Chapter 17. Stage Three: Virality

In 1997, venture capital firm Draper Fisher Jurvetson first used the term *viral marketing* to describe network-assisted word of mouth.[61] The firm had seen the power of virality firsthand with Hotmail, which included a vector for infection in every email—the now-famous link at the bottom of a message that invited recipients to get their own Hotmail account.

Decades earlier, Frank Bass, one of the founders of marketing science, described how messages propagated out in a marketplace.[62] His 1969 paper, “A New Product Growth Model for Consumer Durables,” explained how messages trickle out into a market through word of mouth. At first, the spread starts slowly, but as more and more people start talking about it, spread accelerates. However, as the market becomes saturated with people who’ve heard the message, spread slows down again. This model is represented by a characteristic *S*-shape known as the Bass diffusion curve, shown in Figure 17-1.

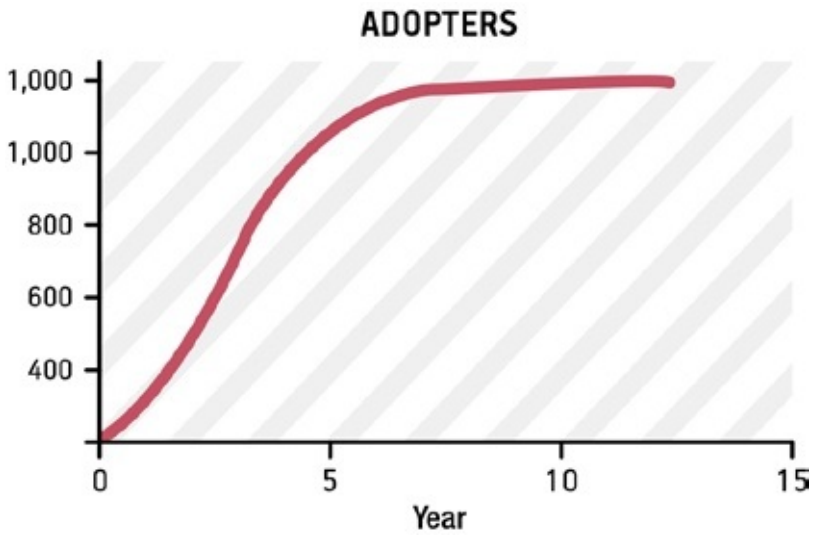

Figure 17-1. Three certainties: death, taxes, and market saturation

When researchers compared the spread of Hotmail to the predictions from Bass's model, they found an almost perfect fit.

In the Virality stage, it's time to focus on user acquisition and growth, but keep an eye on your stickiness too.

- There's a risk that you build virality and word of mouth at the expense of engagement. Perhaps you're bringing in new users who are different from your earlier adopters, and as a result they don't engage with the product. Or maybe your unique value proposition is getting lost in your marketing efforts, and your new users have different expectations from earlier ones.

- Be careful that you haven't moved on from stickiness too soon. If you're investing in adding users, but your churn is high, you may not be getting a good enough return on investment. Premature growth burns money and time, and will quickly kill your startup.

The Three Ways Things Spread

Virality is simply users sharing your product or service with others. There are three kinds of virality:

- **Inherent** virality is built into the product, and happens as a function of use.

- **Artificial** virality is forced, and often built into a reward system.

- **Word-of-mouth** virality is the conversations generated by satisfied users, independent of your product or service.

All three matter, but should be treated as distinct forms of growth and analyzed in terms of the kind of traffic they bring in. For example, you may find that artificial virality brings in plenty of drive-by traffic, but inherent virality brings in engaged customers who actually turn into revenue.

Inherent Virality

Many products have inherent virality. When you use TripIt, you share your travel plans with colleagues, which they can view better when signed in; when you use Expensify, you forward expense reports to others for approval; when

you use FreshBooks, your customers view their electronic invoices on the site.

This is the best kind of virality. It feels genuine, and the recipient is motivated to start using the product or service. It's like an epidemic. It's not voluntary. It's not something that you opt into doing or experiencing, it just happens.

Artificial Virality

While inherent virality is best, artificial virality can be bought. Parts of Dropbox are inherently viral—users share files with colleagues and friends—but the company isn't afraid to compensate its users. It offers additional storage for tweeting or liking the product, and rewards users for helping it to acquire new customers. The rapid growth of the service happened because of existing users trying to convince friends to sign up so they can grow their free online storage capacity.

Artificial virality comes from incentivizing existing users to tell their friends. Done right, it can work well—as Dropbox has shown—but it can also be awkward and feel forced if done poorly. You're essentially building self-funded marketing activities into the product itself, sometimes at the expense of legitimate functionality.

Word-of-Mouth Virality

Finally, there's natural word of mouth. Harder to track, it's also extremely effective, because it amounts to an endorsement by a trusted advisor. You can see some of this activity by simply monitoring blogs and social platforms for mentions of your startup—and when you see one it's a good idea to engage with the endorser, find out what made him share your product or service, and try to turn that into a repeatable, sustainable part of the viral growth strategy.

You may even want to use tools like Klout or PeerReach to try to score the impact that those who are discussing you can have on awareness of your product or service, since their rankings act as a proxy for a person's ability to spread a message.

Metrics for the Viral Phase

Measuring your viral growth turns out to be really important if you don't want to pay for customers. The number you're after is your viral coefficient, which venture capitalist David Skok sums up nicely as "the number of new customers that each existing customer is able to successfully convert."[63]

To calculate your viral coefficient:

1. First calculate the invitation rate, which is the number of invites sent divided by the number of users you have.

2. Then calculate the acceptance rate, which is the number of signups or enrollments divided by the number of invites.

3. Then multiply the two together.

Table 17-1 shows sample math for a company with 2,000 customers who send 5,000 invitations, 500 of which are accepted.

Table 17-1. Sample math for a viral coefficient calculation

Existing customers	2,000		
Total invitations sent	5,000	Invitation rate	2.5
Number that get clicked	500	Acceptance rate	10%
		Viral coefficient	25%

This might seem overly simple, because in theory, that quarter of a customer will, in turn, invite another 25% of a customer (6.25% of a customer), and so on. In reality, as David points out, it's unlikely that users will continue to invite their friends as time goes by—instead, they'll invite those friends who they think are relevant and then stop inviting, and many of those they invite will have the same groups of friends. The invitation roster will get saturated.

There's another factor to consider here: cycle time. If it takes only a day for someone to use the site and invite others, you'll see fast growth. On the other hand, if it takes someone months before she invites others, you'll see much slower growth.

Cycle time makes a huge difference—so much so, David feels it's more

important than viral coefficient. Using sample data from a worksheet he created, David underscores this in one of his examples: “After 20 days with a cycle time of two days, you will have 20,470 users, but if you halved that cycle time to one day, you would have over 20 million users!”

Bass’s equations took many of these factors into consideration when he was trying to explain how messages propagate out into a marketplace and how customers gradually adopt innovation.

Ultimately, what we’re after is a viral coefficient above 1, because this means the product is self-sustaining. With a viral coefficient above 1, every single user is inviting at least another user, and that new user invites another user in turn. That way, after you have some initial users your product grows by itself. In the preceding example, we could do several things to push the viral coefficient toward 1:

- Focus on increasing the acceptance rate.
- Try to extend the lifetime of the customer so he has more time to invite people.
- Try to shorten the cycle time for invitations to get growth faster.
- Work on convincing customers to invite more people.

Beyond the Viral Coefficient

Treat the three kinds of viral growth differently. Each of them will have different conversion rates, and users who come from each kind of growth will have different engagement levels. That’ll tell you where to focus your efforts.

The metrics that matter in the virality phase are about outreach and new user adoption. While the most fundamental of these is the viral coefficient, you can also measure the volume of invites sent by a user, or the time it takes her to invite someone.

For companies selling to an enterprise market, where click-to-invite virality isn’t the norm, there are other metrics that might work better. One is the *net promoter score*, which simply asks how likely a user is to tell his friends about your

product and compares the number of strong advocates to those who are unwilling to recommend it.[64] It's a good proxy for virality, because it suggests customers who will act as references, refer you business, or be quoted in marketing collateral.

Virality doesn't play a key role in every business. Some products are just not naturally viral, and hardly any are wildly so. Much has been made of getting a viral coefficient above 1—in other words, getting every user to invite at least one other user. This means, in theory, you can grow forever.

Unfortunately, a sustained viral coefficient above 1 is a Holy Grail for startups.

That doesn't mean you should ignore virality; rather, it means you need to treat it as a force multiplier that will make your paid marketing initiatives more successful. That's why the Virality stage comes before the Revenue and Scale stages: you want to get the biggest bang for your marketing buck, and to do so, you need to optimize your viral engines first.

Timehop Experiments with Content Sharing to Achieve Virality

Jonathan Wegener and Benny Wong started Timehop in February 2011 as a hackathon project. The original product—built in a single day and called 4SquareAnd7YearsAgo—aggregated your Foursquare check-ins and sent them to you in a daily email from one year ago. It was a fun way of looking back at where you had been each day last year. The project got a lot of attention, and after a few months of watching organic growth, the founders decided to focus on it full-time. They rebranded as Timehop and raised $1.1 million in financing from venture and angel investors.

The founders spent most of their time at the beginning focusing on engagement. Luckily for them, people were hooked on the product, and it showed in the core metrics. "We consistently saw 40–50% open rates on our emails, and still do," says Jonathan. "So we knew we had a sticky, engaging product that people cared about."

Proving that Timehop was an engaging product was essential, but so was proving that engagement led to retention. "People have been on Timehop for close to two years without ever getting bored and leaving," says Jonathan.

“Originally we tracked open rates, unsubscribes, and content density [how many users get emails each day because they did something a year ago] religiously, but all of that’s in very good shape.” It was time to change their One Metric That Matters.

That engagement and retention gave the founders the confidence they needed to tackle the next big challenge: growth. “We saw through pixel tracking in emails that 50% of emails were being opened on iOS devices,” says Jonathan. “That led us to focus on a mobile app, which is also a better tool for encouraging growth through sharing.”

While people do share Timehop emails, email itself is not truly social. People *received* emails, but they didn’t share them. Since Timehop wants to build what Jonathan describes as a “social network for your past,” the move to mobile helps to encourage social behaviors. In fact, mobile users share 20 times more than email-only users. But it still wasn’t enough.

“All of our focus right now is on sharing,” says Jonathan. “The metric we’re watching is percent of daily active users that share something. We don’t focus on the viral coefficient right now—we know it’s below 1—and we want to track numbers that are closer to what people are doing in our app.” The company is now experimenting and testing rapidly to see if it can significantly improve this number. It builds fast and focuses on learning and tracking results. And it has a line in the sand: “We’d like to have at least 20–30% of our daily active users share something on a daily basis,” Jonathan says.

Timehop cares only about growth through virality (and using sharing of content as the primary mechanism for encouraging that virality). “All that matters now is virality,” says Jonathan. “Everything else—be it press, publicity stunts, or something else—is like pushing a rock up a mountain: it will never scale. But being viral will.”

Summary

- Timehop’s founders turned a one-day hackathon project into a real company when they saw consistent, organic growth and significant engagement.
- After seeing that 50% of users opened up daily Timehop emails on an iOS device, the founders built a mobile application. They also changed their OMTM from engagement and retention to virality.

- The founders are focused almost exclusively on content sharing, and increasing the percentage of daily active users who share content, in an effort to create sustainable growth in their user base.

Analytics Lessons Learned

Understanding how people use your product can provide key insight into what direction to go and how to move from one stage to the next—for example, from stickiness to virality. Focusing on a metric like viral coefficient may be too high level; instead, look for the actions within your product that drive virality and make sure you're measuring those properly and have lines in the sand that you're targeting.

Instrumenting the Viral Pattern

Hiten Shah's ProductPlanner site was a tremendously valuable source of acquisition patterns.[65] From enrollment processes to viral email loops to friend invitations, the site catalogued dozens of customer acquisition workflows and would suggest metrics for each stage of the process. For example, Figure 17-2 shows the email invite loop for Tagged.

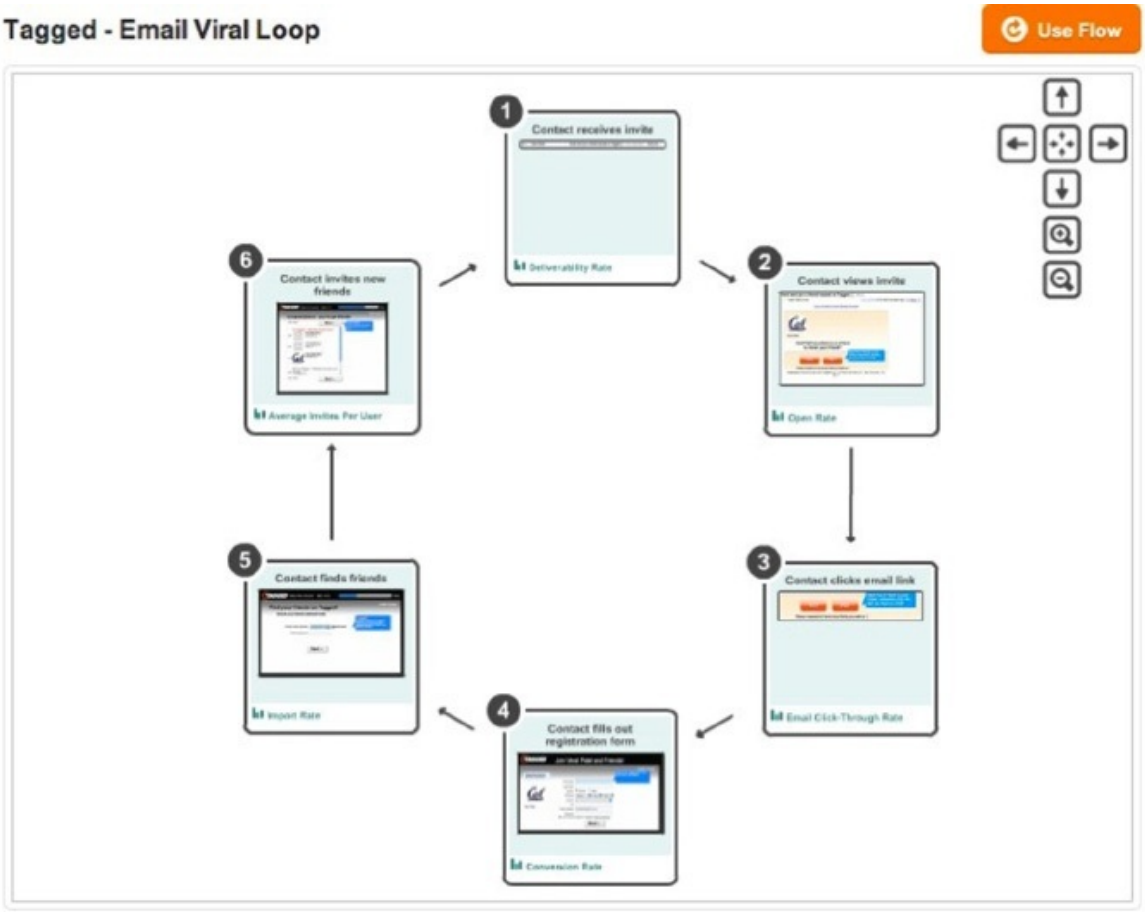

Figure 17-2. Email invite loops have a simple set of steps and metrics to track

While ProductPlanner is no longer available—its founders are focusing on KISSmetrics instead—you can design patterns of your own using this model, then quickly see what metrics you should be tracking within a process. Then you can instrument the viral loop you've built, see where it's collapsing, and tweak it, edging your way toward that elusive coefficient of 1.

Growth Hacking

Most startups won't survive on gradual growth alone. It's just too slow. If you want to grow, you need an unfair advantage. You need to tweak the future. You need a hack.

Growth hacking is an increasingly popular term for data-driven guerilla

marketing. It relies on a deep understanding of how parts of the business are related, and how tweaks to one aspect of a customer's experience impact others. It involves:

- Finding a metric you can measure early in a user's lifecycle (e.g., number of friends a user invites) through experimentation, or, if you have the data, an analysis of what good users have in common
- Understanding how that metric is correlated to a critical business goal (e.g., long-term engagement)
- Building predictions of that goal (e.g., how many engaged users you'll have in 90 days) based on where the early metric is today
- Modifying the user experience today in order to improve the business goal tomorrow (e.g., suggesting people a user might know), assuming today's metric is *causing* a change in tomorrow's goal

The key to the growth hacking process is the early metric, (which is also known as a *leading indicator*—something you know today that predicts tomorrow). While this seems relatively straightforward, finding a good leading indicator, and experimenting to determine how it affects the future of the company, is hard work. It's also how many of today's break-out entrepreneurs drove their growth.

Attacking the Leading Indicator

Academia.edu founder Richard Price shared stories[66] from a recent Growth Hacking conference[67] at which several veterans of successful startups shared their leading indicators.

- Former Facebook growth-team leader Chamath Palihapitiya said a user would become "engaged" later if he reached seven friends within 10 days of creating an account. Josh Elman, who worked at Twitter, said the company had a similar metric: when a new user follows a minimum number of people —and some of those follow back—the user is likely to become engaged. In fact, Twitter has two kinds of users: "active" ones who've visited at least once in the last month, and "core" ones who've visited seven times in the last month.

- Onetime Zynga GM Nabeel Hyatt, who ran a 40-million-player game, said the company looked at first-day retention: if someone came back the day after she signed up for a game, she was likely to become an engaged user (and even one who paid for in-game purchases). Hyatt also underscored the importance of identifying One Metric That Matters, then optimizing it before moving on to the next one.

- Dropbox's ChenLi Wang said the chances that someone becomes an engaged user increase significantly when he puts at least one file in one folder on one of his devices.

- LinkedIn's Elliot Schmukler said the company tracks how many connections a user establishes in a certain number of days in order to estimate longer-term engagement.

User growth isn't everything, however. You may be trying to hack other critical goals like revenue. Josh Elman told us that early on Twitter focused its energy on increasing feed views because it knew its revenue would be tied to advertising—and that advertising could happen only when a user looked at her Twitter feed. Number of feed views was a leading indicator of revenue potential even before the company hit the Revenue stage.

What Makes a Good Leading Indicator?

Good leading indicators have a few common characteristics:

- Leading indicators tend to relate to social engagement (links to friends), content creation (posts, shares, likes), or return frequency (days since last visit, time on site, pages per visit).

- The leading indicator should be clearly tied to a part of the business model (such as users, daily traffic, viral spread, or revenue). After all, it's the business model that you're trying to improve. You're not just trying to increase number of friends per user—you're trying to increase the number of loyal users.

- The indicator should come early in the *user's* lifecycle or conversion funnel. This is a simple numbers game: if you look at something that happens on a

user's first day, you'll have data points for every user, butif you wait for users to visit several times, you'll have fewer data points (since many of those users will have churned out already), which means the indicator will be less accurate.

- It should also be an early extrapolation so you get a prediction sooner. Recall from Chapter 8 that Kevin Hillstrom says the best way to understand whether an e-commerce company is a "loyalty" or an "acquisition"-focused organization is to look at how many second purchases happen in the first 90 days. Rather than wait a year to understand what mode you're in, look at the first three months and extrapolate.

You find leading indicators by segmentation and cohort analysis. Looking at one group of users who stuck around and another group who didn't, you might see something they all have in common.

Correlation Predicts Tomorrow

If you've found a leading indicator that's correlated with something, you can predict the future. That's good. In the case of Solare, the Italian restaurant we described in Chapter 6, the number of reservations at 5 p.m. is a leading indicator of the total number of customers who dine on any given night—letting the team make last-minute staffing adjustments or buy additional food.

UGC site reddit has been fairly public about its traffic and user engagement—after all, it derives revenue from advertising, and wants to convince advertisers it's a good bet.[68] About half of all *visits* to the site are logged-in users, but these users generate a disproportionate amount of site traffic. Reddit's engagement is good. "Almost everyone who makes an account comes back a month later," says Jeremy Edberg. "It's a couple of months before people stop coming back."

Is there a leading indicator in reddit's site traffic? Table 17-2 compares logged-in users (those with accounts) to anonymous visitors by the number of pages they view in a visit.

Table 17-2. Reddit's page views for logged-in versus non-logged-in users

	Logged-in users			**All users**		

Days since last visit	Visits	Page views	Pages per visit	Visits	Page views	Pages per visit
0	127,797,781	1.925B	15.06	242,650,914	3.478B	14.33
1	5,816,594	87,339,766	15.02	13,021,131	187,992,129	14.44
2	1,997,585	27,970,618	14.00	4,958,931	69,268,831	13.97
3	955,029	13,257,404	13.88	2,620,037	34,047,741	13.00
4	625,976	8,905,483	14.23	1,675,476	20,644,331	12.32
5	355,643	4,256,639	11.97	1,206,731	14,162,572	11.74

This data suggests that loyal, enrolled users—those who return each day to the site and have an account—view a higher number of pages per visit. Is that high number of page views by a first-time visitor a leading indicator of enrollment?

Causality Hacks the Future

Correlation is nice. But if you've found a leading indicator that *causes* a change later on, that's a superpower, because it means you can change the future. If a high number of page views on a first visit to reddit *causes* enrollment, what could reddit do to increase the number of page views, and therefore increase enrollment? This is how growth hackers think.

Recall from Chapter 2 what Circle of Friends founder Mike Greenfield did when he compared engaged to not-engaged users—and found out that many of the engaged users were moms. Whether or not someone was a mother was, for Mike, a market-focused leading indicator of that person's future engagement. He could decide how many servers to buy in six months' time based on how many moms signed up today. But what really mattered was this: he could target moms in his marketing, and change the engagement of his users dramatically.

Mike's hack was market-related, but growth hacks come in all shapes and sizes. Maybe it's a change in pricing, or a time-limited offer, or a form of personalization. The point is to experiment in a disciplined manner.

Product-focused growth hacks—what Chamath Palihapitiya calls "aha moments"—need to happen early in the user's lifecycle in order to have an

moments"—need to happen early in the user's lifecycle in order to have an impact on the greatest number of possible users. That's why social sites suggest friends for you almost immediately.

You can use promotions and experiments to try to identify a leading indicator, too. Music retailer Beatport ran a Cyber Monday promotion to maximize total purchases. A week before the holiday, it sent all its customers a 10% discount code. Those customers who purchased something with the code were then sent a second, personalized code for 20% off. If they used that code, they were sent a final, one-time-only, time-limited code for Cyber Monday that gave them 50% off their purchase. This approach increased purchase frequency, and encouraged customers to max out their shopping cart each time.

While we don't have data on the effectiveness of the campaign itself, it's clear that the company now has a wealth of information on who will respond best to a promotion and how discounts relate to purchase volume—and it's made its loyal customers feel loved as well.

Growth hacking combines many of the disciplines we've looked at in the book: finding a business model, identifying the most important metric for your current stage, and constantly learning and optimizing that metric to create a better future for your organization.

A Summary of the Virality Stage

- Virality refers to the spread of a message from existing, "infected" users to new users.
- If every user successfully invites more than one other user, your growth is almost assured. While this is seldom the case, any word of mouth adds to customer growth and reduces your overall customer acquisition costs.
- Inherent virality happens naturally as users interact with your product. Artificial virality is incentivized and less genuine. And word of mouth, while hard to create and track, drives a lot of early adoption. You need to segment users who come from all three kinds of virality.
- In addition to viral coefficient, you care about viral cycle time. The sooner

each user invites another one, the faster you'll grow.

- As you grow in the Virality and Revenue stages, you're trying to find leading indicators of future growth: metrics that can be measured early in a user's lifecycle that predict—or, better yet, control—what the future will be.

When you're growing organically from referrals and invitations, you'll get the most out of every dollar you spend acquiring customers. It's time to focus on maximizing revenue, and pouring some of that money back into additional acquisition. It's time for the Revenue stage.

Should You Move On to the Revenue Stage?

Ask yourself these questions:

- Are you using any of the three types of virality (inherent, artificial, word of mouth) for your startup? Describe how. If virality is a weak aspect of your startup, write down three to five ideas for how you could build more virality into your product.

- What's your viral coefficient? Even if it's below 1 (which it likely is), do you feel like the virality that exists is good enough to help sustain growth and lower customer acquisition costs?

- What's your viral cycle time? How could you speed it up?

What are the segments or cohorts of users who do what your business model wants them to do? What do they have in common? What can you change about your product, market, pricing, or another aspect of your business to address this as early as possible in their customer lifecycle?

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[61] *http://www.dfj.com/news/article_25.shtml*

[62] *http://en.wikipedia.org/wiki/Bass_diffusion_model*

[63] David Skok's explanation of viral coefficient calculation includes two spreadsheets you can play with at *http://www.forentrepreneurs.com/lessons-learnt-viral-marketing/*.

[64] The NPS, first championed by Enterprise Rent-A-Car and written about by Frederick F. Reichfeld,

considered only strongly enthusiastic respondents because those are the “customers who not only return to rent again but also recommend Enterprise to their friends”; see *http://hbr.org/2003/12/the-one-number-you-need-to-grow/ar/1*.

[65] *ProductPlanner was recently taken down. It used to live at* http://productplanner.com.

[66] *http://www.richardprice.io/post/34652740246/growthhacking-leading-indicators-of-engaged-users*

[67] *http://growthhackersconference.com/*

[68] *http://www.reddit.com/about*