



## **A1: COURSE CASE**

**DIGITAL ANALYTICS: BECOME A DIGITAL ANALYTICS NINJA! - DAT-5313 - NYC1**

## INTRODUCTION

Flood-It! is an app available on Google Play and Apple Store. It is a strategy game in which the user must flood the game board with one color in less than the allowed steps. The goal is to flood the game board with the smaller number of steps possible. The game has thirty levels, and the user can choose between three board sizes and game skins. As suggested, the analysis is conducted on the following date range: May 1, 2021 - April 20, 2022. The goals of this analysis are to understand key differences between monetized and non-monetized users and understand at what point of their journey users are leaving the app. During this period, the game attracted 277,000 users, including 258,000 new ones.

## TOP THREE INSIGHTS

- 1) Charcoal Games should set the ad frequency to 3 to maximize its ad impression revenue.
- 2) The company should keep track of crashing users and their operating system and app version to fix existing bugs.
- 3) For better analysis and a better understanding of user path, the company should specify each screen and page of the Flood-It! app on Google Analytics

## ANALYSIS QUESTIONS

### 1. WHAT DIMENSIONS/METRICS SHOULD CHARCOAL GAMES PRIORITIZE FOR THEIR GOALS?

Charcoal Games wants to understand more about the user journey and points where customers might leave the app. The first thing to track for this goal is the number of users and the number of returning users. It is crucial to understand users that like the app the most to target similar users in the future. It is good to track users' country of origin, operating system to optimize the application for those users (app version, language). It is also good to track the country of origin, gender, interest to better target ads. Charcoal Games should also look at the app version and operating system of users who crashes. That way, developers will be able to fix bugs.

Charcoal Games also wants to understand the difference between purchasers and non-purchasers. The company should track revenue (ads impressions and in-app purchases) to understand where its revenue comes from and track its evolution. That way, the company can adjust to optimize its revenue. Additionally, the company should understand the customers' path to in-app purchases. By understanding the path to conversion, the company can modify the app to encourage purchasing behavior.

Note: In dashboard 2, the revenue appears as \$0 because there was no revenue recorded for the period since the data range are not customizable.

## DASHBOARD 1: USERS



Figure 2 Total users by country

Country	↓ New users	Returning users	Total users
<b>Totals</b>	<b>74,889</b> 100% of total	<b>41,629</b> 100% of total	<b>139,453</b> 100% of total
1 India	21,253	9,817	39,502
2 Indonesia	8,003	2,310	13,906
3 Bangladesh	4,992	2,211	8,729
4 Pakistan	4,832	2,345	8,455
5 United States	3,801	5,326	9,324
6 Brazil	3,599	1,400	6,215
7 Philippines	1,764	803	3,181
8 Nigeria	1,685	1,644	3,402
9 Egypt	1,247	619	2,230
10 Kenya	1,228	1,501	2,931

Figure 1 New users and returning users per country

Operating system	↓ New users	Returning users	Total users
<b>Totals</b>	<b>74,889</b> 100% of total	<b>41,629</b> 100% of total	<b>139,453</b> 100% of total
1 Android	70,493	36,972	131,016
2 iOS	1,999	4,706	5,741
3 Windows	1,617	20	1,637
4 Macintosh	587	11	594
5 Linux	98	0	100
6 Chrome OS	85	0	87
7 (not set)	8	0	8

Figure 4 Users per operating system

<b>Totals</b>	<b>74,889</b> 100% of total	<b>41,629</b> 100% of total
1 female	16,671	9,730
2 male	37,371	19,893

Figure 3 Users per gender

Operating system with version	App version	↓ Total users
<b>Totals</b>		<b>494</b> 100% of total
1 Android 8.0.0	2.65	397
2 Android 11	2.65	31
3 Android 10	2.65	14
4 Android 9	2.65	11
5 Android 7.0	2.65	9
6 Android 12	2.65	6
7 iOS 15.5	2.6.53	4
8 Android 6.0.1	2.65	3
9 Android 8.1.0	2.65	3
10 Android 7.1.1	2.65	2

Figure 5 User crashing by operating system and app version

DASHBOARD 2: REVENUE

↓ Total revenue	Ad revenue	Purchase revenue
\$0.00	\$0.00	\$0.00

Figure 6 Revenue per segment

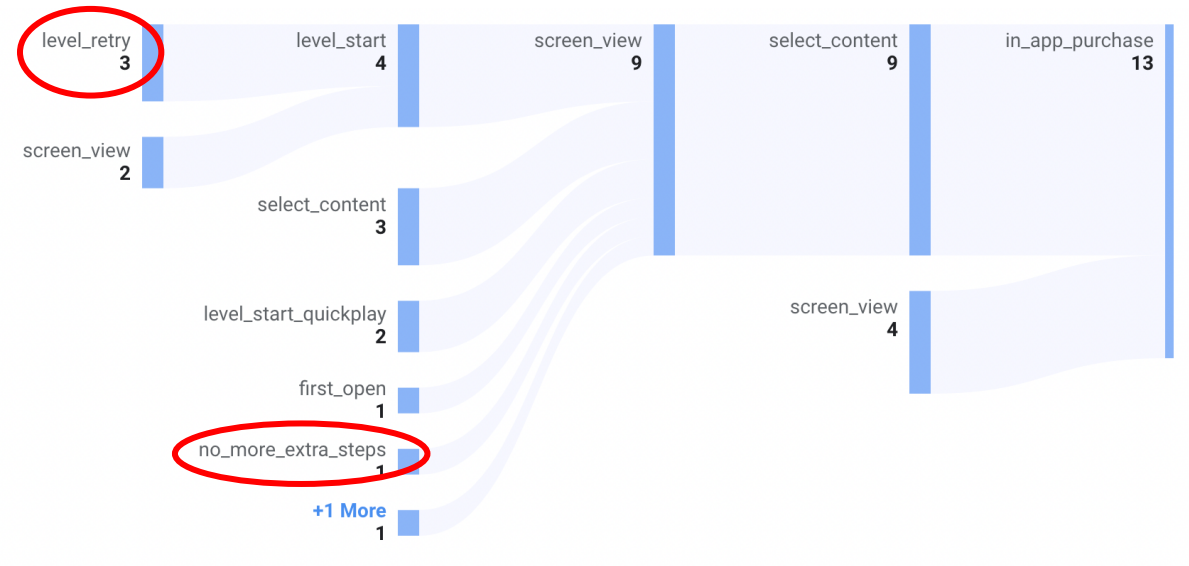


Figure 7 Path to in-app purchases

## 2. ARE THERE ANY GENERAL PLACES IN THE USER JOURNEY THAT LEAD TO AN ABNORMAL NUMBER OF USERS LEAVING THE APP?

### a. Crashing users

Over the analyzed period, 3,900 users crashed out of the 277,000 total users. It seems that users who crash have a significantly higher engagement time per session: 8m45s for crashing users against 3m57s for other users. The user stickiness is also higher for users that crashed. An assumption is that when users stay longer on the app, the app is more likely to crash. When looking exclusively at the users that experienced a crash, 72.4% were on Android and 27.6% on IOS. To solve this issue, developers should look at the 2.6.53 and 2.6.5 app versions. When analyzing the path, users crashed in a few cases: most users crash after playing multiple levels and then trying to post their score, others just after the levels start (quickplay or progressive modes), or just after opening the app.

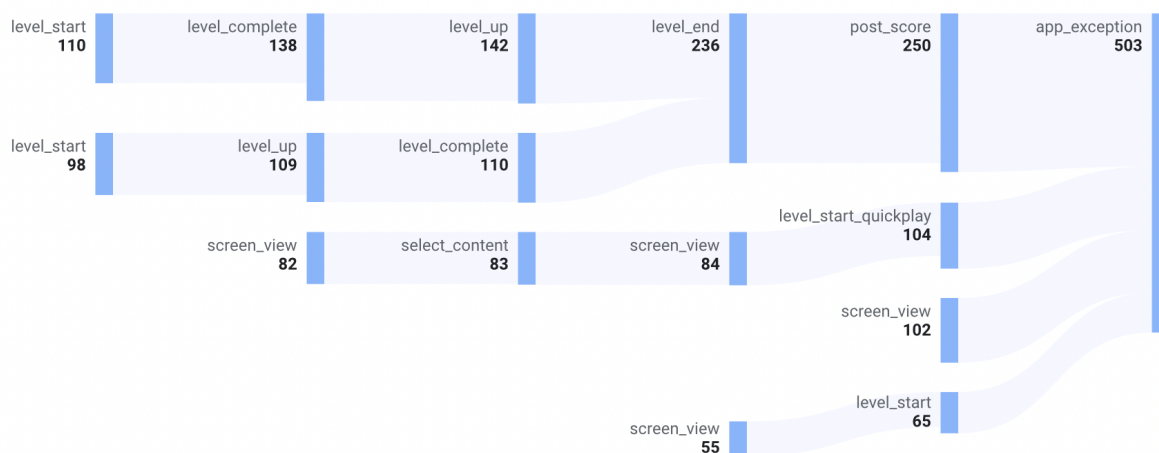


Figure 8 User crashing path

The issue of crashing users comes from different pages of the app. Developers need to investigate those bugs and fix them. By resolving the issue of crashing users, Flood It! should be able to retain more users.

### b. Other users

Flood-It! app might have a confusing interface: The most common path of user is session\_start > screen\_view > select content > screen view > select content > screen view. It seems that the interface might not be user-friendly and intuitive.

### 3. ANALYZE THE MONETIZATION OF FLOOD-IT.

Flood-It! generates revenue in two ways: ad impressions and in-app purchases. In-app purchases include a feature to remove ads and three different packs to buy additional steps. Between May 1, 2021, and April 20, 2022, Flood It! generated \$941.22 in revenue: \$863.98 in ads revenue, \$31.97 for removing ads, \$1.68 for the “extra step pack 1”, 17.27 for the “extra steps pack 2” and \$25.32 for the “extra step pack 3”.

Ad Frequency	Revenue
2	\$59.42
3	\$257.60
4	\$9.15
8	\$4.39
15	\$5.05

Charcoal games pick different ad frequencies for their users. The company generated the least revenue with an ad frequency of 8, and the most revenue with a frequency of 3 (see table). It seems that the optimal ad frequency to maximize revenue is 3. Too many ads might discourage the user to play.

Regarding step packs, it seems that the pack with the greatest number of steps are the most attractive. Therefore, the company can focus on only one pack option to maximize revenue. Since Flood-It! generates the most revenue from ad impressions, the company should also provide an option to watch ads against additional steps. That way users who do not want to pay can still benefit from extra steps but the company still generates revenue.

### 4. OFFER ANY OTHER RECOMMENDATIONS YOU MAY HAVE FROM YOUR ANALYSIS.

Different situations lead to customers completing an in-app purchase: no more extra steps, after level retry and after starting the level (during the game). The Flood-It! app register a few in-app purchases. To incentivize customers to complete in-app purchases, the company could, for

instance, make levels more difficult by decreasing the number of steps available, increasing the number of levels available or not providing free extra steps.

App screen name	↓ Views	Page title	↓ Views
<b>Totals</b>	3,591,172 100% of total	<b>Totals</b>	3,591,172 100% of total
1 (not set)	3,585,419	1 (not set)	3,587,834
2 FIRootViewController/Interstitial	5,702	2 Flood-It!	3,336
3 extra_steps/Rewarded	29	3 ¡Inundalo!	1
4 game_over/Interstitial	22	4 홍수 - 그것!	1
5 game_board/Interstitial	0		
6 main_menu/Interstitial	0		

Figure 9 Screen name

Figure 10 Page name

It seems that Charcoal Games did not register the pages and screens of the app. Right now, the path can only be viewed as events such as “screen\_view”. This does not provide enough details for analysis. To better understand customer path and their journey, it would be great to have each page/screen registered. That way the path exploration analysis will be easier, and the company will be able to identify bottlenecks.

## 5. PROPOSE 5 KEYWORDS SHOULD THEY BID ON FOR SEO

Charcoal Games should bid on the following five words: android game, mobile game, game, board game, puzzle game. Here the reach is targeted at the top five countries that use the app: the United States, Brazil, Bangladesh, India, and Indonesia. The bidding strategy is to bid the same as the top of the page bid except for “android game”. "Android game" has a low bid and a high top of the page big price. Therefore, the proposed bid price is around the same as a keyword with the same reach.

Keyword	Bid price	Reach	Key competitors
android game	\$0.70	10k-100k	best android games, android games
mobile game	\$0.70	10k-100k	mobile games, best mobile games, top mobile games
game	\$0.55	1M-10M	games, online games, unblocked games



board game	\$0.78	100k – 1M	board games, best board games
puzzle game	\$1,96	100k – 1M	puzzle games, online puzzle games, puzzle games online, free games online

According to Google, the average click-through rate of ads on the search network is 2%. Charcoal Games' goal to have a reach of ten million and a click volume of one million within their target audience seems unrealistic. Also, a campaign that big would necessity a huge amount of budget. However, the company generates fairly low revenue.

## CONCLUSION

Flood-It! app has a great number of users but does not generate much revenue. To maximize its revenue, the company should set its ad frequency to three. The company should also encourage users to complete in-app purchases by increasing the number of times users might need extra steps. The app seems to crash in different scenarios, mainly when users post their results. Charcoal Games should monitor crashes by looking at app versions, operating systems, and last pages before fixing existing bugs. The company can also create a “report a bug” button to help with that. Finally, it seems that users have a messy journey on the app. For better analysis and a better understanding of user paths, the company should specify each screen and page of the Flood-It! app on Google Analytics. That way, it will be easier to understand pain points and remove them.

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