BITS Pilani

SEZG507: Product Discovery & Requirements Engineering

Session 01: Introduction


Start
Recording

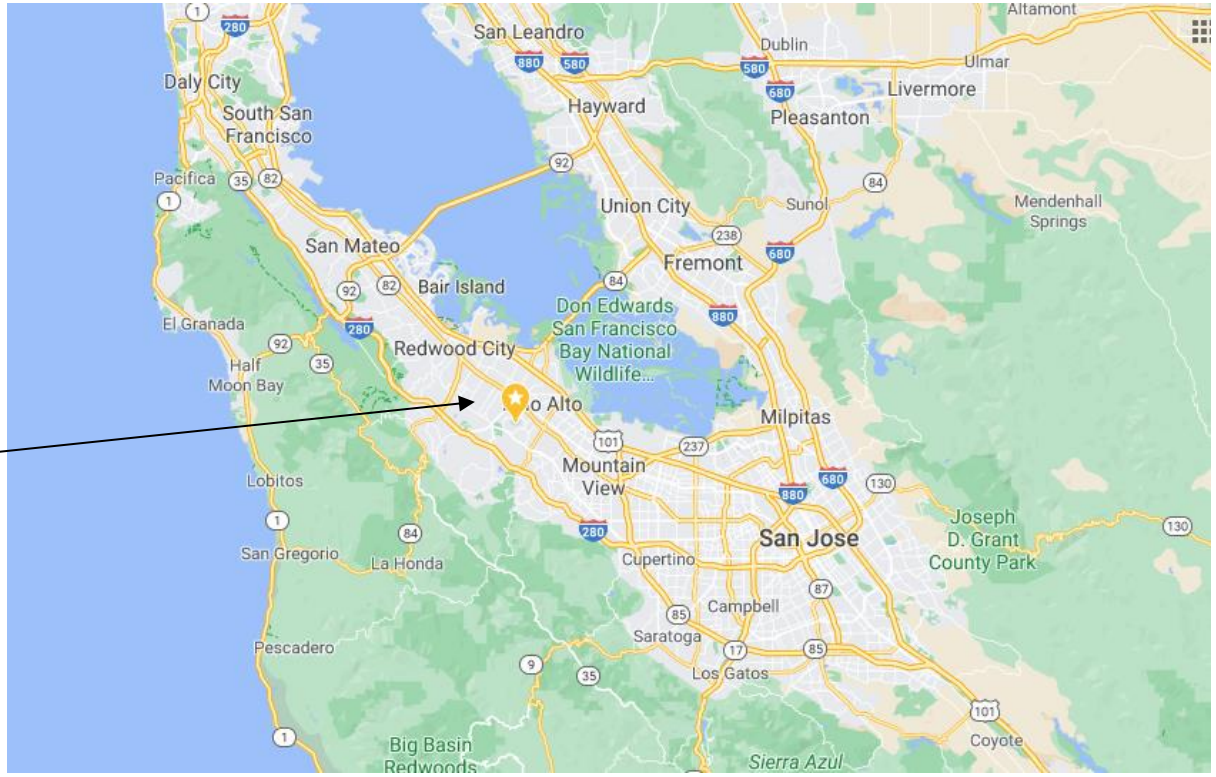
Contents

- Software products scenario
- What fuels the software product industry?
- Different product categories
- Project business vs product business
- What is product management?

Software products scenario

Software product revolution started in the Silicon Valley

Stanford University



Silicon valley

Early companies in Silicon Valley: HP, Xerox, Apple, Oracle,…..

How did Silicon Valley become successful?

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- Convergence of academia (Stanford, UC Berkley), the private sector, and government
- High density of wealthy investors and funding institutions
- Inspiration from past success stories
- Cultural diversity: Half the startups belong to Indians and Chinese
- Level-headed approach to failure

Unicorns across the world

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Country	# of Unicorns
United States	300+
China	140+
India	50+
United Kingdom	30+
Germany	12
South Korea	11

https://www.cbinsights.com/research-unicorn-companies

Unicorns by industry

Industry	# of Unicorns
Fintech	80+
Internet software & services	70+
E-commerce & direct-to-consumer	70+
Artificial intelligence	50+
Mobile & telecommunications	35+
Health	35+

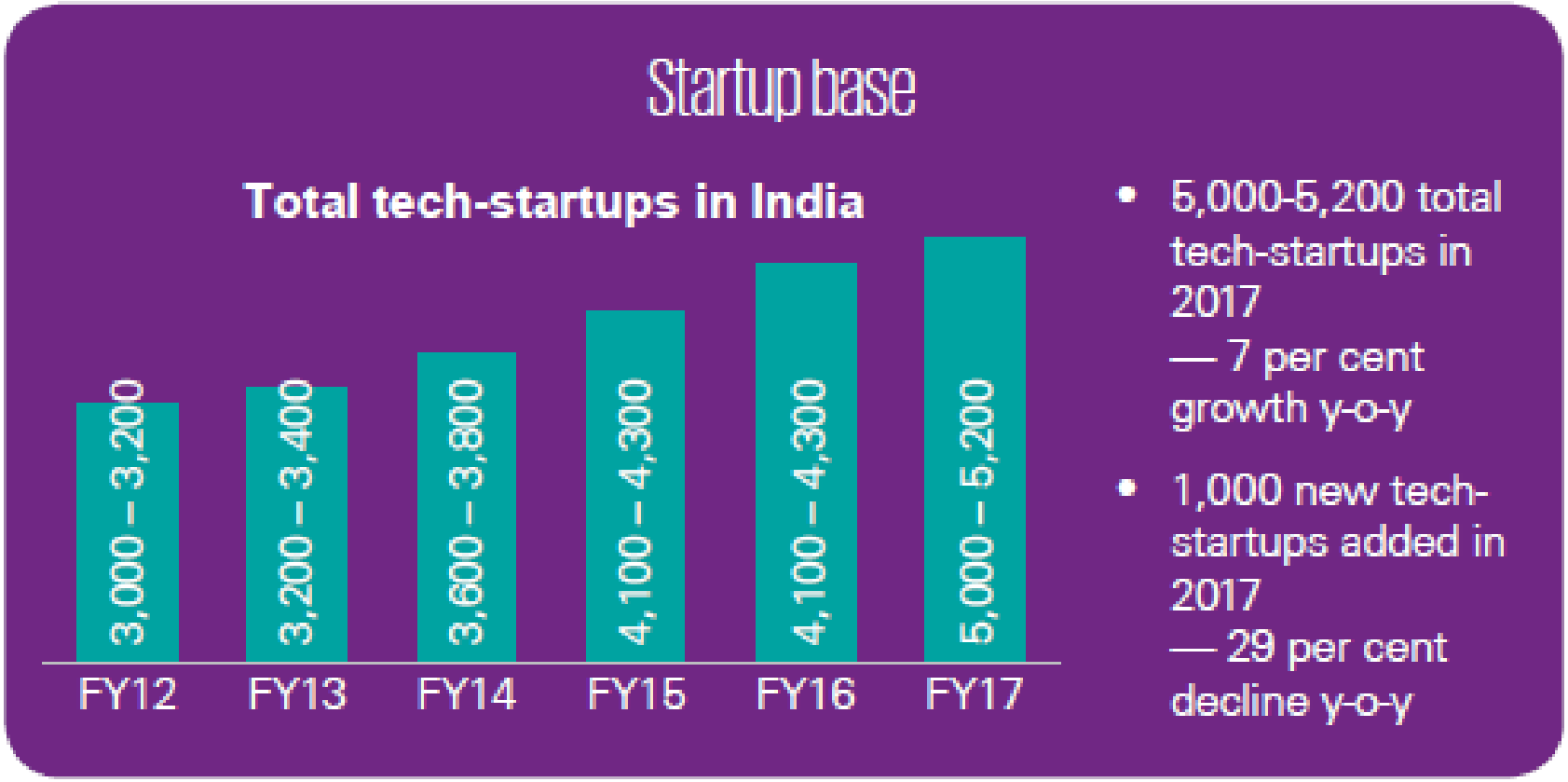
https://www.cbinsights.com/research-unicorn-companies

Growth of start-ups in India

The number of start-ups has grown from 7,000 in 2008 to 50,000 in 2017, according to a report by **KPMG on the startup ecosystem in india**

KPMG report: https://home.kpmg/in/en/home/insights/2019/01/startup-landscape-ecosystem-growing-mature.html

Tech start-ups growth in India



KPMG report: https://home.kpmg/in/en/home/insights/2019/01/startup-landscape-ecosystem-growing-mature.html

Tech start-ups using advanced technology (India)

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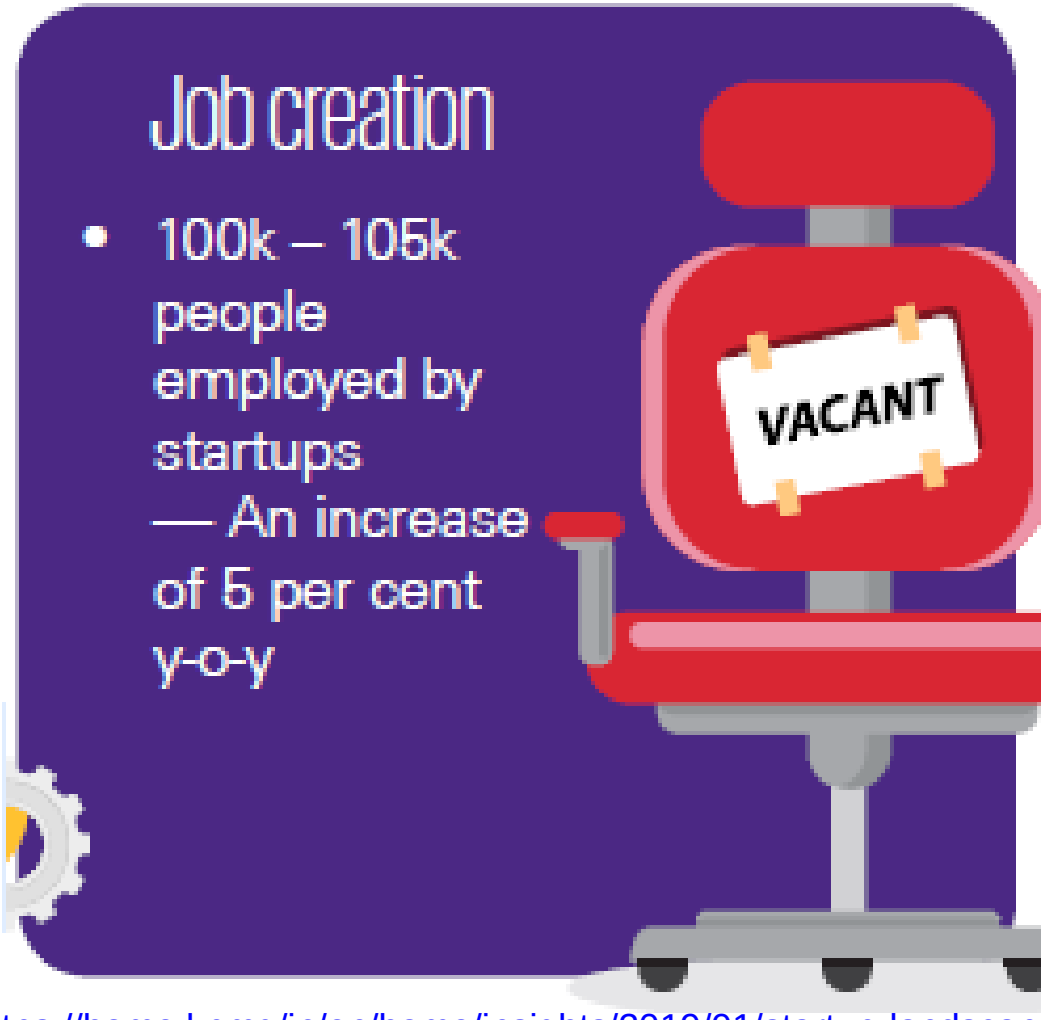
Advanced technology startups

- 15 per cent advanced technology startups (such as analytics, artificial intelligence, Internet of Things (IoT), etc
- 18 per cent software as a services (SaaS) startups in the overall startup base

KPMG report: https://home.kpmg/in/en/home/insights/2019/01/startup-landscape-ecosystem-growing-mature.html

Tech start-ups job creation (India)



KPMG report: https://home.kpmg/in/en/home/insights/2019/01/startup-landscape-ecosystem-growing-mature.html

Examples of products

- Zoom – Simplified Cisco Webex
- Ola – Built a platform
- Postman – Eco system for API development
- Slack – Simplified Team collaboration
- Twilio – Tool to Integrate messaging
- Kissflow – Business workflow implementation easily
- Rivigo – Innovation in logistics
- MyGate – Spotted an opportunity

What fuels the software product industry?

- Global market reach
- Cloud resources – Amazon AWS, Microsoft Azure, IBM, Google
- Funding - 100 angel investors in 2020
- Talent pool

Product categories

Product categories

- By industry – Finance, Health, Retail, Travel
- By technology – AI/ML, Analytics, Robotics, IoT
- B2B vs B2C
- SaaS vs On-premise
- Mobile vs Web
- Regular vs API products (Payment gateway, Google Maps, SMS gateway, Banking API)
- Product vs Product-cum-service (Ola, Uber, Flipkart)
- Product (Paytm), Product platform (Ola), Product family (Office on Windows, Office on Mac, Office on Android), Product Line (Rockwell Collin Avionics)
- Any other?

Industry segments

- E-Commerce – Amazon, Flipkart
- HealthTech – Practo, Tata Health, CogniAble
- FinTech – Paytm, Wealthy
- EdTech - Byju
- TravelTech – MakeMyTrip, Tripadvisor
- Logistics – Ecom express, Dunzo, Delhivery
- Consumer services – Swiggy
- EnterpriseTech – Zoho, Kissflow, Wooqer
- DeepTech - Niflr, Logically, AskSarkar
- Software Development – Postman, WorkDuck

Product platform

Product platform: Amazon AWS, Android, Uber, PayPal, Facebook

- The technical foundation or ecosystem on which several software products are based.

Product platform

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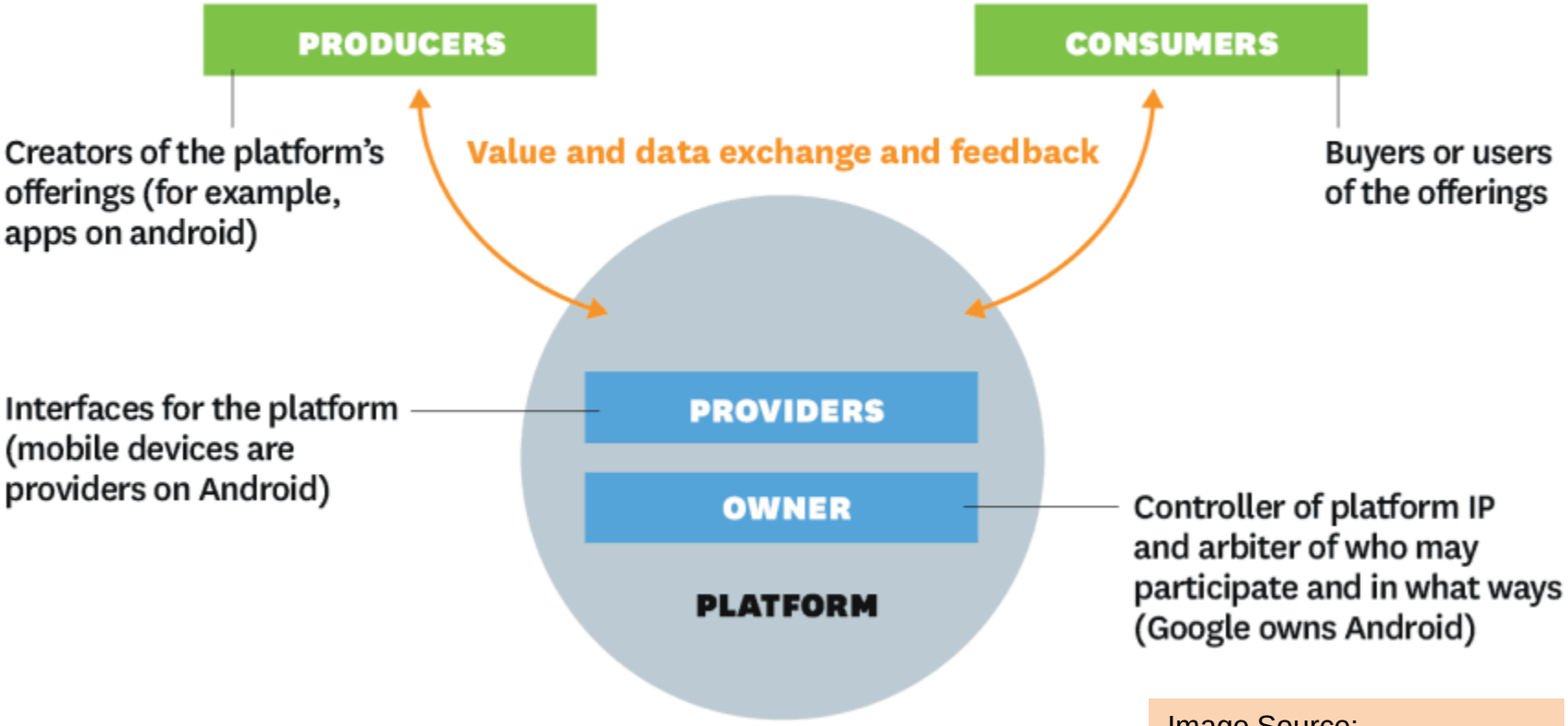
The Players in a Platform Ecosystem

A platform provides the infrastructure and rules for a marketplace that brings together producers and consumers. The players in the ecosystem fill four main roles but may shift rapidly from one role to another. Understanding the relationships both within and outside the ecosystem is central to platform strategy.



SOURCE MARSHALL W. VAN ALSTYNE, GEOFFREY G. PARKER, AND SANGEET PAUL CHOUDARY
FROM "PIPELINES, PLATFORMS, AND THE NEW RULES OF STRATEGY," APRIL 2016

Image Source: https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy

Product family

Product family: Microsoft Office (Word, Excel, PowerPoint, OneNote, Outlook)

- A group of software products that are marketed as belonging together under a common family name

Product line

Product line: Rockwell Collins Avionics systems for different helicopters

- a collection of similar software systems from a shared set of software assets using a common means of production.





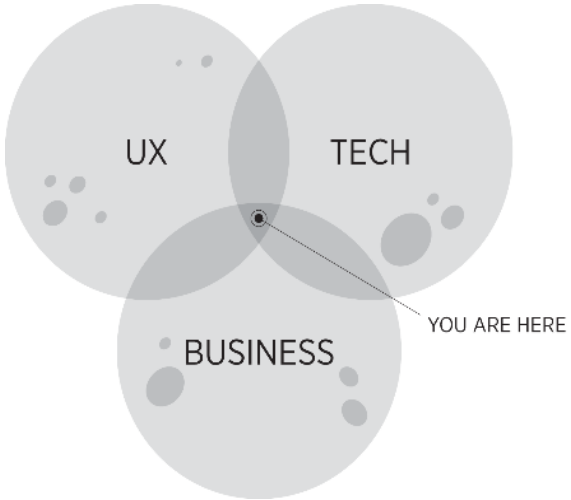
Product business and project business

Dimension	Product	Project
Risk	High	Low
Returns	High	Low
Duration	Ongoing	Pre-determined
Customers	Many	One
Objective	Discovered	Given
Funding	Internal & external	Internal
Marketing effort	High	Low
Management	Strategic	Tactical/operational

What is product management?

- “The job of a product manager is to discover a product that is valuable, usable and feasible.” – Marty Cagan, Author of ‘Inspired’

- “Product management is an intersection between business, user experience, and technology” – Martin Eriksson, Author of Product Leadership



- “Product management is the glue that holds together all the various functions” - Ken Norton, Product Partner at Google Ventures

Product management role

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- You need to be really good at strategy, be inspirational, and understand the long-term picture.

- At the same time, you have to be really good at the operational side and making things happen
    - Setting a vision
    - Creating a roadmap
    - Build the product
    - Talk to customers

- You need the soft skills of persuasion, negotiation, storytelling, vision setting and communication

Product management role

Ref: Product Plan.com

Sharing thoughts

- Name one product company you admire.
- What is the reason you admire this company?

Evolution of product organizations

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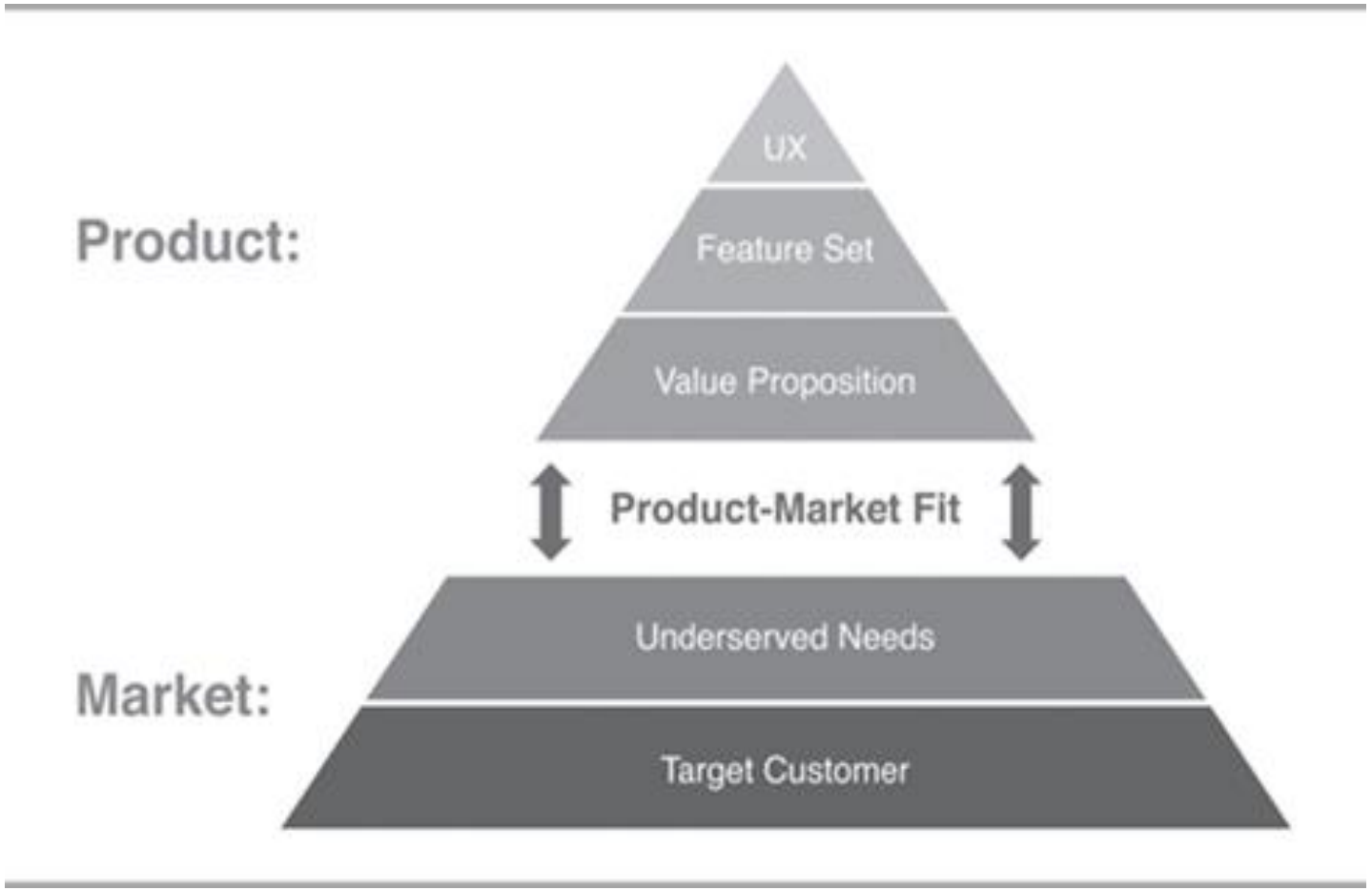
- A product organization goes through the following stages:
  - Startup
  - Growth stage
  - Enterprise
- Let us see what are the characteristics of each stage

Startup stage

- Trying to achieve product-market fit
- Limited funding
- Learns quickly
- Little bureaucracy
- Many fail
- Those that succeed are good at product discovery
- Risky but rewarding if things go well

Examples: WhiteHat Jr, Simpl

Product-Market fit concept



Thank you

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SEZG507: Product Discovery & Requirements Engineering

Session 02: Overview of Product Management


Start
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Please read the course handout, if you haven't already ☺

Contents

- Evolution of product organizations
- Why products fail?
- What do best product teams do?
- Product management: Relationship with rest of the company
- Product lifecycle
- Technology adoption lifecycle
- Journey of some product companies
- Multi-faceted role of a product manager

Evolution of product organizations

A product organization goes through the following stages:

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Let us see what are the characteristics of each stage…

Startup stage

- Trying to achieve product-market fit
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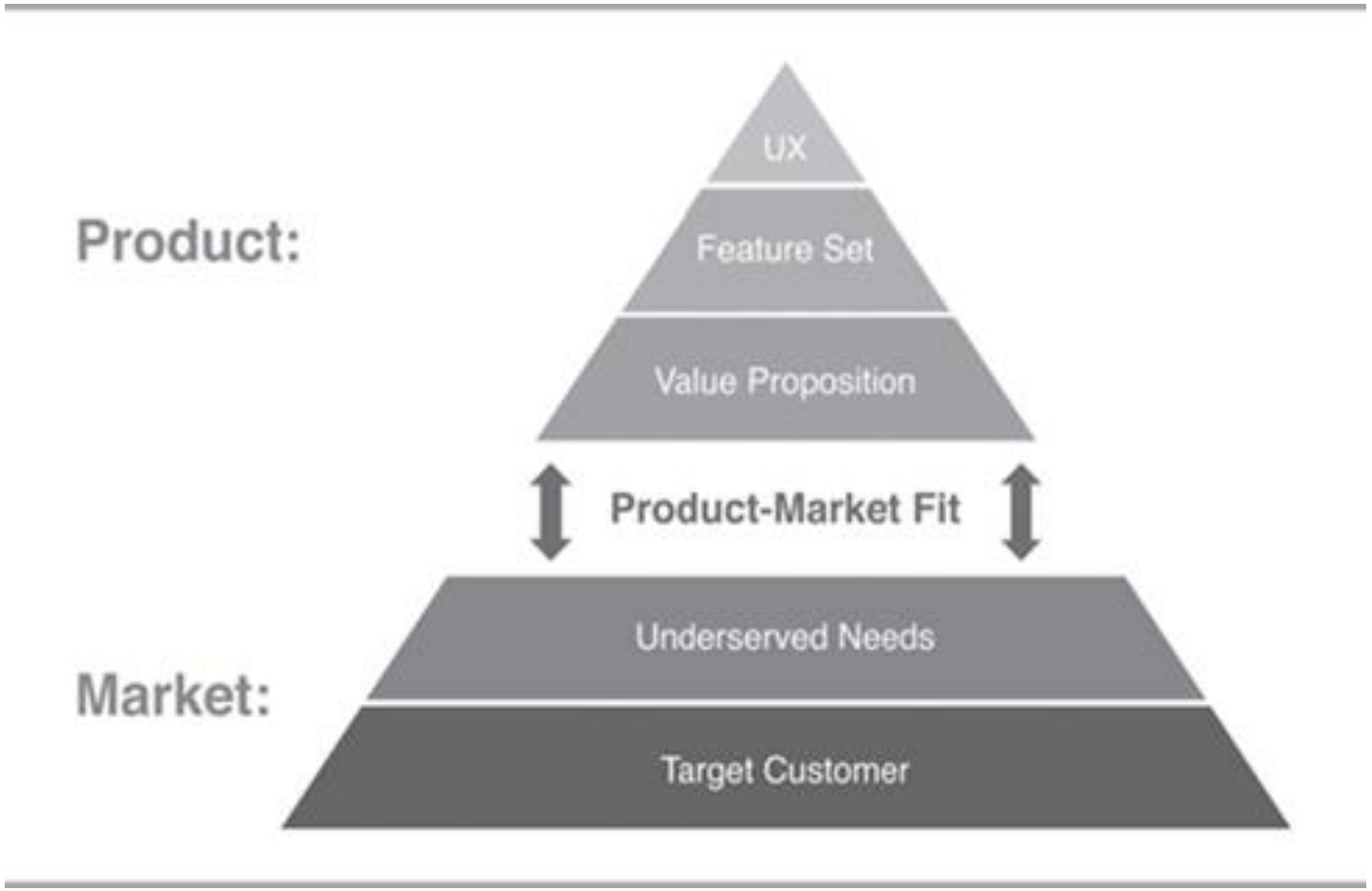

Startup stage examples

WhiteHat Jr

- Founded in 2018
- Offers coding & AI courses to children aged 6 to 14 years.
- Aims to empower children to become creators
- BYJU‘s acquired it for $300 million

Simpl

- Started 2016
- Online payment method that allows a consumer to buy now and pay later
- Digitalizing the old Khata system of payment to grocer, milkman, etc
- Simpl under-writes customer payments based on machine learning
- USP: Transparent financial services and single click payment

Growth stage

- Scale up – more customers
- Replicate earlier successes with new, adjacent products and services; e.g. MakeMyTrip - flight, train, hotel
- Technology infrastructure is stretched (Netflix during the growth stage)
- There is technical debt (Amazon monolithic to microservices)
- Goes for IPO or gets sold (MakeMyTrip IPO, WhatsApp sold to Facebook)

- Examples: Bounce (2016), Postman (2014), KissFlow (2013).

Growth stage example

Kissflow

- Business process management software
- Self-service setup/configuration
- 50 process templates to choose from – employee on-boarding, travel reimbursement
- Strong after sales support
- Product led growth - leading to pull rather than push
- 10,000-plus clients, including biggies like Airbus, Danone, Michelin and Pepsi
- Competitors - Pega, Appian, Outsystems
- 200 employees

Enterprise stage

- Focus is on consistent product innovation, stay ahead
- But many companies are satisfied with leveraging the value created and brand created, leading to slow death (ex. Kodak)
- They work hard to protect what they have created and less on new ventures and initiatives
- There is lack of vision, increased bureaucracy, resorts to acquisitions or creating separate innovation centres to incubate new business or products (example Cisco).

- Companies that failed to innovate: Xerox, AoL, Motorola
- Strong enterprise companies: Adobe, Amazon, Apple, Facebook, Google, and Netflix

Enterprise stage: Examples of consistent innovation

Netflix	Amazon	Facebook
• DVD movie sales • DVD rentals • Online booking of DVD, delivered via Post • Streaming video • In house production of serials and movies • Movie/serial award function (akin to Oscar)	• Books • Electronics, Others • Recommendation feature • Amazon Prime • Alexa • Kindle • AWS • Firestick • Amazon Pay	• Wall & messaging • News Feed - streams friend's activity • Sell stuff to other Facebookers • Tagging and attachments • 'Like' button • Timeline feature • Buys Instagram, WhatsApp

Why products fail?

- Most companies start with ideas generated internally or got from existing or potential customers.
  - Example: HP's AI-enabling technology on a low-cost, general-purpose workstation developed by Marty Cagan & team (1980s), DB designer – I worked on (1989)
- Based on these ideas they create a business case, roadmap, build the product and deploy
- It is then that they realize that there are no takers

- More examples of failed products:
  - Apple Watch Gold edition
  - Google+ social media
  - The Daily - Digital newspaper in collaboration with Apple

What do best product teams do?

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- Tackle risks early
- Define and design products collaboratively – Product Manager, Designer, Engineering
- Solve problems, not just implement features

Tackle risks early

There are four types of risks:

- Value – Does customer find value in the product?
- Usability – Is the product easy to use?
- Feasibility – Is the product technically feasible to build?
- Viability - Will the business be viable, can it break even?

Tackle risks early - Examples

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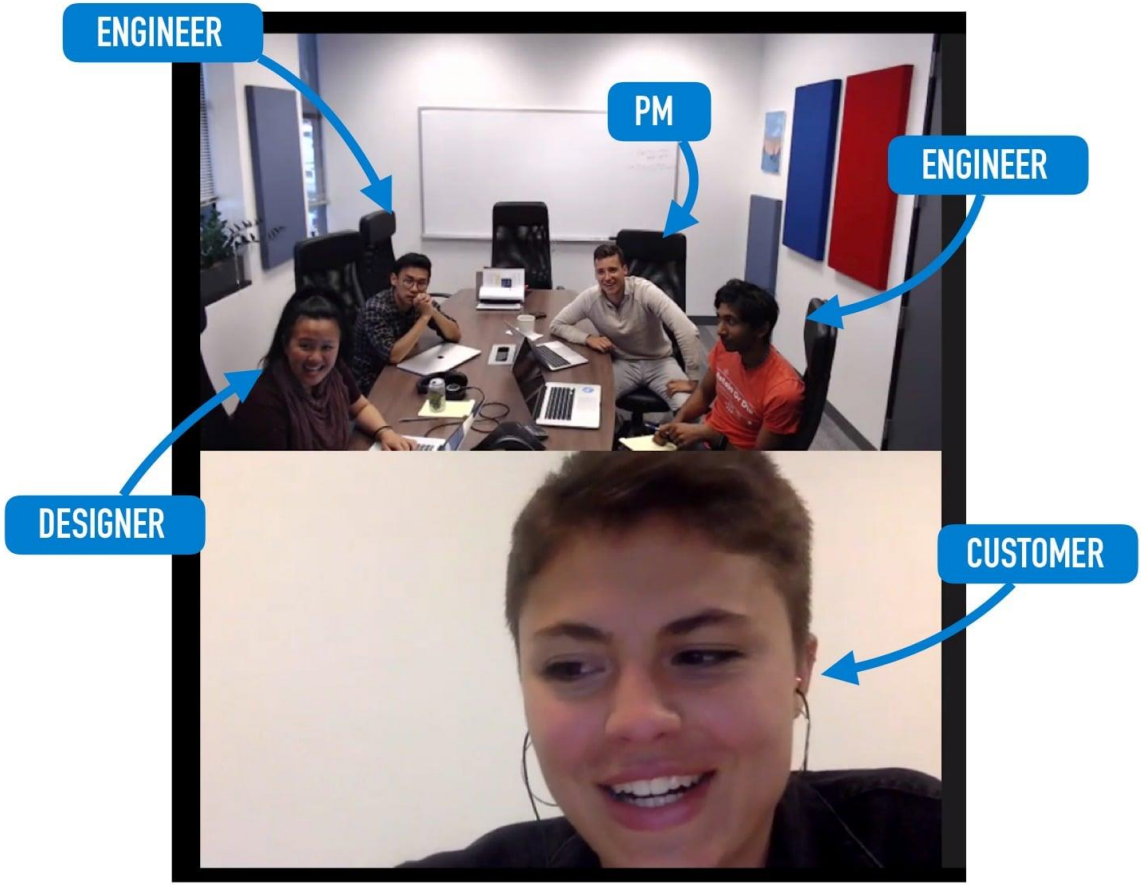
- Bounce
  - Bounce spotted an opportunity in Bangalore: Provide scooter to reach the nearest metro station
  - Bounce experimented their concept with a few scooters to determine value. Once the demand/value was established, they expanded
- AirBnB
  - AirBnB rented their house to test value. A conference was being held in their city and people would be looking for accommodation
- Slack
  - Slack requested friends and cajoled 6-10 companies, to use their product and give feedback to determine usefulness/value and usability and improved the product based on user feedback.

Define and design products collaboratively

- Product, design analytics engineering work side by side in a give-and-take manner
- Leads to better solution ideas and higher ownership



Example: Amplitude

- A product analytics software
- Engineers stay connected with customers by participating in client calls

Solve problems, not just implement features

Example: Kissflow

- Workflow automation improves employee productivity
- Provides 50 ready-to-use workflows from travel reimbursements to employee on-boarding
- Easy diagramming helps model a company's process just as it appears in the business manager's mind.

Solve problems, not just implement features

Example: Wobot Intelligence

- Helps organizations in the Food, Retail, and Manufacturing sectors to reduce risk of non-compliance & pilferage
- Has process compliance modules like hygiene, workforce & workplace safety, customer SOPs, and more
- Uses deep learning video analytics to identify people, objects and their activities
- Customers - IRCTC, Rebel Foods, CureFit, Kitopi, Travel Food Services, Burger Singh, G4S, Max Estates, Blue Tokai, Apparel Group and Smartworks

Solve problems, not just implement features - Example

Example: Logically

- Detects fake news & inaccurate news using AI & ML
- Finds out who is spreading misinformation to enable authorities to take action

- Examples:
  - Detected misinformation during the death of a Bollywood actor Sushant Singh, during conflict with China in Ladakh, and during the Kashmir issue with Pakistan.
  - Detected bots originating in Pakistan that were interfering with geopolitical and sensitive issues within India

- Customers: Indian Election Commission, pharma companies to prevent anti-vaccine information, Mysore Police

Product Management: Relationship with rest of the company

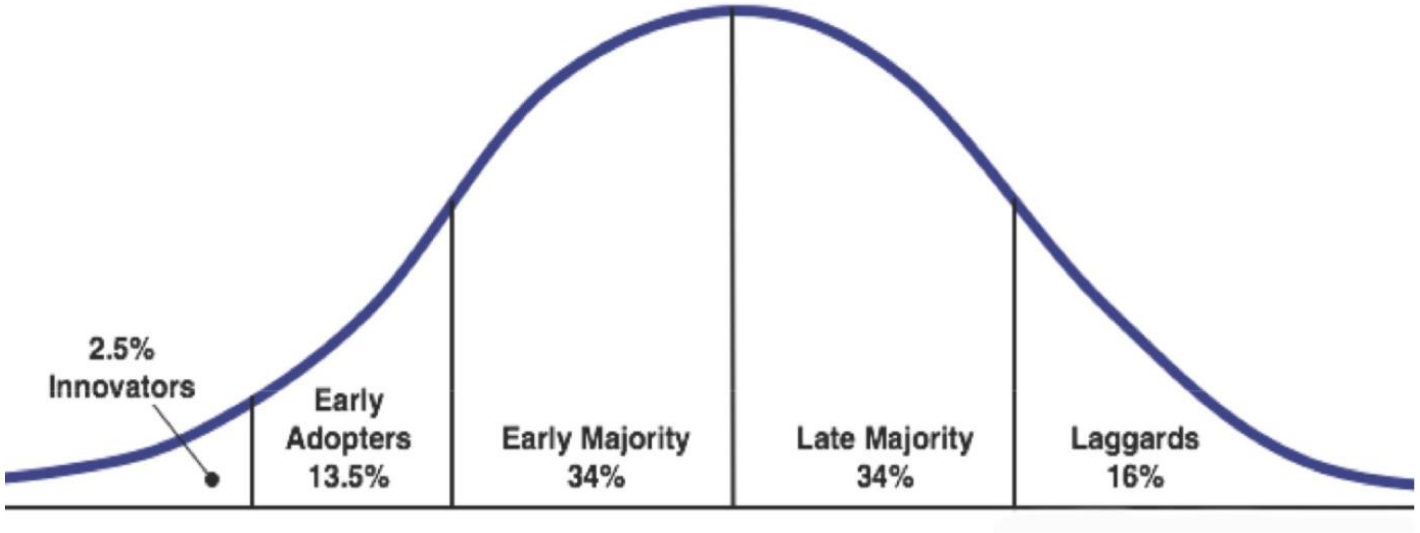
- Development team relies on Product Management to define a plan and write user stories, requirements, and acceptance
- Marketing team relies on Product Management for product information, value proposition definitions. They collaborate to define product position, launch product, define go-to-market strategy
- Sales team relies on Product Management for demo cases, answering detailed inquiries, and helping to close deals.
- Finance and Product Management rely on each other to build the business through determining pricing, margins, discounting, and so forth.

Product lifecycle

- Determine your target customers
- Identify underserved customer needs
- Define your value proposition
- Assess value through customer interaction
- Specify your Minimum Viable Product (MVP)
- Create your MVP prototype
- Test your MVP with customers
- Iterate
- Launch product and support
- Grow and build adjacent products
- End of life

Technology adoption lifecycle

Products using new technology such as AI, NLP, Blockchain, Robotics are adopted gradually



Technology adoption lifecycle…

- **Innovators** are the first to get interested in new products and novelties. They even accept incomplete or defective products just for the pleasure of being the first ones to use this new product.
- **Early adopters**, also known as visionaries or enthusiasts, who accept the risks of testing a new product, but not for the pleasure of coming first but **because they see the potential in it**. Usually, they are influencers within organizations and communities in which they participate.
  - IBM Watson was adopted by Memorial Sloan–Kettering Cancer Centre, Cleveland Clinic, MD Andersen Cancer Centre, to get advise on cancer
- **Early majority**, also called pragmatic, buy new products only after they got references.
  - Manipal Hospital Bangalore, Georgia Tech teaching assistant, H&R Block for tax preparation, several startups use it for developing cognitive apps
- **Late majority** are the conservatives, in other words, those who buy only after the price has dropped substantially. Example late majority users of SalesForce
- **Laggards**, who only buy a new product if this is the only option available.

Technology adoption lifecycle…

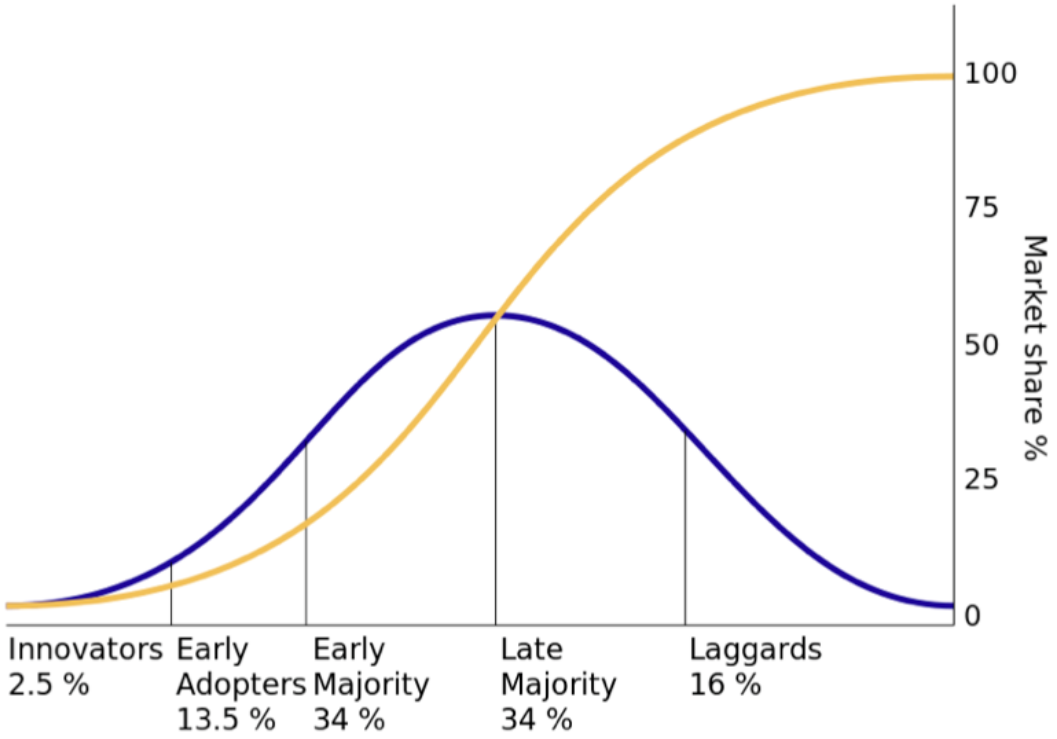
Example:

- IBM Watson and Robotic surgery (Da Vinci) used by one or two hospitals.
- In 1999 Salesforce.com was the first to use Cloud to offer applications on the Cloud. Three years later the industry grew massively with video, music and other media being hosted and delivered online.

https://www.scality.com/solved/the-history-of-cloud-computing/

Technology adoption lifecycle…

S-curve: By calculating the integral (who remembers the calculus classes?) we can obtain the famous S-shaped technology adoption curve.



Multi-faceted role of a Product Manager

- Deep knowledge of customer, your business, market & industry
  - Nium - money transfer to foreign countries
  - Had deep knowledge of money transfer markets in Singapore, Indonesia, Japan, etc.
  - Had good knowledge of forex – how it works, who are the players, banking
- Engage with customers, understand their business, process, pain points
  - Slack understood the collaboration needs of teams
  - Twilio understood the messaging needs of companies
  - Wobot understood the process compliance needs of food, pharma, retail industries
- Prioritize ideas, features and projects
  - Slack focused on Search, synchronization, file sharing
- Collaborate with Design, Engineering, Marketing, Legal, Finance
- Recruit, train and develop the product team
- Manage upward and outward: Tell a story, sell a vision, get funding
- Align and focus the organization

Journey of some product companies: Exercise

Study the journey of Netflix and identify:

- Key milestones?
- Challenges faced?
- What did they do right and what did they do wrong?
- Key product management learnings

- Courtesy: https://www.businessmodelsinc.com/exponential-business-model/netflix/

Thank you

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SEZG507: Product Discovery & Requirements Engineering

Session 03: Core Concepts


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Contents

- Principles of product management
- Characteristics of a holistic product
- Product-market fit
- Problem space vs. solution space
- User vs. buyer
- Continuous discovery and delivery
- Product ecosystem
- Critical success factors
- Introduction to product research

Principles of product management

- Establish compelling value; examples:
  - MakeMyTrip – A one stop shop for travel
  - Postman – Make API testing easy
- Many of the ideas won't work out, and the ones that do will require several iterations; examples:
  - Slack – Initially developed a multi-player online game which did not succeed, but the inbuilt messaging feature became successful
  - MakeMyTrip – Initially targeted Indian travellers, but was not successful; later targeted NRIs
- We must validate our ideas on real users and customers; examples:
  - Bounce – Validated the ‘Rent-a-bike’ idea by investing in a few scooters
  - AirBnB – Rented their apartment to conference attendees
- Validate ideas fast and with minimal cost – the more we delay, we may be expending more effort and cost on an idea that does not have a market

Discussion point

What has been *your* experience with applying any of these principles?

- Establish compelling value; examples:
  - MakeMyTrip – a one stop shop for travel
  - Postman – Make API testing easy
- Many of the ideas won't work out, and the ones that do will require several iterations; examples:
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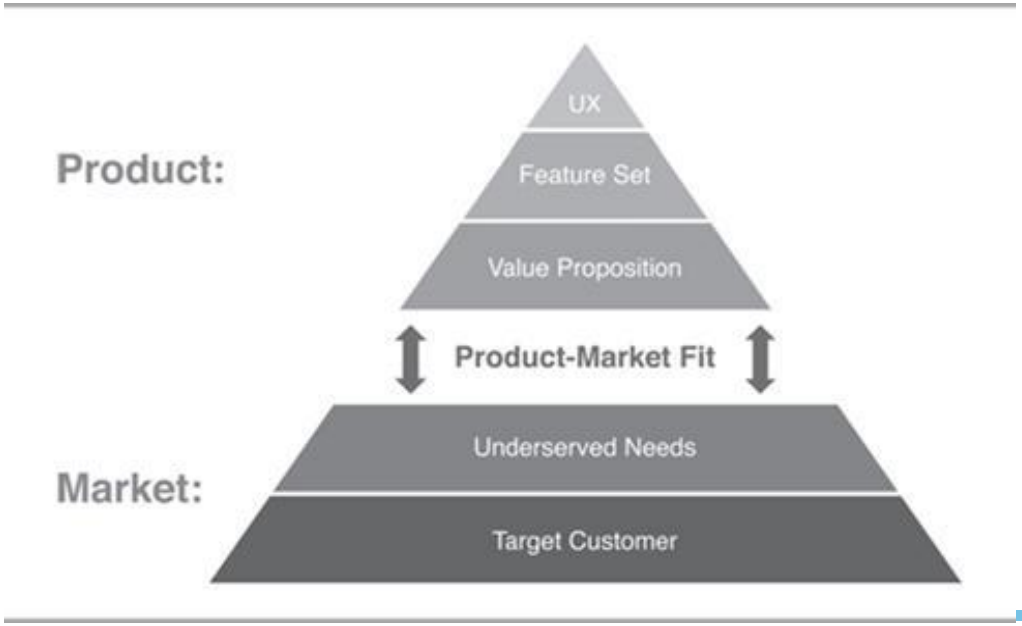
Different aspects of a product

- Functionality; Example: Booking tickets is one function of MakeMyTrip
- Technology; Example: Microservices architecture used by Amazon, encryption used by WhatsApp, AI/ML used by Logically
- User experience (UX); Example: Tally's ease of use for non-finance people)
- How do we monetize? Example: Through transaction fee of something like payment gateways or subscription fee of SalesForce
- How we attract & acquire customers? Example: Freemium of Zoom, cash back of Paytm, search engine optimization, ads
- Offline experience; Example: Merchandise fulfilment experience and merchandise return experience of Amazon & FlipKart, support experience by call centre personnel, self help material on website

Product-market fit

- It is about how well the product meets the needs of the customer (market)
- Good product-market fit results in happier customers, lower churn rates, shortened sales cycles, and rapid organic growth.
- You can always feel when product/market fit isn't happening.
  - The customers aren't quite getting value out of the product, word of mouth isn't spreading, usage isn't growing that fast, press reviews are not enthusiastic, the sales cycle takes too long, and lots of deals never close.



Product-market fit

- Marc Andreessen coined the term *product-market fit* in a well-known blog post titled “The only thing that matters.” (https://pmarchive.com/guide_to_startups_part4.html)
- In a great market -- a market with lots of real potential customers -- the market *pulls* product out of the startup; example:
  - eCommerce, EdTech, FinTech
- Conversely, in a terrible market, you can have the best product in the world and an absolutely killer team, and it doesn't matter -- *you're going to fail*; example:
  - Video conferencing (2007), Iridium satellite phone
- Great products sometimes create huge new markets: examples:
  - Virtual machine by VMWare, smart phone by Apple
  - Any other?
- The only thing that matters is getting to product/market fit.

Discussion point

Do *you* know of any great product that failed?

- Marc Andreessen coined the term *product-market fit* in a well-known blog post titled “The only thing that matters.” (https://pmarchive.com/guide_to_startups_part4.html)
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Problem space vs solution space

- Problem space consists of customer needs and pain points.
- However problems are not always easy to know:
  - Customers express their needs in terms of existing solutions
  - For example they say “I need a cab in 5 minutes”, because they think cab is the only solution
  - The real need is to go from A to B.
- There can be many solutions for this:
  - Hire a cab
  - Use self-driving scooter or car
  - Hail a bike taxi
  - Any other solution you can think of?
- Therefore before finding a solution, we need to understand the real need/problem
  - Understand what the customer needs and why
  - Observe what (s)he does, why (s)he does it etc. (Persona)
  - “If I had only one hour to solve a problem, I would spend up to two-thirds of that hour in attempting to define what the problem is.”

Problem space vs solution space contd.

What differentiates one product from another is the quality of solution; examples:

- Space pen: Need is to write in space. US designed an ink pen that works in zero gravity; Russians used a simple pencil.
- Progressive auto insurance: Customer wanted quick settlement of car insurance claim; a process that took 6-7 days was cut down to 1 day through innovative solution.
- MoveWorks: Users need quick IT support to install say a project management software. Solutions can be: Raise a ticket, Call IT support, Use MoveWorks bot which will check your eligibility and download the software and install it instantly.
- Application maintenance service: Need to decide whether faster problem resolution is the need or minimal problems is the need.

Discussion point

What do you think can be another example?

What differentiates one product from another is the quality of solution; examples:

- Space pen: Need is to write in space. US designed an ink pen that works in zero gravity; Russians used a simple pencil.
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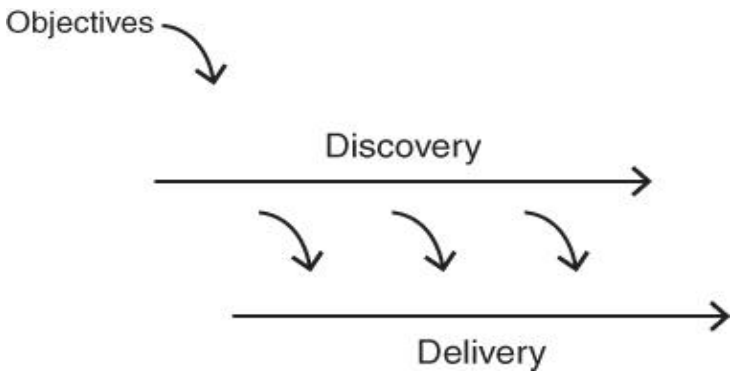
User vs. buyer

- In large enterprises the decision makers are not the end users
- Decision makers are usually part of the senior management. They want to solve a business problem or pain point.
- Their concerns are delivering functionality that brings business value (increase customer satisfaction, customer growth, reduce customer churn), productivity, security, reliability / stability / quality of solution
- The end users typically do not have the authority to commission the product. But ultimately they are the ones who are going to use the product.
- Hence the product needs to be user friendly and efficient in performing its functions.
- Example
  - Lotus Notes: It was a very secure team database and email system. But not very user-friendly.
  - Cisco WebEx – very reliable but not very user friendly. But corporations prefer it.
  - Do you know of any other example?
- But this is changing with SaaS product management becoming more aware of UI/UX

Continuous discovery and delivery

- Discovery and delivery are our two main activities for a cross-functional product team, and they typically go on simultaneously.
- We are always working in parallel - to both *discover* the necessary product to be built—which is primarily what the product manager and designer work on every day—while the engineers work to *deliver* the-quality product.
- The engineers are also helping daily in discovery (and many of the best innovations come from that participation, so this is not a minor point), and the product manager and designer are also helping daily on delivery (mainly to clarify intended behaviour).
  - Examples: Postman, Slack
- Does this happen in a company you know of?



Product ecosystem

Product should address the total customer experience (the whole offer)

- Kaagaz & MS Office Lens (document scanner app on mobile) does not only scan but allows us to share the image via email, WhatsApp etc. Because the customer is not just interested in scanning and storing, (s)he wants to share with others
- Xerox started with photo copying facility but soon realized people need to staple the pages, need cover page in different colour, etc. So they enhanced the machine to address the total customer experience
- Clarify: customer support software that involves tracking customer interaction, product details, knowledge base, workflows
- No Broker.com: Find house, pay advance, get painter, get packer & mover
- Have you come across other products that address total customer experience?

Product ecosystem contd.

Creating partnerships & alliances

- Xerox tied up with paper manufacturers to ensure steady supply of paper
- SAP partners: DataXtream for POS solutions, DocuSign for eSignature integration with SAP
- Netflix tied up with telecom service providers such as Verizon, Airtel to host their content at ISP gateways, so as to ensure fast response time to customers
- MakeMyTrip built alliances with airlines, hotels, etc.
- Have you come across any other examples?

Critical success factors

- Differentiation
  - Intuit: UI and features
  - Apple: UX
  - Citibank: Reliability & infrastructure
  - .Net: Ease of use
  - Toyota: Quality
  - ISRO: low cost satellite launches for world-wide customers

- Entry barrier
  - Google Earth: Entry barrier due to technology
  - Da Vinci Robotic Surgery: Technology
  - Microsoft HoloLens: Mixed reality technology for doctors

Product research

Product research is an approach that draws from user research, market research, and product analytics to help any product team arrive at insights in a timely, continuous manner.

Thank you

BITS Pilani

SEZG507: Product Discovery & Requirements Engineering

Session 04: Introduction to Product Research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Contents

- Product research
- Excuses for not doing research
- When do you do product research?
- Building on different research disciplines
- Market research
- Product analytics
- A set of rules for product research
- Rule 1: Prepare to be wrong

Product Research

Product research is an approach that draws from user research, market research, and product analytics to help any product team arrive at insights in a timely, continuous manner.

Excuses for Not Doing Research

- It takes too long
- We don't have the budget
- We decided what the user needs
- We're not researchers
- The product is completely new
- It's just a small change
- We need the features first
- It's not the right time
- We don't have many users to test with
- We have enough data
- We'll learn during the pilot

When Do You Do Product Research?

- **Stage 1** is exploring the value of products or features in the market. This is the phase where you are discovering deeper needs in a broader context. In many cases, you don't even have a plan to build something: you're just trying to find out whether it's a good idea. At this stage, you are trying to understand the problem space. Have you understood the problem correctly? Are you considering the right solutions? Are you planning to build the right solutions for the problem you understand?
- **Stage 2** is the development of the product or feature. Here, research helps you stay on course and allows you to assess the right approach. Your results might invite you to explore alternatives. Now that you're immersed in the problem, why are you struggling with certain aspects? Do the assumptions you made at the beginning still hold true? Are you building the solution the right way?
- **Stage 3** comes after you have released your product or feature or when you're working on refining existing features. Research at this stage helps you observe the change in your users' behavior. Now you can check your assumptions directly with the users and see how their needs are changing because of your product or service.

Different Research Disciplines

- Product research draws from different research disciplines, namely
  - User research
  - Market research
  - Product analytics
- There is some overlap between these disciplines, each discipline has a different focus
- Each discipline has subdisciplines that are specialized for particular types of research

User Research

- User research studies what a user does with and surrounding the context of a product's use
- It is about working with real humans to understand their motivations, behavior, and needs
- It aims to understand how that person employs your product and what happens before, during, and after that experience
- User research can be broken down into three categories
  - **Generative user research**: Aims to get a deep, rich understanding of user needs and desires: users' behaviors, attitudes, and perceptions; uses methods like ethnography and contextual interviews
  - **Descriptive user research**: Aims to uncover how something works and describe a phenomenon in detail; uses methods such as interviews, contextual interviews, and diary studies
  - **Evaluative user research**: Aims to find out how something compares to a known set of criteria; usability studies and A/B testing are common evaluative research methods

Market Research

- Market research involves gathering data about what people want and analyzing that data to help make decisions—for example, about strategies, processes, operations, and growth
- Market research is usually split into four areas
  - **Exploratory market research**: Used when the research problem has a lot of unknowns. It identifies avenues for new and existing product growth. Market exploration usually makes use of secondary data from inside and outside the company, as well as observational studies, expert opinions, and user feedback.
  - **Descriptive market research**: Concerned with finding out how things occur, how often, and how they're connected. Interviews and surveys are popular descriptive market research methods.
  - **Causal market research**: Establishes the cause-and-effect relationship between a set of variables. It relies on statistical methods and large data sets, therefore it requires rigor.
  - **Predictive market research**: Helps you predict certain market variables. It forecasts what users will want and when they want it, and findings can affect future sales, growth projections, or the development of a product.

Product Analytics

- Product analytics is about discovering how your audience uses your product from the data trails they leave. Product analytics can be used to find answers to questions regarding the behavior of a large number of users.

Types of Product Analytics

- Product analytics can be classified into four subtypes: descriptive, diagnostic, predictive, and prescriptive.
  - **Descriptive analytics**: Describes what you know from your data, whether that's the number of downloads recorded or the percentage of users who leave the site within a minute. It paints a numerical picture of what happened.
  - **Diagnostic analytics**: Helps you discover why something is happening. It uses techniques like data discovery, drilldowns, data mining, and correlations.
  - **Predictive analytics**: Asks what might happen in the future, based on what has happened in the past. You take the data you have and employ statistical techniques, usually involving machine learning, to predict how users might behave.
  - **Prescriptive analytics**: Asks what your next steps should be, based on what you know and what you think users will do in the future. Prescriptive analytics is thus firmly rooted in predictive analytics but is more advanced.

Rules for Product Research

- Rule 1: Prepare to be wrong.
- Rule 2: Everyone is biased, including you.
- Rule 3: Good insights start with a question.
- Rule 4: Plans make research work.
- Rule 5: Interviews are a foundational skill.
- Rule 6: Sometimes a conversation is not enough.
- Rule 7: The team that analyzes together thrives together.
- Rule 8: Insights are best shared.
- Rule 9: Good research habits make great products.

Rule 1: Prepare to Be Wrong

Case Study

- Some years ago, the online marketing company Constant Contact experienced an increase in call volume from its customers, mostly small businesses. More and more callers wanted answers to their marketing questions, and data showed an increase in visits to its support pages and forums from mobile devices. This led the VP of customer success to believe that Constant Contact customers weren't getting the answers they wanted.
- Do you agree with the VP's point of view?
  - If yes, why?
  - If no, why not?

Continuing With the Story

- Some years ago, the online marketing company Constant Contact experienced an increase in call volume from its customers, mostly small businesses. More and more callers wanted answers to their marketing questions, and data showed an increase in visits to its support pages and forums from mobile devices. This led the VP of customer success to believe that Constant Contact customers weren't getting the answers they wanted.
- An executive had the idea to package all the company's content into a mobile app called Marketing Smarts. This executive allocated more than $200,000 to build this app and send it to the app stores. Fortunately, it never became a reality.
- We say "fortunately" because the mindset in the company at the time was "go build it for scale," which meant this project went to the newly formed innovation team, the Small Business Innovation Loft.
- The innovation team decided to run a design sprint to test concepts with customers and observe their reactions. They found that customers were often using a desktop when they had a question, so they didn't need a mobile app at all.

Ego Is the Enemy of Product Research

- Challenging this egocentric mindset is a key part of doing product research well
- Each time we disprove a theory or belief, we in fact discover more validation that we can be right, because we know the process we are undertaking is real.
- Instead of expecting to be right, we need to expect to be wrong, even seeking to be wrong.
- The whole team needs to adopt the right mindset for product research.

Different Mindsets in Research

- Transactional Mindset
- Confirmatory Mindset
- Problem-Finding Mindset
- The Right Mindset, the Insight-Making Mindset

Transactional Mindset: "How Can I Sell This?"

The *transactional* mindset is all about the transaction and limits itself to whether or not a customer would buy a product. An example is asking, "Would you like to buy...?" or "What if you had...?" If this sounds more like a sales pitch than research to you, you are correct. The transactional mindset doesn't take into account the nuances of a customer journey or the complex needs of the customer. It explores the topic at a surface level, avoiding the depths at which the researcher may find evidence that they are wrong. This approach is often seen in market research that solely focuses on sales performance, and it is not useful.

Confirmatory Mindset: "Am I Not Right?"

The *confirmatory* mindset is where you try to get the answers you want. If you beat up the data, it will tell you what you want to hear. The problem with this approach is that it's about confirming the ideas or beliefs you already have rather than listening to what the customer has to say. If you are in the confirmatory mindset, you might find yourself asking subtly leading questions, usually focused around the feature you are working on. These questions are laced with a secret desire to be liked by the customers, and their wording reflects your own product development world, not the customers' world.

Problem-Finding Mindset: "How Can I Improve This?"

Some teams focus on finding things to fix. These teams carry out research just to find problems. They'll treat a usability study like a driving test: there are right and wrong answers, and the student either passes or fails. If you have a problem-finding mindset, you will be watching the sessions with a very keen eye on what the participant *cannot* do. This drive to find an underlying problem causes you to be aggressive in interviews, which sometimes look more like interrogations. You assume that the participants are hiding a problem, which you are there to extract from them. You believe the users will give you a great insight if you continue asking, "Why? Why? Why? Why!"

The Right Mindset, the Insight-Making Mindset: "I Want to Understand"

We talked about teams that focus on the sales motivation, teams that focus on being right, and teams that focus on mistakes and improvements. There is a fourth type of team that focuses on learning. They are aware of their assumptions and biases, they work very hard to avoid leading their users during research, and they check their egos at the door. Their sole goal is to learn from their users. They seek to learn about users' good and bad experiences, their favorable and critical thoughts, their suggestions and complaints. When they hear an unpleasant surprise, they stop and listen, giving users space to express themselves in their own terms. These are the teams that assume the insight-making mindset. They are the ones that are most successful with product research.

The insight-making mindset is where you are open to being wrong.

The insight-making mindset adopts a *diagnostic* approach.

The *insight-making* mindset focuses on the positive *and* negative aspects of your product. Researchers in this mindset work with an open mind, trying their best to withhold judgment and focus on the research question at hand. Unlike researchers with a transactional mindset, they are not just interested in that "switch" moment when the purchase decision is made. Unlike researchers with a confirmatory mindset, they do not lead their participants to affirm their product's features. Unlike researchers with a problem-finding mindset, they are not looking to fix an immediate problem. They just want to listen and understand without bias.

Steps for Good Insights

innovate achieve lead

Step 1: Focus on a research question.

The goal of product research is finding actionable insights for product development in a timely manner. Therefore, it is very important to start with a research question. A research question is a single focused question that frames your research endeavor: what is it that you want to learn? Finding one is not hard, and it guarantees quality and focus throughout the process.

Step 2: Identify your research method and participants.

This is the step where you decide on your method and who you will work with. There are hundreds of methods that you can use to answer your research question. But each method answers a different type of research question.

Step 3: Collect data.

It may come as a surprise that collecting data comes at such a late stage in the process! Depending on your research question and your selected method, this step can entail talking to participants, asking them specific questions, doing work together, watching them use your product, or analyzing historic data from users.

Step 4: Analyze as a team.

Your data will gain meaning if you analyze it from different perspectives. The best way to do this is as a team—not necessarily your immediate team but a group of people who offer different, even opposing, viewpoints. This is almost seeking to be wrong about your initial ideas! Involving fellow team members, peers on other teams, stakeholders, and sponsors will help you arrive at richer insights in a very short time.

Step 5: Share findings.

Sharing your research findings is just as important as the previous four steps, and it is a separate step because of the effort involved. It is so sad to see teams do a very good job with the first four steps and then write a report that no one will ever read. Sharing your findings is an opportunity to share stories, judge the business impact, and show what you suggest through prototypes. Successful product research teams don't do this just once; they do it over and over to have meaningful discussions with all affected parties.

Step 6: Plan the next cycle.

No, you're not done yet! Good product research is about continuously learning from the market and from your customers. One research endeavor leads to another, and you never stop discovering new insights.[4]

Continuous Learning in Real Life: Mix of Qualitative and Quantitative Approaches

Example 1: Start with quantitative data

Quant: Start with sales data. Look at won/lost numbers and reasons for these. Focus on the top reason sales are lost.

Qual: Interview lost prospects and/or look-alikes.

Quant: Based on insights around won/lost reasons and interviews, examine product analytics to compare what you heard with what actually happened.

Qual: Prototype a product feature that solves an identified problem and get customer feedback.

Quant: After feature release, track analytics to check whether you are seeing the expected behavior.

Example 2: Start with qualitative data

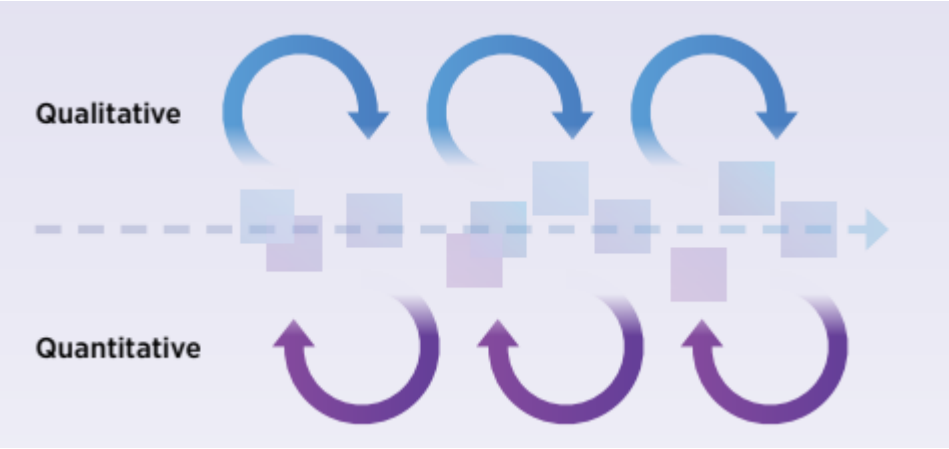
Qual: On-site customer visits/day-in-the-life

Quant: Analytics on those customers' product usage

Qual: Video interviews of customers

Quant: Market analysis of new opportunity

Qual: Prototype of new product area



Summary

- The foundation of product research is being open to being wrong. The insight-making mindset gives you the space to learn and to arrive at genuine insights.
- Good product research consists of six steps: focusing on a research question, identifying your research method and participants, collecting data, analyzing as a team, sharing findings, and planning the next cycle.
- Planning the next cycle in product research is a key behavior. Without it, you risk making research a one-time, disposable showpiece.
- Product research is an ongoing endeavor where you cycle between different types of research approaches.

Thank you

BITS Pilani

SEZG507: Product Discovery & Requirements Engineering

Session 05: Understanding Product Research Rules – Part I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Contents

In 2016, product leader Hope Gurion (now of Fearless Product) took a job at Beachbody, a multilevel marketing company with a network of over 250,000 fitness coaches. The company was preparing for its annual coaching summit, which would bring 50,000 people together in a stadium in Nashville, Tennessee. It would be a great opportunity for the product team to interact with coaches. Hope and her team were responsible for managing an app called Coach Office, which the coaches used to organize their administrative work.

Up until then, Beachbody's research on this app had focused solely on its top coaches: a high-performing 1%, or about 2,500 people, who had been with the company for a long time and were expert users. They had learned their way around the product and had no issues navigating around it and getting things done. This led the internal Beachbody stakeholders, who had come to know the top coaches over the years, to believe that everything was fine with the app.

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Further, the app, which had been developed by a third party, had not been built with smartphones in mind. (Remember, it was 2016!) To make matters worse, it wasn't instrumented for usage analytics, either. The internal team had no data to help them understand app usage. So all they had to go on were the experiences and comments of these top coaches. They were biased toward one small segment of their users—and they didn't even know they were biased.

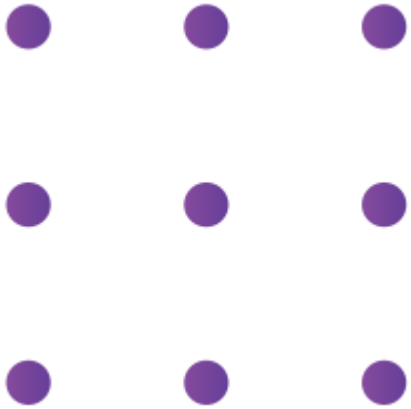
What are Biases?

- Biases are shortcuts our brains take to make things easy for us to process, allowing us to draw conclusions and make decisions faster.
- Biases can be healthy.
  - For example, if you have a bias toward eating fruit over cookies and cake, your overall health likely benefits.
- However, biases have an underlying prejudice that can be harmful.
  - They induce us to gravitate toward what we want to be researching instead of what we should be researching.
- Biases also oversimplify the phenomena you are trying to understand and may lead you to limited or downright wrong insights.
- Understanding the different types of biases and learning to identify them before you begin analysis will help you reduce or eliminate their effects on your research.

Categories of Biases

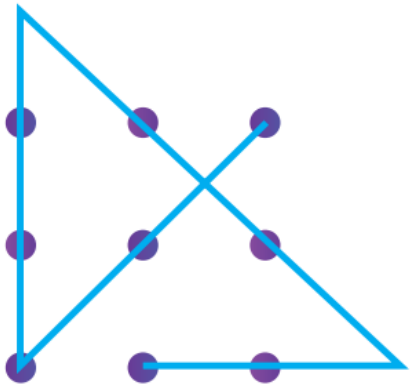
- The NeuroLeadership Institute (https://neuroleadership.com) has identified 150+ different types of bias
- The institute has also organized biases into the following categories
  - Similarity: “People like me are better than others.”
  - Expedience: “If it feels right it must be true.”
  - Experience: “My perceptions are accurate.”
  - Distance: “Closer is better than distant.”
  - Safety: “Bad is stronger than good.
- These high-level categories can help frame how biases affect you and your product research efforts.
- It is almost certain that you will exhibit biases during your product research initiatives.
- Biases can be conscious, such as in the fruit example previously given, or they can be unconscious.
- They can take the form of assumptions you don’t even realize you’re making.

A Fun Exercise



Connect the dots by drawing four or fewer straight lines, without lifting your pen

A Fun Exercise: Solution ☺



To solve the puzzle, you have to go quite literally "out of the box" by drawing a line that goes far outside the assumed box around the 3 × 3 grid. You might have assumed that you weren't supposed to break that invisible box, but there's no real boundary there—it's all in your head! If you had a really giant Sharpie, you might be able to connect all of the dots in one short, thick line. Were you making assumptions about the width of the pen? Maybe you considered it, but our assumption (see what we did there?) is that you didn't. This means you were making assumptions you didn't even know you were making. You likely assumed that the pen was a common ballpoint pen, which would not be incorrect, but that assumption closes the door on another insight before you even start.

Let's apply this to a real-world example. In early 2001, a company known for breakthrough inventions (such as the first drug-infusion pump and an all-terrain wheelchair) told the press that it would soon unveil a revolutionary new vehicle that would "be to the car what the car was to the horse and buggy."[3] Steve Jobs said it would be as important as the invention of the personal computer.[4] It drew $38 million from prestigious Silicon Valley investors. The project, code named "Ginger,"[5] would be revealed live on *Good Morning America*. What would it be? A hover board? A flying car? A teleportation device?

It was the Segway scooter.

The Segway was a strange-looking battery-powered scooter with no seat that had a range of about 15 miles (shown in Figure 2-3). It weighed about 70 pounds (32 kilograms) and cost about five thousand dollars. Not only was it not a threat to the automotive industry, but the average consumer was simply not interested. The company expected to sell 100,000 Segways in the first year. Nearly 20 years later, in 2020, approximately 130,000 have been sold. *Time* eventually named the Segway one of the 50 worst inventions.[6]

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It was the [illegible]

The Segwa[illegible] th no seat that had a[illegible] weighed about 70 p[illegible] d dollars. Not only v[illegible] the aver- age consu[illegible] pected to sell 100,0[illegible] in 2020, approximately 130,000 have been sold. *Time* eventually named the Segway one of the 50 worst inventions.[6]

Make no mistake, the Segway was an amazing piece of hardware, but the team made assumptions about its market acceptance that had little grounding in how the market would receive it. This vehicle fit into none of the standard categories. Was it a motorcycle? A bicycle? And what if the motor vehicle bureau required a license to operate a Segway?

From a bias standpoint they exhibited a bias to technology development. It was more interesting to the Segway team to solve the problem with technology, and that caused them to be blind to broader social context. For example, cars take up a lot of space, yet making a smaller vehicle isn't necessarily the solution. They might have taken this vehicle to the local grocery store, but would consumers? It turns out, consumers weren't interested.

To help you identify biases, we have divided them into three categories: biases that occur on the researcher side, external biases (those that stem from the participant or the data they generate), and biases that involve both.

Researcher Bias

- Observer expectancy bias
- Confirmation bias
- Attribution errors
- Group attribution effect

Observer Expectancy Bias

Have you ever started something with an expectation about how it will end? *Observer expectancy bias* is just that. It's the tendency of a researcher to see what they expect to see in a study. (It falls into the "expedience" category of bias types). This might be because you have prior knowledge of the group of participants, an expectation about how they'll behave, or subjective feelings about the people you are studying. If you don't check your observer expectancy, you risk contaminating your research with "data" that isn't there. This can happen because you unintentionally influence participants during your sessions or cherry-pick the results that confirm your hypothesis. Are you assuming that one user segment is more intelligent than another? Is your verbal or nonverbal language influencing how they behave?

Confirmation Bias

Sometimes you can subconsciously gravitate to data that confirms what you already think (see the "experience" category of bias types). This is *confirmation bias*. If you have a hypothesis you are particularly close to or you think you know what the problem is already, you might be drawn to data that confirms those beliefs. This might even mean that you subconsciously discard or discredit data that challenges your beliefs or proves them wrong. Even if you don't think you are doing this, it's a very common unconscious bias that's hard to eliminate from research.

This bias goes hand in hand with the observer expectancy bias. Observer expectancy bias can prevent you from asking the right questions and listening openly; confirmation bias can prevent you from doing analysis with an open mind.

Attribution Errors

Another way you introduce bias into research is through *attribution errors*. This is where you attribute certain behaviors to participants' characteristics or situational circumstances unwarrantedly, and often erroneously. Human beings tend to associate negative and undesired behavior with a personal characteristic of the other person, not themselves. For example, you might think that a driver who didn't yield to you in traffic is selfish and rude, when in fact they may be in a hurry for a good reason. These errors happen very frequently when analyzing product usage data. For example, if a meal-plan dieting app has a low user retention rate, you might attribute that to users being unmotivated or unwilling to lose weight, but the real reason may be that the recommended ingredients are hard to source and the recipes are confusing.

When you are trying to understand how and why users behave, try to make sure you're considering both their personal characteristics and their circumstances. This will help you avoid attribution errors and arrive at more broadly applicable insights.

Group Attribution Effect

Another kind of attribution error is *group attribution effect*. This is when you associate your participant with a group, then assume that the group is homogeneous and that the participant has all the attributes of that group. A common example is generalizing about nationalities: even though France has a great culture of gastronomy, not every French person is a good cook. Another example: just because someone works out six days a week, you can't assume that they eat protein powder and take supplements. In fact, we see group attribution effect every time we experience or witness racism and similar types of bigotry.

Group attribution effect can arise when you are trying to build rapport with participants and make them feel like you know them. If you make wrong assumptions, you risk damaging the connection you worked hard to create.

Types of External Bias

- Availability bias
- Biased participant: The know-it-all
- Biased participant: The existing customer

Availability Bias

Availability bias (which falls into the "distance" category of bias types) is when you focus on the data or participants that are fastest and easiest to obtain. It tends to enter after you've identified a research question and planned your project, as you're selecting your participants, data, and methods. You are particularly likely to do this in areas where your product is already performing well, and you may even have a confirmatory mindset about the problem you're trying to solve. Asking existing customers how they feel about a particular feature may be easy, but it's unlikely to elicit feedback that will lead to growth. You should resist the temptation to use only the data that you can gather or speak only to people you can easily get to and be open about new things you can learn with an insight-making mindset.

Biased Participant: The Know-it-all

You have probably spoken to a customer like this. They have an answer to everything, and they are overly eager to tell you what you should do with your product. Those who shout loudest are often heard first, but that doesn't mean those voices are the only ones you should be listening to. This is not to say you should ignore them—they may have a valuable insight! But don't view them as representing your whole customer base, either. The more a customer knows about the product (the more expert they are), the more likely they are to provide overly complicated feedback. While this can be valuable, such customers often represent a tiny segment of the customer base, not the mainstream.

Listening to expert buyers at the expense of the average customer can result in narrow messaging that then results in an overengineered product. Expert buyers are often early adopters, so it's easy to fall into this trap when you are starting to build your product research practice, when those customers don't represent your target users.

Biased Participant: The Existing Customer

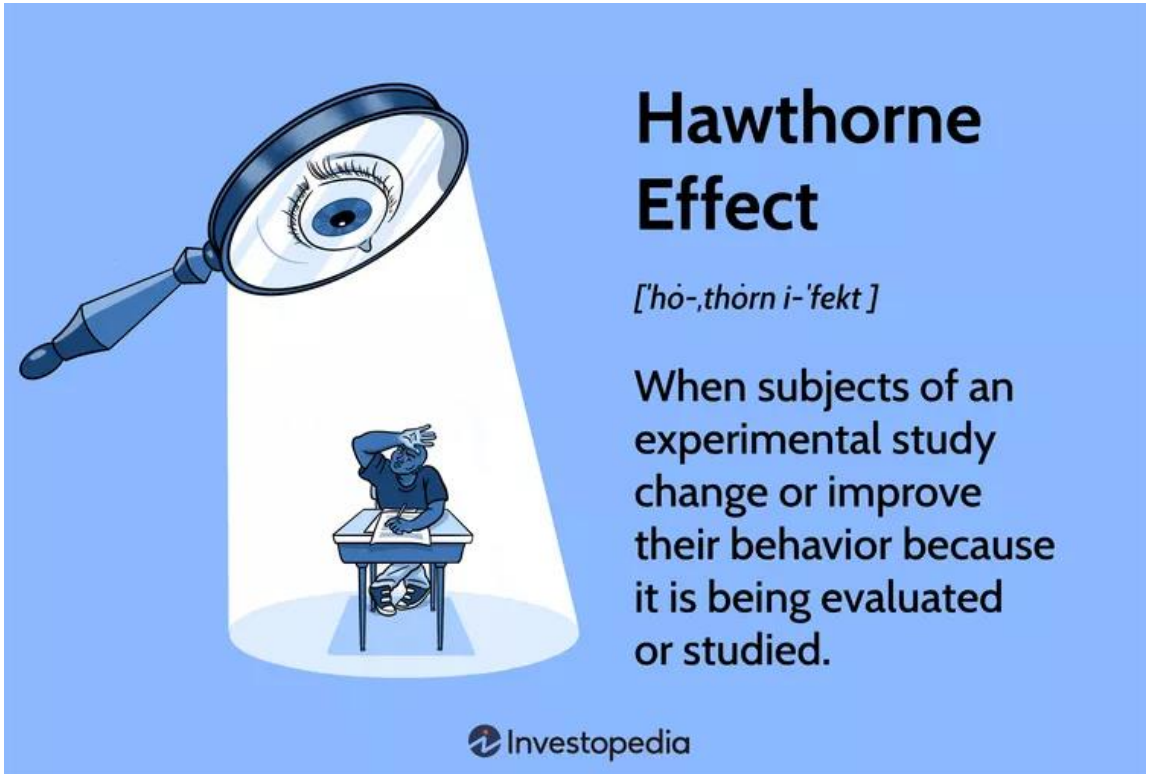
Attracting new customers and retaining existing ones can look very different. Your existing customers might want something as straightforward as simpler navigation, whereas new customers need to be drawn in by a unique design element. In product research, it's easy to lean too heavily on making improvements for your existing customers because, frankly, that's where the dollars are. But when focusing on growth, remember that not losing one existing customer isn't the same as winning an entire market.

General Biases

- Hawthorne effect (observer bias)
- Social desirability bias
- Recall biases

Hawthorne Effect

Between 1924 and 1932, researchers studied the Hawthorne Works, a factory that produced electrical equipment in Illinois, to determine the effect of certain working conditions on productivity. They split the workers into two groups: a control group that worked in the same lighting and another group that worked under brighter lights. When they increased the lighting intensity, workers' productivity increased. But what was surprising was that worker productivity increased in all groups involved in the study— even in the control group that had no increase in brightness at all.



https://www.investopedia.com/terms/h/hawthorne-effect.asp

Social Desirability Bias

Your presence affects participants' task performance; does it affect other aspects of your study? *Social desirability bias* is the tendency for participants to give responses they feel would be acceptable for the general population. Participants may avoid answering questions truthfully for fear of being judged, or they may inhibit their usual behavior because they think that it is not socially acceptable. For example, factory personnel may exaggerate how important safety is to them, even while ignoring safety precautions. Novice users may deliberately navigate to advanced features in your app to hide the fact that they may not be competent with computers.

Recall Biases

There are four common *recall biases* that affect what we remember. First, there's the *primacy* or *recency effect*: people tend to remember the first and last things we hear better than the rest of a conversation. Second is the *anchoring effect*: we tend to give more significance to the first thing we hear and use that as a reference point to evaluate everything else after it. Third, the *Von Restorff effect* holds that we tend to better recall those things that stand out from the rest. Finally, there's the *peak-end rule*: people tend to recall the end and the most unusual parts of past episodes.

Recall biases mean that your participants will not be able to share with you entire episodes of their experiences accurately because they may forget parts of the story and their memory may fill in the gaps incorrectly. What's more, you will not be able to recall everything that your participants share with you. Taking notes helps, but you may still be inclined to treat the first interesting thing you hear as a reference point for everything else, due to the anchoring effect. Or a particularly striking detail in an anecdote may surprise you so much that you miss other important details, due to the Von Restorff effect.

What Can You Do About These Biases?

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- Take a good look in the mirror
  - Try a healthy dose of self-critique
  - Challenge your own motives, thoughts, and hypotheses as you plan your research, conduct it, and analyze it
- Find an independent set of eyes
  - When someone looks at a problem with a fresh set of eyes, they can often spot the bias that closer observers missed and call it out
- Be on the lookout for bias
  - During your sessions, capture the moments when you feel you or your research partners might be biased; recording these moments and discussing them afterward will improve your awareness.
- Watch your conversation style
  - How are you communicating?
  - What form do your questions take?
  - Could you be leading your participants with your language and phrasing?
  - How you communicate with your participants is key to how they perceive you.

Exercise: Assumption Storming ☺

- Look at any product
- Let's say it's a chair you're sitting on
- Ask yourself the following questions and write down the answers:
  - Why does the chair have armrests?
  - What assumptions does that imply?
  - The person has two arms?
  - If it had only one armrest, what assumptions might that be due to?
  - Or if there are wheels, is the floor it is placed on smooth enough to roll on?
  - What about the dimensions? Is the chair intended for an "average" adult human?
  - And who might that even fit?
- Craig Launcher, a designer at Medtronic, calls this process *assumption storming.*
- In the medical device industry, if you are wrong about an assumption, someone's life could be at risk.
  - While designing and developing products, his team spends days assumption storming about a problem area so that they have a fuller mental grasp of the situation.

Common Reasons for Making Assumptions

REASON	EXAMPLE
You lack knowledge.	You don't know why customers abandon a shopping cart, so you assume it's because that's when they see the total price.
You want to simplify the problem.	You assume that all customers are using your software on the latest iPhone device.
You want to standardize the problem.	You assume that what you need to do is just like something you did in a past project, and thus the solutions (or framework or standards) you used then will work here, too.
You want to make a general statement rather than a specific one.	You assume that left-handed customers are no different from right-handed customers.
Different tools encourage different assumptions.	During sketching, you might think more abstractly, leading you to make assumptions about your general approach as well as visuals. Flowcharts are very process oriented and discrete, so your assumptions will be about decision making. Design mockups are more detailed and interface focused, so your assumptions might deal more with the visual aspects of the project. Different ways of thinking lead you to focus differently.
You're responding to cultural pressure.	You make assumptions based on the latest trend. Remember Skeuomorphism? (Good for you if you don't!) It was an aesthetic trend Apple used in many of its mid-2007 designs that made things look like they did in the real world.

Common Reasons for Making Assumptions contd.

REASON	EXAMPLE
You fall into the trap of expert arrogance.	"I'm not making assumptions!" you assume.
Your project requirements are ambiguous.	You don't know which customer you're designing for, and your requirements don't mention it, so you assume that you don't need to think about accessibility for hearing-impaired or visually impaired customers.
You follow rules, norms, and conventions.	You learn the UX rule that "every additional step in a flow increases the drop-off rate" and assume that it's true in your case.
You've already formed expectations.	You expect a particular outcome and then see that outcome in the data because you're looking for it (confirmation bias).
You want to break away from routine.	You feel the urge to do something differently, making an assumption that it must be different even though the requirements don't state that at all.
You assume the normal in everyday activity.	You assume that the air in a building you enter has the right mix of oxygen, carbon dioxide, and nitrogen to support human breathing, without thinking much about it.

Rules in the Real World

SME Interviews

One way to reduce bias is to bring in experts. Yes, experts can be biased, but they also bring intimate knowledge of a topic. The trade-off can be worthwhile. The product development practitioners at BCG take a somewhat different approach to product development than a typical SaaS company does. Boston Consulting Group (BCG) is a large company that employs experts in many fields, so, researchers reasoned, why not use them? Iuliia Artemenko, a product manager in BCG's practice, says that when BCG has an opportunity to build a product, while performing their initial market research they also interview their internal SMEs. What better way to inform a product team than to have an SME with deep industry knowledge help frame the problem? Only then does the team begin work on a prototype to test with users. This way, they level set the initial product direction with real users and incorporate their feedback into their product development efforts, since expert users can be biased, as we've seen. This real-world check helps BCG reduce any internal SME bias when they launch a new product or features.

Summary

- If you are a human being, you are biased.
  - Biases can be conscious prejudices or unconscious assumptions and can sway the results of your research.
- Avoid directing your research toward a particular set of users just because they are easily accessible, expert, or loyal.
- It is fine to make assumptions
  - Be clear on what you are assuming in your research and why.
- Analyze your assumptions.
  - There is a difference between what you think you know and what you actually know.

Thank you

BITS Pilani

SEZG507: Product Discovery & Requirements Engineering

Session 06: Understanding Product Research Rules – Part II


Start
Recording

Contents

- Rule 3: Good Insights Start with a Question
  - What's an Insight?
  - It's Too Easy to Start Research Without a Question
  - Going from Hunch to Research Question
  - The Usage Perspective
  - The Business Perspective
  - The Expertise Perspective
  - Rules in the Real World
  - Summary

The Meaning of "Research"

Daniel Elizalde had just started his new job as vice president and head of Internet of Things (IoT) at the telecommunications company Ericsson. His charge was to build and deliver end-to-end IoT solutions to market. He had access to market intelligence from various sources (McKinsey & Company, IDC, Gartner, and so forth), and his initial direction, following the market reports, was to support manufacturing via "Industry 4.0," which brings automation and digitization to traditional manufacturing practices. Daniel had to do some product research because he had a number of questions that needed to be answered.

The word *research* meant something very different at Ericsson than it did to Daniel, who spent his career in product management. At Ericsson, *research* means technology development: for example, while the company is bringing 5G products to market at the time of this writing, they have research teams conducting technology development on the next generation of network technology (you might call it "6G").[1] Contrast *technology* research with *product* research, which seeks to answer questions around viability, usability, and desirability of a product.

What's an Insight?

- An *insight* is a nugget of information you discover that makes you look at a situation from a different perspective. It's an observation about the behavior and psychology of a group of users. In short, it's like learning the secret to something.

Let's take this to a real product example: the MachineMetrics (MM) operator dashboard is a tablet that's mounted next to a machine in a factory. The screen shows data and information to the machine operator on how the machine is performing regarding the current job. If the machine is on track, the screen is green. If it is behind, the screen is orange or red depending on how far behind. The initial intent of this design choice was to enable factory workers to see from a distance how the machines were performing. If you've been inside a factory, they can be quite large spaces, and this visibility from a distance is very helpful. The insight that the MM team uncovered after some product research was that the machine operators were strongly affected emotionally by the red screen color and it would demotivate them, so they would not work hard to get back on track. Digging further, the inverse was true: if the screen remained green, the operators would work harder to keep it green! The team took this information into account when redesigning the interface. The question the MM team began with was: how do the machine operators consume the information and data from the tablet during their workday?

It's Too Easy to Start Research Without a Question

- It is surprisingly easy to start research without a research question.
- Teams that are new to product research often fall into this trap.
- In their excitement to find out how their product is being received, they dive into looking at data, asking users, and showing concepts—without a focus.
- We see three common traps here: starting with no focus at all, starting with an output instead of a question, and starting with a method instead of a question.
  - The Vagueness Trap: "Let's Do a General Check!"
  - The Output Trap: "We Need Personas"
  - The Method Trap: "Should We Do a Survey?"

The Vagueness Trap

- Teams that are just beginning with research may feel that they need to take a broad look at everything first.
- So they attempt a “general check” with their users, bombarding users with questions.
- The result is lots of information but maybe only a few genuine insights that would help them with their product.
- By asking too much, they risk gathering data that can’t possibly be distilled into actionable results quickly—which is what product research is all about.
- Being excited to know about every aspect of your customers’ experience is great; it shows that you care!
- Taking focused, iterative steps toward this goal is a better product research practice.

The Output Trap

- Teams who are new to research can fall into the trap of focusing on the output.
- It's easy to read a Medium article about user personas and think, "OMG, that's what we need!"
- It is better to take a few steps back and think about *why* you think you need personas (or a customer journey map, or another shiny output).
- Are you asking this question because of a recent change in your plans? Are you interested in a particular type of behavior, for a particular type of development? Are you trying to explore a particular area for new business opportunities?
- Focusing on the problem before the output yields better insights.

The Method Trap

- Similar to the temptation to start with an output, you might be inclined to start with a method instead of a research question.
  - You might say, “We should do a survey—why not? All customer-centric companies do surveys!”
- Then you’d try to figure out what questions you want to ask.
- This is research planning done backward.
- Teams who get good results from product research first decide on what they want to learn about, then decide on the method to use.

The Value of a Research Question

- It’s essential to narrow your objectives to a single crisp research question.
- A research question provides focus to your research effort and ensures that it has an impact.
- You’ll use a combination of product data, comparisons, market opportunity, and known best practices to frame the problem and create a single, pinpointed research question.
- A question that is well formulated for the purpose of the project helps everyone focus on the common problem, without getting distracted by the surrounding context.
- How can you distill everything you want to know into a single research question?

Going from Hunch to Research Question

- Your research may start with a hunch—something that bugs you about your product.
- For successful product research, you need to go beyond assumptions or “what if?” musings and find a research question.
- A research question is a single, focused question that guides your research.
- You can arrive at it iteratively by examining your hunch through different lenses to find the underlying problems, then formulating one research question to learn about those areas of interest.
- Sometimes your refinement leads to very interesting problems and multiple research questions.

From Hunch to Problem

- Who?
  - What type of person are you trying to learn about? Whatever your hunch is about, is it a problem for that person? How do you know? Do they think that it is a problem?
- What?
  - What is the nature of your hunch? What is driving you to explore this area? What evidence do you currently have? What information do you lack?
- Why?
  - Why is this worth exploring? What is its impact on the user? How significant is it? Why do you care about this now?
- Where?
  - Where do you see this issue occur? What is its natural habitat, and what is the broader context?
- When?
  - When does this happen? With what frequency? Are there exceptions to this frequency? Does the user's experience change as they use the product?
- How?
  - How did you arrive at this hunch? Does it manifest itself as a problem or a moment of delight for the user? Do they experience it differently in different channels?

Different Perspectives

- The usage perspective
  - When you find out what your users are doing with your product, you'll have a better understanding of the issues and opportunities in play. You will start to discover the problems they're having, which means you'll be able to incorporate their behavior and sentiments into your research.
- The business perspective
  - Product management is a complex domain, and one of its goals is to sustain financial growth. Delivering great experiences can cost you, but great experiences can bring great returns. Looking at your problems from a business perspective helps you determine what is valuable for future growth.
- The expertise perspective
  - Industry leaders, academics, internal SMEs, and resources created by them can help you look deeper into your problem and focus your effort on the most valuable parts. You shouldn't make up your own usability rules, campaign structures, or market trends; you can start with what is already out there.

Hunch to Research Question

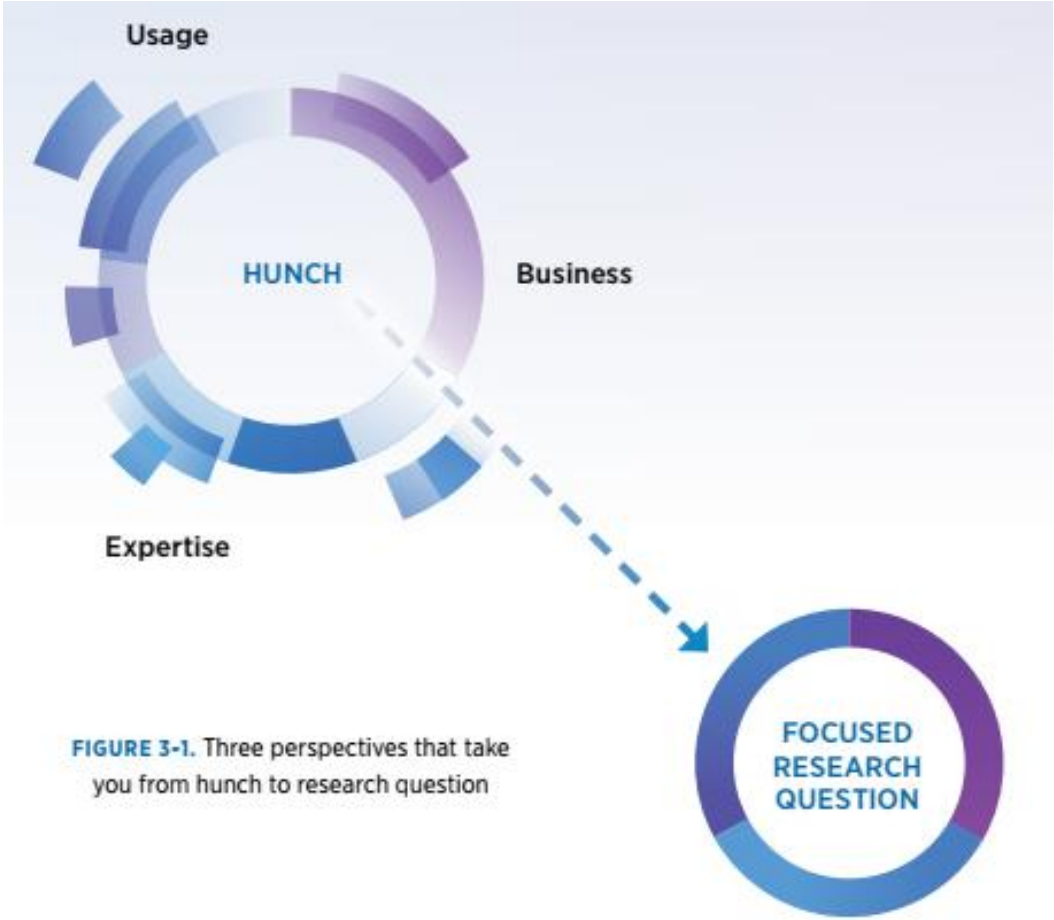

FIGURE 3-1. Three perspectives that take you from hunch to research question

Properties of a Good Research Question

- Focused and deliberate
  - A research question has a very specific focus, carefully chosen by the researcher.
  - Note that you can have a very broad research question that is also extremely focused
    - For example, “How do low income communities cope with COVID-19 risks?”
- Open-ended
  - A research question is not stated as a yes-or-no question.
  - Product research is about learning with an open mind.
  - Open-ended questions allow your participants to share experiences that you never thought of. They also allow you to ask about interesting moments as they arise.
- Free of prejudices
  - A research question is not leading; it is free of prejudices.
  - It does not come with a hidden agenda and is not designed to elicit the answers you want to hear.
  - The answers you get depend on how you frame the question.
  - That’s why it is important to get rid of implicit biases while you turn your problem into a research question.

A Good Research Question

- A research question is different from an interview question.
- A good research question is informed by what you already know, not your assumptions.
- Examining your hunch from three different perspectives will help you reach a problem that is grounded in reality and worth spending time on.

The Usage Perspective

- Usage data from event tracking and feedback in the form of user voices are helpful in framing the problem so that you can form the right research question.
  - Event Tracking
    - A great place to start understanding how people use your product or service is by observing how they interact with it. One way of getting to this data is by examining the traces your users leave.
    - Segments and Cohorts
      - *Segments* are groups of users organized by certain criteria.
      - *Cohorts* are segments that are based on certain behaviors shown over a specific time period
    - User voices
      - It's important to look not only at how your users are *behaving* with your product but also at how they *feel* about it.

The Business Perspective

- Your Business Model
  - What you offer and how you offer it—in other words, your *business model*—will be a big input to your research question. Understanding your business model and how it affects the nature of your research question will allow you to pinpoint more accurately where your greatest opportunities are.
- The Market
  - Understanding the opportunities available in the market for your product is another important input in refining your problem. Here, data you already have can give you insights into where your product fits for your customers. Knowing about the market is especially important if your problem is related to new areas of growth.
- Operations
  - *Operations* refers to the important group of people who make sure that the users' digital experiences are running as intended. These people are usually the "nondigital" part of a digital product. Operations teams are responsible for functions like user support, quality of service monitoring, shipping and returns, IT, and accounting and finance, among others. Knowing about the operational background of your problem gives you a phenomenal advantage in framing your problem.

Different Markets

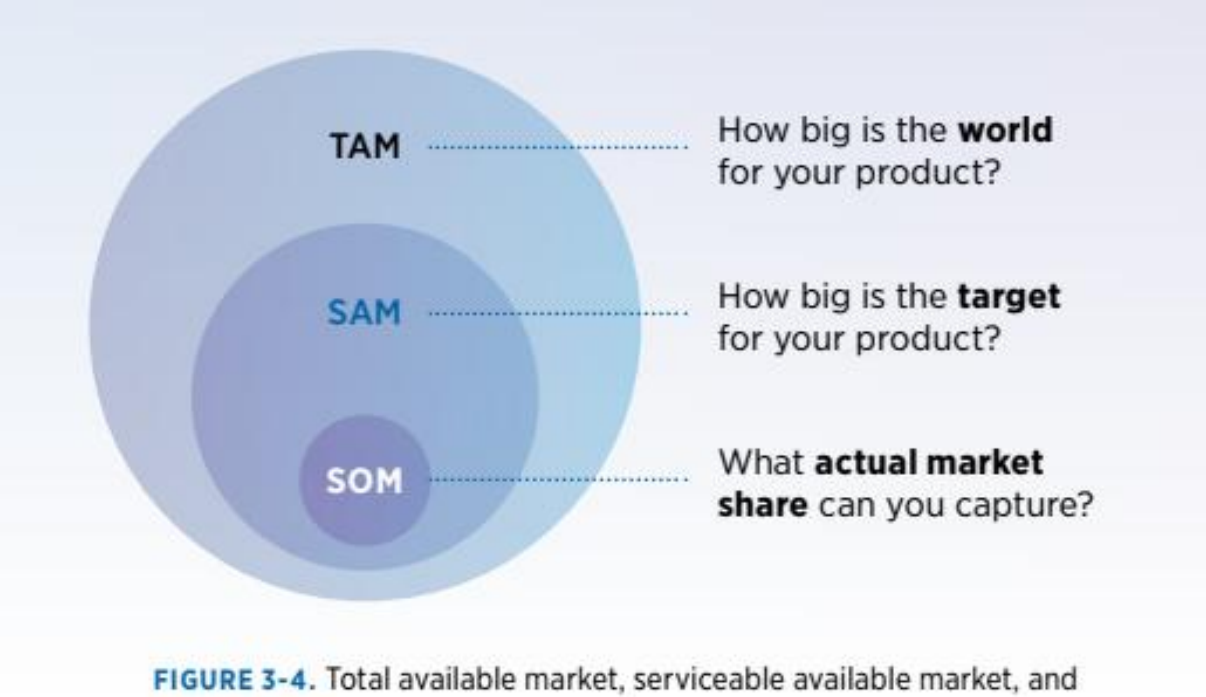

FIGURE 3-4. Total available market, serviceable available market, and serviceable obtainable market

Heuristic Analysis

- A *heuristic analysis*—often referred to as *expert review*—is a structured way of reviewing your product against known UX best practices.
- In its most common form, you can take your product (or a prototype) and ask three to five usability and/or design experts to offer their opinions on how well the design matches up to current best practices.
- Heuristic analysis will *not* be 100% accurate or complete. In fact, that's the whole point ☺
- Some typical questions for starting a heuristic analysis:
  - *How will the user attempt to achieve their intended outcome(s)?*
  - *How will the user see the correct action(s) available to them?*
  - *Will the user associate the correct action with the outcome they expect to achieve?*
  - *How will the user see progress toward their intended outcome?*

Existing Research

- One of the biggest goals of product research is to arrive at insights without having to wait a long time and put in a lot of resources.
- That is why it is critical to frame your problem in a way that makes research less challenging.
- In some cases, someone might have done it for you: the problem you are interested in, or a problem that is very similar, might have already been the subject of someone else's research.
- Therefore, looking at existing research can be a great way to focus your research question.
  - Existing internal research: In your organization, someone in a similar function might have looked at a similar problem a while ago and did some investigation.
  - Existing external research: This research may include publicly released research findings from other companies (usually in the form of a Medium article) or databases of research findings from research agencies.

Rules in the Real World

Paying tuition by bank wire can be costly, time-consuming, and opaque. It can be extra stressful for international students attending university in another country. One cross-border payment company made it their mission to make these large international money transfers a breeze.

A former product manager for the company was given a broad problem to solve once she arrived: find where the money is. (What a focused place to start!) She spoke to the support team in her first few weeks at the company to get their perspective. They told her about where in the process people were struggling, where they needed in-person help, and where they usually got confused.

She then met with the data science team to review recent transaction trends. The first quantitative insight they found was the small conversion rate: out of every one hundred transactions that started, only a handful finished. They found a second insight: successful payments tended to start on a mobile device and finish on a desktop.

Rules in the Real World contd.

This was interesting, but the data science team didn't know why. So the product manager pulled together a research sprint—a time-boxed learning and prototyping practice—to speak with international students. Luckily, the company's headquarters was near many large universities—so out of the building she and her team went! The team interviewed students about how they pay their tuition and learned about how they use the company's products in the process.

From that activity they gained two valuable insights. First, the reason for starting on mobile and finishing on desktop was that the student, usually about 17 or 18 years old, would receive the payment email from the school on their smartphone and then begin the process. Often they would get stuck because a large amount of information was needed that the student didn't have (tax ID numbers, bank numbers, and so forth). The student would then forward the payment email to their parents with the kind of loving note that all parents enjoy receiving: "Hi, Mom and Dad, can you pay this bill? Thanks! Love you!"

Rules in the Real World contd.

The second important aspect of this insight was that there were two different people involved in this process. At the time, the product's user experience didn't differentiate between student and parent users. Furthermore, parents would often go to the bank to initiate a wire transfer, thus completely cutting the company out of the transaction. This explained the low conversion rate and highlighted some serious problems with the product experience. It also indicated a significant opportunity in the higher education sector.

With these insights, the product manager took the initiative to summarize, form solutions hypotheses, and begin experimenting with her team. Their findings ultimately led to a significant increase in conversions and revenue from a segment the company had previously thought to be saturated. All it took was some brief but thoughtful and rigorous product research to "find where the money was!" She made this approach a habit at the company by doing variations of it over and over. She has since left the company, yet they still approach the product in a similar manner.

Summary

- All good research starts with a single question.
- That question should be based on what we already know—and that means data.
- Examine users' behavior data with event tracking, user voices, heuristics, and user segments and cohorts to find salient behavior.
- Frame your opportunity based on your business model and the market available to you.
- Look at the experience of people delivering the unseen parts of the service for hidden, high-impact areas.

Thank you

BITS Pilani

SEZG507: Product Discovery & Requirements Engineering

Session 07: Product Discovery Process


Start
Recording

Contents

- Purpose of Product Discovery
- Core Principles of Product Discovery
- Discovery Iterations
- OKR Framework
- Discovery Techniques Overview
- Market Segmentation
- Personas
- Identify Underserved Customer Needs
- Customer Benefits
- Hierarchy of Needs
- Importance vs. Satisfaction

Purpose of Product Discovery

- The purpose of product discovery is to address these critical risks:
  - Will the customer buy this, or choose to use it? (Value risk)
  - Can the user figure out how to use it? (Usability risk)
  - Can we build it? (Feasibility risk)
  - Does this solution work for our business? (Business viability risk)
- And it's not enough that it's just the product manager's opinion on these questions. We need to collect evidence.
- When it comes to *how* we do product discovery, there are a set of core principles that drive how we work. If you understand these, you will understand not only how to work well today but also how to easily incorporate new techniques as they emerge in the future.

Core Principles of Product Discovery

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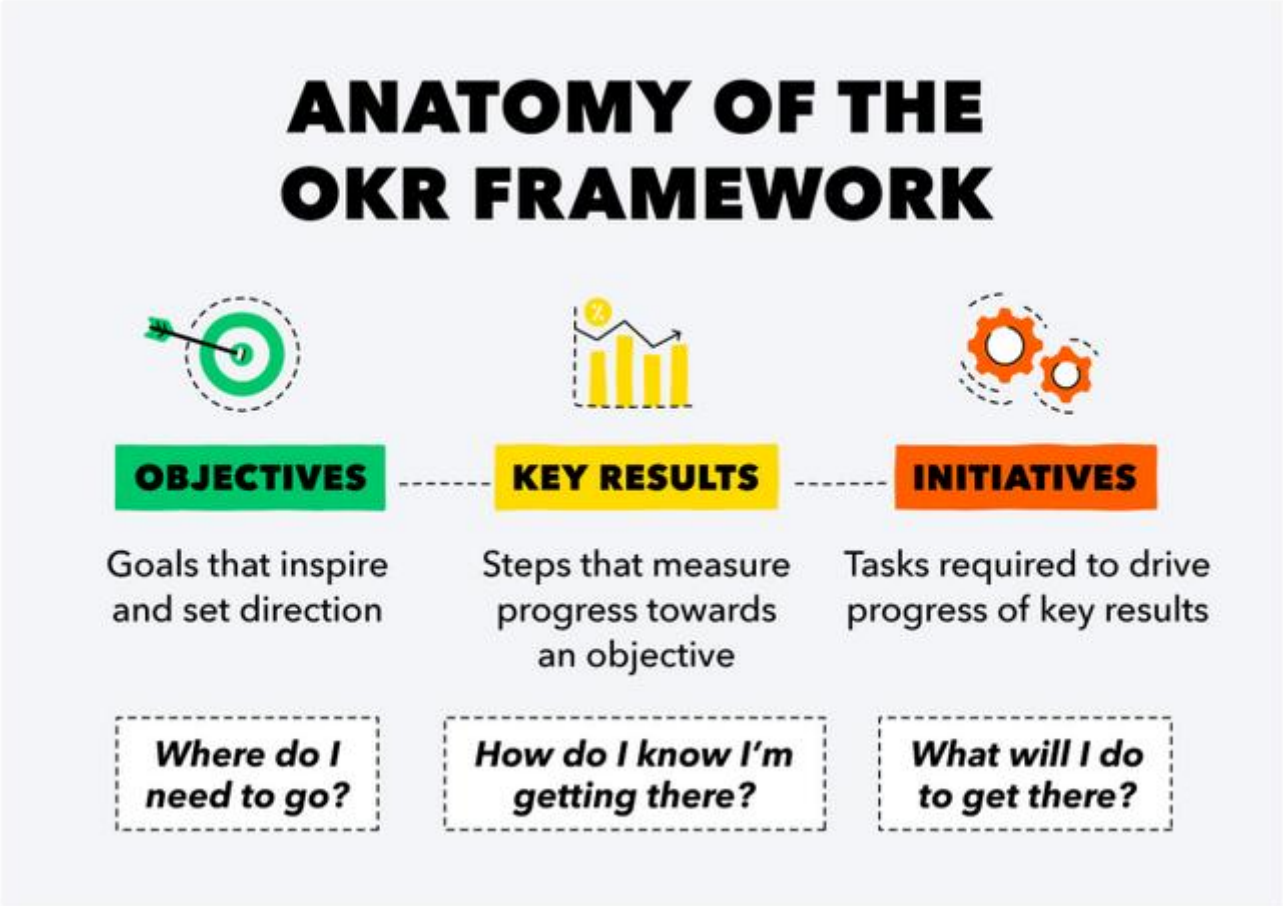
1. We know we can't count on our customers (or our executives or stakeholders) to tell us what to build.
2. The most important thing is to establish compelling value.
3. As hard and important as the engineering is, coming up with a good user experience is usually even harder, and more critical to success.
4. Functionality, design, and technology are inherently intertwined.
5. We expect that many of our ideas won't work out, and the ones that do will require several iterations.
6. We must validate our ideas on real users and customers.
7. Our goal in discovery is to validate our ideas the fastest, cheapest way possible.
8. We need to validate the feasibility of our ideas during discovery, not after.
9. We need to validate the business viability of our ideas during discovery, not after.
10. It's about shared learning.

Discovery Iterations

- Most product teams normally think of an *iteration* as a delivery activity. If you release weekly, you think in terms of one-week iterations.
- It's true that ideas come in all shapes and sizes, and some are much riskier than others, but the purpose of discovery is to do this much faster and cheaper than we can do in delivery
- But we also have the concept of an iteration in discovery. We loosely define an *iteration* in discovery as trying out at least one new idea or approach.
- To set your expectations, teams competent in modern discovery techniques can generally test on the order of 10–20 iterations *per week*.
- Many iterations never make it beyond just you, your designer, and your tech lead.
- The very act of creating a prototype often exposes problems that cause you to change your mind.
- As a rule of thumb, an iteration in discovery should be *at least* an order of magnitude less time and effort than an iteration in delivery.

Objectives and Key Results (OKR)



https://mint.intuit.com/blog/planning-2/okr-framework/

Discovery Techniques Overview

- Discovery Framing Techniques
  - Framing techniques help us to quickly identify the underlying issues that must be tackled during product discovery.
  - If we're handed a potential solution, we need to clarify the underlying problem to be solved.
  - We need to tease out the risks and determine where it makes sense to focus our time.
  - We also need to ensure that we understand how our work fits in with the work of other teams.
- Discovery Planning Techniques
  - There are a few techniques that are useful throughout the product discovery effort and help with identifying the bigger challenges and planning how you'll attack this work.

Discovery Techniques Overview contd.

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- Discovery Ideation Techniques
  - There are, of course, any number of ways to come up with ideas.
  - But some sources are better than others in their potential for keeping us focused on the most important problems.
  - Ideation techniques are designed to provide the product team with a wealth of promising solutions aimed at the problems we're focused on now.
- Discovery Prototyping Techniques
  - Our go-to tool for product discovery is typically a prototype.
- Discovery Testing Techniques
  - Testing Feasibility
  - Testing Usability
  - Testing Value
  - Testing Business Viability
- Transformation Techniques
  - Quantitative
  - Qualitative

Discovery Framing Techniques

- Much of our product discovery work doesn't require a lot of framing or planning.
- We need to come up with a solution to a particular problem, and often this is straightforward, and we can proceed directly to delivery work.
- But for many efforts, this is decidedly not the case, and some framing and true problem solving becomes critically important.
- Big projects—and, especially, *initiatives* (projects spanning multiple teams)—are common examples.
- Our discovery work to ensure alignment and to identify key risks. Two goals:
  - The first is to ensure the team is all on the same page in terms of clarity of purpose and alignment.
  - The second purpose is to identify the big risks that will need to be tackled during the discovery work.

Different Techniques for Different-Sized Efforts

1. An opportunity assessment is designed for the vast majority of product work, which ranges from a simple optimization to a feature to a medium-sized project.
2. A customer letter is designed for larger projects or initiatives that often have multiple goals and a more complicated desired outcome.
3. A startup canvas for those times you're creating an entirely new product line or a new business.

- Note that these techniques are not mutually exclusive. You may find it useful to do both an opportunity assessment and a customer letter, for example.

Problems versus Solutions

There is an underlying theme you'll see in all framing techniques, and the reason is that it's just human nature for people to think and talk in terms of *solutions* rather than the underlying *problems*. This applies especially to users and customers but also applies to stakeholders in our business, other company execs, and if we're honest with ourselves, it very often applies to us as well.

But one of the most important lessons in our industry is to *fall in love with the problem, not the solution*.

Why is this so important? Because, more often than not, our initial solutions don't solve the problem—at least not in a way that can power a successful business. It usually takes trying out several different approaches to a solution before we find one that solves the underlying problem.

However, there very likely is a legitimate problem behind that potential solution, and it's our job in the product organization to tease out the underlying problem and ensure that whatever solution we deliver solves that underlying problem.

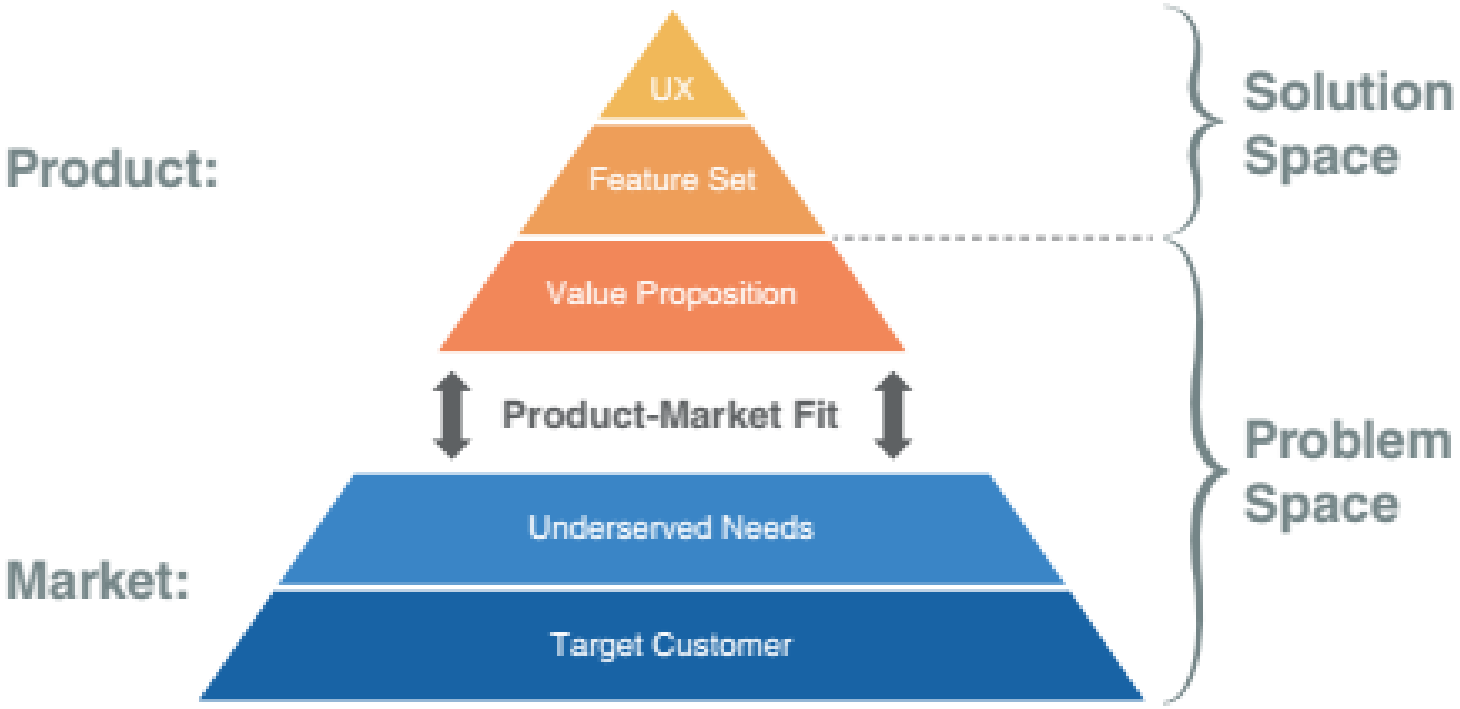
A small amount of time up front framing the problem to be solved—and communicating this framing—can make a dramatic difference in the results.

This problem famously applies to startup founders. Founders will often stew on a potential solution for month, if not years, before they get the funding and the nerve to pursue it.

More often than not, our initial solutions don't solve the problem—at least not in a way that can power a successful business.

This is another reason why typical product roadmaps are so problematic. They're lists of features and projects where each feature or project is a possible solution. Somebody believes that feature will solve the problem or it wouldn't be on the roadmap, but it's all too possible they are wrong. It's not their fault—there's just no way to know at the stage it's put on the roadmap.

Problem Space vs. Solution Space



Segment Your Target Market

- Demographic Segmentation
  - Demographics are quantifiable statistics of a group of people, such as age, gender, marital status, income, and education level. E.g. App for moms to easily share photos of their babies; demography of target customers women 20 to 40 years old who have one or more children under the age of three.
- Psychographic Segmentation
  - Psychographics are statistics that classify a group of people according to psychological variables such as attitudes, opinions, values, and interests. For the same app, you might describe your target customers as moms who enjoy using social media and like sharing pictures of their babies with friends and family.
- Behavioral Segmentation
  - You can also use relevant behavioral attributes to describe your target customer: whether or not someone takes a particular action or how frequently they do. You might define your target market as moms who currently share an average of three or more baby pictures per week on social media
- Needs-Based Segmentation
  - With this approach, you divide the market into customer segments that each have distinct needs. Let's take Dropcam, for example, which offers an affordable, easy-to-use wireless camera. A parent, may use Dropcam to monitor their children while they sleep:

PERSONAS

The persona is a useful tool for describing your target customer. Alan Cooper championed the use of personas as part of his "Goal-Directed Design" process. In his book *The Inmates are Running the Asylum*, he describes personas as "a precise definition of our user and what he wishes to accomplish." Cooper explains, "personas are not real people" but rather "hypothetical archetypes of actual users." Personas

What Info Should a Persona Provide?

Good personas convey the relevant demographic, psychographic, behavioral, and needs-based attributes of your target customer. Personas should fit on a single page and provide a snapshot of the customer archetype that's quick to digest, and usually include the following information:

- Name
- Representative photograph
- Quote that conveys what they most care about
- Job title
- Demographics
- Needs/goals
- Relevant motivations and attitudes
- Related tasks and behaviors
- Frustrations/pain points with current solution
- Level of expertise/knowledge (in the relevant domain, e.g., level of computer savvy)
- Product usage context/environment (e.g., laptop in a loud, busy office or tablet on the couch at home)
- Technology adoption life cycle segment (for your product category)
- Any other salient attributes

The Busy Mom

Lisa Bennett

Age:	32
Gender:	Female
Marital Status:	Married
Education:	Bachelor's degree
Job:	Teacher
Income:	$55,000

"My children's health is my top priority, but raising two kids is a full-time job, so I need an easy way to stay on top of their prescriptions and medical appointments."

Lisa is an elementary school teacher. She lives with her hard-working husband Dave and their two children Addison (12) and Caleb (9). Because Dave often works late, Lisa is the primary caregiver to her children.

Although her children are generally healthy, they both have to take important prescriptions. Addison has asthma and must always have her inhaler by her side. Lisa worries that she might forget to refill a prescription for the inhaler and potentially put Addison in danger.

Life never stops for Lisa, and she rarely has a moment to herself. Therefore, she needs an easy way to keep track of her children's prescriptions and medical appointments.

Goals

- Be reminded of children's medical appointments
- Be able to keep track of children's health info
- Have the ability to refill prescriptions easily

Technology Use

- Average
- Owns an iPhone
- Uses desktop PC
- Uses Facebook to keep up with family and friends

Interests

- Spending time with family
- Being involved with her children's extracurricular activities
- Tennis

Identify Underserved Customer Needs: An Example - Turbotax

Tax preparation software can go well beyond the IRS tax forms, which are just instructions for how to prepare your tax return. Tax software can check the accuracy of your return. TurboTax can also file your taxes for you electronically, which is more convenient than having to print out and mail your return. It can help you maximize your deductions and reduce your audit risk. It can even download your tax information from your employer, banks, and brokerages so that you don't have to enter it manually. Each of those items is a distinct customer benefit. Let's list them explicitly:

1. Help me prepare my tax return
2. Check the accuracy of my tax return
3. Reduce my audit risk
4. Reduce the time it takes me to enter my tax information
5. Reduce the time it takes me to file my taxes
6. Maximize my tax deductions

This is by no means an exhaustive list of the customer benefits that TurboTax provides. We could easily keep peeling the onion and identify many more benefits. For example, state tax returns are completely separate from federal returns. Also, TurboTax offers a service that lets you receive your tax refund more quickly. But for the purposes of this discussion, let's focus on the six benefits listed above.

Customer Discovery Interviews

You should share each of your customer benefit hypotheses with the customer during the interviews. You should ask a set of questions about each benefit statement, such as:

- What does this statement mean to you? (to check their understanding)
- How might this help you?
- If a product delivered this benefit, how valuable would that be to you?

(Possible responses: no value, low value, medium value, high value, or very high value)

- For a response of high or very high value: Why would this be of value to you?
- For a response of low or no value: Why wouldn't this be of value to you?

Understanding Customer Benefits

Customer Benefit	Typical Customer Comment
1. Help me prepare my tax return	"I don't really know much about taxes. I try to follow the instructions but they're confusing. I'm not sure which forms I should be filling out."
2. Check the accuracy of my tax return	"I'm not that great at math, so I know I'm probably making several mistakes when I'm adding and subtracting all those numbers on my tax forms."
3. Reduce my audit risk	"I'm worried about being audited but don't really know how risky my tax return is. It would be great to know if it would raise any yellow flags with the IRS so I could fix those parts."
4. Reduce the time it takes me to enter my tax information	"I spend lots of time each year entering data from all the tax forms I receive from my employer, bank, and brokerages."
5. Reduce the time it takes me to file my taxes	"I normally print my tax return and then go to the post office, wait in line, and mail it so I can get delivery confirmation. It would be great if I could avoid that hassle."
6. Maximize my tax deductions	"I don't know about all the deductions that I'm eligible to take. I'm probably leaving some money on the table."

Customer Benefit Ladders

Benefit at Top of Ladder	Detailed Customer Benefit
Feel confident	1. Help me prepare my tax return 2. Check the accuracy of my tax return 3. Reduce my audit risk
Save time	4. Reduce the time it takes me to enter my tax information 5. Reduce the time it takes me to file my taxes
Save money	6. Maximize my tax deductions

Summary

- Product discovery process has many facets
- Understanding customer needs plays a central role in successful product discovery
- Customer benefits can be understood from different perspectives

Thank you

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SEZG507: Product Discovery & Requirements Engineering

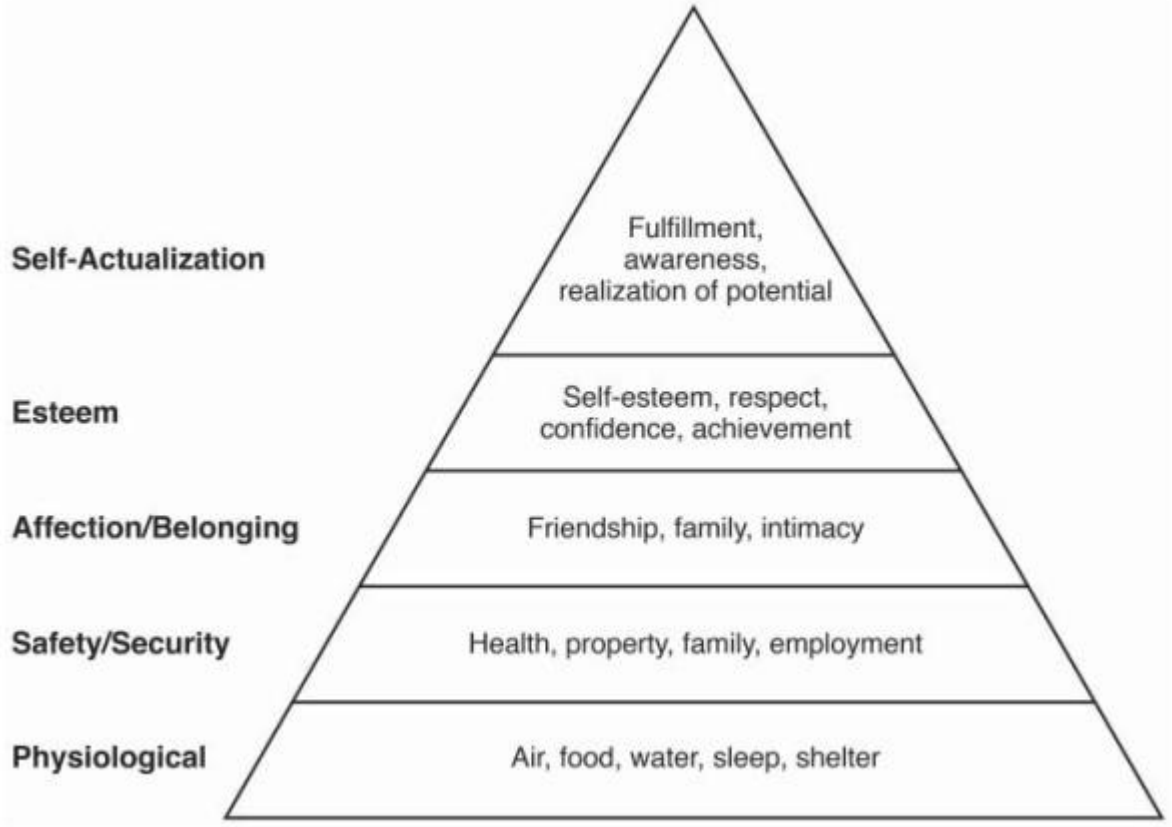
Session 08: Techniques in the Product Discovery Process


Start
Recording

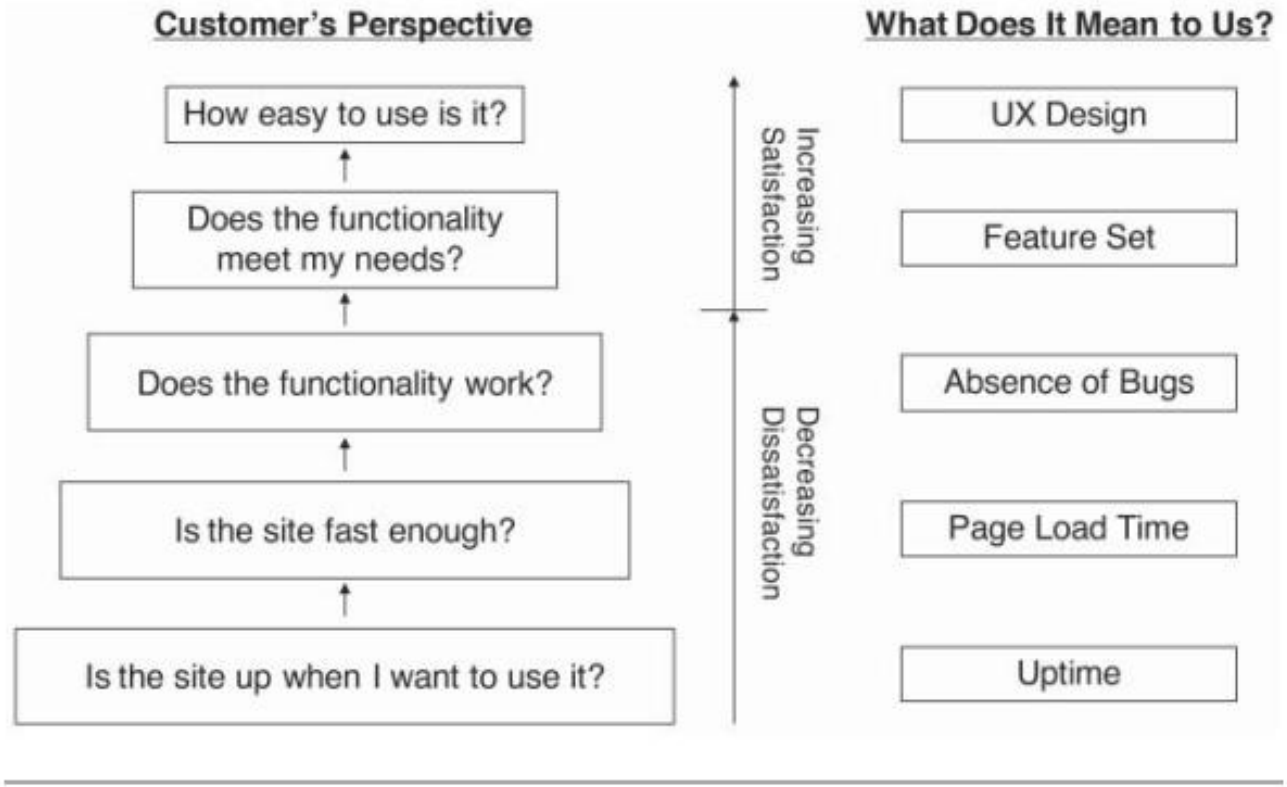
Contents

- Hierarchy of Human Needs
- Hierarchy of Web User Needs
- The Importance vs. Satisfaction Framework
- Discovery Framing Techniques
  - Opportunity Assessment Technique
  - Customer Letter Technique
  - Startup Canvas Technique
- Discovery Planning Techniques
  - Story Map Technique
  - Customer Discovery Program Technique
  - Case study: Martina Lubchenco of Microsoft [Reading]
- Discovery Ideation Techniques
  - Customer Interviews
- Summary

Maslow's Hierarchy of Human Needs



Olsen's Hierarchy of Web User Needs



The Importance vs. Satisfaction Framework

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Discovery Framing Techniques

Opportunity Assessment Technique

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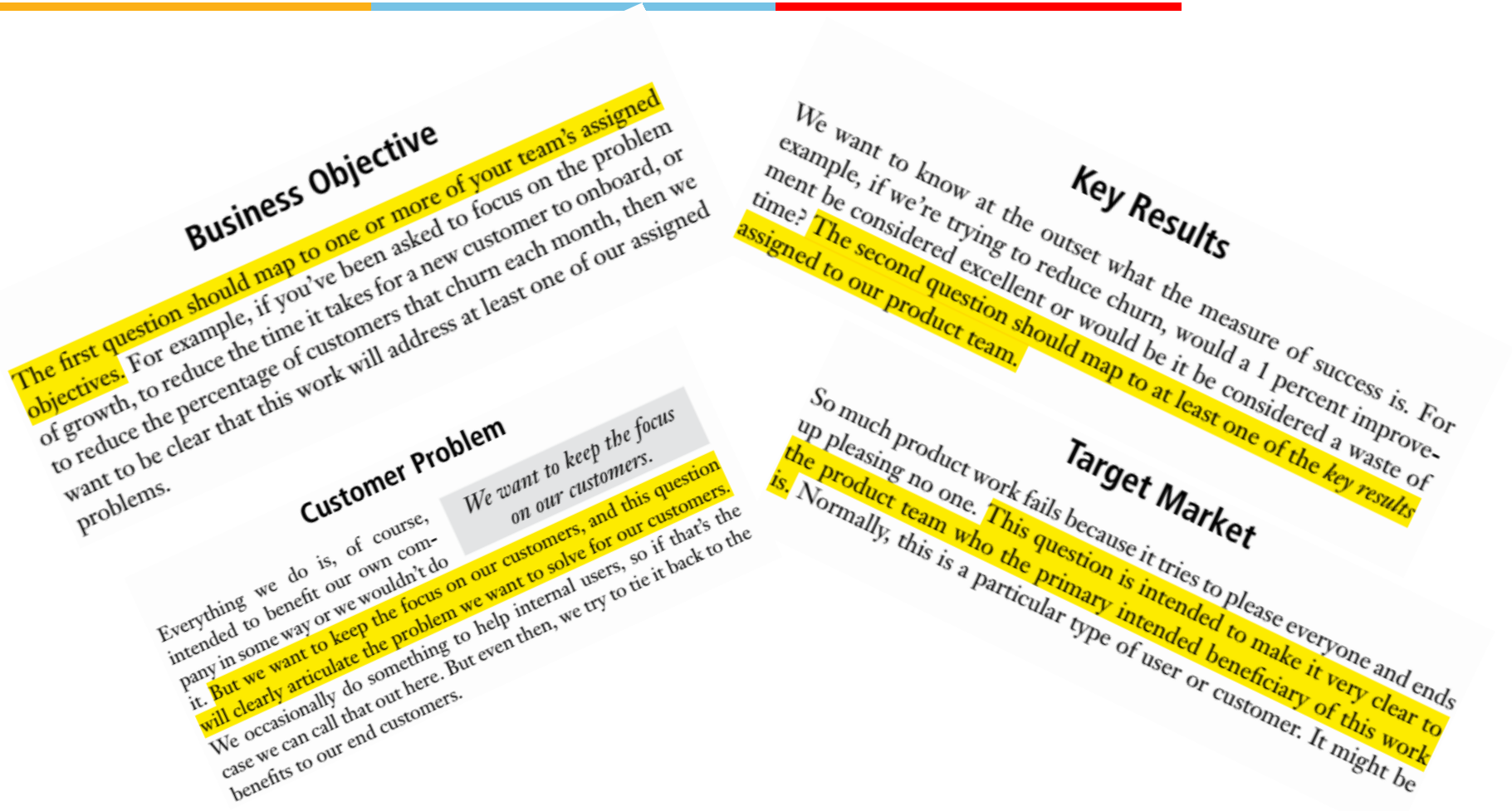
- An opportunity assessment is an extremely simple technique but can save you a lot of time and grief.
- The idea is to answer four key questions about the discovery work you are about to undertake:
  - What business objective is this work intended to address? (*Objective*)
  - How will you know if you've succeeded? (*Key results*)
  - What problem will this solve for our customers? (*Customer problem*)
  - What type of customer are we focused on? (*Target market*)
- Answering these questions is the responsibility of the product manager, and it normally takes a few minutes to prepare these answers.
- But then the product manager needs to share them with her product team and with key stakeholders to ensure you are on the same page.

Opportunity Assessment Technique contd.



Business Objective

The first question should map to one or more of your team's assigned objectives. For example, if you've been asked to focus on the problem of growth, to reduce the time it takes for a new customer to onboard, or to reduce the percentage of customers that churn each month, then we want to be clear that this work will address at least one of our assigned problems.

Customer Problem

We want to keep the focus on our customers.

Everything we do is, of course, intended to benefit our own company in some way or we wouldn't do it. But we want to keep the focus on our customers, and this question will clearly articulate the problem we want to solve for our customers. We occasionally do something to help internal users, so if that's the case we can call that out here. But even then, we try to tie it back to the benefits to our end customers.

Key Results

We want to know at the outset what the measure of success is. For example, if we're trying to reduce churn, would a 1 percent improvement be considered excellent or would be it be considered a waste of time? The second question should map to at least one of the *key results* assigned to our product team.

Target Market

So much product work fails because it tries to please everyone and ends up pleasing no one. This question is intended to make it very clear to the product team who the primary intended beneficiary of this work is. Normally, this is a particular type of user or customer. It might be

Customer Letter Technique

- For smaller and more typically sized efforts, the opportunity assessment is usually sufficient.
- But when embarking on a somewhat larger effort, there may in fact be multiple reasons, several customer problems to be solved, or business objectives to be tackled.
  - A typical example of an effort of this size would be a redesign.
  - Maybe it is intended to both improve the experience for current customers and perform better for new customers.
- To communicate the value effectively, it may take more than the four questions listed in the previous technique.
- In the format of a customer letter written from the hypothetical perspective of one of your product's well-defined user or customer personas, the following points are addressed:
  - How does the planned redesign improve the life of our customers?
  - What are the real benefits to them?
- The letter—sent to the CEO from a very happy and impressed customer—explains why he or she is so happy and grateful for the new product or redesign.
- The letter also includes an imagined congratulatory response from the CEO to the product team explaining how this has helped the business.

Startup Canvas Technique

- The techniques explored so far are for typical-sized, smaller efforts like adding a new feature, or medium to large-sized efforts like a redesign.
  - Those cover most of what product teams actually work on.
- However, another especially difficult situation requires a more comprehensive framing technique.
  - An early stage startup, where you are trying to figure out a new product that can power a new business
  - For those that work at an enterprise size company, when you're asked to tackle an all-new business opportunity for the company.
- You're not being asked to improve an existing product, you're being asked to invent an entirely new product ☺
- In such situations, a wide array of risks:
  - Validating your value proposition
  - Figuring out how you intend to make money
  - Figuring out how you plan to get this product out to your customers and sell to them
  - Deciding how much it will cost to produce and sell this product, and what you will measure to track your progress
  - Determining whether the market is large enough to sustain a business.

Startup Canvas Technique contd.

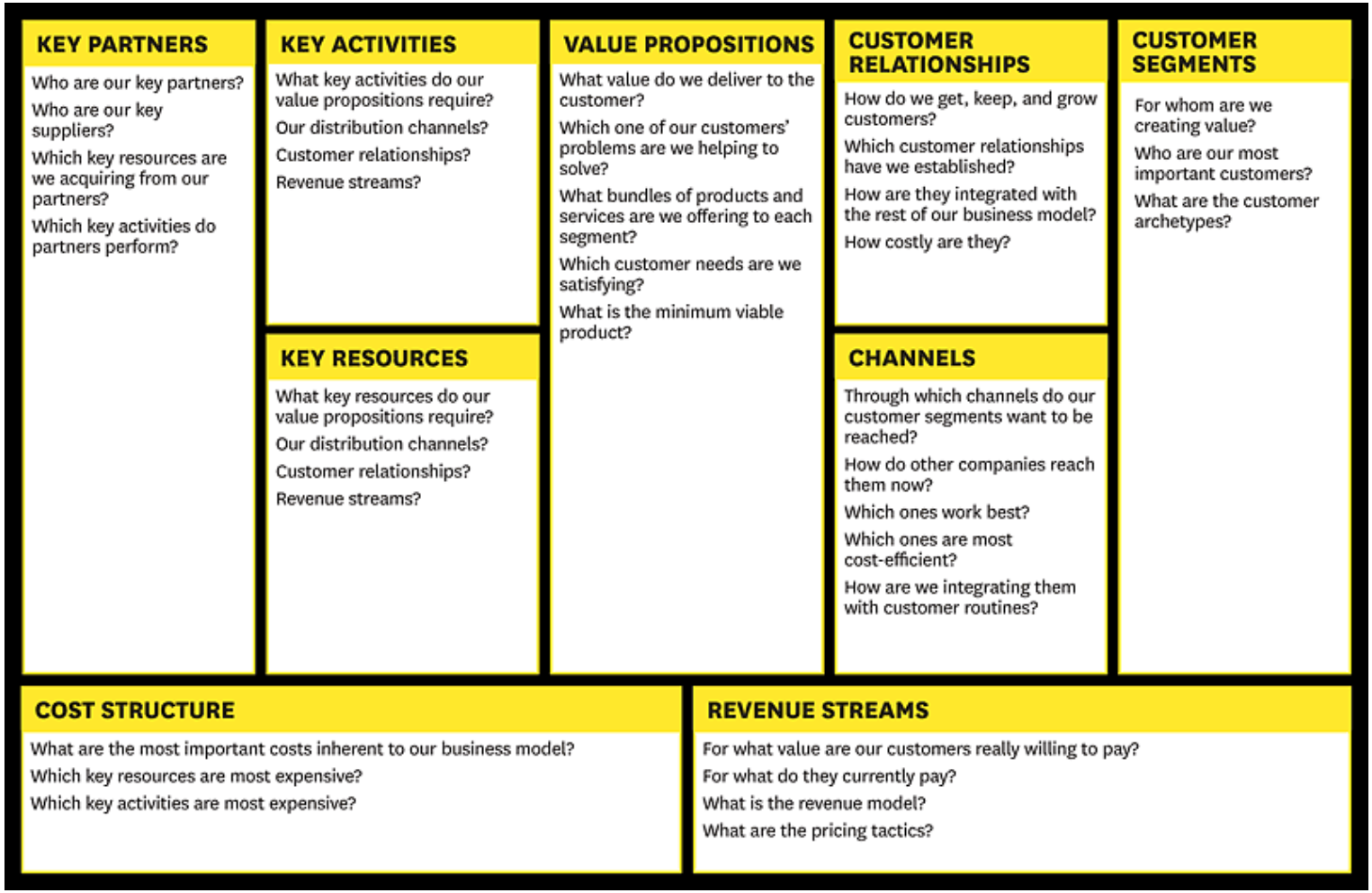
- A startup canvas, its close cousins the business model canvas, and the lean canvas are intended to be lightweight tools to call out these risks early and encourage the team to tackle them up front.
- You can use a canvas for any product change, no matter the size, but you would likely quickly find that, once you have an existing product and business, the majority of the canvas doesn't change and is only duplicated.
- The startup canvas for simpler work, especially if you have a new product manager. The startup canvas can help that new product manager get a good holistic understanding of her product and understand the key areas of the affected business.

Business Model Canvas

- The business model canvas — as opposed to the traditional, intricate business plan — helps organizations conduct structured, tangible, and strategic conversations around new businesses or existing ones.
- Leading global companies like GE, P&G, and Nestlé use the canvas to manage strategy or create new growth engines, while start-ups use it in their search for the right business model.
- The canvas's main objective is to help companies move beyond product-centric thinking and towards business model thinking.

https://hbr.org/2013/05/a-better-way-to-think-about-yo

Business Model Canvas contd.



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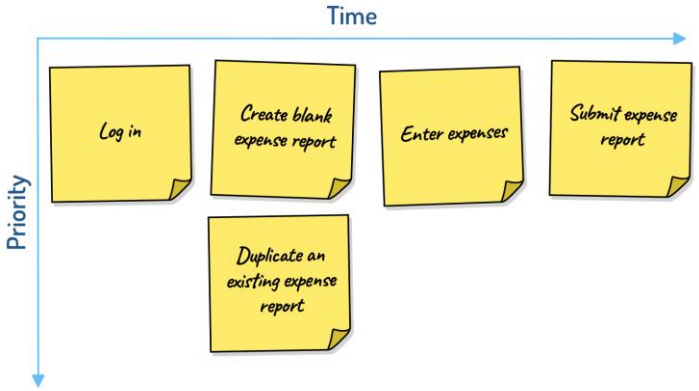
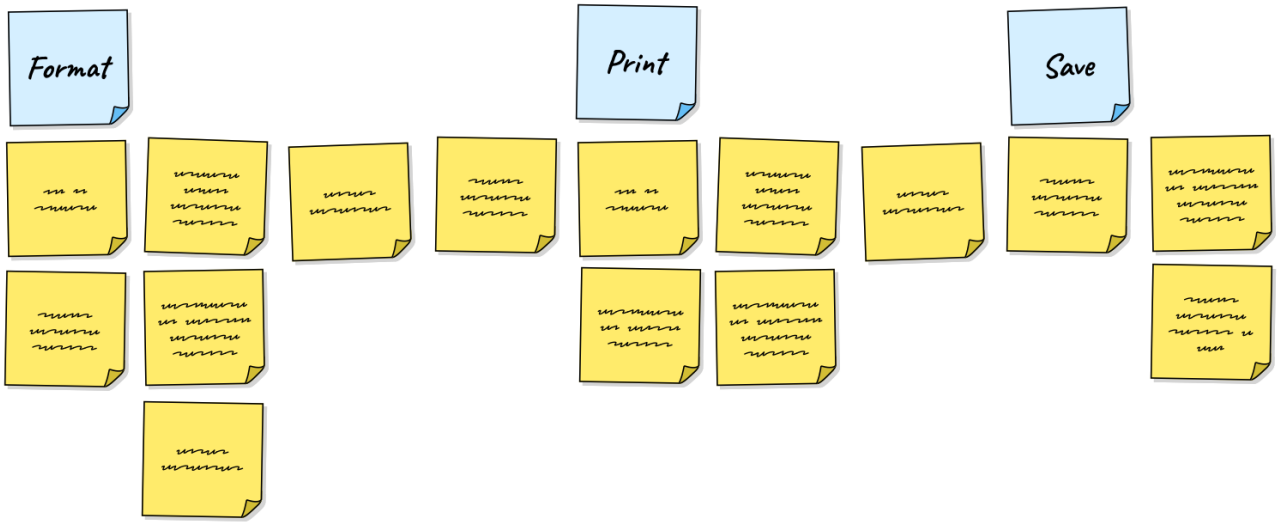
Discovery Planning Techniques

Story Map Technique

- The origin of story maps came from frustration with the typical flat backlog of user stories.
  - There's no context, just a prioritized list of stories.
  - How can the team know how one story fits in with the big picture?
  - What does it mean to even prioritize at that granularity with so little context?
  - And what set of stories constitutes a meaningful milestone or a release?
- Story maps are two-dimensional maps, in which major user activities are arrayed along the horizontal dimension, loosely ordered by time from left to right.
- Along the vertical dimension, we have a progressive level of detail. As we flesh out each major activity into sets of user tasks, we add stories for each of those tasks. The critical tasks are higher vertically than the optional tasks.
- If you lay out your system this way, you can, at a glance, get the holistic view and consider where to draw the line in terms of different releases and their associated objectives.

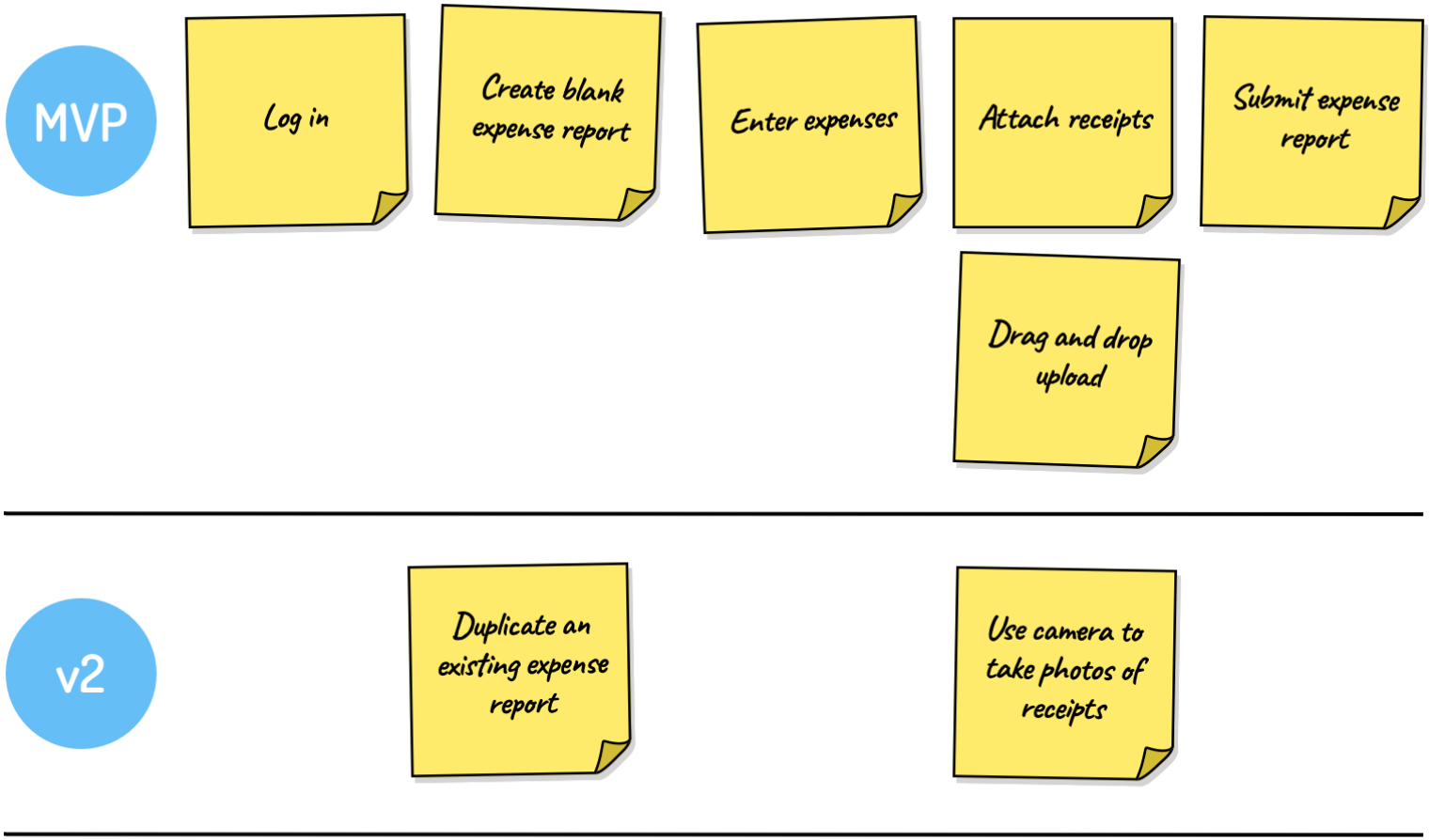
Story Map: Example





https://www.mountaingoatsoftware.com/blog/user-story-mapping-how-to-create-story-maps

Story Map: Example contd.



https://www.mountaingoatsoftware.com/blog/user-story-mapping-how-to-create-story-maps

Story Maps: Utility

- Note that each story has context. The entire team can see how it fits in with the other stories. And not just as a snapshot in time. The team can see how the system is expected to grow over time.
- We can use this story map to frame our prototypes, and then as we get feedback on our prototypes and learn how people interact with our product ideas, we can easily update the story map to serve as a living reflection of the prototypes.
- As we finalize our discovery work and progress into delivery, the stories from the map move right into the product backlog.

The Power of Reference Customers

First, we need to talk about the nearly magical power of a happy reference customer.

Let's be clear about what it means to be a *reference customer*: This is a *real* customer (not friends or family), who is running your product in *production* (not a trial or prototype), who has paid *real money* for the product (it wasn't given away to entice them to use it), and, most important, who is willing to *tell others* how much they love your product (voluntarily and sincerely).

There are few things more powerful to a product organization than reference customers.

Please believe me when I say that there are few things more powerful to a product organization than reference customers. It is the single best sales tool you can provide to your sales and marketing organization, and it completely changes the dynamics between the product organization and the rest of the company.

Ask any good salesperson the single best tool you can provide to help her do her job, and she'll say, "happy reference customers."

Customer Discovery Program Technique

We are discovering and developing a set of reference customers in parallel with discovering and developing the actual product.

I will warn you that this technique takes substantial effort, primarily on the part of the product manager. I wish it were easier. But I will also say that if you do this technique, I consider it the *single best leading indicator of future product success.*

I will also say that this technique is not new, although every few years some influential person in the product world rediscovers its power and it gets attention once again. It also goes by multiple names. In any case, I'm convinced that everyone would do the technique if it didn't require so much actual work.

There are four main variations of this technique for four different situations:

1. Building products for businesses
2. Building platform products (e.g., public APIs)
3. Building customer-enabling tools used by employees of your company
4. Building products for consumers

Self Study for Future Discussion

https://www.svpg.com/team/martina-lauchengco/

Profile: Martina Lauchengco of Microsoft

In 1993, Word 6.0 was the biggest release, feature-wise, Microsoft had ever produced.

In addition to all the new features, the team had another very large objective. Their code base had diverged, and it was extremely slow and costly for Microsoft to implement Word separately for each platform: Windows, DOS, and Mac. This code convergence effort was supposed to save Microsoft substantial development time, and—they tried to convince themselves—improve the offering since Word would have the same features on every platform.

It also meant that there was great pressure to get the release out so they could start to gain the efficiencies of a single code base.

At the time, Word for Mac was a relatively small market. It was only $60 million, versus Windows, which at that point was more than a $1 billion market. If you remember, back then Windows machines absolutely dominated, and the future of Apple was not a sure thing. However, the Mac community was also very vocal—with passionate

Chapter 40 of Inspired: How to create products customers love?
By Marty Kagan, Wiley Publication, 2017

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Discovery Ideation Techniques

Customer Interviews

- There are many forms of customer interviews, so this is not really a single technique.
- Some are informal and some are more formal.
- In every user or customer interaction, we always have the opportunity to learn some valuable insights.
- Need to understand
  - Are your customers who you think they are?
  - Do they really have the problems you think they have?
  - How does the customer solve this problem today?
  - What would be required for them to switch?

Making the Most of Customer Interviews

Frequency. Establish a regular cadence of customer interviews. This should not be a once-in-a-while thing. A bare minimum would be two to three hours of customer interviews per week, every week.

Purpose. You are not trying to prove anything during these interviews, one way or the other. You're just trying to understand and learn quickly. This mindset is critical and needs to be sincere.

Recruiting users and customers. I talk much more about this when we discuss the usability testing technique, but for now, be sure to talk primarily to people in your intended target market. You're looking for about an hour of their time.

Location. It's always amazing to see customers in their native habitat. There's so much to learn just by observing their environment. But it's also fine to meet them somewhere convenient or have them come to your office. If you need to do this over a video call, that's not as good, but much better than not doing at all.

Preparation. Be clear beforehand what problem it is you think they have, and think about how you'll either confirm or contradict that.

Making the Most of Customer Interviews contd.

Who should attend. My favorite is to bring three people to these interviews: the product manager, the product designer, and one of the engineers from the team (we normally rotate among those that want to attend). Usually, the designer drives (because they've usually been trained how to do this well), the product manager takes notes, and the developer observes.

Interview. Work to keep things natural and informal, ask open-ended questions, and try to learn what they're doing today (not so much what they *wish* they were doing, although that's also interesting).

Afterward. Debrief with your colleagues to see if you've all heard the same things and had the same learnings. If you made any promises to the customer during that session, be sure you keep them.

Summary

- For many product discovery efforts framing and true problem solving becomes critically important.
  - Discovery framing techniques facilitates these activities
- For complicated product efforts, it often helps to have some way to scope out and plan your discovery efforts.
  - Discovery planning techniques are focused on these aspects
- It is important to address the relevant question: How do we generate the types of ideas that are likely to truly help us solve the hard business problems that our leaders have asked us to focus on right now?
  - Discovery ideation techniques are tuned towards investigating this question

Thank you