

Daniel McCarthy, Emory University

How to Uncover the Health of Your Business Through the Health of Your Customers



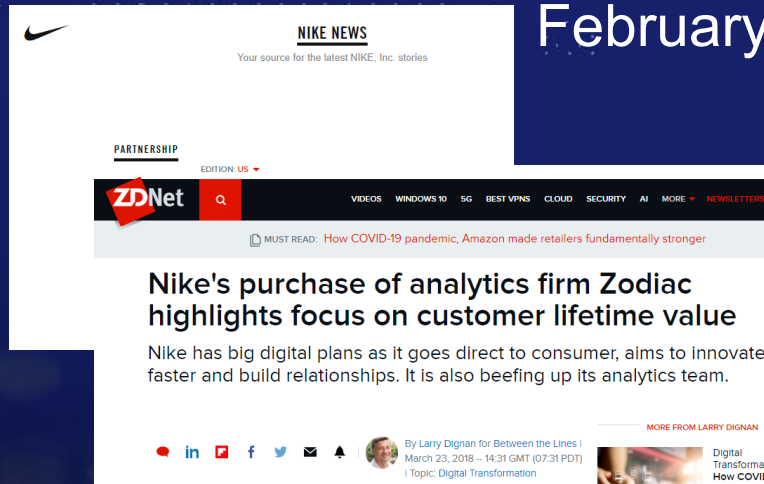
How to Uncover the Health of Your Business Through the Health of Your Customers

Daniel McCarthy

MSI 2023 Summit

February 16th, 2023

ZODIAC



The problem...

- Do you *really* know if you are **creating value**?
 - **Optimizing** value?



- But...



Casper moviepass™



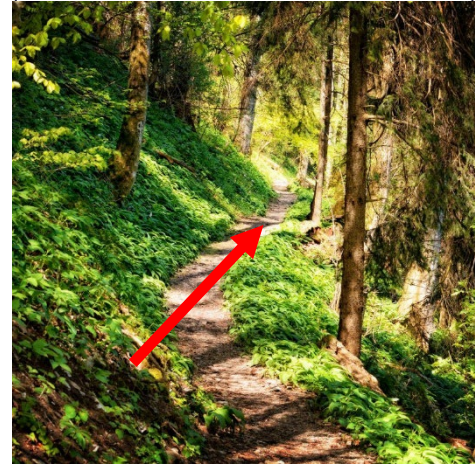
What is needed (if not currently profitable)

- **Absolute** profitability → **incremental** profitability
- **Immediate** profit → **long-term** profit

What is required:

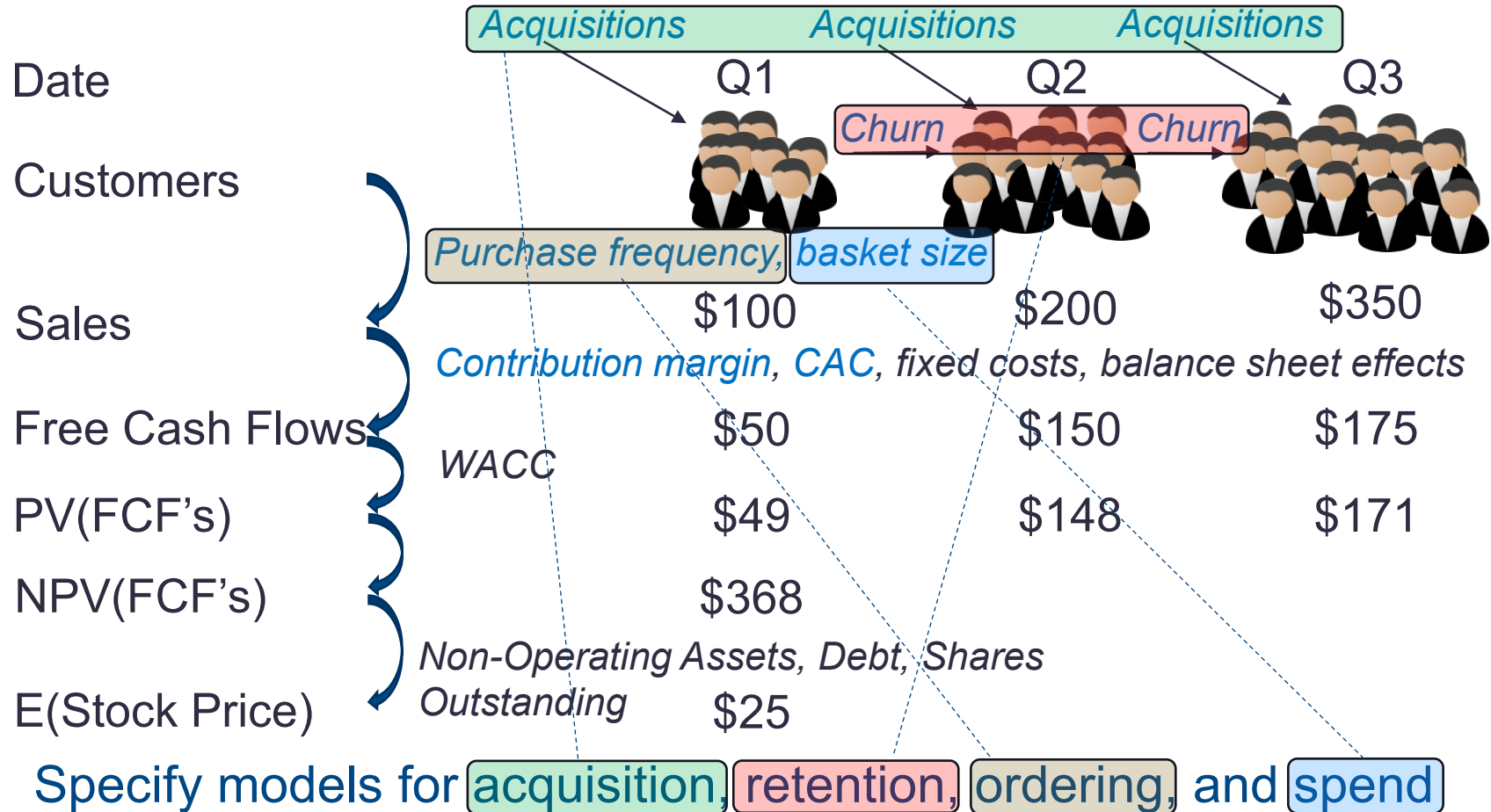
1. Invest when **incremental ROI** is high
2. Find as many [1]'s as possible
3. [Manage overhead judiciously]

Path to profitability

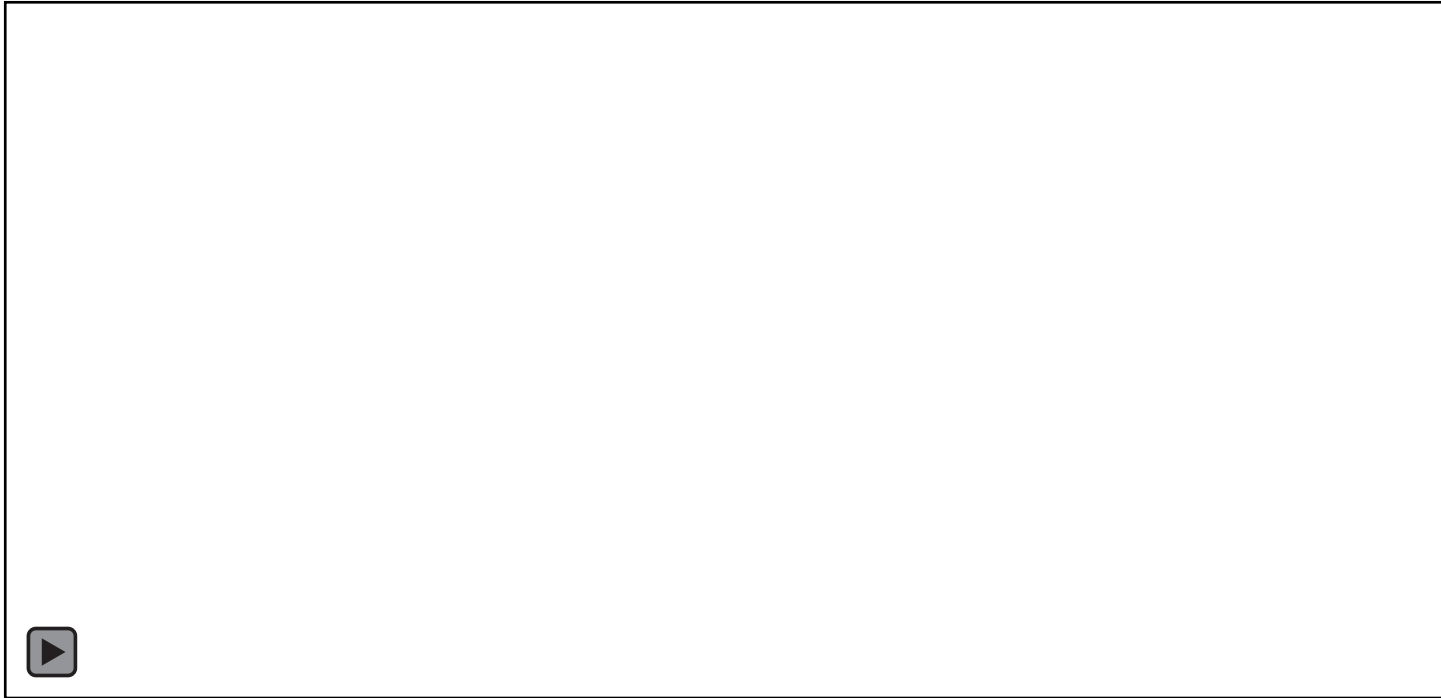


What metrics to look to? Metrics at the **customer-level**

Customer valuation to corporate valuation



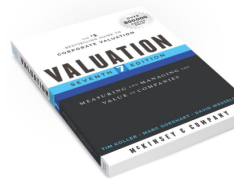
CBCV moves markets



Broad-based acceptance in and outside of marketing

McKinsey & Company

Strategy & Corporate
Our Insights



John Wiley & S

Whereas a k
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revenues from t
turnover. If cus
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from existing cu

⁵For more on compa
Carthy, Peter Fader,
closed Customer Dat

S&P Global
Market Intelligence

DoorDash poised to grow despite challenges, experts say ahead of public debut

DoorDash just refiled its IPO paperwork, updating a key chart on customer retention that had puzzled experts

businessinsider.com

FINANCIAL TIMES

TheStreet.com

RetailWire

Slate

sina

CBS

BARRON'S
BUSINESS
INSIDER

Inc.

THE WALL STREET JOURNAL

Home World U.S. Politics Economy Business Tech Markets Opinion Arts Life Real Estate

Stir Fry on Sale? Blue Apron Turns to Deals to Draw Customers

MARKETPLACE

NOV 1, 2017

11/02/2017: How big is investor appetite for HelloFresh's market debut?

Shares of luxury online marketplace Farfetch surges 53 percent in IPO's first day of trading

Yahoo Finance @YahooFinance · Jun 20, 2019

Highlight: "I expect them [Slack shares] to go up," @Emory Assistant Professor of Marketing @d_mccar says on \$WORK. "Conservatively, I'd put their valuation closer to \$18 billion or even higher than that." Full interview:



The Wayfair Riddle

The furniture retailer's business has serious flaws, but the stock keeps soaring



By Elizabeth Winkler

The Economist

Cramer reveals his position on the battleground stock of Wayfair

- "Real Money" host Jim Cramer goes over Wall Street's bull and bear cases for furniture giant Wayfair to see if it could be a worthy investment.
- While Wayfair's e-commerce platform is promising, conflicting analyst reports can still weigh on the stock, Cramer says.

FASB



Customer lifetime value (CLV) vs post-acquisition value (PAV)

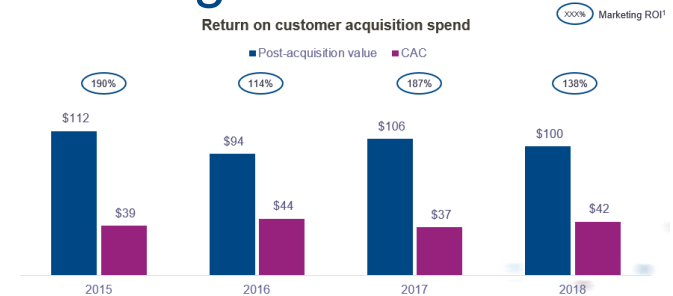
PAV: determines upper bound on CAC

CLV: determines if you're **upside or not**



- = Good current economics
- + Sufficient customer acquisition
- + No significant future degradation

PE diligence



Critical to know your numbers



Measurement

OK, but how to **measure** these metrics?

Most important: transaction log

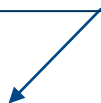
Better: profitability, fulfillment, returns, marketing, ...

Need three things:

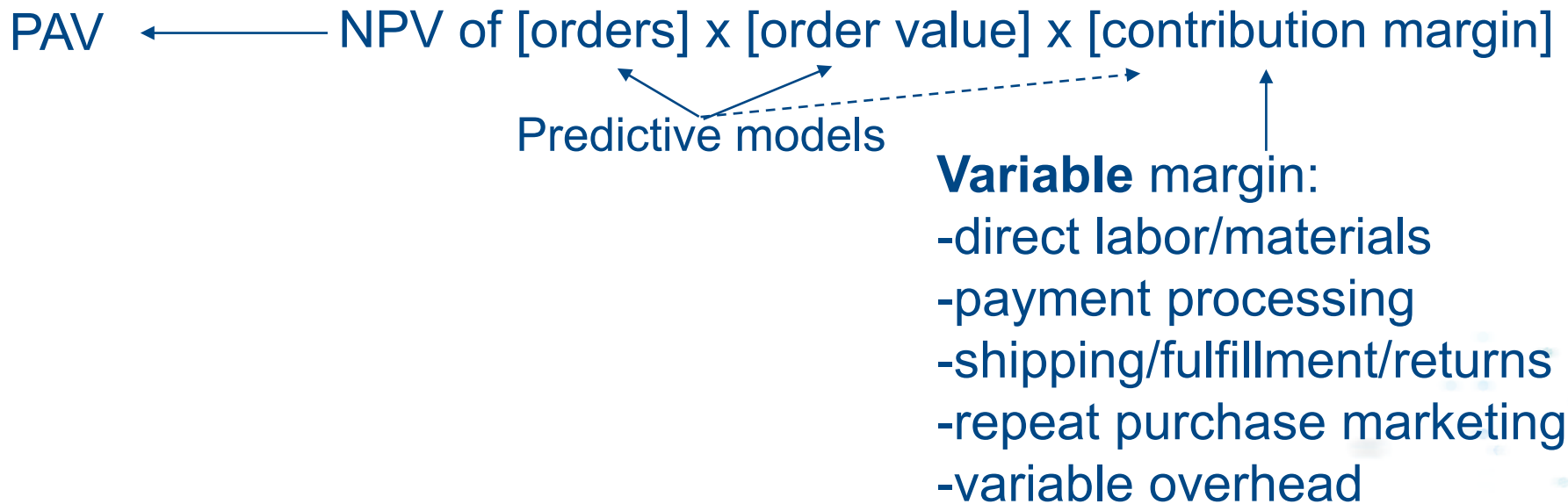
1. **Right data**
2. **Right definitions**
3. **Right predictive models**

	member_id	optimized_date	transaction_amount
1:	700373317891206817152738	2016-06-08 20:00:00	35.36
2:	460249405950371522742925	2021-10-14 20:00:00	18.16
3:	460249405950371522742925	2020-10-08 20:00:00	20.08
4:	460249405950371522742925	2021-10-25 20:00:00	84.67
5:	460249405950371522742925	2021-03-03 19:00:00	20.41

2406:	361236995928985762839322	2017-01-24 19:00:00	13.04
2407:	902977063439189179147783	2017-01-16 19:00:00	58.88
2408:	902977063439189179147783	2020-12-12 19:00:00	86.04
2409:	1082802351068601439679407	2016-04-02 20:00:00	13.30
2410:	736571298405913881710195	2017-03-02 19:00:00	31.46



Right definitions



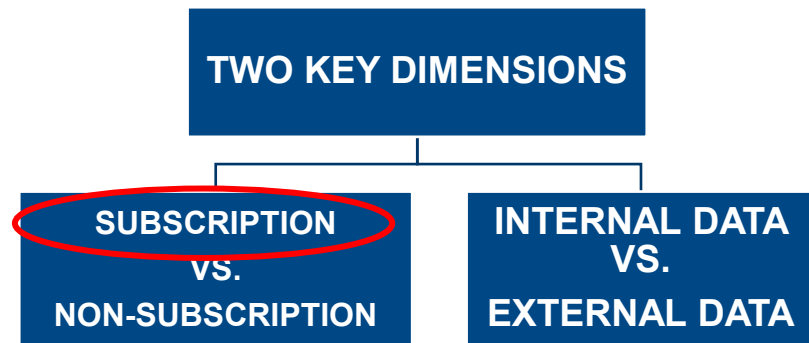
Don't even get me started on CAC

Modeling PAV

Subscription vs non-subscription

- **Subscription:**

- Observable churn
- Relatively steady payments over lifetime
- Easy to model
- But less common than non-subscription



BIRCHBOX♦



mongoDB



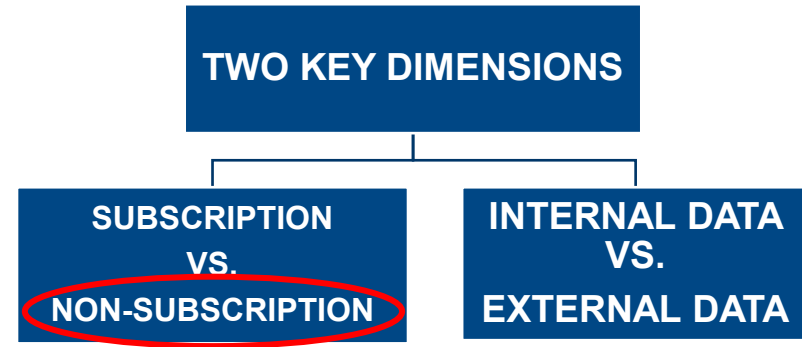
Spotify



Subscription vs non-subscription

- **Non-subscription:**

- Latent attrition
- “Random” purchase timing over lifetime
- Harder to model
 - Can’t approximate as contractual
 - But suitable methods now well-established



MANAGEMENT SCIENCE
Vol. 33, No. 1, January 1987
Printed in U.S.A.

COUNTING YOUR CUSTOMERS: WHO ARE THEY AND WHAT WILL THEY DO NEXT?

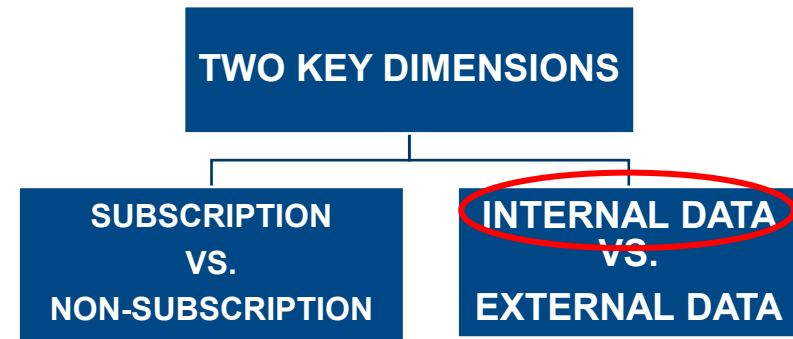
DAVID C. SCHMITTLEIN, DONALD G. MORRISON AND RICHARD COLOMBO
The Wharton School, University of Pennsylvania, Philadelphia, Pennsylvania 19104
Graduate School of Business, Columbia University, New York, New York 10027
Department of Marketing, Tisch Hall, New York University, New York, New York 10002

This article is concerned with counting and identifying those customers who are still active. The issue is important in at least three settings: monitoring the size and growth rate of a firm's ongoing customer base, evaluating a new product's success based on the pattern of trial and repeat purchases, and targeting a subgroup of customers for advertising and promotions. We develop a model based on the number and timing of the customers' previous transactions. This approach allows computation of the probability that any particular customer is still active. Several numerical examples are used to illustrate applications of the model.
(MARKETING; CONSUMER BEHAVIOR; POISSON PROCESS; PROBABILITY MIXTURE MODELS; NEW PRODUCT INTRODUCTIONS; MARKET SEGMENTATION; BROKERAGE FIRMS)



Internal vs. External Data

- **Internal (granular)**
 - Customer-level transaction logs
 - Can be enriched with other sources
 - Marketing action
 - Customer satisfaction
 - Social media activity, ...



001.

LIFETIME VALUE ANALYTICS

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BACK TO LIBRARY

INSIGHTS

CLV

Retention

Transactions

ANALYTICS

A/B Testing

QUERY

New Query

Saved Query

Exports

Diagnostics

Accounts

Contact Us

Customer Lifetime Value Insights

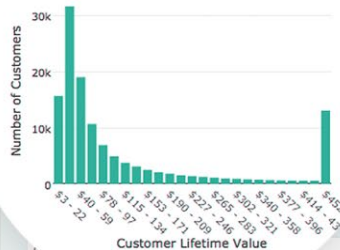
Financial Analysis: Sales Gross Profit

Value Metric: CLV RLV

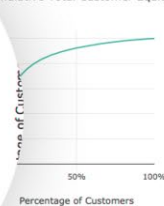
Customer Base

Total Customer Equity	Average CLV	Median CLV	Number of Customers
\$1,054	\$212.14	\$55.97	126,825

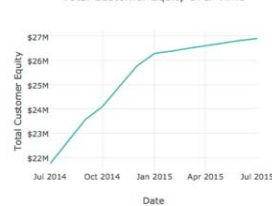
Breakdown of CLV



Cumulative Total Customer Equity



Total Customer Equity over Time



Zodiac tracks CLV insights including customer distribution by value and attribute over time and progress toward goal.

ZODIAC

002.

CUSTOMER SEGMENTATION BY VALUE.

ZODIAC

BACK TO LIBRARY

INSIGHTS

CLV

Retention

Transactions

ANALYTICS

A/B Testing

QUERY

Total Customer Equity by Acquisition Channel



Average CLV by Acquisition Channel



Nike's purchase of analytics firm Zodiac highlights focus on customer lifetime value

Nike has big digital plans as it goes direct to consumer, aims to innovate faster and build relationships. It is also beefing up its analytics team.



By [Larry Dignan](#) for [Between the Lines](#) | March 23, 2018 -- 14:31 GMT (07:31 PDT) | Topic: [Digital Transformation](#)

Nike has acquired Zodiac Inc., a consumer data analytics company, in a sign that its digital transformation plans revolve around customer lifetime value.

The athletic shoe and apparel maker, which is in a dogfight with Adidas and Under Armour, has a strategy called Consumer Direct Offense that aims to develop products faster with personalization at scale. Nike also has to focus on selling direct and owning the customer relationship since retail is a messy industry.

In 2016, Zodiac raised \$3 million in seed funding to launch predictive analytics tools based on forecasting individual customer lifetime value. The models were developed by Wharton School Professor Peter Fader and a team of data scientists at the University of Pennsylvania.

Zodiac's mission is to understand the value of an individual customer to boost revenue and retention with the right marketing, recommendations and offers.

In November, Nike outlined plans to juice its growth in the years ahead by scaling new product platforms quickly and then going direct to consumer via its retail outlets, mobile apps and e-commerce partners.

Mark Parker, speaking on Nike's third quarter earnings conference call, outlined the company's progress across key areas:

- 2X Innovation, which revolves around developing new platforms (types of shoes and technologies).
- 2X Speed, which revolves around investing in digital to serve consumer demand faster. There's also a heavy dose of investment in robotics and automation.
- 2X Direct, which leads with digital channels as well as Nike's own retail outlets.

Analytics will be critical to multiple efforts. Parker added that Zodiac and its "proprietary tools will help us deepen relationships with consumers all over the world with a primary focus on our NikePlus members."

Predictive Customer And Corporate Valuation

See what customers will do tomorrow, so you can
make better decisions today

[GET THE DEMO](#)[FOR INVESTORS](#)[FOR BUSINESSES](#)

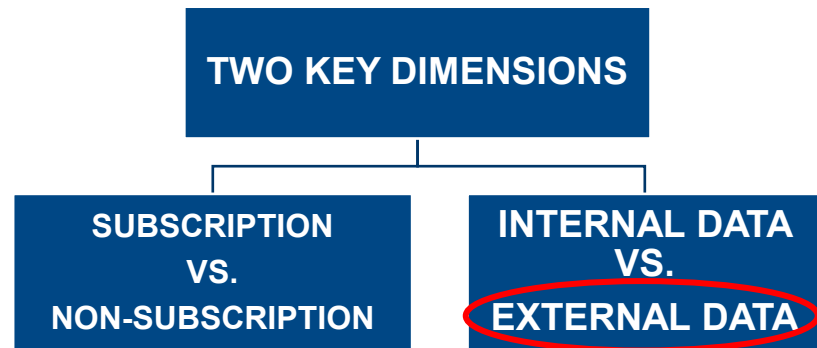
Internal vs. External Data

- **External (aggregated)**

- “Rolled up” summaries
- Periodically disclosed

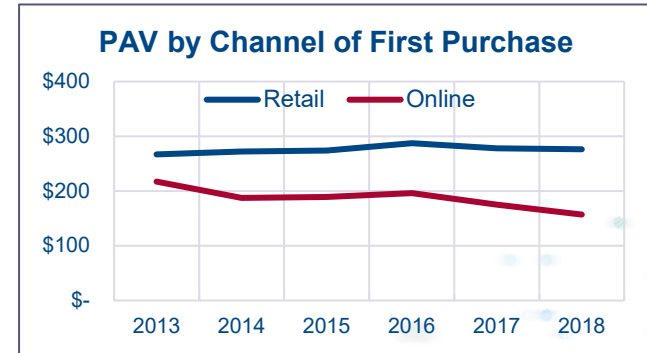
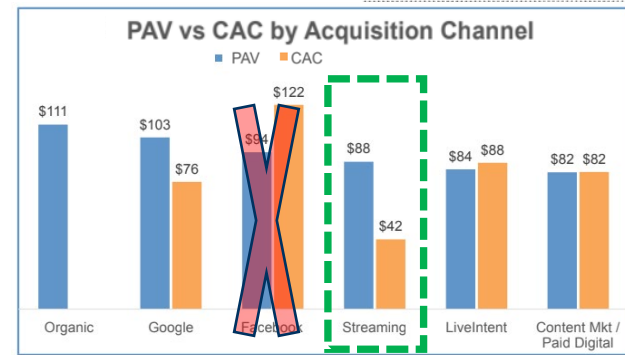
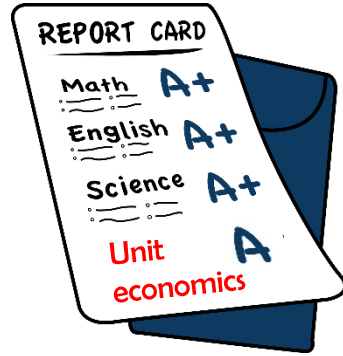
- First-party disclosures (10-K’s, 10-Q’s, investor presentations, etc.)
- Third-party data

earnest



Management

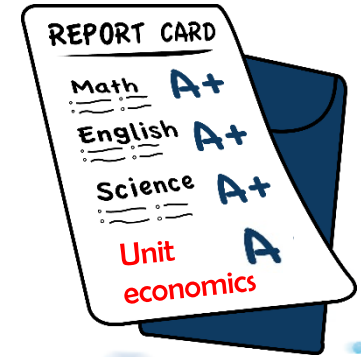
- Measurement framework →
- How to move from A to A+?
- Move from **measure** → **manage**:
 - ROI by **acquisition channel**
 - ROI for **stores versus online**. etc
 - **Experimentation**
 - Invest in **direct channel**
 - Learn preferences, drop middlemen, ...



Key takeaways



1. Get your data house in order
2. Cultivate **sound measurement**
3. Get your **customer-based report card**
4. Invest in **experimentation**
5. **Instrument** for action
6. Take action (reallocate budget, ...)
7. Repeat



STITCH FIX



Further Resources

- Connect/follow me on LinkedIn and Twitter (@d_mccar)
- HBR article: <http://bit.ly/2sBjbYM>
- Morgan Stanley article: <https://mgstn.ly/3uzUwlh>
- Seminal CBCV papers: <http://bit.ly/2N8P3sq> and <http://bit.ly/2LUmLFG>
- New CBCV paper incorporating credit card panel data: <http://bit.ly/2UlwfXO>
- Contact me if you would like a copy of this deck

Thank you!



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GOIZUETA
BUSINESS
SCHOOL

GOIZUETA
BEYOND

Measuring CAC

Starting point: $CAC = \dots$

Sales and marketing

Customers acquired

In truth, more complicated:

- Marketing for repeat orders
- Cost allocation
- Lagged expenses
- Gross versus net CAC
- What is “acquisition”?

But
approximately right >> nothing



APPENDIX Illustrative Customer Acquisition Cost

(All units in millions, except per-customer figures)		2018
Total Advertising Spend		\$774.2
Partner Ad Spend		\$5.5
Direct Retail Ad Spend		\$768.7
Active Customers		15.15
Total Orders		28.08
% of Orders from Repeat Customers		65.8%
Implied New Customers		9.60
Implied Orders from Repeat Customers		18.49
AOV		\$239.2
Assumed Revenue from Repeat Customers		\$4,423
Assume 7% Direct Retail Ad Spend on Repeat Revenue		\$309.6
Implied Direct Retail Ad Spend for New Customers		\$459.1
Customer Acquisition Cost adjusted for Repeat Ad Spend		\$48
Annual Direct Retail Revenue per Customer		\$443
Annual Contribution per Customer		\$86.75
Contribution Margin		19.6%



For a given cohort of new locations and product upsells that go live on the Toast platform in a given month, we calculate the CAC as the in-month hardware and professional services gross profit plus the sales and marketing expense incurred two months prior, which is based on the median time between when a location is signed and when it goes live on our platform.²⁰ To evaluate payback period, we compare our CAC to the estimated contribution profit from the same cohort of live locations and upsells, which is defined as (i) the subscription component of MRR for the cohort, less the estimated costs to service these fees, plus (ii) the average payments component of MRR in each new location's first three full months live on our platform, less the estimated support costs to service these fees.



Net Customer Acquisition Cost (profit) can be calculated as Adjusted Sales and Marketing Expense (which excludes depreciation and amortization expense and stock-based compensation expense) less Adjusted Connected Fitness Product Gross Profit (which excludes depreciation and amortization expense and stock-based compensation expense). Our Net Customer Acquisition Costs (profit) for fiscal 2017, fiscal 2018, and fiscal 2019, was \$14.2 million, \$(4.9) million, and \$1.6 million, respectively, or \$183, \$(33), and \$5 per Connected Fitness Subscriber added, respectively. We believe we will continue to drive rapid payback and efficiencies in Net Customer Acquisition Costs (profit) by further leveraging sales and marketing investments as a result of heightened brand awareness and growing word-of-mouth referrals. Changes in Connected Fitness Product margins or sales and marketing expenses may result in an inability to fully offset our customer acquisition costs.

WARBY PARKER

