MOBILE APP DEVELOPMENT FOR ENTREPRENEURS

eecs 441

Lecture 12: Lean Startup, the Business Model Canvas, and Market Analysis

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Doing a Startup

Traditional formula to do a startup:

75% failure rate!

- write a business plan:
  - problem to be solved
  - solution provided
  - market size
  - return on investment: five-year forecast of income, cash flow, profits
    - a googling exercise, involving a large dose of guesswork
- pitch to investors, raise money
- assemble a team and build product in "stealth mode"
- introduce product
- sell

What's Wrong with Business Plans?

Business plans rarely survive first contact with customers

> No battle plan ever survives contact with the enemy
> -- *Helmuth von Moltke the Elder*

Five-year plans try to forecast complete unknowns: they are generally fiction

Instead, successful startups go quickly from failure to failure: adapting, iterating, continually learning from customers to improve upon their ideas

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Lean Startup

An attempt to make the process of starting a company less risky

Favors:
- experimentation over elaborate planning
- customer feedback over engineering intuition
- iterative design over "the big unveiling"

A startup is a temporary organization searching for a repeatable and scalable business model

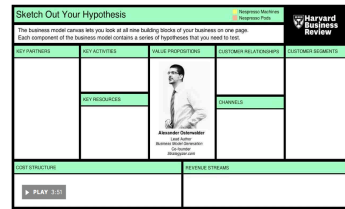Three key principles: business model, customer development, agile development

Business Model Canvas

A business model captures your customers' wants and needs, your value proposition, how you're going to reach your customers, how you'll create your product, and how you'll make money
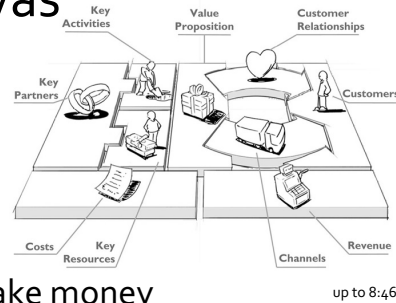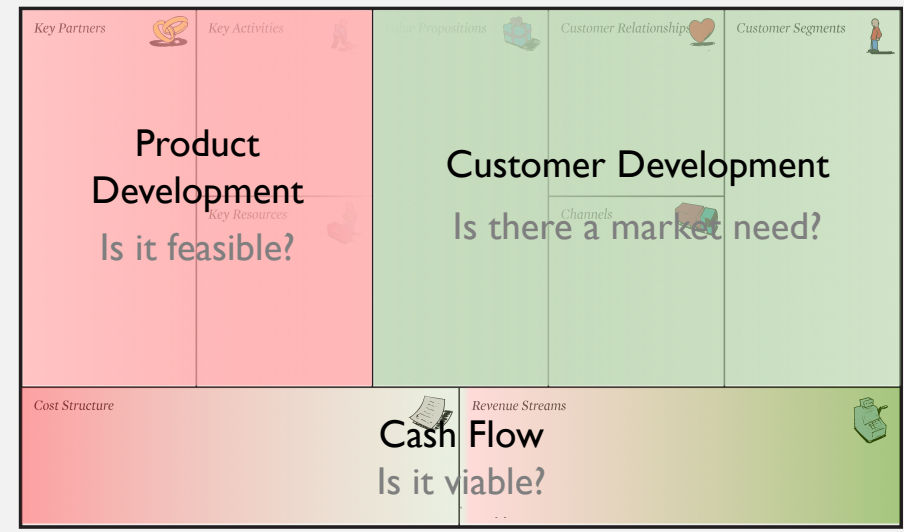
up to 8:46

A business model canvas (BMC) is a planning tool that forces you to succinctly summarize your guesstimates about your customers, product, and market

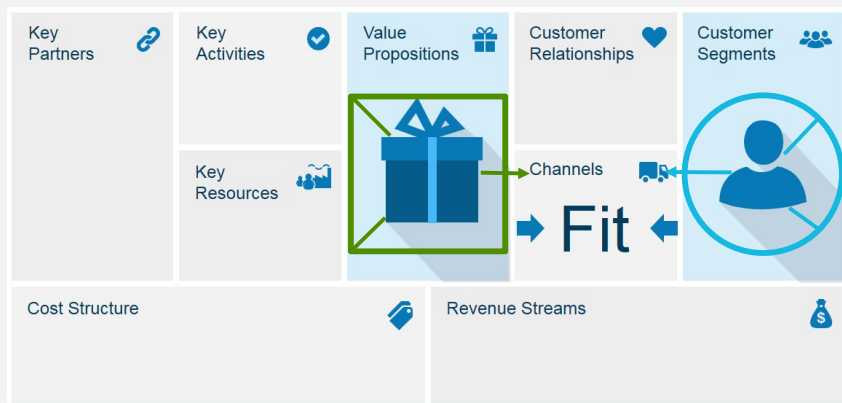[Blank, S., "Why the Lean Start-Up Changes Everything," *HBR*, May 2013]
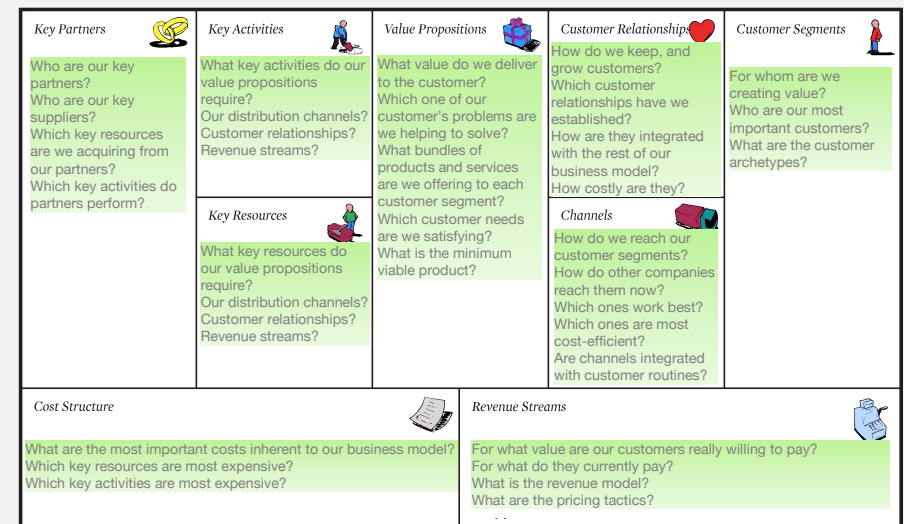

The Business Model Canvas

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources	Product Development — Is it feasible?	Customer Development — Is there a market need?	Channels

Cost Structure / Revenue Streams — Cash Flow — Is it viable?

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VPC: Embedded in the BMC

Defining your value proposition is the first step in populating your BMC

The Business Model Canvas

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
Who are our key partners? Who are our key suppliers? Which key resources are we acquiring from our partners? Which key activities do partners perform?	What key activities do our value propositions require? Our distribution channels? Customer relationships? Revenue streams?	What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each customer segment? Which customer needs are we satisfying? What is the minimum viable product?	How do we keep, and grow customers? Which customer relationships have we established? How are they integrated with the rest of our business model? How costly are they?	For whom are we creating value? Who are our most important customers? What are the customer archetypes?
	Key Resources — What key resources do our value propositions require? Our distribution channels? Customer relationships? Revenue streams?		**Channels** — How do we reach our customer segments? How do other companies reach them now? Which ones work best? Which ones are most cost-efficient? Are channels integrated with customer routines?	

Cost Structure — What are the most important costs inherent to our business model? Which key resources are most expensive? Which key activities are most expensive?

Revenue Streams — For what value are our customers really willing to pay? For what do they currently pay? What is the revenue model? What are the pricing tactics?

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The Business Model Canvas

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
motivations for partnerships: • optimization and economy • reduction of risk and uncertainty • acquisition of particular resources and activities	**categories:** production, problem solving, platform/network **Key Resources** **types of resources:** physical, intellectual (brand, patents, copyrights, data), human, financial	**characteristics:** newness, performance, customization, "getting the job done," design, brand/status, price, cost reduction, risk reduction, accessibility, convenience/usability	**examples:** personal assistance, dedicated personal assistance, self-service, automated services, communities, co-creation **Channels** **channel phases:** **awareness:** how do customers know us? **evaluation:** how do we obtain feedback from customers? **purchase:** how do customers buy our products and services? **delivery:** how do we deliver to customers? **after sales:** how do we provide customer support?	**examples:** mass market, niche market, segmented, diversified, multi-sided platform

Cost Structure	Revenue Streams
is our business more: cost driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing), or value driven (focused on value creation, premium value proposition) **sample characteristics:** fixed costs (salaries, rents, utilities), variable costs, economies of scale, economies of scope	**types:** asset sale, usage fee, subscription fees, renting/leasing, licensing, brokerage fees, advertising **fixed pricing:** list price, feature dependent, customer segment dependent, volume discount **dynamic pricing:** negotiation/bargaining, yield management, spot market

www.businessmodelgeneration.com

The Business Model Canvas

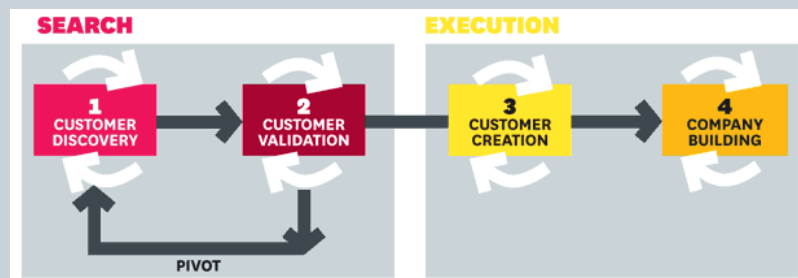| Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	

Cost Structure	Revenue Streams

www.businessmodelgeneration.com

Validating Your BMC

First fill out your BMC with your best, but likely wrong, guesses

Then go out and ask potential users, purchasers, and partners for feedback on all elements of the BMC

Refine business model, iterate and, if necessary, pivot

SEARCH — **EXECUTION**

1 CUSTOMER DISCOVERY → 2 CUSTOMER VALIDATION → 3 CUSTOMER CREATION → 4 COMPANY BUILDING

PIVOT

[Blank, S., "Why the Lean Start-Up Changes Everything," *HBR*, May 2013]

TAM, SAM, SOM

TAM: Total Addressable Market

Total potential market for a product "How big is the universe?"
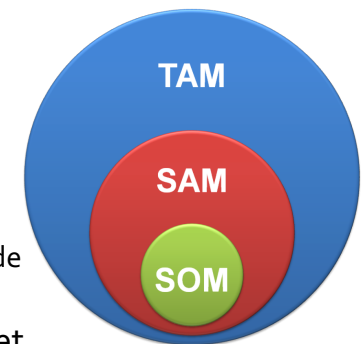
Example: total book market worldwide

SAM: Serviceable Available Market

Portion of TAM served by your product/services "How big is the segment that FITs my value proposition?"

Example: total US readers online
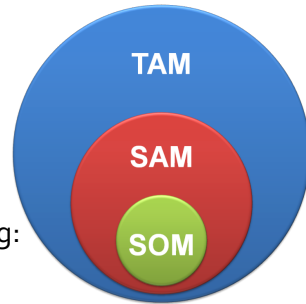
TAM · SAM · SOM

TAM, SAM, SOM

SOM: Serviceable Obtainable Market

Share of market realistically reached in
the short term (first few years), considering:
- your value proposition fit:
  will anybody want to buy your product?
- your customer relationships and channels:
  can you reach your customers? what's your plan to do so?
- your SAM and competitors:
  fraction of SAM you can capture in the short term?

Example: competing against physical bookstores, other
online booksellers

(SOM/SAM) is your short-term target market share

Use of TAM, SAM, SOM

If you have a $1M to invest in 10 startups, how would
you pick the startups to invest in?
- minimize risk: is there a market for the startup?
- maximize return: how big is the market?

SOM and SAM analyses help de-risk the investment:
discover a market with the least amount of capital
- at the minimum, SOM should neutralize the risk of
  investing in the startup
- SAM acts as sanity check for SOM and promises at least a
  good return

TAM analysis assesses the upside potential at scale:
can we all be billionaires?

Would You Invest?

For example: you want a 10x return on your investment,[1]
a startup is seeking $250K investment for 20% equity

The startup's market research assesses that:
- TAM = $2B
- SAM = $100M
- SOM = $5M within 2 years, $12M within 4 years
- EBITDA[2] margin = 25% (how profitable, roughly)
- Valuation of listed competitors = 8x EBITDA (8 times earnings)

Would you invest?

[1] Time horizon not specified
[2] Earnings before interest, tax, depreciation, and amortization;
earnings without taking financing, accounting, and taxation details into account

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Return on Investment

Would you invest?
- TAM = $2B, SAM = $100M (5% of TAM),
  SOM = $5M within 2 years, $12M within 4 years
- EBITDA margin = 25%, valuation = 8x EBITDA

Evaluation:
- in 2 years: revenue 5% of SAM
  - EBITDA = .25*5M = $1.25M
  - Valuation = 8 * $1.25M = $10M
  - RoI = (.2 * $10M)/$250K = 8x

- in 4 years: revenue 12% of SAM
  - EBITDA = .25*12M = $35M
  - Valuation = 8 * $3M = $24M
  - RoI = (.2 * $24M)/$250K = 19x
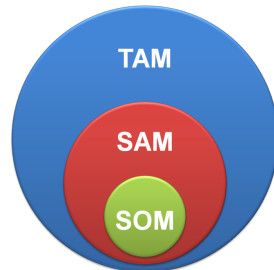   - assuming no Series B funding event dilution

Upside at Scale

In 4 years, revenue is already 12% of SAM ($100M)
- TAM = $2B, EBITDA margin = 25%, valuation = 8x EBITDA

Now you need more investment to expand:
- assuming ability to capture 12% of TAM = $240M revenue
- EBITDA = $60M, valuation = $480M
- for 10x RoI, investor would be
  willing to invest up to $48M

Where to Get the Numbers?

By doing market research

Market research firms sell ($,000s) industry reports
For example: Gartner, IDC, Forrester, JD Power, Nielsen, etc.
Often cited by newspaper and magazine articles

Investment banks also publish market forecasts
For example: Goldman Sachs, Merrill Lynch, Morgan Stanley, etc.

Brokerage firms publish stock analyst reports
For example: Fidelity, Vanguard, Schwab, etc.

Where to Get the Numbers?

Competitors:
- market trends and info on web sites
- public companies' quarterly and annual reports
- SEC filings (use Edgar or 10K Wizard to search)

Estimates from similar or replacement products
and services (typewriters vs. office computers)

Sample reports:
  GSMA's 2016 Mobile Economy
  Sandvine's 2015 Global Internet Phenomena
  Goldman Sach's Virtual and Augmented Reality Report

Revenue Streams

How do you monetize your project?
1. paid app:
   - pros: no annoying ads/sales in app, cleaner interface
   - cons: how to sell? AppStore takes 30% cut

2. mobile ads: collect user data, sell to advertisers
   - example: Facebook
   - pros: remove cost barrier to adoption
   - cons: ads take up screen real-estate and can be annoying
     (app churn)
   - sponsorship:
     - example: RunKeeper: track running activity to unlock exclusive
       rewards and promotions
     - pros: better integrated with app's use, less annoying
     - cons: harder sell with advertisers(?)

US Total Media Ad Spending Share, by Media, 2012-2018
% of total

	2012	2013	2014	2015	2016	2017	2018
TV	39.1%	38.8%	38.1%	37.3%	36.9%	36.2%	35.7%
Digital	22.3%	25.2%	28.2%	30.9%	33.2%	35.3%	37.3%
—Mobile	2.6%	5.7%	9.8%	14.0%	18.7%	22.6%	26.4%
Print	20.7%	19.0%	17.7%	16.5%	15.5%	14.7%	14.0%
	11.5%	10.2%	9.3%	8.6%	8.0%	7.5%	7.1%
	9.2%	8.8%	8.4%	7.9%	7.5%	7.2%	6.9%
	9.3%	8.9%	8.6%	8.2%	7.8%	7.5%	7.1%
	4.0%	4.1%	4.0%	3.9%	3.8%	3.7%	3.6%
	4.5%	4.0%	3.5%	3.1%	2.8%	2.5%	2.3%

nchmarks its US newspaper ad spending projections
its US outdoor ad spending projections against the
hich the last full year measured was 2012; numbers
00% due to rounding; *print only; **excludes off-air

June 2014

www.eMarketer.com

US Total Media Ad Spending, 2012-2018
billions and % change

- $165.03 (4.3%) 2012
- $171.05 (3.7%) 2013
- $180.12 (5.3%) 2014
- $189.38 (5.1%) 2015
- $200.00 (5.6%) 2016
- $209.69 (4.8%) 2017
- $220.55 (5.2%) 2018

■ Total media ad spending ● % change

Note: includes digital (online and mobile), directories, magazines, newspapers, outdoor, radio and TV
Source: eMarketer, June 2014

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www.eMarketer.com

Net US Digital Ad Revenue Share, by Company, 2012-2016
% of total media ad spending

	2012	2013	2014	2015	2016
Google	9.1%	10.0%	10.6%	11.1%	11.3%
Facebook	1.3%	1.9%	2.7%	3.2%	3.7%
Yahoo	1.5%	1.5%	1.5%	1.5%	1.5%
Microsoft	1.1%	1.3%	1.4%	1.7%	2.0%
AOL	0.6%	0.6%	0.6%	0.7%	0.7%
Amazon	0.3%	0.4%	0.5%	0.6%	0.7%
			0.5%	0.5%	0.5%
			0.4%	0.6%	0.8%
	28.2%	30.9%	33.2%		

n desktop and laptop computers
d includes all the various formats
revenues after companies pay
ites; *data through 2013 is
e 2014

www.eMarketer.com

US Digital Ad Spending, by Channel, 2012-2018
billions and % change

	2012	2013	2014	2015	2016	2017	2018
Desktop*	$32.43	$33.40	$32.99	$32.01	$29.00	$26.68	$23.90
—% change	6.6%	3.0%	-1.2%	-3.0%	-9.4%	-8.0%	-10.4%
Mobile**	$4.36	$9.69	$17.73	$26.59	$37.49	$47.43	$58.33
—% change	178.3%	122.0%	83.0%	50.0%	41.0%	26.5%	23.0%
Total	$36.80	$43.08	$50.71	$58.60	$66.49	$74.11	$82.24
—% change	15.0%	17.1%	17.7%	15.6%	13.5%	11.5%	11.0%

*Note: *includes spending primarily on desktop- and laptop-based ads; **includes classified, display (banners and other, rich media and video), email, lead generation, messaging-based and search advertising; ad spending on tablets is included*
Source: eMarketer, June 2014

174313
www.eMarketer.com

Revenue Streams

How do you make money?

3. **in-app purchases/freemium**:
   - pay to upgrade
     - example: Angry Birds
     - pros: try before you buy
     - cons: hard to strike a good balance of what's free
   - purchase physical or virtual items
     - pros: an additional sales channel
     - cons: accidental purchases (by children)
   - subscription: pay for content
     - example: news apps
     - pros: recurring revenue
     - cons: hard to strike a good balance of what's free, limited applicability

Bottom-up Sales Forecast

For paid apps, using Google Adwords keyword tool:

- estimate of traffic associated with keyword
- estimate of clicks for a given ad campaign
- to build volume forecast, decide how much you want to spend on Adwords and the expected conversion ratio:
  - Adwords budget: $6,000/month
  - average cost per click: $0.8 = 7,500 clicks/month
  - conversion rate: 4% = 300 sales/month
  - average purchase: $0.99 = monthly sales forecast of $297
  - AppStore's commission 30% = net of $208

[Munir, A., *App Monetization*]

Bottom-up Sales Forecast

For mobile ads:
- research click-throughs for similar app as yours
- multiply by amount you get paid per ad

Similarly for paid upgrade, in-app purchases, and subscription:
- research purchase rate for similar apps
- multiply by upgrade/purchase price
- the advantage of subscription is that it is recurring

Bottom-up Sales Forecast

Bottom-up forecast is more believable than top-down estimates if backed-up by real numbers

Also allow for forecast revision by updating the values of parameters used in the model

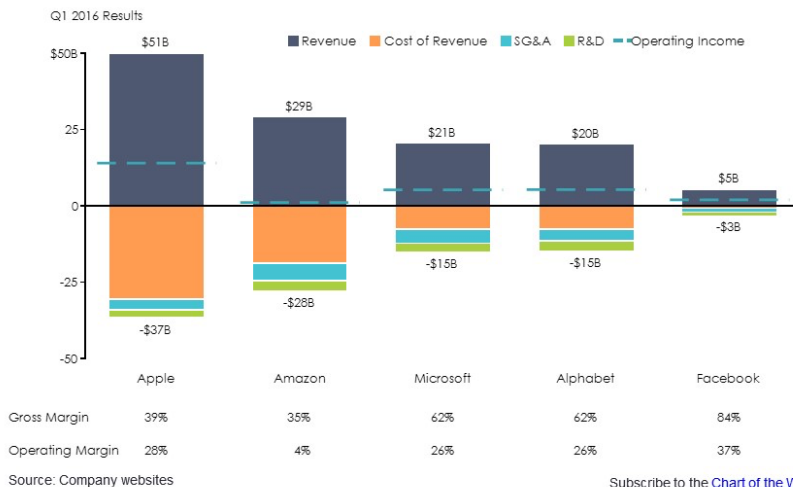Sanity check: compare against top-down SOM estimate

Source: thebusinessplanshop.com, *How to Forecast Sales*

What's a Good Profit Margin?

MEKKO GRAPHICS

Tech Giant Quarterly Income Comparison

Q1 2016 Results

Legend: Revenue | Cost of Revenue | SG&A | R&D | Operating Income

	Apple	Amazon	Microsoft	Alphabet	Facebook
Revenue	$51B	$29B	$21B	$20B	$5B
	-$37B	-$28B	-$15B	-$15B	-$3B
Gross Margin	39%	35%	62%	62%	84%
Operating Margin	28%	4%	26%	26%	37%

Source: Company websites

Subscribe to the Chart of the Week

Competitor Analysis

What are their value propositions? What makes them unique?

How do they market their services/products? Customer relationships and channels?

What are their market shares?

Reconstruct your competitors' business model canvases and SOMs

Barriers to Entry

Examples:

- substantial investment (need to build a clean-room fab)
- technology (a website or a simple app is not a barrier)
- switching cost (Nespresso)
- brand (huge marketing costs)
- regulation (licensing and concessions)
- access to resources (exclusivity, proprietary)
- access to distribution channels (exclusivity, proprietary)
- location (a shop in Time's Square)

[the businessplanshop, *Market Analysis*]

Due Sun, 3/5, 10 pm

Five parts:

- BMC of your project
- Market analysis:
  - top-down: TAM, SAM, SOM
  - bottom-up: sales forecast (check against SOM)
- Barriers to entry
- BMC of direct or indirect competitor(s):
  - 1 for team of 3
  - 2 for team of 4-5
  - 3 for team of 6-7
- Performance evaluation review: each team member must complete one per team mate (10 points)

Cite your sources