



LIQUID AND GRIT

Social Casino Product Report

Competitive research and actionable product recommendations

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SEPTEMBER

2016

INTRODUCTION



Dear Product Owner,

According to *Warfighting*, the U.S. Marine Corps handbook, “Success depends in large part on the ability to adapt—to proactively shape changing events to our advantage as well as to react quickly to constantly changing conditions.” Our goal is to inform you of the latest events and highlight the largest opportunities so that you can react quickly.

Our Bold Beat examines clubs, the newest mid-core inspired mechanic in social casino. Review Key Features for details on how to implement your own clubs system.

There have been notable improvements to core game play. Big Fish Casino released a slot machine with hidden object mechanics, World Series of Poker released an all-in style of poker, and GSN released a coin drop machine.

Customer service remains an area of opportunity. Recently, DoubleDown Casino gave ambassadors to top-tier players, and Luckyo Casino connects players to customer service reps within the inbox. See Quick Wins for details and review In-Game Surveys from our July 2016 Report when building these types of market-growth features.

It's been a busy month in the social casino market, and we have the latest innovations thoroughly covered in Market Watch. New game play, card collections, daily challenges, and updated reward systems are trending features.

Huuuge Casino, the newest top 30 grossing game, has many interesting mechanics, including clubs, lotteries, and social slots machines. The Game Deep Dive breaks down Huuuge Casino's features, machines, and economy.

All the best,

Brett Nowak
Editor-in-Chief

KEY FEATURES

KEY FEATURES

Consider building clubs—the latest powerful, mid-core inspired feature in social casino. Experiment with new game play and innovative customer service tactics

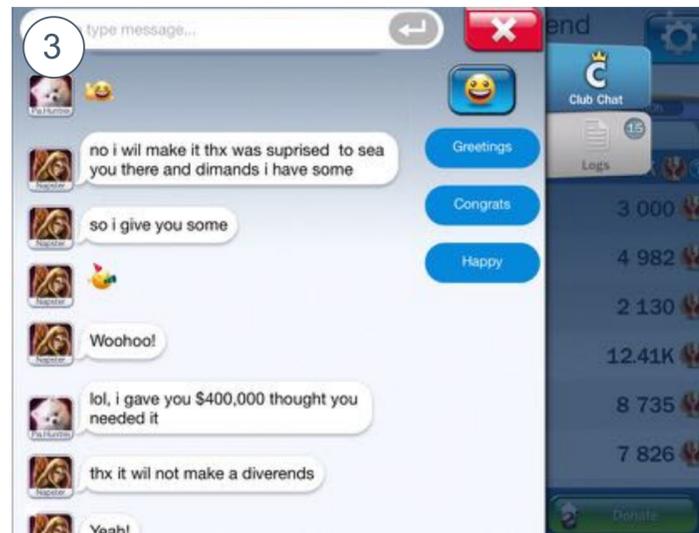
Feature	KPIs	Recommendations
Clubs	<ul style="list-style-type: none">• Drive retention	<ul style="list-style-type: none">• Build clubs for collaboration and sharing between players• Give leadership roles to elite players and create group-based challenges
Hidden Object Slots Machines	<ul style="list-style-type: none">• Expand market share	<ul style="list-style-type: none">• Innovate on core mechanics like slot machine play• Consider adopting mechanics from other genres
Inbox Customer Service	<ul style="list-style-type: none">• Retain whale revenue	<ul style="list-style-type: none">• Improve customer service response and resolution times by providing easy-to-access customer service in the inbox. 42% of customers purchased more after a positive customer service experience
Lottery	<ul style="list-style-type: none">• Increase engagement	<ul style="list-style-type: none">• Test adding another daily retention bonus mechanic, like a lottery feature• Try introducing ticket-earnings into core game play
Polish Items	<ul style="list-style-type: none">• Improve retention	<ul style="list-style-type: none">• Allow players to collect coin bonuses within a machine• Add mystery gifts to certain levels, and create Facebook events to increase retention

BOLD BEAT: CLUBS

HUUUGE CASINO

Huuuge Casino's Billionaires' League is a community built upon sharing, social interaction, and competition

- Upon app entry, a dialogue introduces the Billionaires' League. Players receive a gift of \$6.25 worth of coins to join (image 1).
- There are six leagues and divisions within most leagues (image 2).
- To join certain clubs, players must collect enough Fame Points. Fame Points are earned by receiving likes, making new friends, and winning \$2.50 worth of coins.
- For social interaction, club members chat in the club area or in any slot machine (image 3).
- Players may donate chips once a day to their club. The chips go into the club bank (image 4).
- The clubs compete for a week-long "season." The top prize is \$75 worth of coins for each member (image 5).
- The club wall displays community bonuses (given out when club members hit jackpots), exclusive chip deals, and player questions.
- When players make a purchase on the club page for \$24.99, all members of the club receive 2% of the purchase value (image 6).
- Players can get kicked out of a club by club leaders.
- At the end of a season, a dialogue box messages players their end-of-season results.



DOUBLEUP SLOTS

In DoubleUp Slots, clubs are team competitions that last a day

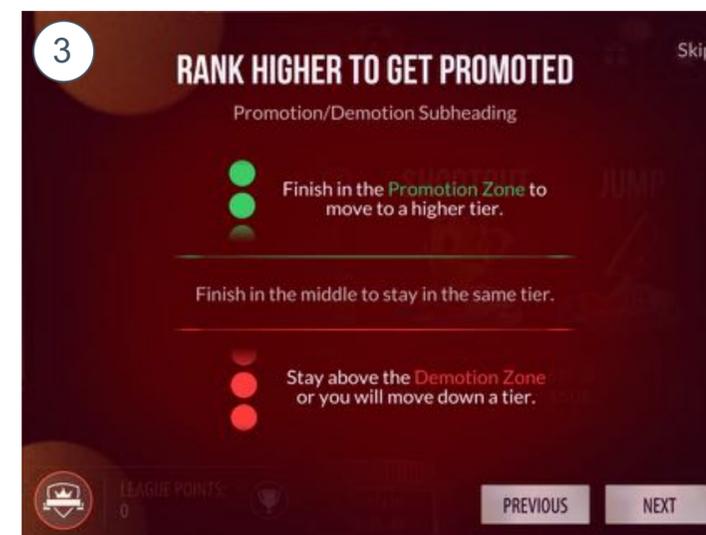
- Players in clubs work together to hit milestones. The milestones produce club points, which unlock rewards (image 1).
- Club points are earned by collecting bonuses, big wins, level ups, and purchasing coins.
- The competition resets every 24 hours and clubs compete against all other clubs (image 2).
- Players can see another player's club contribution by clicking on their profile (image 3).
- Clubs also compete directly against other clubs in the 'Club vs. Club Challenge,' where the winning club receives 2x challenge club rewards (image 4).
- After a purchase, players are shown the amount of club points they contributed to their club (image 5).
- Upon entering the game the next day, players receive a clubs daily report (image 6).



ZYNGA POKER

Zynga Poker leagues let individual players advance in league standings based on chips won

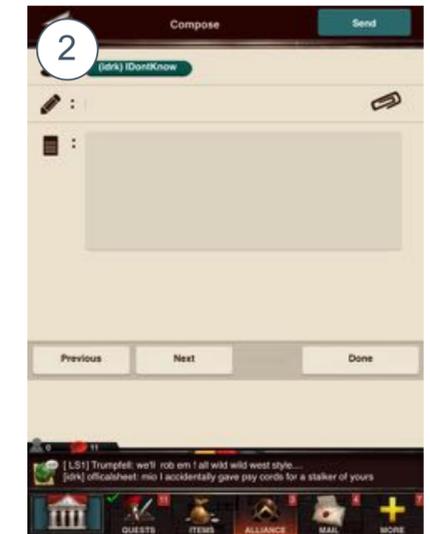
- Each league runs for eight weeks, separated into one-week sections. There is a leaderboard that shows rankings based on chips won (image 1).
- There are four tiers with three levels in each (image 2).
- Players move up and down tiers if they are in the promotion or demotion zones. If their icon is green, they are in the promotion zone. If it is red, they are in the demotion zone (image 3).
- When players win a big hand, they receive league points. The league icon glows and the number (in this case +4) appears, signifying the number of league points won (image 4).
- The league prizes are chips and medals displayed on a player's profile (image 5).
- At the end of eight weeks, players receive a summary of their results, including medals won (image 6).



GAME OF WAR

Game of War's alliances provide collaboration and competition to all players, and special privileges to elite players. City alliances are quests that require alliance members to work together

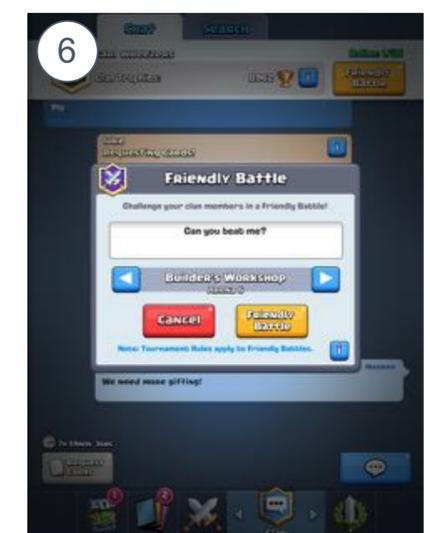
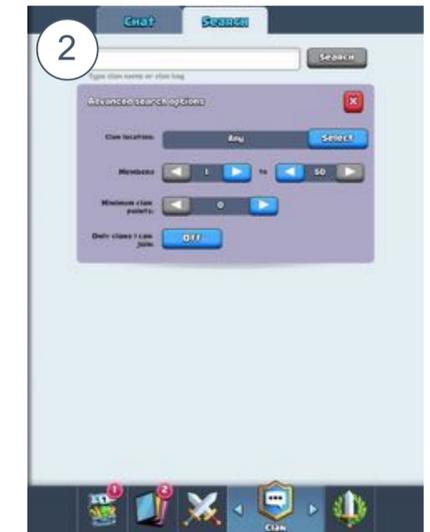
- Players can easily join alliances at any level (image 1).
- Once players join an alliance, they can send mail to the entire alliance (image 2).
- Players may use the following tools:
 - **Alliance store:** Items can be bought from the store with loyalty or gold. Players may also ask for special items from alliance leaders and highly ranked members (image 3).
 - **Catalog:** Players can star an item to let alliance leaders know that a member wants a particular item. This mechanic also gives special privileges to elite players in the alliance.
 - **Resource help:** An area to inform players what they can do to help the alliance.
 - **Reinforcement:** Players can reinforce other players.
 - **Alliance war:** Alliances can go to war with other alliances.
- When an alliance help button on the main screen is pushed, players can see specific help requests from other members of their alliance (image 4). Conversely, players can request that other alliance members speed up their in-game timers.
- City alliances are often marketed in the alliance board (image 5).
- City alliances may be built through collaboration with the entire alliance. For example, members of the alliance must complete research quests, which require special resources, and donate to the city alliance (image 6). Once the city alliance is built, it provides special boosts to alliance members.



CLASH ROYALE

Clash Royale's clans allow players to donate and request cards that strengthen members' battle decks

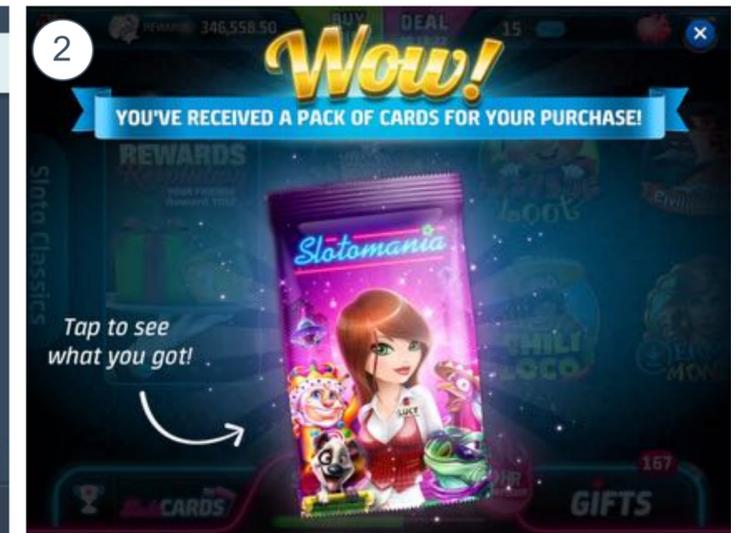
- Players may create open, invite-only, or closed clans. They may also customize the clan's badge, add a description, and set a required trophy limit and location (image 1).
- To join a clan, players may use the advanced search tool to find a clan with their preferences (image 2).
- Clans consist of 50 or fewer players (image 3).
- Every eight hours players may receive XP for donating four cards. They are also able to post messages within the clan board and request cards (image 4).
- If a player receives donated cards, there is a notification upon app entry (image 5).
- Players can compete in friendly battles with other clan members (image 6).



RECOMMENDATIONS

Build clubs for collaboration and sharing between players. Give leadership roles to elite players and create group-based challenges

- **Build features for collaboration with the secondary purpose of competition:** Like in Clash Royale's clans, build clubs mostly to share, collaborate, donate, and request (image 1).
- **Consider building clubs after building a collection mechanic:** To collaborate, players need items to give and receive (other than coins). In Clash Royale, clans are mostly about exchanging cards to strengthen battle decks. See our May 2016 Report for details on Sloto Cards and collection mechanics (image 2).
- **Create leadership positions and give special privileges to elite players:** In Game of War's alliances, players can request special items from alliance leaders and highly ranked members. These leaders also manage the alliance store, which provides deals on requested items (image 3).
- **Reward every club player when a member makes a purchase:** In Game of War's alliances, players receive gifts when an alliance member makes certain purchases. This is similar to Slotomania's gift cards, which is detailed in Market Watch (image 4).
- **Consider adding group challenges:** In Game of War, a city alliance is built through collaboration of the whole alliance. Completing special research assignments (like donating to the city project) provides special boosts to the whole alliance (image 5).
- **Level out competition:** When adding features to spark competition, make sure there's a close match between clubs. For example, Zynga Poker and Huuuge Casino divide out leagues and clubs (image 6).



QUICK WINS

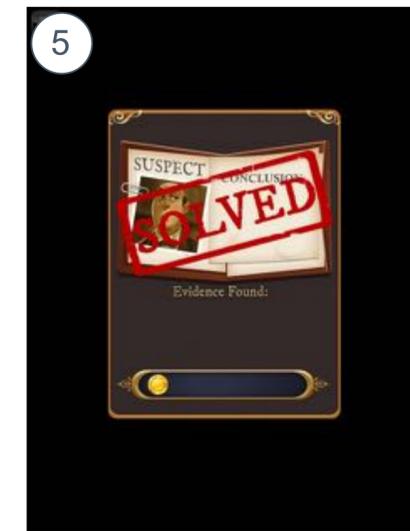
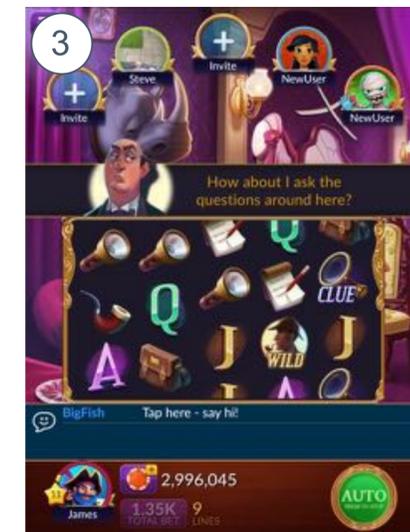
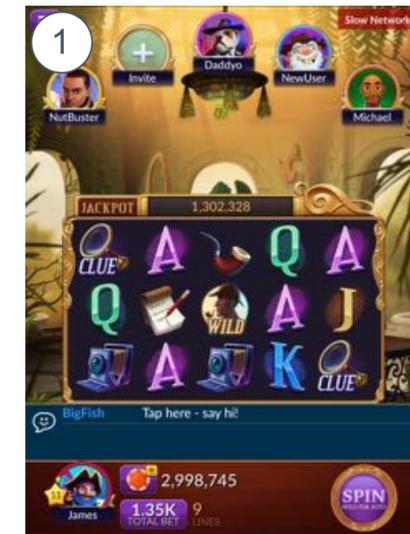
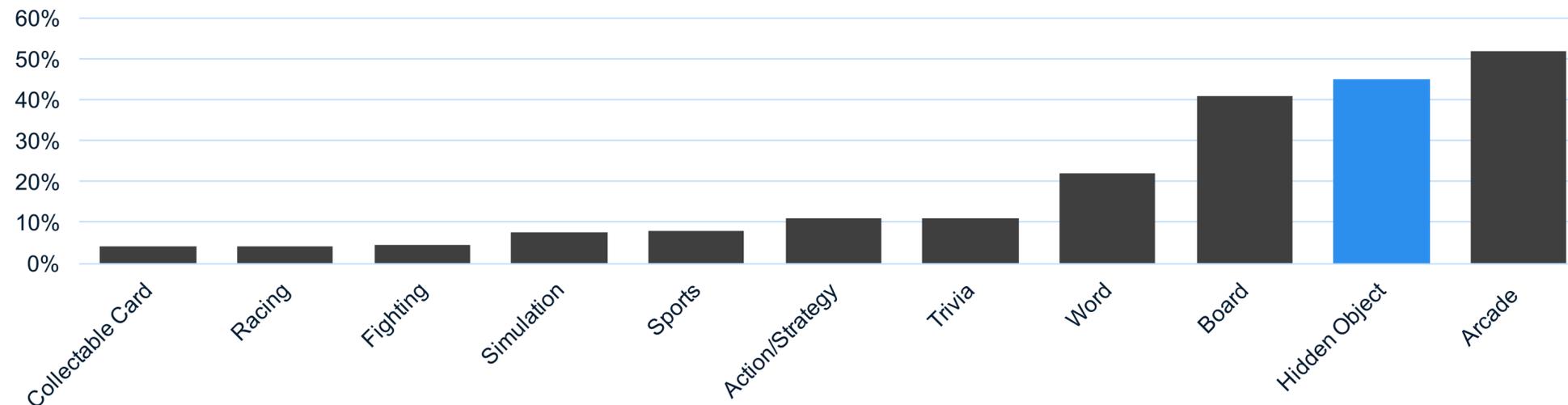
- Hidden Object Slots Machines
- Inbox Customer Service
- Lottery
- Polish Items

HIDDEN OBJECT SLOTS MACHINES

Innovate on core mechanics like slot machine play. Consider adopting mechanics from other genres

- Big Fish Casino's newest machine is themed like the board game CLUE (image 1).
- Players must hit three or more CLUE symbols to unlock the hidden object mini-game in order to crack the case (image 2).
- During play, characters appear over the reels to make the game interactive (image 3).
- When players hit three CLUE symbols, the reels are removed and players are shown a hidden object scene with three objects they must find to crack the case (image 4).
- Finding all the objects, which is not difficult in the beginning, will solve the case (image 5).
- Players then progress to a new hidden object scene (image 6).
- **See New Machine Releases for a full breakdown of Sherlock Manor.**
- **Review In-Game Surveys in the July 2016 Report on how to structure discovery for this type of core innovation.**

Other genres played by Big Fish Casino players

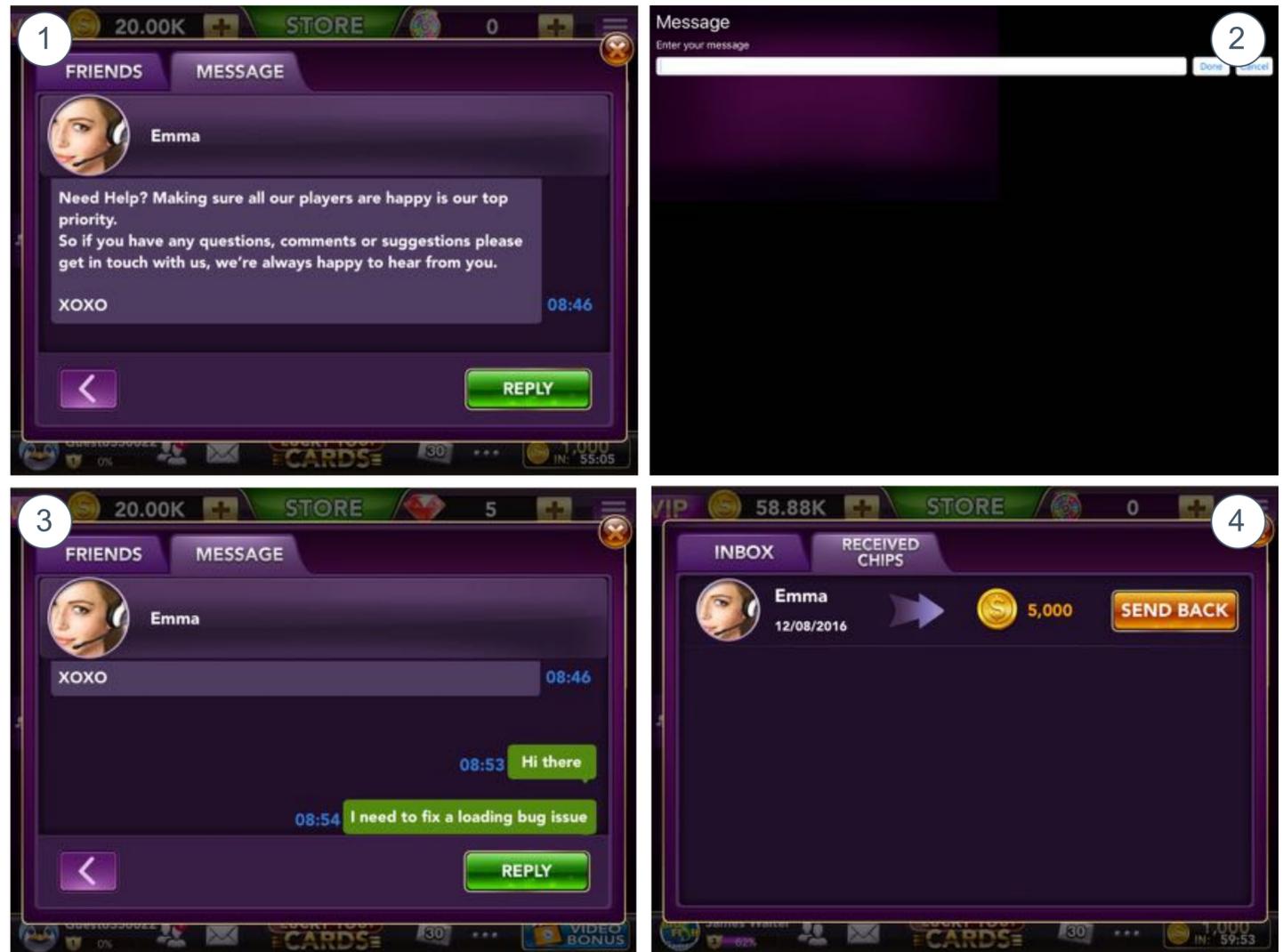


INBOX CUSTOMER SERVICE

Improve customer service response and resolution times by providing easy-to-access customer service in the inbox. 42% of customers purchased more after a positive customer service experience (non-gaming results)

- Players in Luckyo Casino may contact a customer service representative directly through the inbox feature (image 1).
- Clicking 'reply' takes players to a text area where they can write their message (image 2).
- A dialogue box appears showing the message and interaction with the customer service representative (image 3).
- Players may even receive and send chips to Emma, the customer service representative, to engage with her further (image 4).

- 42% of customers purchased more after a positive customer service experience
- 52% of customers stopped buying after a negative customer service experience
- 69% attributed their good customer service experience to quick resolution of their problem
- 95% shared bad experiences and 87% shared good experiences with others*



* "Customer Service and Business Results." *Dimensional Research*, April 2013.

LOTTERY

Test adding another daily retention bonus mechanic, like a lottery. Try introducing ticket-earnings into core game play

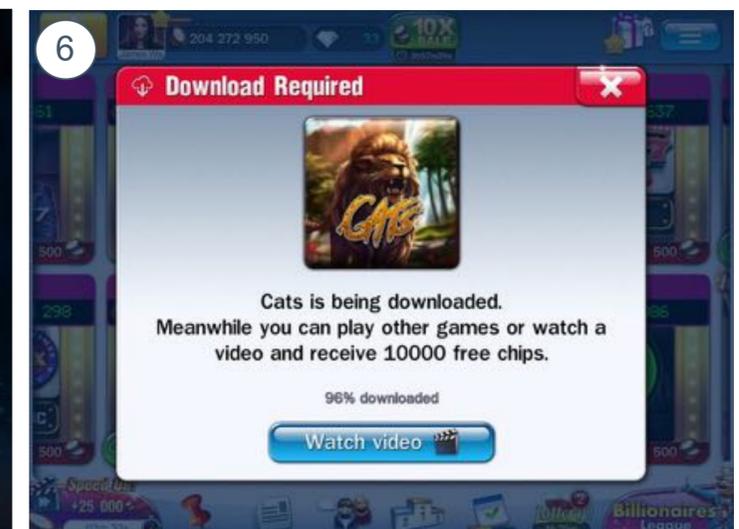
- Upon app entry in Huuuge Casino, the lottery is marketed as double earnings on certain days of the week (image 1).
- The lottery offers a list of potential prizes based on the ticket tier (image 2).
- Three tiers may be played for different potential winnings (image 3).
- All tickets may be purchased (image 4).
- Filling up the progress bar at the bottom with ten free bronze tickets results in one more free bronze ticket. Filling up the progress bar a second time produces a silver ticket (image 5).
- Players may also win puzzle pieces, which fill in the puzzles on the left side of the screen. The top puzzle prize is \$454 worth of coins (image 6).
- **Review a similar feature in KONAMI Slots—the cat-themed daily bonus mechanic.**
- **Review Primary Coin Bonuses in the May 2016 Report for more information on daily retention bonuses.**



POLISH ITEMS

Allow players to collect coin bonuses within a machine. Add mystery gifts to certain levels, and create Facebook events to increase retention

- **Add in-machine bonus messaging:** When players forget to collect their secondary coin bonus, Big Fish Casino adds a banner so players can easily collect it (image 1).
- **Test free mystery gift on leveling up:** In Willy Wonka Slots, players earn a free mystery gift upon leveling up (image 2). There is also a tiny mystery gift box next to the level meter below the slot machine to incentivize players to progress.
- **Invite players to Facebook events:** After clicking the 'mark your calendar' marketing banner in Big Fish Casino, players are taken to a Facebook event where they can RSVP (image 3). Over 8,000 people signed up for BFC's Labor Day Weekend event.
- **Supply gift cards for friends when players make a purchase:** In Slotomania, when players make a purchase, all their friends with five or more friends receive an anonymous gift card (image 4). See Market Watch for more details.
- **Brainstorm community challenge mechanics:** Black Diamond Casino launched a community challenge mechanic: 1M free spins unlocked a Labor Day sale (image 5).
- **Watch to earn while downloading a new machine:** In Huuuge Casino, players may watch a video during their new machine download to earn chips (image 6).



PRODUCT MARKET WATCH

AS OF 9/14/16

TRENDING FEATURES

New game play is a recent innovation in social casino. More games are adding card collections and daily challenges. Slotomania and DoubleDown Casino updated their rewards programs

Feature	Games	Notes
New Game Play	<ul style="list-style-type: none"> • Big Fish Casino • World Series of Poker • GSN Casino 	<ul style="list-style-type: none"> • Big Fish Casino released a hidden object slot machine • World Series of Poker released an all-in poker game called Texas Roulette • GSN released a coin-drop machine
Card Collections	<ul style="list-style-type: none"> • Big Fish Casino • Viva Slots Las Vegas • Scatter Slots • Slotomania 	<ul style="list-style-type: none"> • Big Fish Casino released Stick'ems • Viva Slots Las Vegas released Fortune Cards • Scatter Slots released a mid-core themed card collection mechanic • See the May 2016 Report for details on Slotomania's Sloto Cards
Daily Challenges	<ul style="list-style-type: none"> • Wizard of Oz Slots • DoubleDown Casino • DoubleUp Slots 	<ul style="list-style-type: none"> • Wizard of Oz Slots released VIP daily challenges • See the August 2016 Report for details on DoubleDown Casino's daily challenges system • See the February 2016 Report for details on DoubleUp Slots' daily goals (and the game since the feature has been updated)
Rewards Programs	<ul style="list-style-type: none"> • Slotomania • DoubleDown Casino • Heart of Vegas (coming soon) 	<ul style="list-style-type: none"> • Slotomania released an update to their rewards program (in addition to other notable changes) • DoubleDown Casino released Diamond Club to 100% (initially released in July) • Heart of Vegas is pre-marketing a loyalty program called the Player's World

TOP 10 GROSSING

DoubleDown Casino released a rewards program. Big Fish Casino released a collection system. Slotomania released a scoreboard and updates to rewards. Wizard of Oz Slots released daily challenges

Game	Change	Notable features released
DoubleDown Casino	●	Diamond Club, initially released in July (image 1 and additional slide)
Big Fish Casino	●	Stick'ems, a reel-based collection system (image 2 and additional slide)
Heart of Vegas	◐	New machines and updates to old machines
House of Fun	◐	New machines
Jackpot Party Casino	◑	An economy rebalance and Playboy IP machine
Slotomania	●	Scoreboard, more gifting, gift cards, and adjustments to rewards (see additional slides)
Hit it Rich!	◑	Higher bets now qualify players for a mystery gift
Wizard of Oz Slots	●	Daily challenges with multiple challenges each day (image 3 and additional slide)
Bingo Bash	◑	New bingo room
GSN Casino	◑	Millionaire Machine, a coin drop machine unlocked with 100 slot machine spins



TOP 11 – 20 GROSSING

Gold Fish Casino Slots released a Michael Jackson IP meta-game. WSOP released a new style of poker. Scatter Slots and Viva Slots Las Vegas released card collection mechanics

Game	Change	Notable features released
Caesars Slots		Three-hour bonus, more wedges in the wheel, and a collect all button
DoubleU Casino		Jackpot tournaments released on some devices
KONAMI Slots		New machines and jackpots added to old machines
Gold Fish Casino Slots		Several new IP machines and Michael Jackson IP meta-game (image 1)
Quick Hit Slots		New machines and cross-promotion to Gold Fish Casino Slots
Bingo Blitz		New bingo room and new slots machines
World Series of Poker		\$5 billion cash game, daily bonus golden wedge is 5x, and Texas Roulette (all-in or fold) game play
Scatter Slots		Card collection mechanic added during the weekend (image 2 and additional slide)
Viva Slots Las Vegas		Fortune Cards, a collection mechanic (image 3)
Pharaoh's Way		New machine released



TOP 21 – 30 GROSSING

Slot Bonanza released a new story board chapter. Willy Wonka Slots released a mega-progressive jackpot shared across all games. Classic Vegas Casino released timed challenges

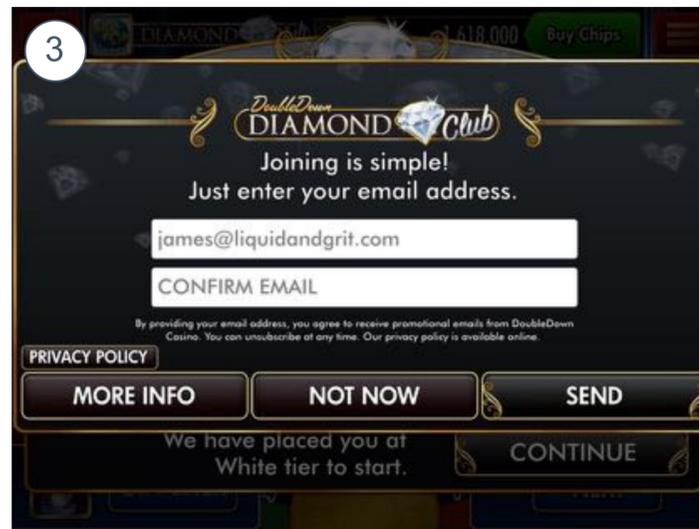
Game	Change	Notable features released
Slot Bonanza		A new chapter, a story board with challenges and rewards (image 1)
Black Diamond Casino		New machine with a challenge system attached. Community-based live ops (see Polish Items)
Willy Wonka Slots		A Golden Ticket progressive jackpot given out eight times a month (image 2)
Classic Vegas Casino		Time challenges added (image 3)
DoubleUp Slots		No major changes to this game (Super Lucky Casino released Epic Jackpot Slots on 7/1/16, Get Rich Slots on 6/24/16, and Hot Vegas Slots Casino on 5/16/16)
myVegas Slots		New machines released
Huuuge Casino		New machines released (Billionaires' League released 8/3/16)
Jackpotjoy Slots		New machines released
Hot Shot Slots		New machines released
Hot Vegas Slots Casino		Full game was released 5/16/16 (see note above about Super Lucky Casino releasing new games)



DOUBLEDOWN CASINO

Diamond Club focuses rewards on top players and purchasers

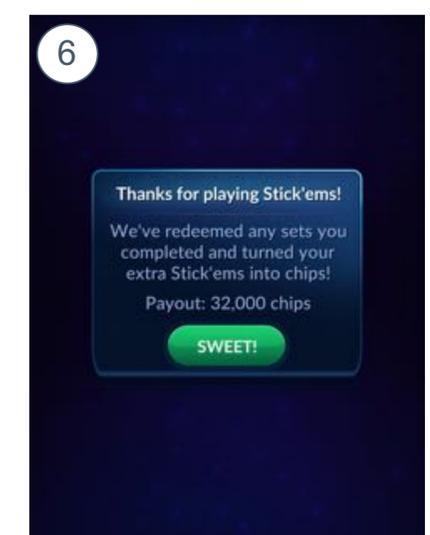
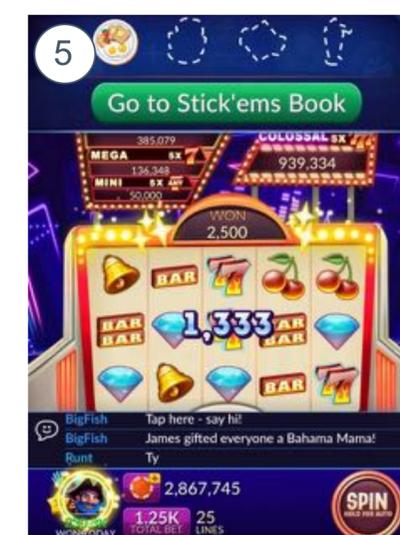
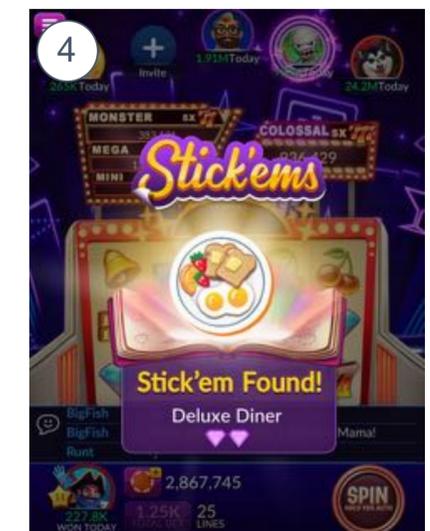
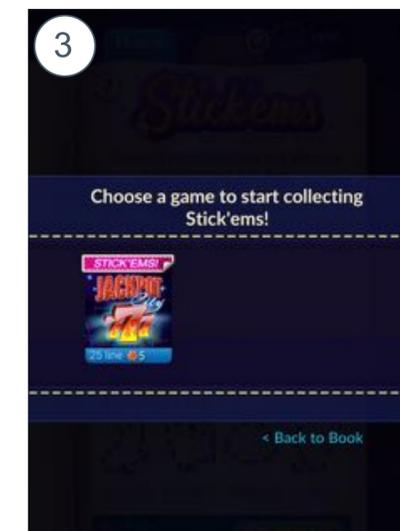
- The Diamond Club has six tiers. Players advance to higher tiers by playing wagers and purchasing chips (image 1).
- Benefits (image 2):
 - A low-value wedge on the daily wheel is replaced with a high-value wedge
 - Free daily wheel spin when advancing a tier
 - Early access to new machines
 - More loyalty points with purchases
 - Ambassador service (for highest tier only)
- Players sign up for the rewards program using their email (image 3).
- Players see all their benefits on their tier-dashboard (image 4).
- Players can now gift ten spins (previously three) to friends as Diamond Club members (image 5).
- The gift wheel has a gift back and next button, allowing players to be more viral with their top friends (image 6).



BIG FISH CASINO

Big Fish Casino released its collection mechanic feature, Stick'ems. Players collect four Stick'ems to win a prize

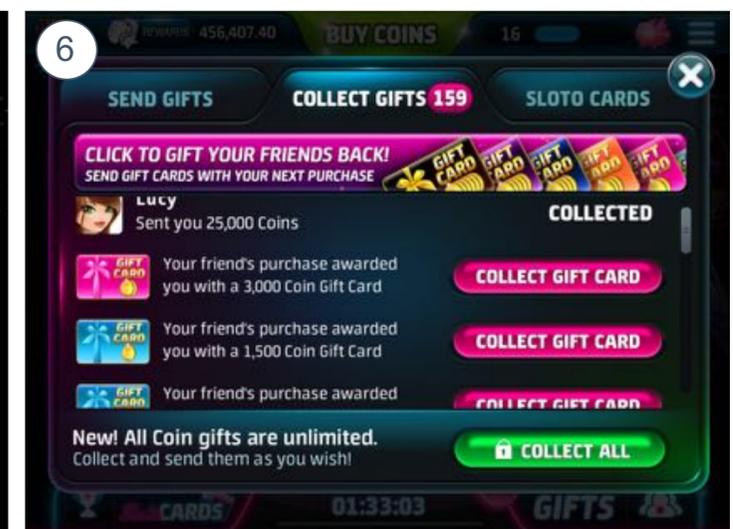
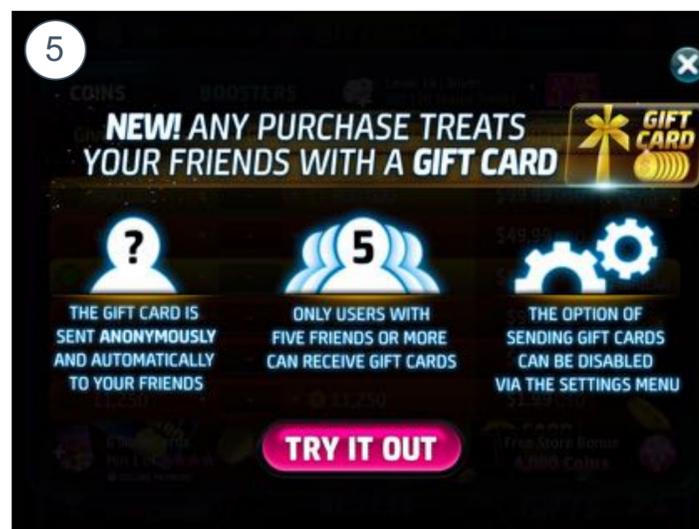
- When players enter the game, Stick'ems are marketed with a dialogue (image 1). Players may win Stick'ems, which are sticker-like collectables, by playing a slots game.
- Clicking 'View Stick'em Book!' takes players to a Stick'ems book (image 2).
- Clicking play takes players to a dialogue where they choose a machine to collect Stick'ems (image 3).
- When players find a Sitck'em, a dialogue opens up over the machine (image 4).
- After players win a Stick'em, they are instructed to open the Stick'ems book (image 5). Completing the first Stick'ems book awards players \$4.54 worth of coins.
- Stick'ems is a week-long event. Players are notified of their winnings after the event and their Stick'ems are removed from the game (image 6).



SLOTOMANIA

As part of Slotomania's Rewards Revolution, there is a scoreboard, increased gifting, bragging, and gift cards with purchases

- Players can gift friends who need a boost, see their friends' levels, and see their best slots win (image 1). Players may click the bottom, right-hand corner to switch the scoreboard to other boards, like level, balance, top win, and chip leader.
- A daily challenge awards one person 1B coins. This is explained with a video (image 2). For more information on Slotomania's videos, see Card Collections in the May 2016 Report.
- Clicking on a friend takes players to a gift dialogue where they may send free coins, mystery gifts (ten total), or Sloto Cards (image 3).
- Players can even brag when they pass friends (image 4).
- Any purchase sends a gift card to all a player's friends with five or more friends (image 5).
- Gift card colors and gifting amounts change based on package size. Players may receive gifts anonymously from friends (image 6).
- Changes to the daily bonus and the rewards depend on status level.



WIZARD OF OZ

Daily challenges are released with multiple challenges, ranging from spinning 50 times to winning 50 million in credits

- Upon app entry, players receive a dialogue introducing the new daily challenges feature (image 1).
- There are five daily challenges per day, most fairly easy to achieve, with the same reward (image 2). When players complete all the challenges in a day, they unlock the Beat the Witch machine.
- When players complete a challenge during spinning, a dialogue appears with the challenge and the prize won (image 3).
- In each machine, there is a small icon in the bottom left corner of the UI, right below the slot machine (image 4). When players progress along a challenge, a progress bar surfaces above the challenges icon.



SCATTER SLOTS

Scatter Slots released a card collection mechanic for a Labor Day event

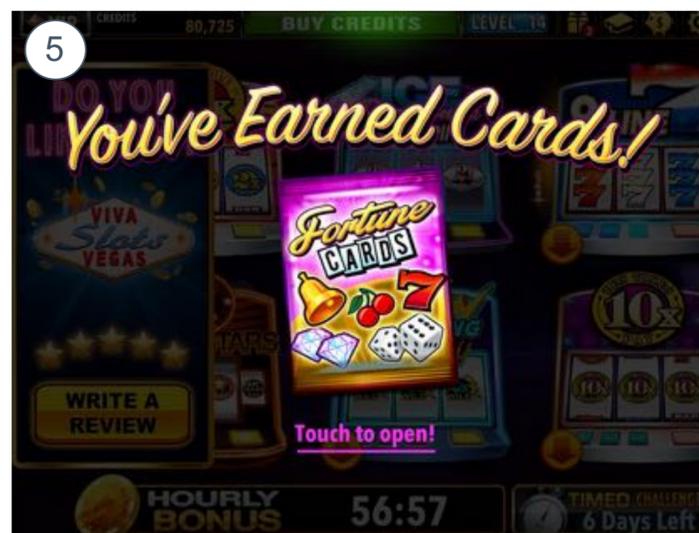
- The card collection feature was released during Labor Day and was extended an additional day due to popularity (image 1).
- Players needed to collect ten characters (image 2).
- Players received a free deck of cards every 24 hours (image 3) and every 12 hours if they made a purchase (image 4).
- The rewards in a deck of cards included VIP for certain number of days, coins, upgrades, and characters (image 5).
- After uncovering all the cards in a deck, players received a summary of their winnings (image 6).



VIVA SLOTS LAS VEGAS

Fortune Cards are Viva Slots Las Vegas' newest feature tuned tightly like its economy

- The Fortune Cards dialogue surfaces upon app entry (image 1).
- Players may earn cards with machine play, certain purchases, and major level ups (image 2). Similar to the Viva Slots Las Vegas economy, earning Fortune Cards is tuned very tightly.
- Players need to collect ten cards to complete a set and earn a bonus. Collecting all ten sets in an album earns a bigger bonus (image 3).
- The theme of the cards range from musical instruments to Greek Gods (image 4).
- Players receive a packet of cards after every package purchase (image 5).
- There are three cards in every packet (image 6).



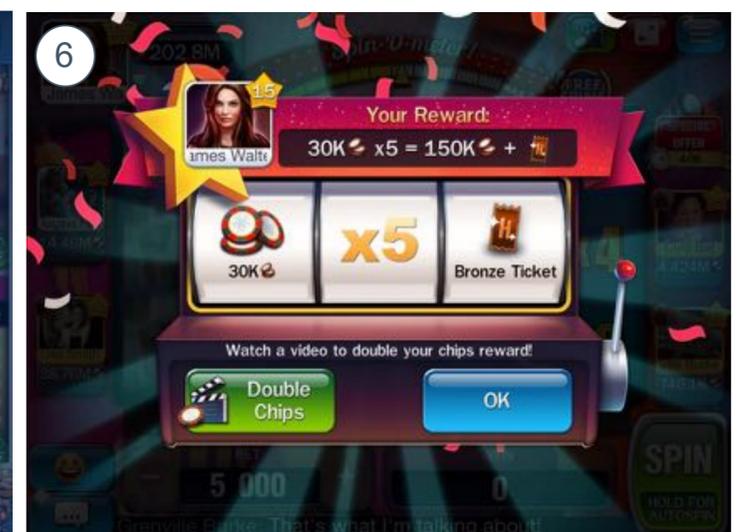
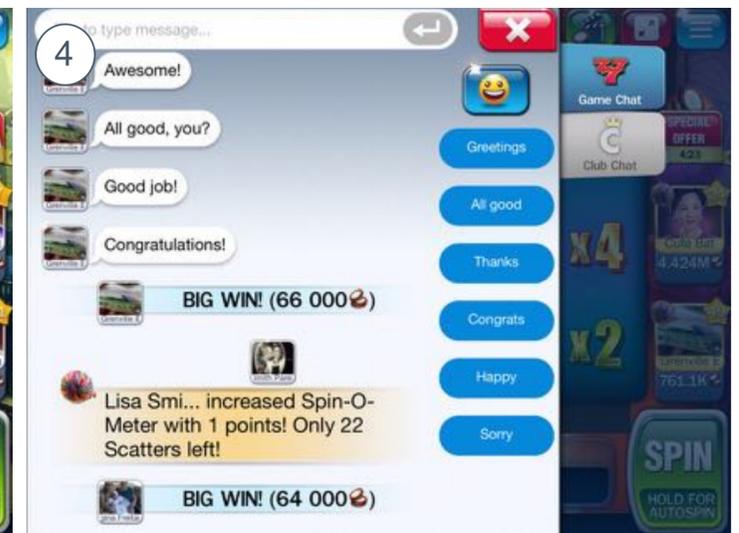
GAME DEEP DIVE

Huuuge Casino

FEATURE SUMMARY

Huuuge Casino offers a full casino suite, tons of social features, and many classic, non-IP slots machines

- A full casino suite of games is marketed to players (image 1).
- Players click the profile picture of another player to join their table, creating a nice social experience (image 2).
- In the slot machine, four players spin at the same time. Players can click on other players' profile pictures to see full profiles, send likes, gift coins, and send club invites (image 3).
- Certain games, like Kittens, feature group mechanics. These groups work to fill a meter to win a minimum of 120 free spins. Free spins are shared amongst the group. As players increase the meter, a message appears in the chat area (image 4).
- There is a daily to-do list with tasks like spin 100 times, hit a big win, hit a free spin, and collect three lobby bonuses (image 5).
- When players level up, they receive a mini-slot machine spin and the ability to double their chips by watching a video (image 6).



ECONOMY BREAKDOWN

Huuuge Casino gives players a large amount of initial chips, then boosts their wallets with a 15-minute secondary coin bonus. This economy supports the social nature of Huuuge Casino, allowing players to find and retain friends through social connections within the game

	Value	Tune	Rank*	Comments
Coins-to-dollar ratio	80K for \$1 purchased	Moderate	9th	<ul style="list-style-type: none"> The economy inflation is average compared to top-grossing slots games
Initial coin balance	\$7.97	Loose	7th	<ul style="list-style-type: none"> The initial value players receive is moderately large
New user bet values	\$0.01 default \$0.01 minimum	Tight	18th 16th	<ul style="list-style-type: none"> The initial default bet is cheap The minimum bet is moderately cheap
New user tuning	1.3K default bet spins 1.3K minimum bet spins	Very loose	2nd 4th	<ul style="list-style-type: none"> New players receive a large number of spins at both bet levels
Total daily coin bonuses	\$1.88 primary \$30.00 secondary \$31.88 total	Very loose	1st	<ul style="list-style-type: none"> Players may collect \$31.88 worth of coins daily, the highest amount of coins possible compared to top grossing games

*Compared to the top 22 grossing social slots games.

MACHINE COMPARISON

Huuuge Casino provides many non-IP slots machines. Most of the machines have either a progressive jackpot or social mechanic

	Strength*	Notes
IP		There is no IP but many machines are similar to land-based IP (image 1)
Mechanics		There is a wide range of mechanics, from classics to 5 x 3 but no elaborate reel mechanics (image 2)
Jackpots		Approximately 65% of machines include progressive jackpots (image 3)
Social		Group play provides social scatters and group bonuses (image 4)
Access		Eight machines are unlocked to new players, and a machine is unlocked every level from levels 2-10 (image 5)
Art and VFX		The art and VFX of the machines are moderate (image 6)



*Compared to the top 22 grossing social slots games.

NEW MACHINE RELEASES

- **5 Dragons Gold** (Heart of Vegas)
- **Smooth Criminal** (Jackpot Party Casino)
- **Sherlock Manor** (Big Fish Casino)

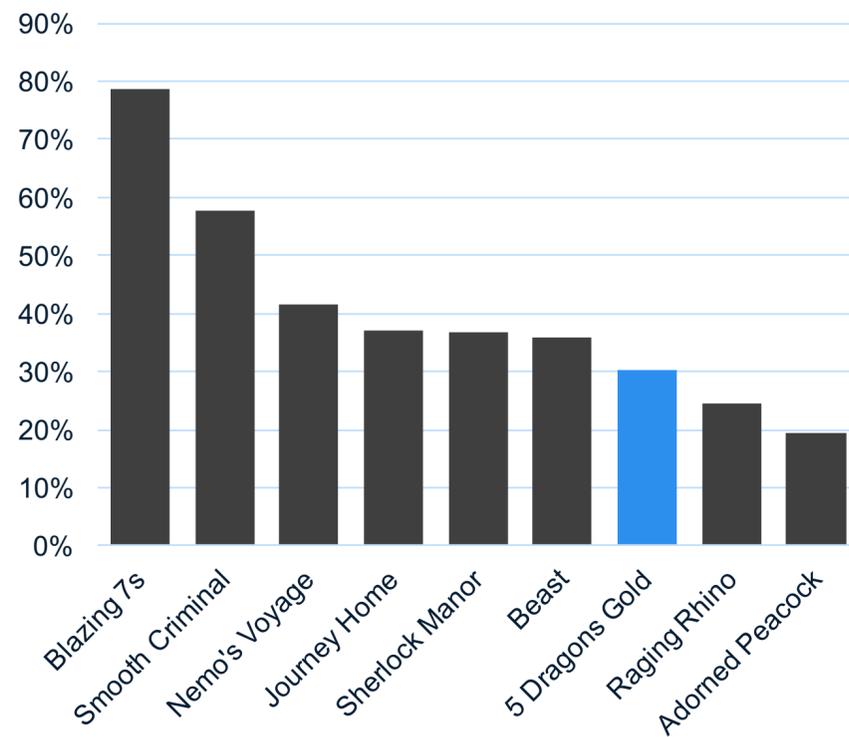
HEART OF VEGAS

5 Dragons Gold has a below average hit frequency, very high volatility, and infrequent bonus games

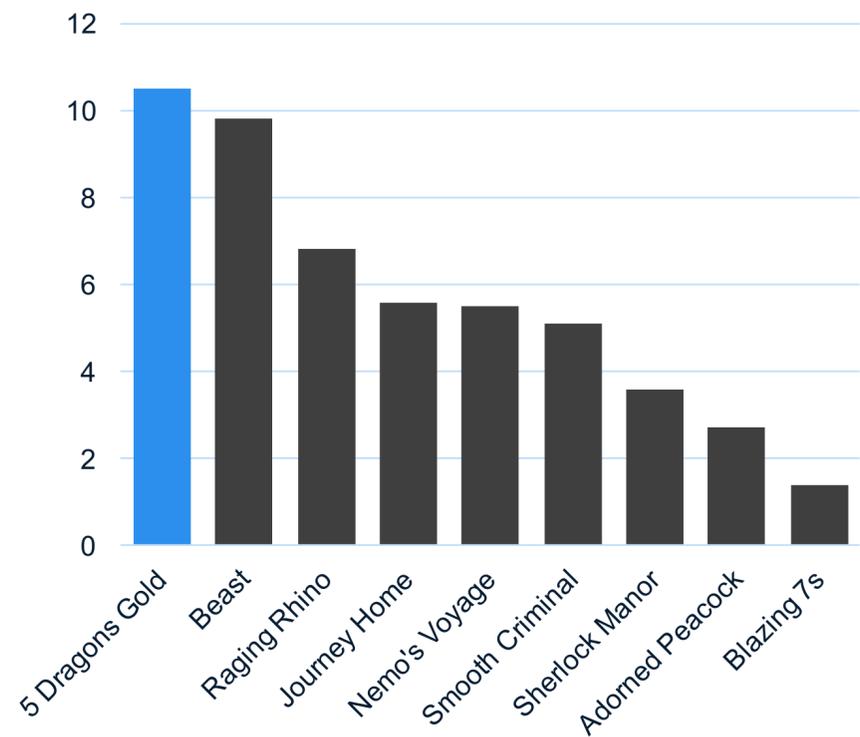
Mechanics: There are multiplier wilds up to x40 (image 1). A free spin mode, which is triggered by hitting three gold coins, lets players choose the number of free games with accompanying multiplier options (image 2).



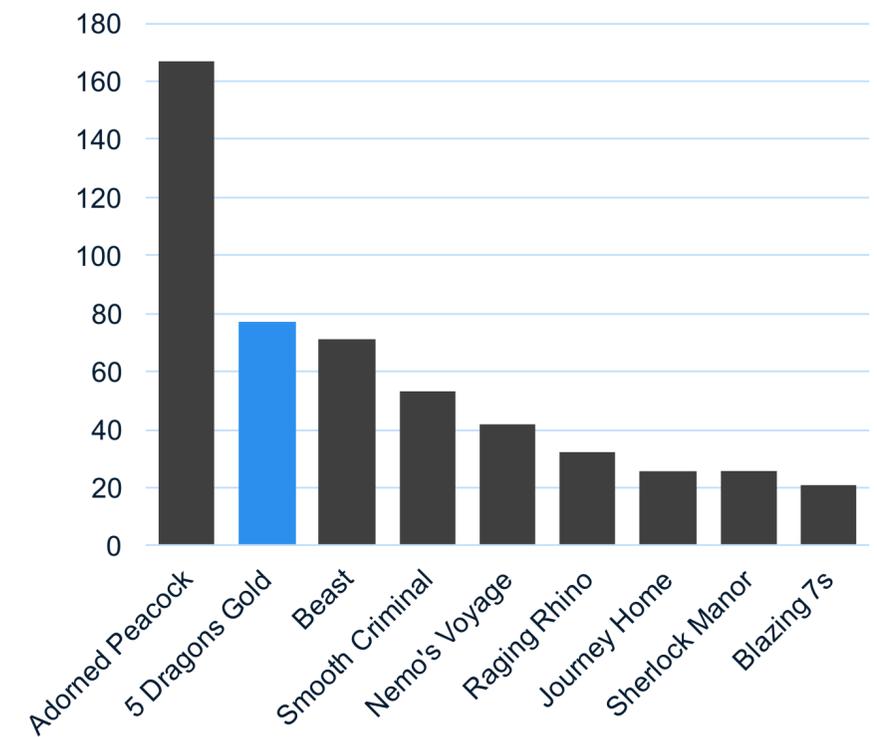
Hit frequency (hits over total spins)



Volatility



Number of spins until a bonus



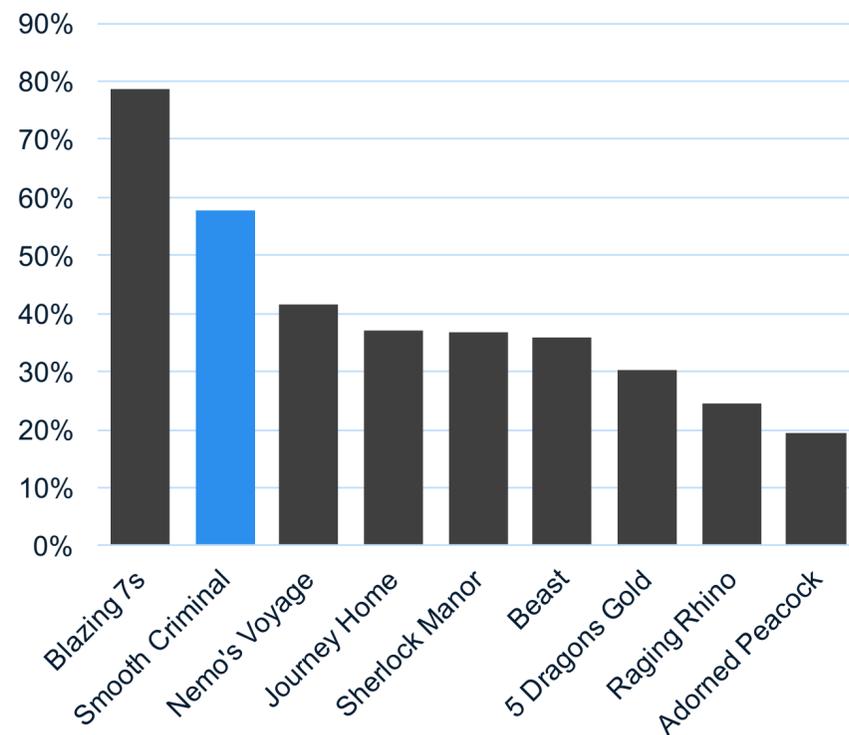
JACKPOT PARTY CASINO

Smooth Criminal, a Michael Jackson IP machine, has a high hit frequency, average volatility, and average frequency bonus games

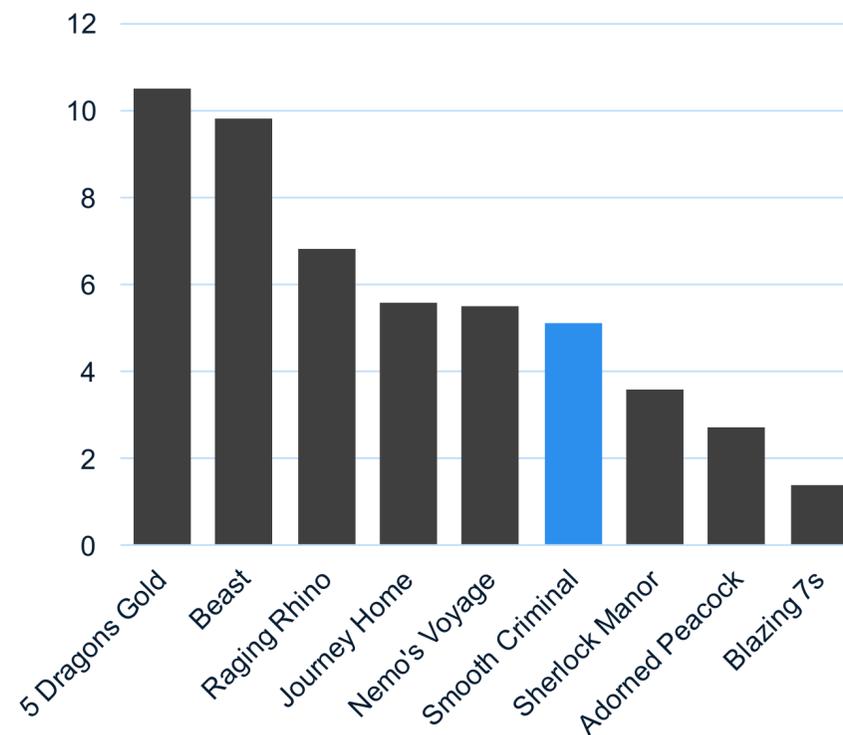
Mechanics: 'Lean for Wilds' feature involves Michael Jackson symbols on reels two and four leaning in and placing additional wilds on reels (image 1). Free Spin Bonus is triggered by either three bonus symbols (image 2) or a Michael symbol leaning on a bonus Michael symbol.



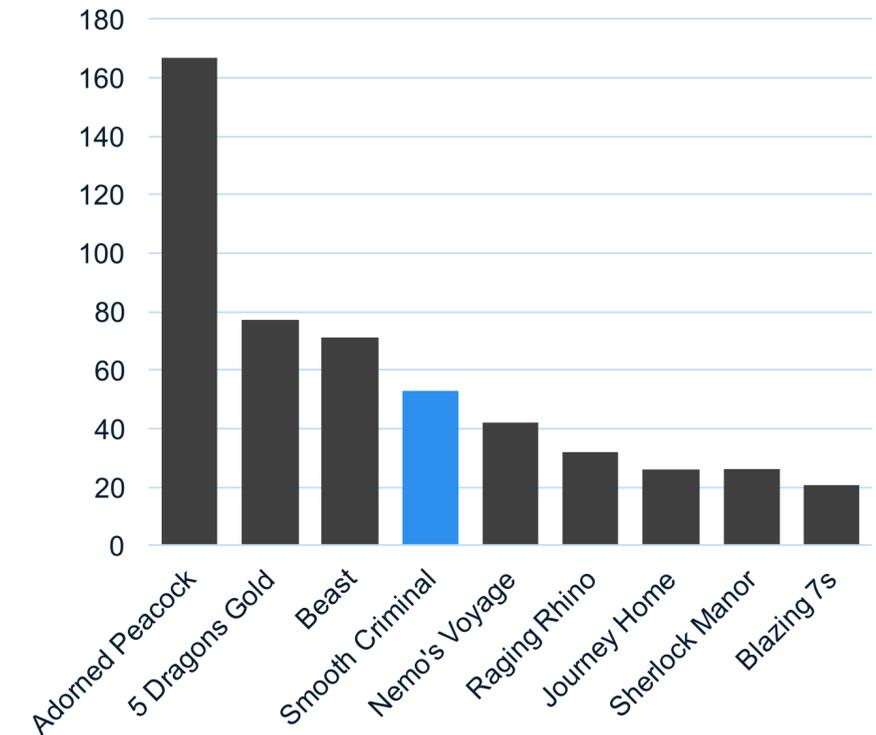
Hit frequency (hits over total spins)



Volatility



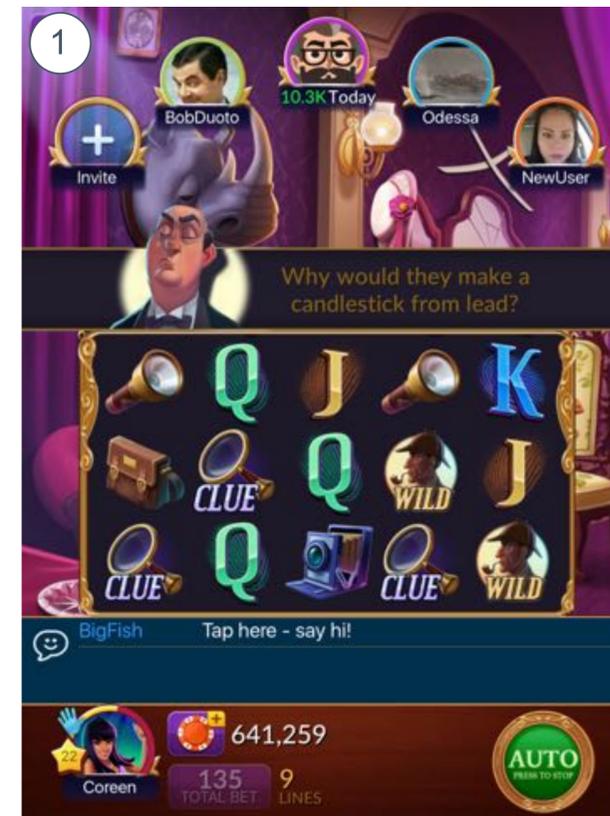
Number of spins until a bonus



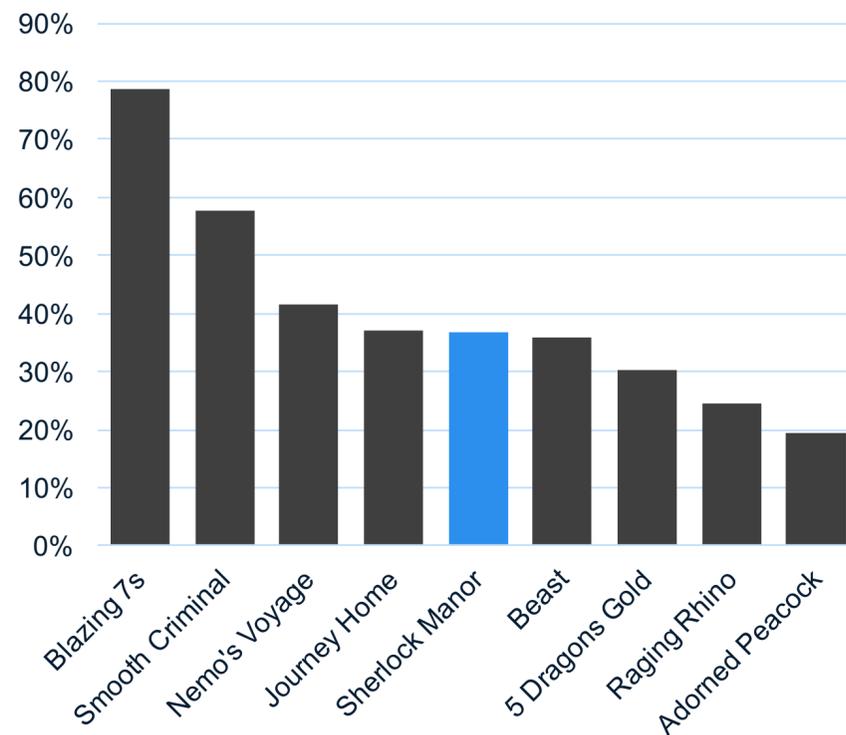
BIG FISH CASINO

Sherlock Manor, a slot machine with hidden object mechanics, has an average hit frequency, low volatility, and frequent bonus games

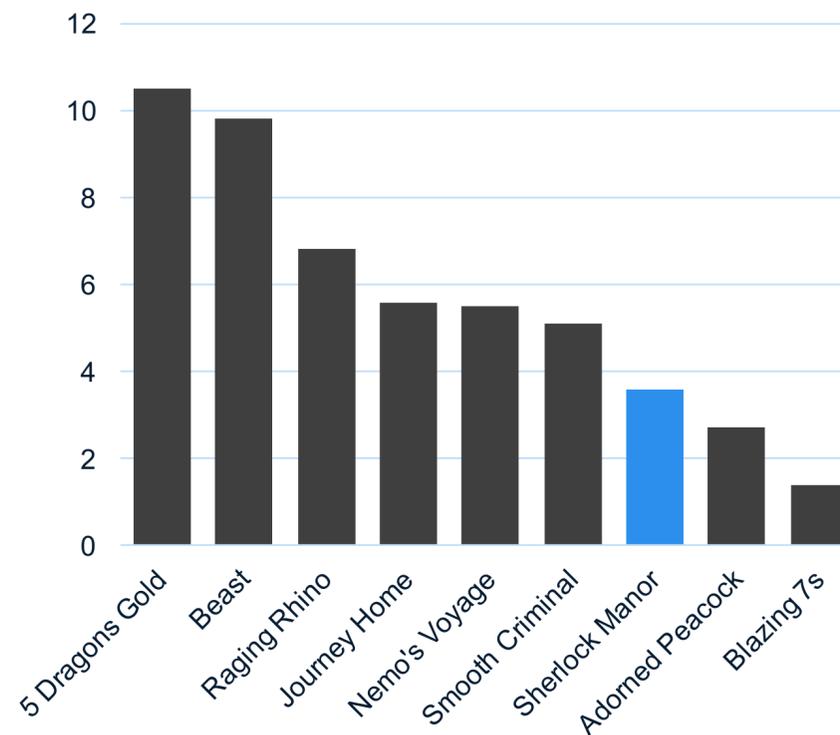
Mechanics: A 3 x 5 machine with a bonus game feature triggered by having three or more CLUE symbols land anywhere on the reels (image 1). In the bonus game, players search scenes for hidden items to earn prizes (image 2).



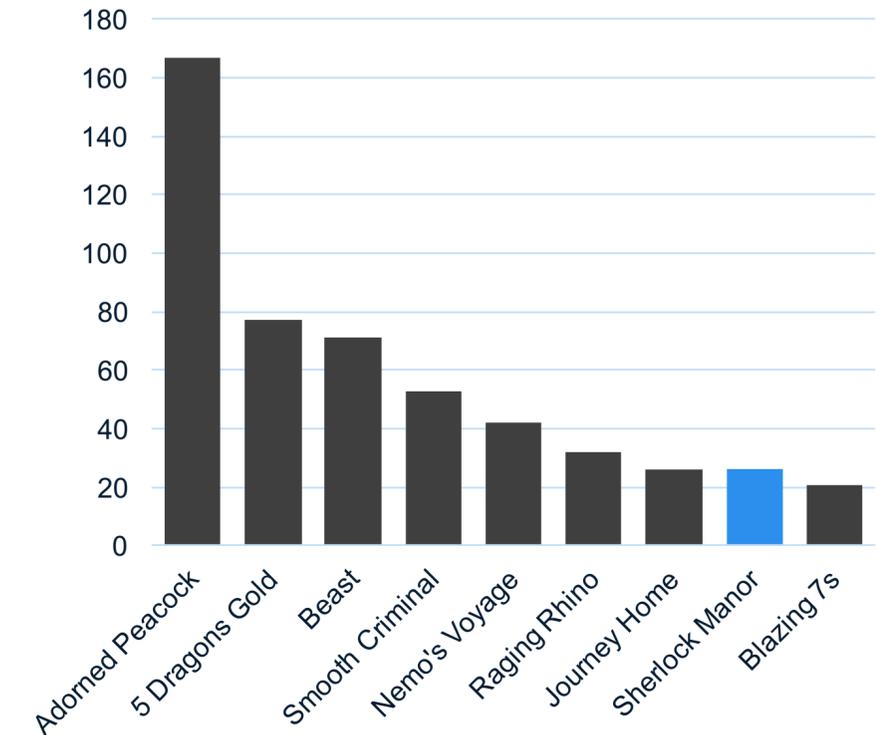
Hit frequency (hits over total spins)



Volatility



Number of spins until a bonus



APPENDIX

DATA COLLECTION PROCESS

Recommendations, information, and data comes from market research, app intelligence tools, and deep analysis of the games

Market research

- Each game is reviewed weekly for updates, regardless of whether the game has been updated through the App Store.
- Transaction information comes from the iOS App Store's In-App Purchases tab. These transactions are ranked based on the number of transactions.
- Las Vegas player insights come from online sources, such as the Las Vegas Convention and Visitors Authority and the UNLV Center for Gaming Research.
- Progressive jackpot information comes from online research, specifically from wizardofodds.
- Trending revenue, downloads, and package-rank data come from Priori Data, a Liquid and Grit partner.

Analysis of competing hypotheses

- *“Analysis of competing hypotheses (ACH) requires an analyst to explicitly identify all the reasonable alternatives and have them compete against each other for the analyst's favor, rather than evaluating their plausibility one at a time.” – CIA.gov*
- All the components of a game (e.g., features, economy, theme) compete against each other to determine the most impactful features.
- We illustrate how these components compete against each other to determine the most valuable features.
- We also incorporate the uniqueness of a feature in the market, comparing the feature across top-grossing and breakout slots games on iOS.

Game information

- Game information comes from a deep-dive analysis of each game.
- In the economy section and economy-related slides, the coin value is determined by converting coins into money using \$5 worth of non-sale purchasable coins in each game. For example, if the minimum bet is 1,000 coins and players can purchase 500 coins for \$5, the value of the minimum bet is \$10. For games without a \$5 package, the next closest package is used.
- The cost of each level is determined by how many coins are needed to complete it. Then, that amount is converted to a dollar amount using \$5 worth of non-sale purchasable coins, as mentioned above.

After estimating the advantages in accord with what you have heard, put it into effect with strategic power supplemented by field tactics that respond to external factors.

– Sun Tzu, *The Art of War*

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