

# MOBILE APP DEVELOPMENT FOR ENTREPRENEURS

eees 441

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

## Doing a Startup

Traditional formula for doing a startup:

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



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

## 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

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

## 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 unveil”

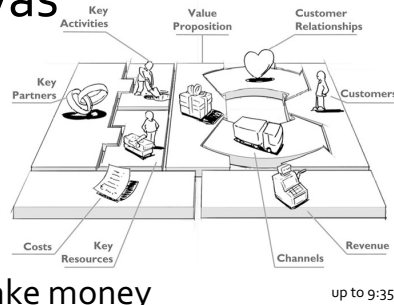
A startup is a **temporary** organization **searching** for a repeatable and scalable business model

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

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

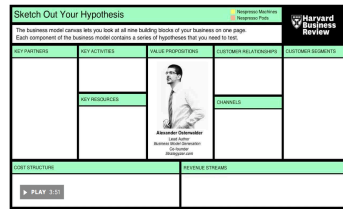
# Business Model Canvas

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



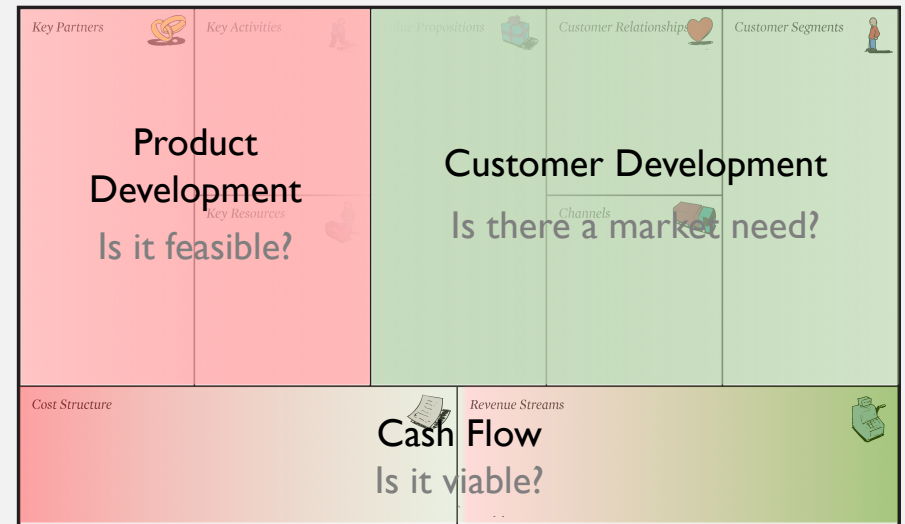
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A **business model canvas (BMC)** is a **planning tool** that forces you to **succinctly** summarize your guesstimates about your customers, product, and market



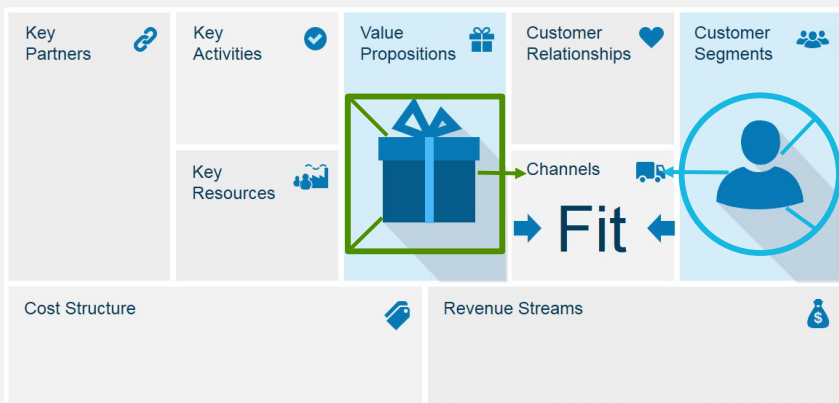
[Blank, S., "Why the Lean Start-Up Changes Everything," HBR, May 2013]

## The Business Model Canvas



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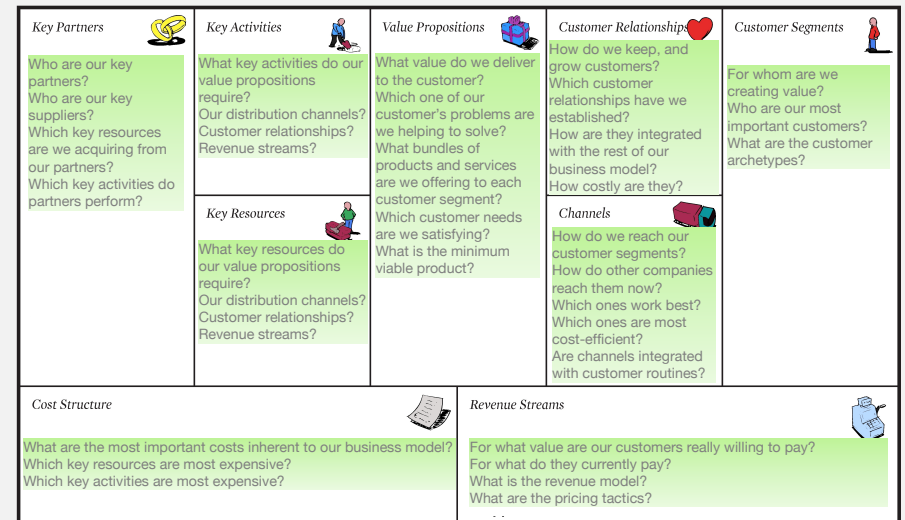
# VPC Embedded in the BMC



Defining your VPC is the first step in populating your BMC

When reading/presenting a BMC, **start from its VPC**

## The Business Model Canvas



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## The Business Model Canvas

<b>Key Partners</b> motivations for partnerships: • optimization and economy • reduction of risk and uncertainty • acquisition of particular resources and activities	<b>Key Activities</b> categories: production, problem solving, platform/network  <b>Key Resources</b> types of resources: physical, intellectual (brand, patents, copyrights, data), human, financial	<b>Value Propositions</b> characteristics: newness, performance, customization, "getting the job done," design, brand/status, price, cost reduction, risk reduction, accessibility, convenience/usability	<b>Customer Relationships</b> examples: personal assistance, dedicated personal assistance, self-service, automated services, communities, co-creation  <b>Channels</b> 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?	<b>Customer Segments</b> examples: mass market, niche market, segmented, diversified, multi-sided platform
<b>Cost Structure</b> 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		<b>Revenue Streams</b> 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		

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## The Business Model Canvas

## Online Book Seller

<b>Key Partners</b> • shipping company • logistics company • warehouse owners • publishers • IT outsourcing company • cloud provider • paypal • credit-card companies	<b>Key Activities</b> • develop web site • negotiate discount with publishers • advertise site • customer service  <b>Key Resources</b> • developers • marketing people • warehouses • logistics	<b>Value Propositions</b> • discounted popular books • huge inventories of hard-to-find books • marketplace for books	<b>Customer Relationships</b> • wishlist • free shipping • no-hassle return • premium account • reward points • reviews  <b>Channels</b> • TV ads • youtube ads • search engines • blogs	<b>Customer Segments</b> • mass market: popular book buyers • niche market: long-tail, specialized book buyers • book sellers
<b>Cost Structure</b> • salaries • outsourcing cost • ad cost • cloud infrastructure cost • warehouse rental cost • no storefront space, inventory, and personnel cost!		<b>Revenue Streams</b> • 33% off for popular books • no discount for hard-to-find books • x% of marketplace sales		

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## The Business Model Canvas

<b>Key Partners</b>	<b>Key Activities</b>	<b>Value Propositions</b>	<b>Customer Relationships</b>	<b>Customer Segments</b>
<b>Key Resources</b>		<b>Channels</b>		
<b>Cost Structure</b>		<b>Revenue Streams</b>		

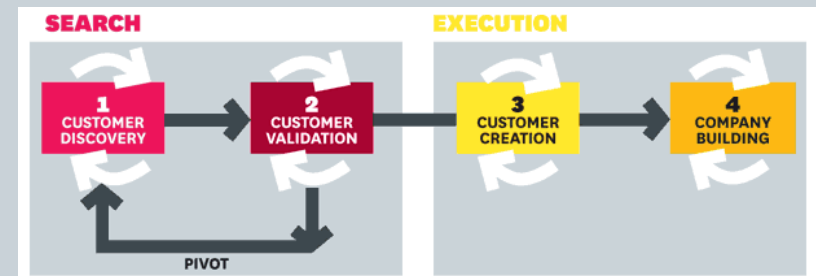
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## Validating Your BMC

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



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

# Market Size Estimates

Can be top down or bottom up

First top down:

**TAM:** Total Addressable Market

Total potential market for a product  
“How big is the universe?”

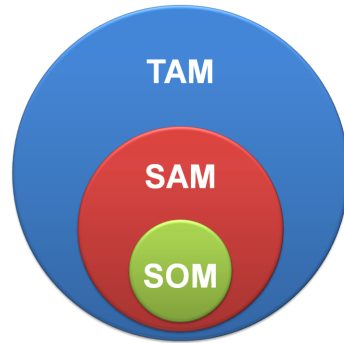
Example: total book market worldwide

**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

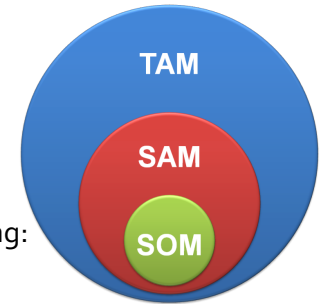
**SOM:** Serviceable Obtainable Market

Share of market realistically reached in the short term (first few years), considering:

- your value proposition fit:  
will anybody want to buy your product/service?
- 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, against Amazon?

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



[the businessplanshop, TAM SAM SOM]

# Use of TAM, SAM, SOM

If you have \$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?

[the businessplanshop, TAM SAM SOM]

# Would You Invest?

For example: you want a 10x return on your investment,<sup>1</sup> 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<sup>2</sup> margin = 25% (how profitable, roughly)
- Valuation of listed competitors = 8x EBITDA (8 times earnings)

Would you invest?

<sup>1</sup>Time horizon not specified

<sup>2</sup>Earnings before interest, tax, depreciation, and amortization; earnings without taking financing, accounting, and taxation details into account

[the businessplanshop, TAM SAM SOM]

# 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 =  $.25 * 12M = \$3M$
  - Valuation =  $8 * \$3M = \$24M$
  - RoI =  $(.2 * \$24M) / \$250K = 19x$ 
    - assuming no Series B funding event dilution

[the businessplanshop, TAM SAM SOM]

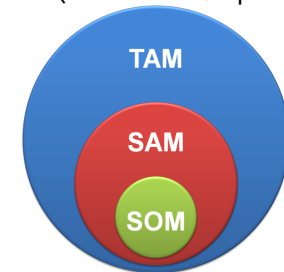
# Upside at Scale

In 4 years, revenue is already 12% of SAM (\$100M)

- TAM = \$2B, EBITDA margin = 25%, valuation = 8x EBITDA

Would you be willing to invest more when the startup needs more money to grow?

- assuming ability to capture 12% of TAM (revenue = \$240M)
- EBITDA = \$60M, valuation = \$480M
- for 10x RoI, investor would be willing to invest up to \$48M (for 100% of company)



[the businessplanshop, TAM SAM SOM]

# 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, JP Morgan, Merrill Lynch, Morgan Stanley, etc.

Brokerage firms publish stock analyst reports

For example: Fidelity, TD Ameritrade, Charles Schwab, etc.

[CayenneConsulting, TAM SAM SOM]

# 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 [The Mobile Economy](#)

Sandvine's [Global Internet Phenomena](#)

Goldman Sach's [Virtual and Augmented Reality Report](#)

[CayenneConsulting, TAM SAM SOM]

# Actual Revenue Streams

How do you monetize your project?

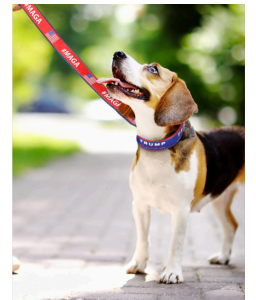
1. **paid app:**
  - pros: no annoying ads/sales in app, cleaner interface
  - cons: how to sell? AppStore takes 30% cut
2. **mobile ads:** collect user data, sell to advertisers
  - example: Facebook
  - pros: remove cost barrier to adoption
  - cons: ads take up screen real-estate and can be annoying (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(?)

[Munir, A., *App Monetization*]

# 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
  - **subscription:** pay for content
    - example: news apps
    - pros: recurring revenue
    - cons: hard to strike a good balance of what's free, limited applicability
  - purchase **physical or virtual items**
    - pros: an additional sales channel
    - cons: accidental purchases (by children)
    - examples?



[Munir, A., *App Monetization*]

# Bottom-Up Sales Forecast

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  $\Rightarrow$  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

# 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 rates of similar apps
- multiply by upgrade/purchase price
- the advantage of subscription is that it is recurring

[the businessplanship, *Sales Forecast*]

## 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](http://thebusinessplanshop.com), *How to Forecast Sales*

[the businessplanshop, *Sales Forecast*]

## 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

[CayenneConsulting, *Competitor Research and Analysis*]

## 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*]