THE MATH

OF THE

APP BUSINESS

REVENUE

MAUs

ARPU

Retention

Installs

Welcome to the business of apps

It's no secret that mobile apps are notoriously hard to monetize. With over 1.5 million apps in both the App Store and Google Play and market forces that have all but necessitated the move to a freemium model, app publishers everywhere have their work cut out for them.

Yet, we've seen time and time again that the curse of the app stores need not shake your spirits. In 2016, mobile apps are predicted to generate over $58 billion in revenue, and the popularity of mobile is only going to rise with an increasingly connected world. The question, then, is:

How can you stake your claim on a share of this massive opportunity?

The answer comes down to knowing your numbers.

Monetizing your mobile app requires understanding the math behind the app business. This understanding—of your metrics and revenue drivers—ultimately enables you to dissect your business model. It allows you to hone in on any bottlenecks that could be costing you business and identify any areas of improvement that can be optimized to better achieve your goals.

The math of the app business is neither scary nor intangible. The truth is, **the entire app business can be summarized with one equation**. Know this one equation, and you'll be able to masterfully leverage and manipulate each of its integral variables to demonstrate a clear, quantifiable effect on your bottom line.

Ready to dive into the math of the app business and claim your share of this massive market? **Continue on to learn the secret equation that separates the top grossing apps from the rest of the pack.**

The app business has a simple equation

Over the past five years, we've learned a lot about the many metrics and strategies that indicate an app's performance and profitability. While each app has a unique design and use case that lend themselves to different business models, they all share a handful of metrics necessary to their success. Together, these metrics take the mystery out of monetization. They are readily quantifiable and play together in a predictable manner, regardless of the app or chosen business model.

These items are:

Monthly Active Users (MAUs): The number of mobile app customers who have actively engaged with your app over the last month. While marketers and product managers have the freedom to define the parameters around the term 'active,' the active customer count is usually filtered through a combination of usage and last seen statistics. Commonly, app publishers consider any customer who has launched your app at least once as an active customer; however, some publishers impose more stringent criteria or record active users on a weekly or daily basis.

Installs: The number of customers who have not only downloaded your app but have taken the next step to install it on their device. On average, 30% of your total downloads will convert to installs.
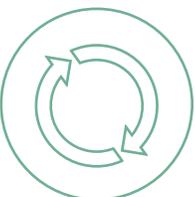
Customer Retention: A measurement of an app's ability to engage and maintain its customers over an extended period of time; in this case, one month. Retention varies by app store category, with commonly reported benchmarks suggesting an average 40% one-month retention rate and a 4% one-year retention rate.

Average Revenue Per User/Customer (ARPU): The average dollar amount each customer attributes to your app's revenue over a given timeframe. ARPU is usually calculated in monthly terms and commonly averages out your revenue by your monthly active users, rather than your total install count.

$$ARPU = \frac{\textit{Total revenue generated within a given time frame}}{\textit{Total \# of active users within a given time frame}}$$

Customer Insights: Trends and key findings gathered from customer feedback and app analytics. Customer insights speak to the wants, needs, and behaviors of your customers. When acted on, such findings are invaluable in identifying new features to add to the product roadmap or improving individual areas of your app to boost customer engagement, loyalty, and revenue.

Personalization: Cohesion between the customer experience and the individual preferences of your customers, based on an analysis of your customers insights. The in-app experience can be made personalized by delivering contextually relevant, value-adding content respectful of your customer's preferred style of brand communication. A personalized app experience is integral to driving customer lifetime value; and ultimately, your bottom line.

App Revenue: The dollar amount of revenue generated by your customers over a given time period; in this case, a month. App revenue can be generated in the form of advertisement revenue, in-app microtransactions, subscriptions, or downloads (in the case of paid apps).

Bringing them all together

These seven metrics are interlinked and combine to form one equation that sums up the entire app business. That equation is:

| Monthly Active Users | X | Monthly Average Revenue Per user | = | Monthly Revenue |

Installs   Retention   Research   Personalization

Here, monthly active users, average revenue per user, and total revenue are all straightforward, quantifiable variables that form a single, consistent equation. The other four variables are your levers. Tweaking any of them changes your total revenue, but the relationship is less predictable.

The beauty of this equation lies in its simplicity. When making decisions about the direction of your app, remembering this one equation allows you to quickly assess if you're moving the needle on any of the components and, thus, improving your bottom line.

As we work with developers on how they can grow their business, we find ourselves returning to the equation on a regular basis in order to track progress. Importantly, successful developers are now routinely working against this equation when thinking about their product roadmap, features, and customer feedback. **Categorizing your work in terms of the impact and results you anticipate driving is a very clear way to ensure that the tasks that are most important are getting done.**

The remainder of this guide will break down this equation with actionable steps you can take to impact each of the four levers: installs, retention, customer research, and personalization. Tweaking any of these easily manipulable levers will directly alter your revenue stream—a metric that, by itself, may seem unshakable.

We've further provided a simple tracking worksheet in the appendix that some developers use to map the equation to work items. Feel free to use it if it's helpful for you and to share with others.

Enjoy, and watch as your bottom line suddenly becomes a very predictable and movable figure.

Impacting the math of your app's business

Now that we've got an understanding of the key elements in the app business's equation, the question becomes:

## How do I impact each of these elements?

The good news is that we've learned a lot about each of these elements, their inputs, and what you can do to really improve them.

Let's start with the starting point of the equation: Installs.

Installs: The two paths customers take

The customer interaction that leads to the decision to download your app has two common paths:

- Discovery
- Referral

Referral (~30%)	Discovery (>65%)
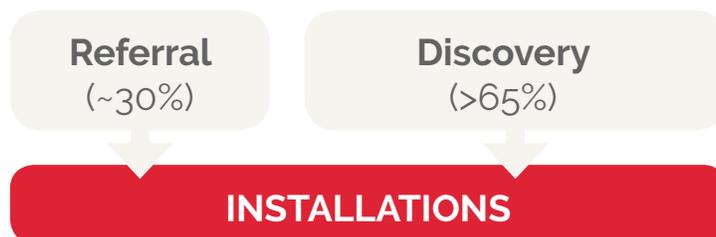
INSTALLATIONS

Discovery is the most common driver of app awareness and installations. Currently, more than 65% of all app downloads are the result of customers navigating through the app stores using either the search function or the rank-driven top charts. Much of this discovery happens through browsing the category and featured lists, which explains why so many developers are focused on getting their apps featured or rank higher. The rest comes through general searching, which relies more on app store optimization in order to get your app to lure in your potential customers and stand out from your competitors.

Referrals, on the other hand, are what happens when a trusted source (e.g., a friend, an app review site, or an influential blogger) evangelizes your app and influences potential customers to download it from one of the app stores.

The difference in behavior between these two paths is an important distinction to make when thinking about how to influence the installation numbers for your business.

Customers who follow the referral path are generally visiting your app's product page in an app store with the intent to install your app. They've already been convinced by someone they trust to take a look at your app and give it a try.

Discovery-driven customers, on the other hand, are engaging in the age-old practice of window- shopping—they're browsing through an app store and evaluating apps.

Let's break down the differences between the two installation paths in more detail and talk about how to maximize your opportunity for both.

The Discovery Path:
Are people converting when they find your app page?

They key to understanding the discovery path is viewing your app's app store product page as a vehicle for marketing, an item to be optimized. Just like a landing page, your product page has its own call-to-action and its own set of metrics—most prominent of which is its conversion rate.

View Product Page
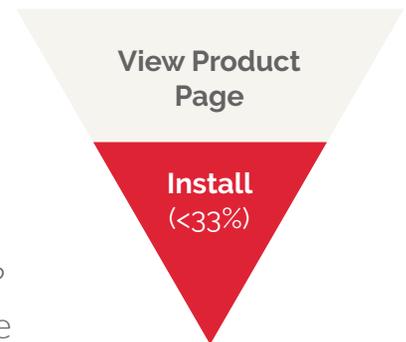
Install
(<33%)

What's that you say? You didn't think about the conversion rate? You assumed that most people who saw your app's product page were installing your app?

It's absolutely critical that you understand that the majority of the time, when someone looks at your app's page in an app store, they're choosing to NOT INSTALL your app.

Our studies of activity around app store product pages and work with various third-party analytic tools gives us three pieces of unique data that you should understand:
- For free apps, fewer than **1 in 3 views** of the app product page result in a download.
- For paid apps, fewer than **1 in 10 views** of the app product pages results in a purchase.
- For either category, only **30%** of people who download your app typically proceed to install it.

The reality is this:
Whether your app is free or not, most people choose to pass on your app.

The decision points for a discovery customer

Fortunately, you can meaningfully impact your app store conversion ratio by altering any of the three decision points for a customer who is in discovery mode:

- Your app's description
- Your app's screenshots
- Your app's ratings and reviews

Experimenting with your **app's description**, from the way you describe what the app does to discussing recent updates and your call-to-action, all play a hand in swaying a customer's decision to install your app. Well-written copy, with an emphasis on benefits and key use cases, will serve you well.

It's also important that you optimize the layout of your app's description in order to optimize the readability. Long blocks of text that run together are much harder to read than sections that are neatly broken up with line breaks and use Unicode characters for bullets, checkmarks, and other visual signals.

Compare the two layouts below:

A powerful photo editor with many amazing effects, filters and collage maker!

* ▢ is a powerful photo editor with **many amazing effects and filters** !
* A very comprehensive photo editor and pretty much everything you could ever want to do on your phone!
* There are so many effects, stickers and features to apply to your photos!
* ▢ is a fun and powerful photo editor that lets you quickly be pro, even if you've never edited a photo before
* Build in photo collage feature, ▢ will give you the look you want in seconds.

* Our Facebook page: https://www.facebook.com/ ▢

Transform photos with the tap of a finger. Use simple, yet powerful, photo editing tools to apply filters, adjust colors, and more!

Key Features:
+ One-tap auto enhance
+ Photo filters
+ Gorgeous photo effects and frames
+ Fun stickers
+ Color balance

▢ – Make collages & decorate wedding pics with photo frames!

▢ is the most romantic photo editor app for your mobile. Do you have too many photos of your special day and don't know what to do with them all? Make lovely wedding photo collage! Create a delightful collage showcasing all of your sweet moments. Download ▢ as soon as possible and enjoy. Pick your favorite wedding photo frame and favorite colorful background and have fun with photo editing. Your big day deserves this beautiful photo collage. Make an unforgettable wedding photo collage!
Features:
Easy to use interface
Select photo from your phone gallery
Drag and drop photos and easily move around within collages
Zoom, rotate, scale and crop images to fit the collage layout
Choose your favorite photo frame and background templates
Save high resolution picture collage to your phone gallery
Share your photos to Facebook, Twitter or Instagram.

This is a very nice and useful photo collage editor. Make memorable collages! This simple application lets you quickly and easily create wedding photo collages. You will

We recommend making sure that you've viewed your app's description on the phone, tablet, and web and revise it so that it presents well in every situation. It's not easy, but it's worth the effort! [See details about the limitations on characters and "above the fold" behavior in various environments in our Appendix.]

Your **app's screenshots** can make the words you share realer for the customer and give them a sense of what to expect on their screen. We highly recommend experimenting with the screenshots and descriptions and measuring the impact on your app's installation rates.

The silver bullet in driving downloads and purchases of your app are, however, the ratings and reviews. Specifically, the **overall ratings volume** and the **most recent reviews** you've received are important indicators to your potential customers.

This appears to be because the ratings and reviews are social proof for your app. Excellent ratings or significant complaints are powerful signals of quality for the average customer. A review from another customer is much more convincing than what the app developer has to say. 15 years of reviews on Amazon, Yelp, and other online review sites have taught us to trust our fellow consumers.

In our experience, modifying your app's descriptions and screenshots are important activities,but they're dwarfed by the influence that ratings and reviews have on your conversion rates. The mainstream app stores don't share enough data about this activity, but we've used information from the developers we work with and some third-party app stores to assess a "Share of Influence" that we think is roughly accurate.

The data underscores the importance of having excellent ratings and reviews to tell your story to potential customers:

Influence Share

- **Ratings & Reviews** — 75%
- **Description** — 15%
- **Screenshots** — 10%
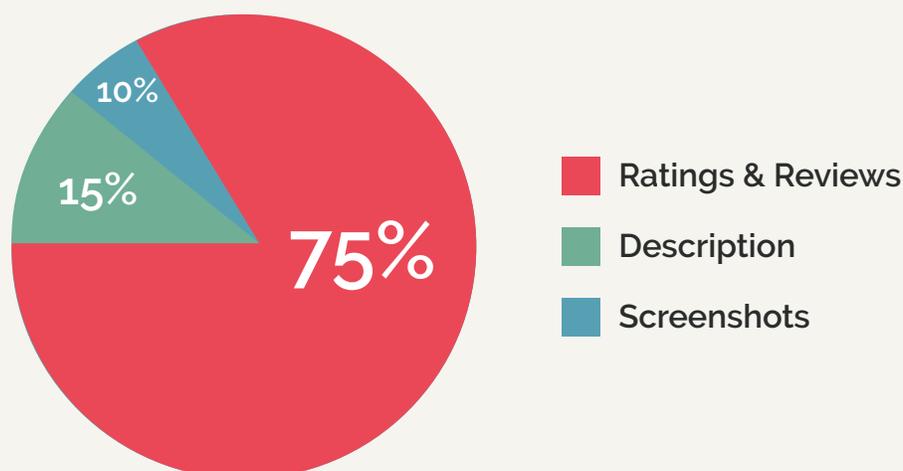
The Referral Path:
Create evangelists and prosper

The referral component of apps is talked about often because it's used to describe how an app like Angry Birds or Clash of Clans became so popular, but that's the exception rather than the rule. Very few apps are fortunate to become part of mainstream culture, but many apps rely on a loyal and loving audience.

If you've got an app that's live and has gotten some traction, it's likely that you've garnered at least some initial fans. You can see it when you're at dinner with a group of friends and someone pulls out their phone and shows off the latest app they've discovered. It's happening when people are tweeting about your app and how it managed to save them a ton of time or money. **Every loyal app customer is a potential salesperson for you**.

Instead of waiting for your app customers to get to a point where they're sharing your app with others, wouldn't it be great if you could move customers to that point? It turns out that there are some simple but powerful ways to trigger emotional connections with the people using your apps that enable you to stand out from the crowd.

The first thing that you can do is to **think about what in your app is shareable**. Our friends at Chewsy, for example, make it incredibly easy to share reviews of dishes with their friends through Facebook and Twitter, even going so far as to pre-write the reviews. It's brilliant because it takes some of the work out of the process, and it's connected to an activity that many people are naturally interested in sharing.

In addition to creating hooks to share activity from your app, you can create hooks to truly engage on a personal level with your app customers. **Making it easy to give feedback and then responding to each customer has an amazing impact on the customer experience**. Your dialog with them creates an emotional connection, helping them understand that there are people behind the app who care about their opinions and experiences.

Companies like Zappos and Nordstrom have understood this for years and now you can replicate this kind of experience in your app. Importantly, this activity is very rare–when was the last time you had a meaningful engagement with a company that made software? The customers you converse with are much more likely to talk about you to their friends and to share your app because you've connected with them and communicated that you care about their experience. **Apps that engage with their customers see much higher rates of referral-based downloads, just by listening**.

Retention:
Engage, listen, and keep more customers

As both dwindling retention rates and growing acquisition costs point out, the retention problem facing most app developers is a larger issue than the discovery problem. Winning a download is excellent, but for every 100 downloads today, only four of those customers will continue to use your app a year from now. The drop off is exceptionally steep, with more than 60% of the initial customers giving up on the app in the first month.

There are several important steps to take when thinking about retention. The first is that you need to measure it. We highly recommend instituting some form of analytics within your app. Whether you are using Google Analytics, Flurry, TUNE, or building your own measurement tool, you can quickly understand at an aggregate level what's going on after someone installs your app.

Measurement is a core step to take in the process, but measuring doesn't actually impact the retention equation. In order to impact the equation, you need to be focused on updating and refining your app on a regular basis. As you learn how people are using your app, what they expect from it and what they'd like to see in order to improve it, you have to listen to the feedback and iterate on your product.

Updates:
A core retention activity

Developers who actively update and improve their apps are more successful in ranking higher and obtaining more installs. This is because the update mechanism creates an opportunity to re-engage with customers who may have forgotten about your app or gave up on it after a buggy experience. Each update serves as a reminder of your existence.

Additionally, regularly updating your app communicates to your app customers that you are regularly investing in their experience. If your app is in the App Store, avoid going overboard with updates (we've seen apps trying to update on a weekly or even daily basis) because each update will reset your average rating and your customers will be spread out over many versions, making testing a nightmare. You want to find the balance between your app seeming like it's dead and updating so aggressively that very few people have the most recent version.

Creating a customer database for regular outreach

The most challenging part of the distributing over the app stores is that much of the information behind the customer profile and journey is unavailable to the developer. You can change this, however, by having optional or required logins for your app. It's possible to create a database of your app customers for better collection of customer insights. We recommend making logins optional and working to provide clear benefits to your customers for logging in—such as saved progress, personalization, or activity streams that are specific to app activities and exclusive to registered customers.

The login system you create should give benefits to your app's customers, first. However, in creating a reason to login, you can get the benefit of knowing more about your app's customers, including an e-mail address or alternative contact information. Once you've created a customer database, you can use the database to connect with your customers on a regular basis, sharing information about app updates, sales or announcements, or other apps in your portfolio.

Considering many app customers stop using your app in the first month, creating an external channel to communicate with your app customers gives you a powerful re-engagement channel. Simply reminding them of your presence can lead to a significant increase in the retention rate. More than that, however, regular communication with your app customers about new features and examples of how people are using your app is enough to dramatically change your retention patterns.

The helpful waiter leads to repeat business

Proactive in-app communication, whether one-way or two-way, changes the nature of the customer's interaction with your app. Instead of just interacting with software, the app customer is interacting with a real person. At Apptentive, we sometimes refer to this as the "helpful waiter" approach: When you're at a restaurant and your waiter is attentive and checks in with you occasionally, you feel good about the level of care taken by the business. Similarly, a proactive approach towards asking the customer about their experience produces a similar outcome, which encourages the customer to use your app more often due to the establishment of an emotional connection.

Monetize:
Research and personalize

Research with the goal of collecting customer insights and mapping the customer journey.

More downloads and more active users are certainly requirements for a successful app. The ultimate goal, for most app developers, however, is to make a business out of an app.

The key to getting smart about making a business out of your apps is to truly understand your customers. In doing so, you can better determine how you can make the best use out of your limited developer resources by creating a personalized experience and the updates that offer the most value. To start collecting customer insights, make a list of questions that could guide your product roadmap or marketing strategy. Such questions may be:

- What will people pay for in your app? Is it more content, additional levels, greater service, or a specific product set?
- If you're employing ads, do you know if your ad strategy is relevant or intrusive?
- What other associated apps can you build for your most loyal fans and app customers?

The emerging business models for apps are presenting us with new opportunities to build a business, but flying blind and guessing is a dangerous way to uncover the answers to your monetization questions. Instead of copying others or just throwing things against the wall with your customers, take a proactive approach to learning more about how you can succeed. Running targeted surveys to your customers is a great step to get smarter about customer needs.

Personalize your offerings based on the individual preferences of your customers

The best apps are those that offer personalized experiences. The more you understand your customers, the more you can cater to their customer journey. For example, some customers are more likely to make in-app purchases than others. Other customers are more likely to purchase premium versions of your apps in favor of not seeing ads. When your app is a gateway to your existing commerce channels, **recognizing differences in customer behavior and preferences can ensure that the time customers spend with your app is focused on the right products and delivers a personally relevant experience**. Whether you're selling virtual goods or real services, tailored presentations mark the difference between average revenues and extraordinary profits.

If you've created a customer database and understand the needs and desires of your customers, you will find it easier to program differing experiences. With sophisticated and targeted communications capabilities, it is now possible to capitalize on these differences and to match the results of your research to the capabilities you've built. The best apps use such methods provide **distinct** and **personalized experiences**.

Conclusion:
Break down the app equation and build a business

As you grow your app and your business, always remember the "math of the app business," the one equation that impacts your success. By ensuring that everything you do benefits one of the four levers on revenue, you can maximize your resources and improve your profit.

If you keep focused on maximizing your installs, higher retention, and better monetizing your audience, you'll soon find yourself with more loyal and valuable customers, as well as higher rankings and improved ratings. The equation may be simple, but the work is not. It requires continued investment, commitment, and evaluation to move the needle on each and every piece of the equation and build a sustainable app business.

As always, we're here every step of the way as you continually fine-tune your app development, marketing, and monetization efforts. Visit www.apptentive.com to integrate your app with our customer communication tools and visit our resource library for more complementary guides like The Math of the App Business.

About Apptentive

Apptentive's mobile customer engagement software helps companies listen to, engage with, and retain their customers. The product gives brands the opportunity to identify who to talk to, intelligently engage user segments, and mobilize customers to take action through in-app messages, surveys, and ratings prompts. Integrated into thousands of mobile apps, Apptentive helps companies engage mobile customers, boost app ratings, drive downloads, and earn customer loyalty.

❤ **Apptentive**

Build Loyalty, Spread the Love

Join these companies in **being Apptentive.**

NORDSTROM   DRAFTKINGS   EVERNOTE   allrecipes.com   IHG InterContinental Hotels Group   C. CONCUR

Request a demo at **www.apptentive.com**

Appendix:
Worksheets and resources

Appendix A: The App Math Worksheet – Weekly Task Lists

Item	Task(s)	Owner
Installs – Discovery		
Installs – Referral		
Retention – Customer Conversations		
Retention – App Updates		
ARPU – Purchase Options		
ARPU – Customer Research		
ARPU – Personalization		

Appendix B: App Store Product Page Guidelines*

Item	Character Limit	Above the Fold
App title, iOS	255 characters	Truncated in App Store after 23rd character, truncated on home page/ apps screen after 11th character
App title, Android	30 characters	Truncated on home page/apps screen after 14th character, not truncated in Google Play
App description, iOS	4,000 bytes (1,000-4,000 characters)	255 characters
App description, Android	4,000 characters	80 characters
What's New field, iOS	4,000 bytes (1,000-4,000 characters)	N/A
What's New field, Android	500 characters	N/A
Keyword field, iOS	100 characters	N/A
Keyword field, Android	N/A	N/A
Screenshots, iOS	5 max	1-3 shown
Screenshots, Android	8 max	1-3 shown

*character limits subject to change by device type and OS

Appendix:
Worksheets and resources

Appendix C: Mobile App KPI Calculator

Measurement, Benchmarking, & Competitive Intelligence
Use Apptentive's pre-made spreadsheet to track your key metrics and competitors.

Mobile App KPI Calculation

Mobile Marketing Metrics for [App Name]						
To generate your mobile app success report, fill in all of the gray cells in the table below that you have a known value for. The blue cells will be automatically computed based on the information you provide. These calculations can be manually overridden if you have an alternative method of calculation.						
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
App Store Data						
Total download count						
Downloads this month						
App store rank*						
Current app store rating (iOS only)						
All-time app store rating						
App store rating count						
Date of last update (mm/dd/yy)						
Days since last update						

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