



Research Methods in Industry

About Me!



- 3rd Year HCC PhD Student
 - MS in Industrial Engineering (Human Factors Focus) from Clemson
- **Advisor:** Dr. Bart Knijnenburg
- Research: Intersection of Privacy, Decision Making and Internet of Things (IoT)
- Mixed Methods Researcher



Projects



Two Broad Categories:

- **New Product Development**

- Developing Research Plans
- Choosing the right research methods
- Not let people know the actual product but still get the desired user preferences about product
- Much more challenging

- **Existing Product Research**

- Fairly Straightforward
- A/B testing
- Task based research

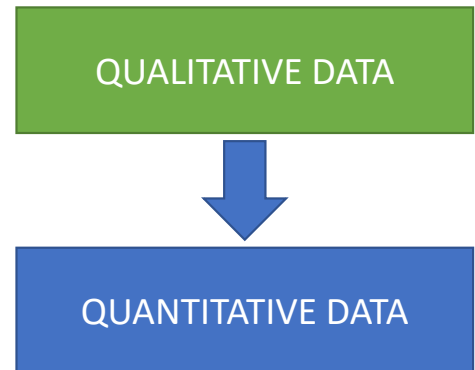


Project: Data Driven Personas

Introduction




- A brand-new product, never tested in market
 - Research Questions:
 - Would people buy this product?
 - What are the barriers to adoption?
 - Would they like certain features more over other?
 - Are there differences in preferences across certain demographics?
- Project used qualitative as well as quantitative research methods



Personas

- Fictional Characters
- Created from user data which can be gathered from user interviews, surveys and so on..
- Usually made from qualitative data gathered from interviews.
- Aim: understand user characteristics, needs, goals and so on..



Rebecca
Casual audiophile

Age 26
Occupation Frontend developer
Education Bachelor degree
Marital status Single
Location Mountain View

Online locations Work and mobile
Computer(s) iPhone and MacBook Pro
Internet usage 8-9 hours

TECHNOPHOBIC ————— TECH WIZ

CDs ————— MUSIC STREAMING

CASUAL LISTENER ————— HARDCORE GEEK

Music is essential to Rebecca's life. She is listening to tunes almost every second of her life, particularly while working.

Obstacles Rebecca faces:

- Too busy to explore new music artists she might like
- Streaming music consumes a lot of data

How will Rebecca interact with Spotify?

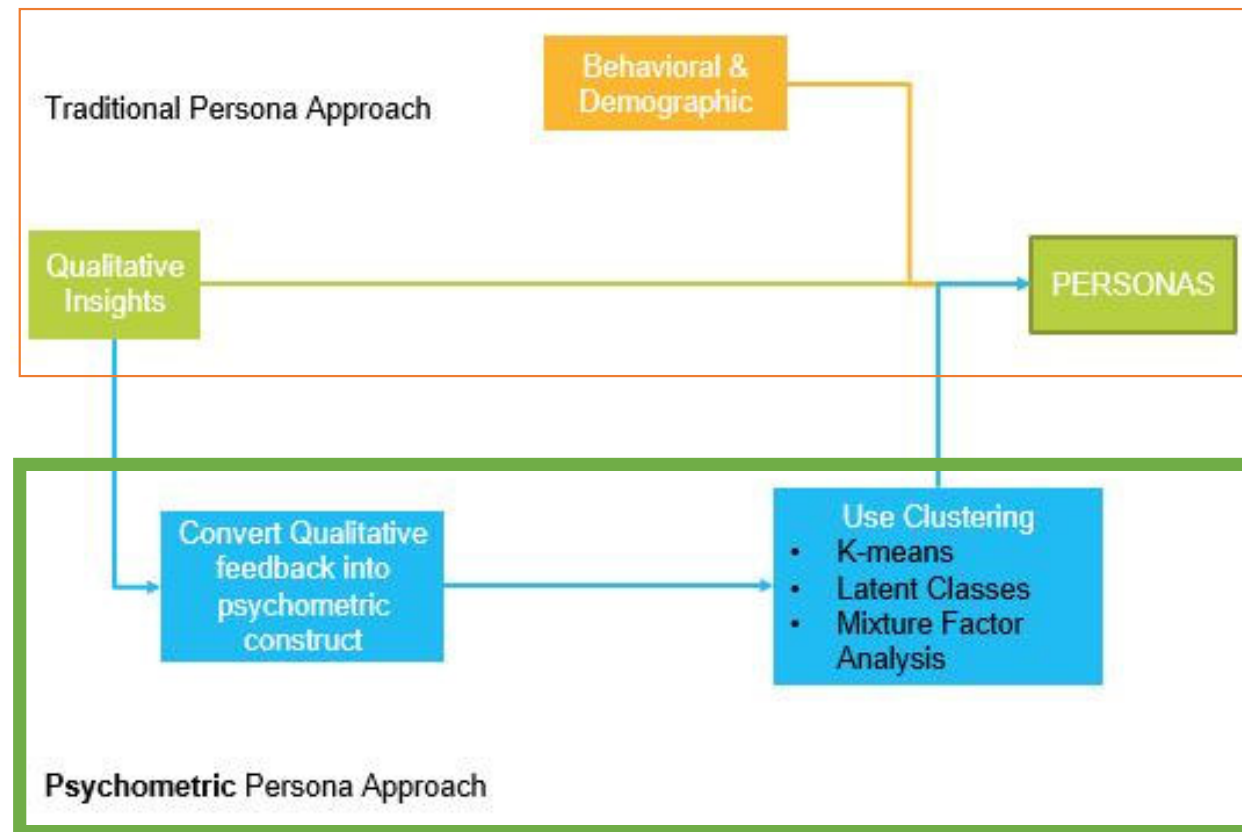
Questions Rebecca will ask:

- How do I keep updated on new releases by artists I follow?
- How do I learn of new artists I haven't heard of?
- Can I listen to music in a data-efficient manner?
- How can I listen on both my MacBook and my iPhone?

Who influences Rebecca?

Ads, Friends, Her own tastes, Music charts, Co-workers

Personas



Study-1 User Interview



- Example context:
 - A platform which helps to consolidate your loans in one place.
 - Can help in collaborating with multiple parties involved in the loan
 - 3-4 distinct features
- Semi Structured Interview with 10 people, approximately 1 hour long
- UserTesting for recruitment

Study-1 User Interview



- Select the right demographic you want to talk to
- You can add additional screening questions *“Are you currently looking for home/auto/education/personal loans?”*

Demographic Filters

Age Remove

25

35

Countries Remove

☒ United States [Show States](#)

☐ United Kingdom

☐ Canada

☐ Australia

☐ India

☐ Rest of World

Demographic Filters

- | | |
|---|---|
| <input checked="" type="checkbox"/> Age | <input type="checkbox"/> Household income |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Employment status |
| <input type="checkbox"/> Industry | <input type="checkbox"/> Company size |
| <input type="checkbox"/> Job role | <input type="checkbox"/> Job level |
| <input checked="" type="checkbox"/> Countries | <input type="checkbox"/> Web expertise |
| <input type="checkbox"/> Operating system | <input type="checkbox"/> Web browsers |
| <input type="checkbox"/> Social networks | <input type="checkbox"/> Language |
| <input type="checkbox"/> Parental status | <input type="checkbox"/> Other requirements |

Study-1 User Interview



Approaching participants

- Start with basic introductions:
 - Tell them who you are what you do and clearly explain what is the purpose of the study.
- Do not forget consent (Two Purposes):
 - Makes sure you can use their data
 - Makes participants comfortable
- “Be brutally honest with your feedback, we are happy to hear the negative one because false positives will hurt us real bad”

Study-1 User Interview



Approaching participants

- Start with a few table setting questions
 - What kind of loan are you looking for?
 - What's the biggest concern you have when it comes to getting loans?
 - Do you have any existing loans?
 - How do you currently manage your finances?
 - Are you sole breadwinner in your house? Are other family members financially helping you out?

Study-1 User Interview



Approaching participants

- Answer a question with another question.....
 - This an extremely powerful tool
 - P: “How does this part of the UI work?”
 - I: “How would you want it to work?”
- Sometimes it is OK to deviate from the script, a participant may have a really intriguing insight in a product you never thought of.

Study-1 User Interview



Show your product:

- Could be a link to fully functional website
- Snapshots of a prototype
 - For this project I used snapshots of mock-ups and walked my participants through every single part of what the product was and what it would do.
- Participants initially have tendency to praise the product (Some hate it outright):
 - Wait for “I like this *BUT*.....”

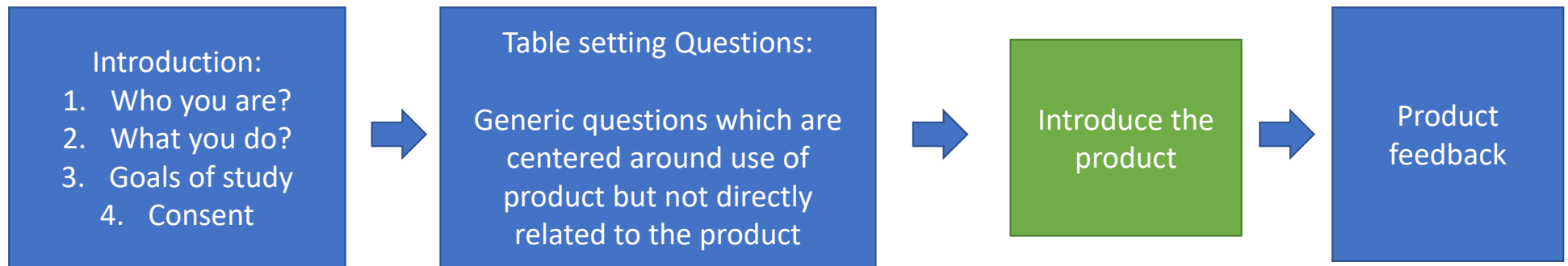
Study-1 User Interview



Watch out for probing statements:

- *“This feels so big brotherish.....I know you guys are using my data.... Just don’t creep me out by saying it too loudly”*
- *“This is such a millennial thing to do.....”*
 - Immediately think back who you are talking to, do they have a specific reason why they might say so? Start probing why is that?

Study-1 User Interview



Study-1 Data Analysis



- Qualitative coding, Card sorting
- Forming a theory/hypotheses as to how things might have been happening
 - You will need very specific user study to test these out
- Reporting the findings:
 - Literally use clips from the user interviews to show how people react to your product (you already have consent!)

Qual → Quant



- Take a look at the example statement:
 - *“I think my credit card debt is annoying..... I would rather pay it off first instead of making an investment”*



- Survey
 - *My credit card debt prevents me from making investments*
 - *I would be open to make investment while I pay off my debts*
 - *Agree to disagree: 7-point scale*

Study-2 Survey



- Used numerous such statements extracted from user interviews to create a survey
- Recruited 200 participants from UserTesting panel
- Statements in the survey were pointed at:
 - Psychometrics
 - Product oriented perceptions

Study-2 Survey



- Use pre-existing scale: E.g. Awareness of Privacy Practices

Awareness (of Privacy Practices): Seven-point scales anchored with “strongly disagree” and “strongly agree” (newly developed).

(1) Companies seeking information online should disclose the way the data are collected, processed, and used.

(2) A good consumer online privacy policy should have a clear and conspicuous disclosure.

(3) It is very important to me that I am aware and knowledgeable about how my personal information will be used.

Study-2 Survey



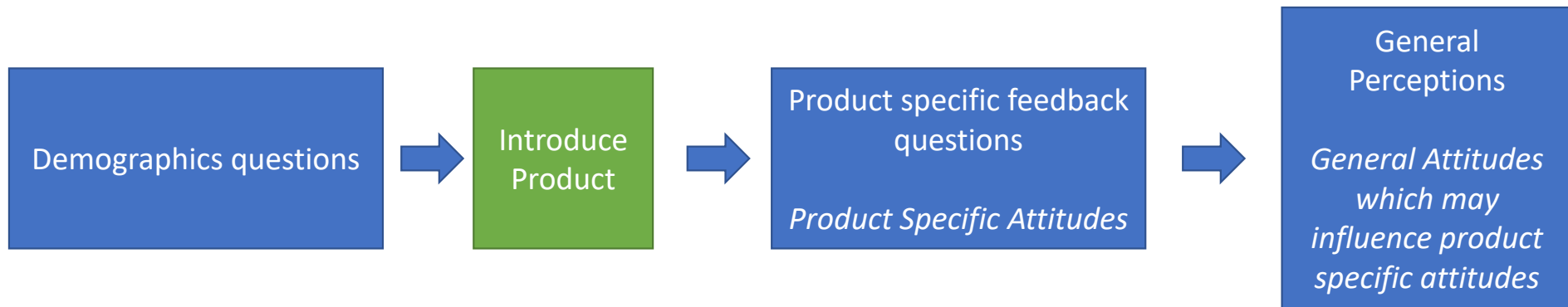
- Build your own scale
 - E.g. Product as a collaborative environment:
 - I think this product will help my family consolidate our loans
 - I am afraid this product would make my family worry about my debt
 - I think the visualization of my debt is useful
 -
- Behavior oriented questions:
 - Would you sign up for this product?
 - How likely are you to purchase this product?
 - How much are you willing to pay for this product?
 - Would you like to pay monthly/annually for this product?

Setting up Survey Study



- Begin with basic questions:
 - Age, gender, household income and so on...
- Introduce the product:
 - I created a video to highlight various features of the product, explaining its capabilities
 - Try to keep a neutral tone when explaining features, do not say “*Our product has an awesome feature XYZ*”. This will bias your participants.
 - Once they have seen the video, ask them questions about the product first..
 - Ask questions related to general perceptions later.

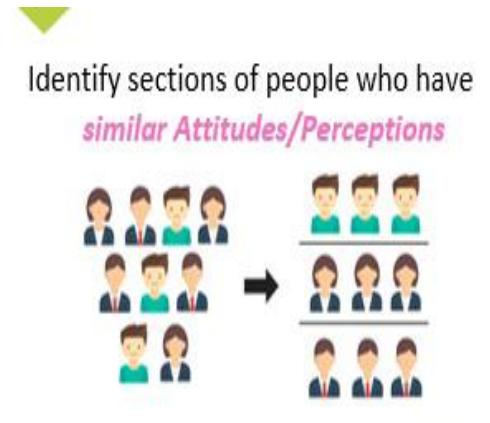
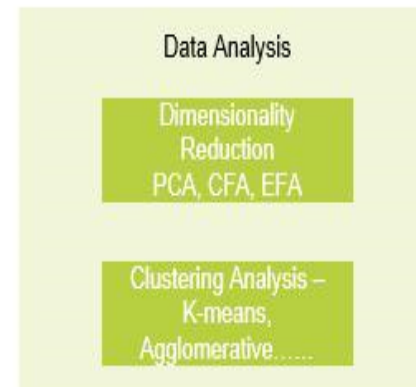
Setting up Survey Study



Study 2: Data Analysis



- I had multiple statements pointing towards a same attitude:
 - Dimensionality Reduction
 - Begin with EFA and proceed to CFA
 - Get factor scores as some of the further data analysis may require it
- Aim is to create personas:
 - Can we cluster our participants?
 - Method: MFA? K-Means?
 - Which clusters make sense?

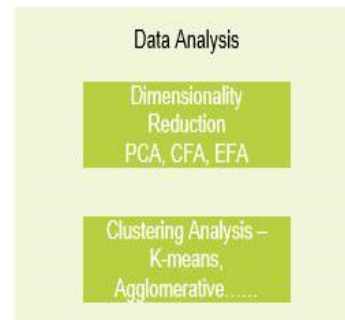


Summary

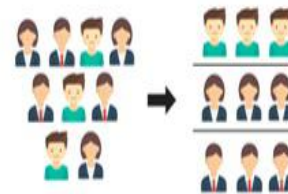


- With the qualitative method we were able to venture into the depths of how people were thinking about our products
- We leveraged these insights to create statement which could be validated with a broader pool of participants
- The personas are now much more robust because they are based on 200 participants rather than quantitative feedback from merely 10 people

Study 2: Data Analysis



Identify sections of people who have
similar Attitudes/Perceptions



Mary Taylor

26
Brooklyn
Student, waitress
Living with his husband

Bio
She lives with her new husband in a rented apartment, with three rooms. She has a busy schedule between school and work. She and her husband now moved into the apartment, and they expecting a child in 7 months.

Wants & Needs

- Design the new apartment with existing furniture and some new additions.
- Add plants to her home.

Favorite Brands
NIKE ASOS NETFLIX APPLE

Tech

- Internet
- Social Media
- Online Shopping
- Gadgets
- Early Adopter

Frustrations
Wants to add accessories that will make the living room like the pictures on Pinterest, but she cannot decide what to do and does not do that.

Quote: "I want a living room like in Pinterest photos, but I need some guidance..."

Daivd Miller

28
New-York
Product Designer
Living with his grifind

Bio
Lives in a rented apartment, 2.5 rooms, with his student girlfriend, works in a high-tech job. Likes hosting people. After a long day at work, he likes to throw on the couch with his girlfriend in front of the TV.

Wants & Needs

- Create a cozy atmosphere at home with innovative design.
- Design the house at low investment and without much effort.

Favorite Brands
APPLE GOOGLE MI Adobe VANS

Tech

- Internet
- Social Media
- Online Shopping
- Gadgets
- Early Adopter

Frustrations

- Don't want to spend money on interior designer and he doesn't have much time to deal with the design planning.
- He designs his apartment, but he thinks that she can look much better.

Quote: "I really want to create a lovely home, with my existing furniture..."



Researching Already Developed Products

Study-1 Internal Systems



- Big companies use several systems which are for the purpose of its employees
- The access to systems are case based

Study-1 Internal Systems



Setting up user study:

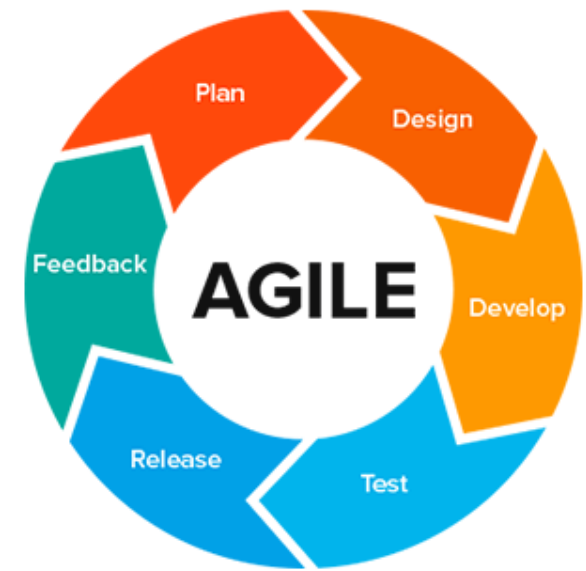
- Identify user groups:
 - Experiences/Expert Users
 - Novice/First time users
- Research Plan:
 - First impressions: likes and dislikes
 - What works (Doesn't)?
 - Create tasks for each user group

Study-1 Internal Systems



Setting up user study:

- Challenges:
 - Finding people who would volunteer to be a part of study
 - You cannot use any random participant
- Reporting:
 - Use clips of people actually performing the tasks to show where they stumbled upon
 - What people said about products
 - Recommend re-design of the existing UI which can go into next production cycle
 - Re-test

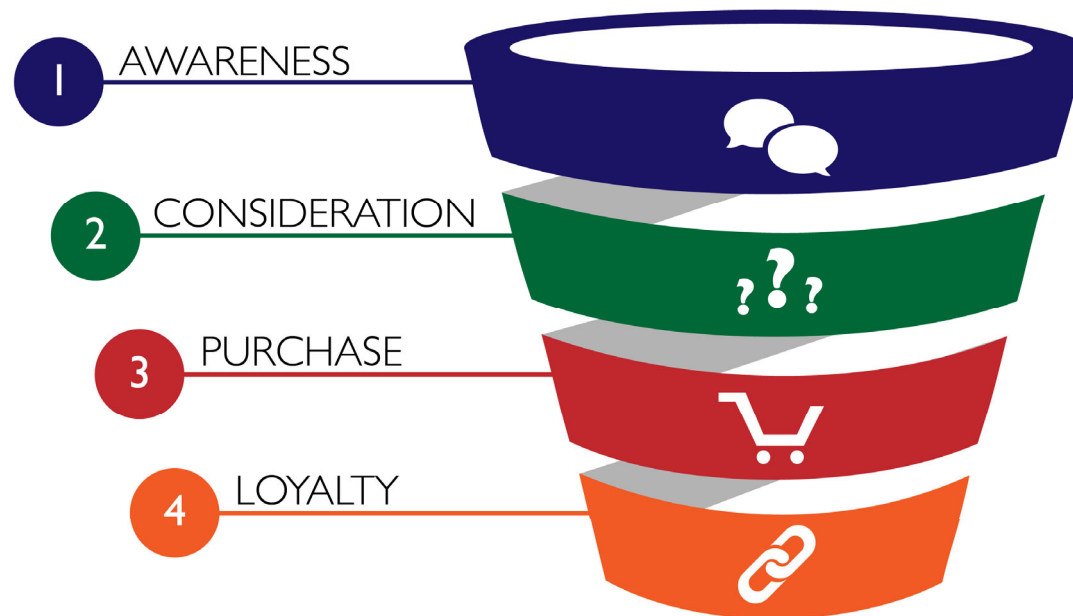


Study-2 End Customer Facing Product



- Aim: To see whether different types of nudges would affect the purchase of life insurance related product
- Simple design of user study:
 - Only 3 different conditions: Baseline, Nudge Type-1 and Nudge Type-2
 - Between subject study design
 - Understand purchase behavior and see whether nudges influence the decision/not

The Marketing Funnel



Study-2 End Customer Facing Product



- Recruiting 90 participants (30 per condition)
- Take a look at product
- Fill out basic details to get a quote:
 - Name, age, gender, smoking history, zipcode.....
- Generate a quote
 - Here the participants have choices between 2 products and not to buy anything
 - Choices remain same across each group
 - Only variation is the nudge which accompanies the choice

Study-2 End Customer Facing Product



- Challenges:
 - We needed to collect actual behavior data
 - Admin issues with developing a similar test environment
 - Used Mock-ups
 - Total 9 choices (3 groups x 3 possible choices)
 - Upon choosing an option they were taken to a page which had code specific to their choice
 - Now we have a behavioral data!!



Summary

Summary



- Having a good grasp over different research methods is important
- Choosing the right research method depends heavily on:
 - Your goals
 - How much time you have?
 - How much resources you can spend to do that particular research?
 - What kind of product are you testing?
- Try to keep your research aimed towards a tangible outcome:
 - Could be in form of a mock-up which is based on research

Summary



- Be ready for unexpected hurdles in research
 - People quit
 - Plans and goals change in the last minute
 - Sometimes your most trusted systems may be down
- It is fun nevertheless!



Thanks!

Reach Out: pbahira@g.clemson.edu