AARRR Model

Understanding AARRR Model

What is AARRR Model?

> Pirate Metrics—a term coined by venture capitalist Dave McClure—gets its name from the acronym for five distinct elements of building a successful business. McClure categorizes the metrics a startup needs to watch into acquisition, activation, retention, revenue, and referral—AARRR. - *Lean Data Analytics*
>
> 根据不同阶段用户参与行为的深度和类型，我们可以将增长目标拆分并 概括为“AARRR”转化漏斗模型，即:Acquisition(获取用户)、Activation(激发活跃)、 Retention(提高留存)、Revenue(增加收入)、Referral(传播推荐)。在这个漏斗中， 被导入的一部分用户会在某个环节流失，而剩下的那部分用户则在继续使用中抵达下一环节， 在层层深入中实现最终转化。 - *Growth Hacker*

AARRR model, which is proposed by a Silicon Valley investor Dave McClure, is an acronym for a set of user's behavior metrics that product-led growth businesses shoud be tracking to be successful. The metrics include **acquisition, activation, retention, revenue, and referrral.**

The figure below describes the five steps through which users, customers, or visitors must progress in order for a company to extract value from them.

Therefore, AARRR model is a kind of metric framework for thinking about success of a business. In fact, AARRR model is usually applied in the formulation of **driver metrics** for A/B testing. This is why it is so important for a data analyst to learn.

Now, the question is that what a role does AARRR model play in A/B testing?

AARRR model is a methodology that data scientists can leverage to design useful driver metrics for a series of subsequent research. And AARRR model can effectively guide us to determine the driver metrics through analyzing the user journey from acquisition to referral.

Note: Driver metrics tend to be shorter-term, faster-moving, and more-sensitive metrics than goal metrics. They are more appropraite than goal metrics to be key metrics for online controlled experiments.

To make you less bewildering about the metrics, let me introduce A/B testing. A/B test is a kind of **user experience research methodology**. It is implemened by a randomized experiment that splits the *randomization units* into two variants, *control and treatment*, then statistical techniques will be performed to compare the change in **core metrics** of two variants to detect which variant is more effective.

For example, a guy from product department proposed an idea that adds a new feature into current product, to improve the user engagement. Now for data scientist/analyst, it is our responsibility to test the validity of the idea. And we usually need to come up with a series of metrics about user engagement and use statistical methods to examine if there is a research effect after collecting data about user engagement.

How Does AARRR Model Works?

AARRR Framework

Category	User Action	Conversation %	Estimated Value
Acquisition	Visits app	100%	$.01
Acquisition	Stays 1 min+	75%	$.10
Activation	Subscribes to newsletter	25%	$.25
Activation	Signs up for free trial	5%	$1.00
Retention	Opens email, clicks through	8%	$2.00
Retention	Visits app 3 times in 30 days	3%	$5.00
Referral	Sends 1+ users to visit site	2%	$3.00
Referral	Refers 1+ users who activate	1%	$10.00
Revenue	Generates minimum revenue	2%	$5.00

ProductPlan

Before running A/B tests, we need metric taxonomy to design useful metrics to reflect the success of our business. Using AARRR model, our first step is to identify conversion metrics for each step of the five user behaviros.

Acquisition Metrics

Acquisition means all channels that attract users to our product, including SEO, social media, marketing campaigns, apps and widgets, and advertising. At the stage, we not just look at the visitors to our products but also at how many of them are converted into our customers. For example, for the business displayed in the figure above:

App visits → Subscribes and signs up→repeat visits to app→Sends and refers users to app→ Generates minimum revenue/conversion to customer

All these steps, before customer conversion, should be measured to understand our customer's journey and optimize our customer's jurney.

There are three fundamental questions we want to be asking about acquisition:

- What channel is driving the most traffic? -- traffic
- What channel performs the best in terms of customer conversion? -- conversion rate
- What channel has the lowest customer acquisition cost? -- cost of acquisition per customer

When trying to figure our which channel can drive the most traffic, The Bullseye Framework, which is proposed by Gabrei Weinberg, can be used for analysis.

> "*With nineteen traction channels to consider, figuring out which one to focus on is tough.*" - Gabriel Weinberg

The framework has three steps:

- What are possible channels?

At the step, we need to brainstrom all possible traction channels. In each channel, we should identify one decent channel strategy. Specifically, running ads on Facebook is a channel strategy.

- What is the minimum viable channel?

Run multiple cheap traction tests in the seemingly promising channels in parallel so as to determine if the idea is feasible. These tests should be designed to asnwer the following questions: 1) How much will it cost to acquire customers via this channel 2) How many customers are avaiable through this channel? 3) Are the customers we are reaching through this channel our target customers?

- What channel is working?

The third and final step in Bullseye is to focus sorely on the channel that performs best in terms of customer conversion. If all goes well, one of the traction channels we tested produced promising results. In the case, we direct all resoruces into the channel.

Activation Metrics

Activation refers to users taking the desired action after they first visited our company's product, webiste, and content. For example, users may visit additional pages, experiment with additional features, spend a given amount of time on your site or app, and sign up for your newsletter. Usually it is not enough to get people to download our app/or even sign up, if they are going to stop using the product right after. This is crucial to guide your user through the real value in our product. The time between the user signs up and "Aha Moment" is activation.

Activation differ from business to business. For e-commer business, activation means users are consuming content displayed in our platforms. Hence, we need to look at how much content they are consuming and how they are consuming. The consideration can assis in designing better content for optimizing their experience. For an app, after users download/sign up for our app, activation means that they login in back repeatedly. So we need to look at whether they log-in once and never come back. For a Saas business, you want to look at the moment people start using your platform. You could think of the moment they sign up for your trial (or even full service) as the moment of acquisition. Every effort after that should be geared towards successfully activating your customer.

In a nutshell, an activated user is someone who keeps coming back to our product. But we need to differentiate two kinds of customers here: *activated customers and cold customers*. As mentioned before, some customers may end up using our products after signing up or downloading, and they are called **"cold customers"**. On the other hand, if users sign up and login back repeatedly, they are **"activated customers"**.

So the question is how to turn cold customers into activated customers? In ther words, how to make cold customers quickly experience "Aha Moment"?

To complete the objective, we should segment and target users with specific onboarding emails or other appratus. And the onboarding process should be as enjoyable and seamless as possible. In designing a good onboarding, we may run a number of tests until we find the best version.

At the stage, we maily focus on the following metrics:

- Enrollments/Subscriptions -- cold customers
- DAU/MAU - activated customers

Retention Metrics

Retention answers the question:**"How many of your customers are you retaining and why are your losing the others?"**

After persuading new users to take action, we also need to monitor how many of them show continuous interest in our products. The continuous interest can be different in different industries. For an e-commerce business, retention means that customers buy products multiple times on the platform. For an app, retention means that users keep logining back and opening/using our app. For a Saas business, retention means that people subscribed to your software and stay subscribed after the subscrption ends.

We not just look at retaining customers, but at how many customers are churning. For one, the churn rate will tell us if our product is a good market fit. If a lot of people starting leaving your product/service after they use it, there must be something wrong with either your product or messaging.

> "Your most unhappy customers are your source of learning." - *Bill Gate.*

At this stage, we should focus on the retention and on the relationship between customer acquisition and retention:

- Retention Rate.
    - Higher retention rate tells us the growth of product is relatively stable, and our product is moving in the right direction.
- Customer acquisition rate > customer churn rate = Growth
- Customer acquisition rate < customer churn rate = Buring a lot of money

Now if the retention rate is very low, what can we do to improve the retention rate?

The key to the improve in retention is to try various ways of inducing your customers into continuously experiencing the real value of your products. For a e-commerce business, email automation or app push can be used for notifying users of any discount available for them. For an app, producing more high-quality content for users to seduce them into opening and wacthing.

Revenue Metrics

Revenue metrics answer the question**"How can you increase your revenue?"**

We need to identify how much money we can earn from our users. The metrics help to figure out whether the cost of acquisition, activation, and other efforts are leading to profitable growth.

There are two metrics we can leverage:

- **ARPPU.** ARPPR means Average revenue per paid user. It can be calculated by dividing the total revenue by the total number of paid users.
- **LTV**. Customer lifetime value is the average revenue that customers will generate before they churn. LTV = ARPA $\times \sum_{n=1}^{m}(1-\text{churn rate})^n$

Referral Metrics

Referral metrics answer the question **"How can you turn your customers into your advocates"?**

To promote referrals we need to have a convenient and systematic referral process in place that stimulates. For example, PDD requires users to enjoy the less costly group buying by inviting others on WeChat so that it dominates the market of three or four tire cities.

One metric on which we should keep a close eye - **viral coefficient**. Viral coefficient is the average number of users that a customer recommends to us. A viral coefficient of two would mean that one customer on average refers two new customers to us.

Viral Coefficient = conversion rate $\times$ number of users receiving invitations

How to use AARRR Model?

Step 1: Set up processes to track and analyze these AARRR pirate metrics.

After identifying the types of data we want to collect for each of these stages of the AARRR framework, we then need to implement tools and methods for collecting analyzing data.

Step 2: Run tests for all stages to identify better approaches

As we gather data, we need to run a plenty of A/B tests to find places where we can improve user engagement at each stage of the AARRR framework.

For example, we might need to run several versions of email automation to see which version can drive more users login back to our app. Or we might run different contest to examine which one can stimulate more users to recommend their friends to our product.

Step 3: Use the metrics to improve our initiatives

As we know what is and is not working at each level of AARRR framework, then our team can start looking for ways to improve the product and marketing initiatives.

Practice

Using AARRR framework, we can answer a seriers of problems that we encounter in our daily job or job interview.

在这里，我选用一道真实的数据分析面试 题目来演示如何使用AARRR分析框架。这两道面试题目均来自于字节跳动的数据分析面试。

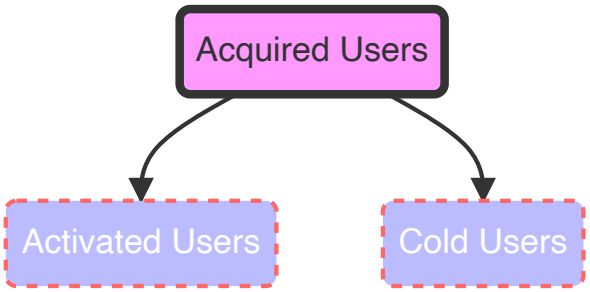
如果抖音的DAU最近下滑，你如何分析指标下降的原因?

鉴于是中文面试，这里采用中文为答案语言。

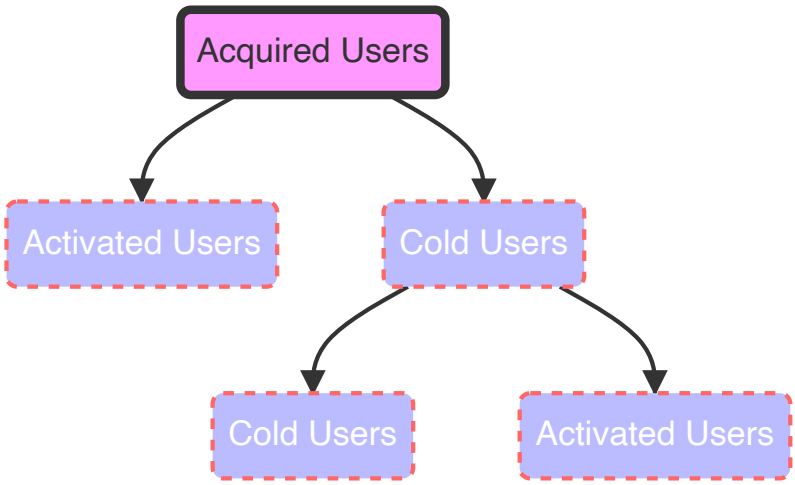
这种 xx 指标有所下降的题目均可以采用AARRR框架予以分析。首先，不妨回忆用户的行为路径：Acquisition > Activation > Retention > Revenue > Referral. DAU指标属于第二阶段activation的指标，所以很明显如果第二阶段的指标出现问题，活跃用户就会减少。具体分析思路如下：

Activation

抖音是一个社交App, 所以其Activation应该指用户在首次接触到抖音后，用户多次往返登录抖音。很容易发现，用户注册抖音后，有一些用户会往返登录成为活跃用户；而有一些用户不会这样做。因此，这里直接讲用户划分为两部分：



其次，Cold Customers随后也可能通过创造更多的优质内容诱导他们多次登录抖音从而成为activated users，当然这部分仍然会有一部分不会成为activated users。所以我们可以继续划分cold users。如下图所示：



在这，额外介绍一个话题 - *冷启动*。

> 冷启动指在产品之初尚未形成完善的生态体系并能提供足够多可消费内容的情况下，从零开始导入第一批用户和制造内容的过程。 -- 增长黑客

OK，目前分析到这一步时，整体的思路就非常清晰了。既然DAU有所下降，从Activation这个阶段看很有可能就是因为从Cold Users转变成为Activated Users的这部分用户减少了。然后我们需要探究为什么这部分用户减少了？可以参照冷启动的概念，有没有可能是因为抖音平台本身优质内容过少没有吸引这部分用户登录使用抖音？其次，如果不是内容的原因，是否是抖音APP本身的onboarding process不友好，导致用户满意度下降，从而在下载了产品后，就没有使用过抖音。

如果我的分析没错，那么针对这两个原因，我们可以给出解决方案：

- 冷启动。出台优质内容创作计划，通过金钱奖励形式鼓励现有的用户创作优质内容。随后通过推荐算法讲优质内容推荐给这部分cold cusomers，诱导他们登录抖音consume content。

- Unfriendly onboarding. 优化onboarding process。
    - 强调抖音的价值所在。例如，抖音是一款通过短视频丰富个人生活同时了解他人生活的APP。
    - 强调抖音的核心功能。通过简单的教程帮助用户理解抖音APP的核心功能是什么，如何使用。
    - 减少向用户索取的个人信息。只获取抖音所需要的必要数据，同时向用户解释为什么需要获取他们的电话以及其他信息，并解释不会窃取用户额外的信息。
    - 优化登录流程。如果用户认为登录困难，我们应该运行多次实验，设计出最方便的登录方法。

最后，当然会有其他的原因，例如外部环境竞争更加激烈，快手抢夺了抖音的用户，导致用户整体减少。