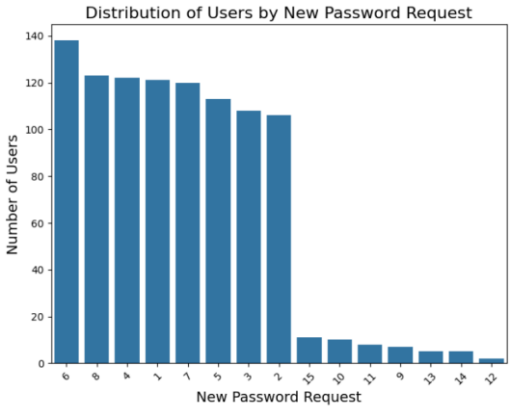


5.4 User Experience Optimization

Distribution of Users by New Password Request

- This count plot displays the distribution of users based on the number of new password requests. It can help identify potential usability issues or areas where users face difficulties, enabling optimization of the user experience.
- The graph indicates that a very small percentage of users request new passwords. In fact, it appears that the vast majority of users (around 130) do not request new passwords, while only a small number (around 11) do.

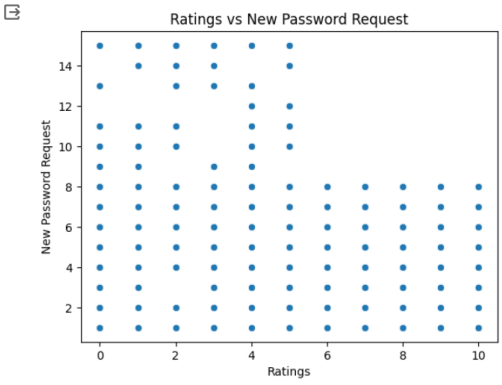
- **Possible reasons why users request new passwords:**
  - ✓ Users may have forgotten their passwords.
  - ✓ Users may be concerned that their passwords have been compromised in a security breach.
  - ✓ Users may want to change their passwords periodically as a security best practice.



New Password Requests v/s Ratings

- The scatter plot shows that the number of new passwords requested is lower than the number of ratings. This means that users who rate the app are less likely to request a new password.

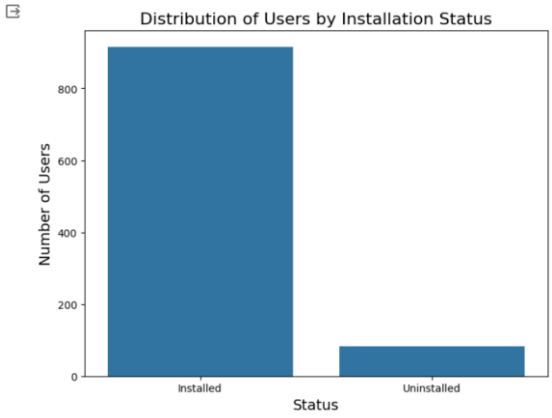
- There are a few possible explanations for this:
  - ✓ Users who are satisfied with the app and leave a positive rating are less likely to forget their password or need to change it for security reasons.
  - ✓ Users who are unhappy with the app and leave a negative rating may be more likely to delete the app altogether rather than request a new password.



5.5 Churn Analysis

- **Distribution of Users by Installation Status**

- This count plot shows the distribution of users based on their installation status (installed or uninstalled). It can provide insights into potential factors contributing to app uninstallation and inform strategies to prevent or mitigate churn.
- A significantly higher number of users have the app installed compared to those who uninstalled it. This indicates that the app is more likely to be retained by users after download.



6. Business Performance Analysis:

Insight 1

The majority of users have relatively low average screen time, with the most common range being 10-20 minutes.

- **Explanation**: The distribution of users by average screen time shows that most users spend a relatively short amount of time using the Openplay platform, with the peak being in the 10-20 minute range.
- **Implications**: Low screen time could indicate a lack of engagement or insufficient value proposition for users, leading to potential churn or missed opportunities for monetization.
- **Potential Actions**: Analyse the features and functionalities that drive user engagement and implement strategies to increase the perceived value of the app, such as introducing new content, gamification elements, or personalized recommendations.

Insight 2

There is a positive correlation between average screen time and average spending on the app.

- **Explanation**: Users who spend more time on the app tend to spend more money within the app, indicating that higher engagement leads to increased monetization opportunities.
- **Implications**: Strategies that increase user engagement could potentially lead to higher revenue generation from in-app purchases or premium features.
- **Potential Actions**: Focus on improving user retention and engagement by enhancing the user experience, offering personalized content, and providing incentives for longer sessions. Additionally, explore monetization strategies that align with the usage patterns of highly engaged users.

Insight 3

Users who keep the app installed tend to spend significantly more time and money on the app compared to those who uninstall it.

- **Explanation**: The analysis shows that installed users have higher average screen times and spending levels compared to uninstalled users, suggesting that retained users are more valuable from an engagement and revenue perspective.
- **Implications**: Reducing churn and increasing app retention can lead to higher engagement, monetization, and overall business performance.
- **Potential Actions**: Implement targeted user retention strategies, such as personalized re-engagement campaigns, addressing usability issues, and offering incentives or rewards for continued usage. Additionally, analyse the reasons behind uninstallation and address any underlying issues.

Insight 4

Users who rate the app highly tend to spend more money on the app.

- **Explanation**: The analysis reveals a positive correlation between user ratings and average spending on the app, indicating that satisfied users are more likely to engage with in-app purchases or premium features.
- **Implications**: Improving user satisfaction and addressing pain points can lead to increased revenue generation and long-term user loyalty.
- **Potential Actions**: Regularly monitor and analyse user feedback, ratings, and reviews to identify areas for improvement. Prioritize addressing user concerns and implementing features or enhancements that align with user preferences. Additionally, consider offering incentives or rewards for users who provide feedback or high ratings.

Insight 5

Only a small percentage of users request new passwords, and those who do are less likely to leave a rating for the app.

- **Explanation**: The distribution of users by new password requests shows that the majority of users do not request new passwords, and those who do are less likely to rate the app.
- **Implications**: New password requests could indicate usability issues or security concerns, potentially impacting user satisfaction and retention.
- **Potential Actions**: Analyse the reasons behind new password requests and address any underlying usability or security issues. Additionally, explore ways to streamline the password reset process and provide clear instructions or support for users experiencing difficulties.

7. Actionable Recommendations:

7.1 Enhance User Engagement:

- Introduce gamification elements, such as rewards, badges, or leaderboards, to increase user motivation and time spent on the app.
- Implement personalized content recommendations based on user preferences and behavior to provide a more tailored and engaging experience.
- Leverage push notifications and in-app messaging to promote new features, updates, or content that could drive user interest and engagement.

7.2 Optimize Monetization Strategies

- Analyse the spending patterns of highly engaged users and tailor in-app purchase offerings or premium features to align with their preferences and willingness to spend.
- Explore subscription-based models or time-limited offers for premium content or features, targeting users with higher screen times and spending levels.
- Implement dynamic pricing strategies based on user behaviour and engagement levels to maximize revenue opportunities.

7.3 Improve User Retention and Reduce Churn

- Implement targeted re-engagement campaigns for users who have not used the app for an extended period, offering incentives or personalized content to encourage their return.
- Conduct regular user experience audits and usability testing to identify and address potential pain points or issues that may lead to uninstallation.
- Leverage in-app surveys or feedback mechanisms to gather insights from users who have uninstalled the app and address their concerns or improve features accordingly.

7.4 Enhance User Satisfaction and Feedback Mechanisms

- Implement a user feedback loop, regularly analysing ratings, reviews, and comments to identify areas for improvement or new feature requests.
- Prioritize addressing user concerns and implementing enhancements or features that align with user preferences and feedback.
- Offer incentives or rewards for users who provide feedback or high ratings, encouraging active participation and fostering a sense of community.

7.5 Streamline User Experience and Security

- Analyse the reasons behind new password requests and address any underlying usability or security issues that may be causing user frustration or concerns.
- Implement user-friendly password reset processes, providing clear instructions and support channels for users experiencing difficulties.
- Explore alternative authentication methods, such as biometrics or social login options, to provide a more seamless and secure user experience.

8. Implementation Plan

Phase 1: Data Analysis and Prioritization:

- Conduct a comprehensive analysis of user data, including engagement metrics, spending patterns, feedback, and churn rates.
- Prioritize recommendations based on their potential impact, resource requirements, and alignment with business objectives.

Phase 2: User Experience Enhancements:

- Implement gamification elements and personalized content recommendations to increase user engagement.
- Conduct user experience audits and usability testing to identify and address pain points or issues contributing to churn.
- Streamline user authentication processes, including password reset mechanisms and exploring alternative authentication methods.

Phase 3: Monetization Strategy Optimization:

- Analyse spending patterns of highly engaged users and tailor in-app purchase offerings or premium features accordingly.
- Explore subscription-based models or time-limited offers for premium content or features.
- Implement dynamic pricing strategies based on user behaviour and engagement levels.

Phase 4: User Retention and Re-engagement Initiatives:

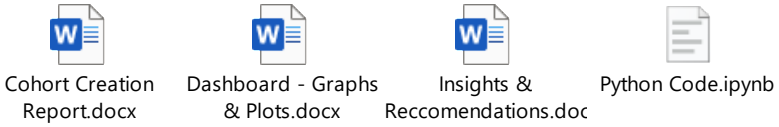
- Develop targeted re-engagement campaigns for inactive or lapsed users, offering incentives or personalized content.
- Implement user feedback mechanisms and prioritize addressing user concerns and feature requests.
- Offer incentives or rewards for users who provide feedback or high ratings.

Phase 5: Continuous Monitoring and Iteration:

- Establish regular monitoring and analysis of user data, feedback, and performance metrics.
- Iterate and refine strategies based on ongoing insights and results.
- Continuously seek opportunities for improvement and innovation to maintain a competitive advantage.

9. Project Deliverables:

- **Tools Used:** Python – NumPy, Pandas, Matplotlib, Seaborn
- **Deliverables Link :** AdarshJha5/Openplay-Assignment (github.com)



10. Project Stakeholders:

List of stakeholders involved in the project and their roles.

11. Project Risks and Mitigation:

1. **Data Quality and Accuracy**:

    - **Risk**: Inaccurate or incomplete user data could lead to flawed insights and ineffective strategies.
    - **Mitigation**: Implement robust data validation processes, and ensure the data collection mechanisms are reliable and secure.

2. **Resource Constraints**:

    Risk: Limited resources, such as budget, personnel, or technical capabilities, could hinder the successful implementation of recommendations.

    Mitigation: Prioritize recommendations based on their potential impact and resource requirements, and explore cost-effective solutions or partnerships where necessary.

3. **User Adoption and Resistance**:

    - **Risk**: Users may resist or be slow to adopt new features, changes, or initiatives, leading to a lack of engagement or ineffective implementation.
    - **Mitigation**: Implement comprehensive user education and communication strategies, gather feedback during development, and conduct pilot tests or gradual rollouts to gauge user acceptance.

4. **Competitive Landscape**:

    - **Risk**: Competitors may introduce similar or superior features or strategies, diminishing the competitive advantage of the implemented recommendations.
    - **Mitigation**: Continuously monitor the competitive landscape, stay up-to-date with industry trends, and foster a culture of innovation and rapid iteration.

5. **Technical Challenges**:

    - **Risk**: Implementation of certain recommendations may face technical hurdles or limitations, such as integration issues or scalability concerns.
    - **Mitigation**: Involve technical teams early in the planning process, conduct thorough feasibility assessments, and have contingency plans for alternative solutions or workarounds.

11. Approval:

Approval Signatures:

Signatures of project sponsor and key stakeholders indicating approval of the BRD.