SENG 44222
Usability Engineering

User Research & UX Research

Nimasha Arambepola
BSc (Hons) in Software Engineering | MPhil (Reading)
Lecturer (Probationary)

Software Engineering Teaching Unit

Faculty of Science, University of Kelaniya
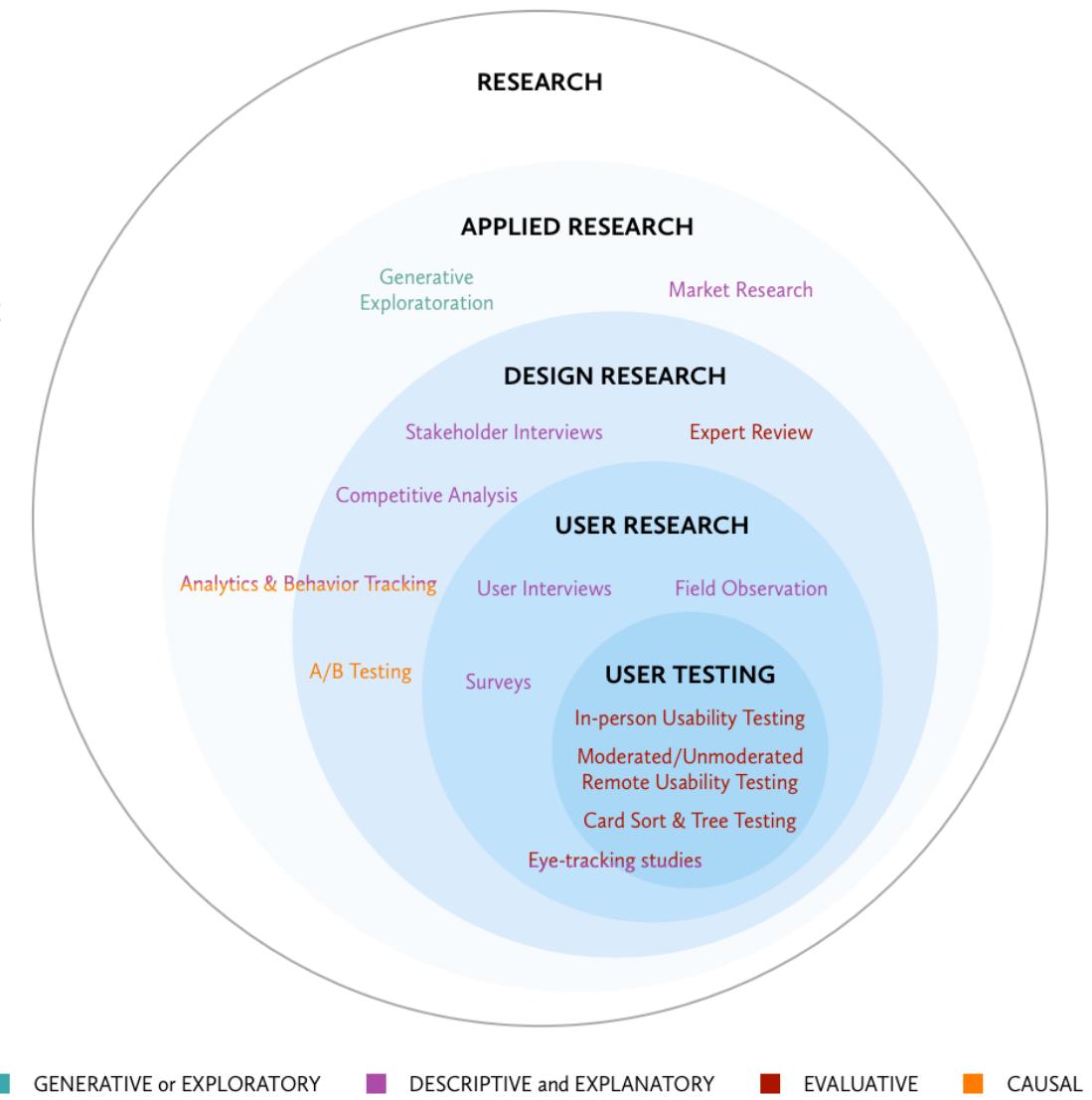
Content

- What is user research?

- Reasons for user research

- UX research methods

  - Qualitative vs Quantitative

  - Attitudinal vs Behavioral

  - Context of Product Use

- Journey map

- Data analysis in UX research

- UX research plan

What is User Research?

"Research" refers to the systematic process of gathering information, studying, investigating, and analyzing data to discover new knowledge, insights, or solutions to a specific question or problem.

What is User Research?

- User research is the methodic study of target users including their needs and pain points—so designers have the sharpest possible insights to work with to make the best designs

88% of online consumers are less likely to return to a site after a bad experience. (stats by Invision)

Reasons for doing user research?

- **To Create Designs That are Truly Relevant**

  - A design that is not relevant to its target audience will never be a success.

- **To Create Designs That are Easy and Pleasurable to Use**

  - "If the user is having a problem, it's our problem."

      — Steve Jobs, co-founder of Apple Computers

- **To Understand the Return on Investment (ROI) of Your UX Design**

  - ROI = profit from an investment/investment cost

  - ROI cannot be calculated as simply as in finance, because the investment is not always measured in the same unit as the benefit, and the effect is not always direct.

    https://www.youtube.com/watch?v=O94kYyzqvTc

ROIs of UX

ROI is a financial indicator used to evaluate the efficiency of an investment.

It refers to the measurement or evaluation of the value gained from investing in user experience improvements or initiatives within a product, service, or system.

Goals and metrics that can be used to measure the impact of UX design

Goals	Metrics
Improve performance and usability	Ease of use Number of user error Ease of learning (task completion time) User satisfaction Number of users
Increase exposure	Number of new visitors
Improve credibility	Trust in the brand Number of referrals
Reduce invested resources	Development cost & time Maintenance cost Customer support cost Time for training needed Documentation cost
Increase sales	Conversion rate Number of transactions Revenue

KPIs of UX
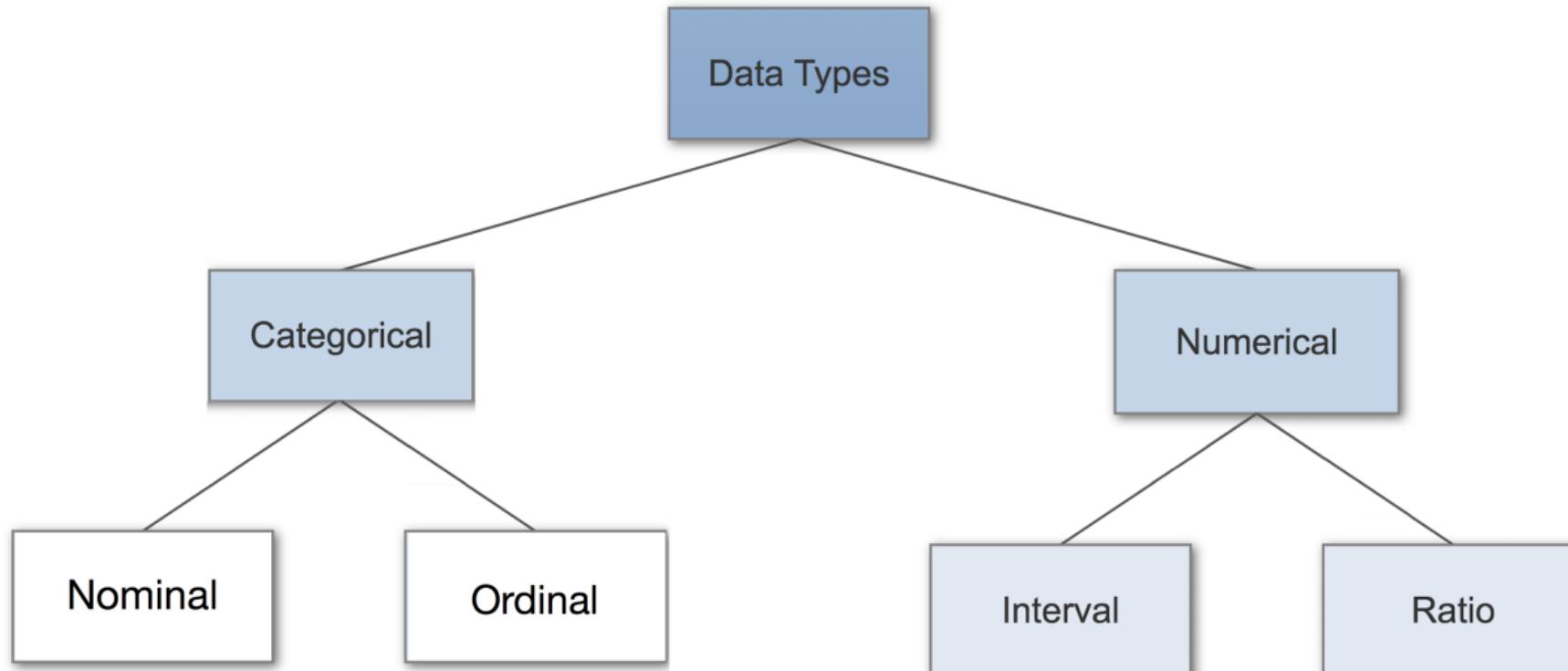
- Key performance indicators (KPIs) are quantifiable measurements used to evaluate the performance

- KPIs are key figures used to measure the performance of different areas or activities of a company.

Behavioral UX KPIs	Attitudinal UX KPIs
Task success rate	System Usability Scale (SUS)
Time on task	Customer Effort Score (CES)
Search vs. Navigation	Net Promoter Score (NPS)
User error rate	Customer Satisfaction Score (CSAT)
Misclick rate	Standardized User Experience Percentile Rank Questionnaire
Conversion rate	First impression

https://maze.co/collections/ux-ui-design/ux-kpis/#:~:text=UX%20teams%20have%20numerous%20KPIs,Customer%20Satisfaction%20Score%20(CSAT).

UX Research Methods

UX Research Methods

I.   **Qualitative vs Quantitative**

II. **Attitudinal vs Behavioral**

III. **Context of Product Use**

I. a. Qualitative research

- Collecting and analyzing qualitative data

  - Qualitative data : Non-numerical data

- Ethnographic field studies and interviews are examples of methods that can help you build a deep understanding of **why** users behave the way they do (e.g., why they leave a website so quickly)

- Open-ended questions

- **Disadvantages:**

  - Your own opinions might influence the findings
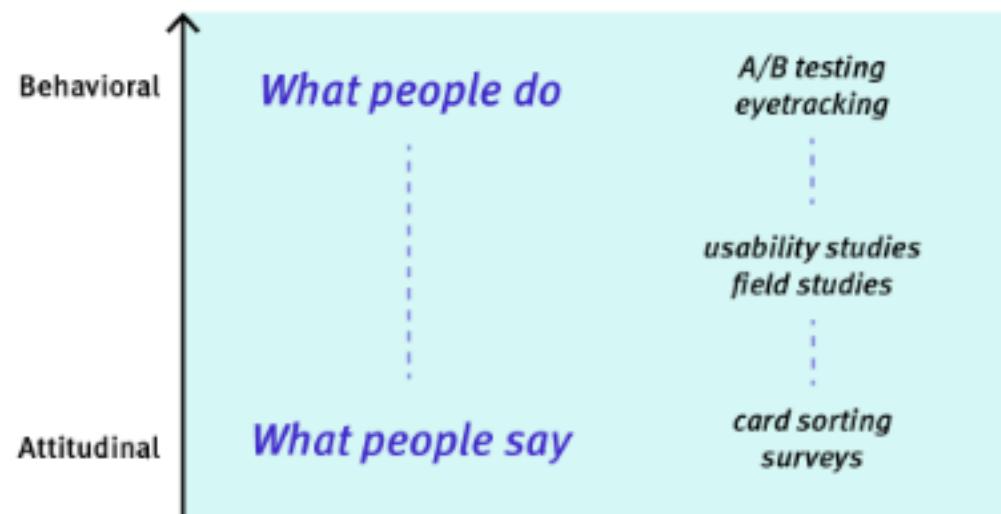
I. b. Quantitative research

- Collecting and analyzing quantitative data

  - Quantitative data : Numerical/ measurable data

- With more-structured methods such as surveys, you gather measurable data about **what** users do and test assumptions you developed from qualitative research

- An example is to use an online survey to ask users questions about their shopping habits (e.g., "Approximately how many items of clothing do you buy online per year?")

- You can use this data to find patterns within a large user group.

- You can gather objective and unbiased data

- **Disadvantages:**

  - Quantitative data alone cannot expose deeper human insights.

II. Attitudinal vs Behavioral

III. Context of product use

Key
- 🟢 Natural use of product
- 🟦 Scripted (often lab-based) use of product
- 🔺 Decontextualized / not using product
- 🔷 Limited use of product
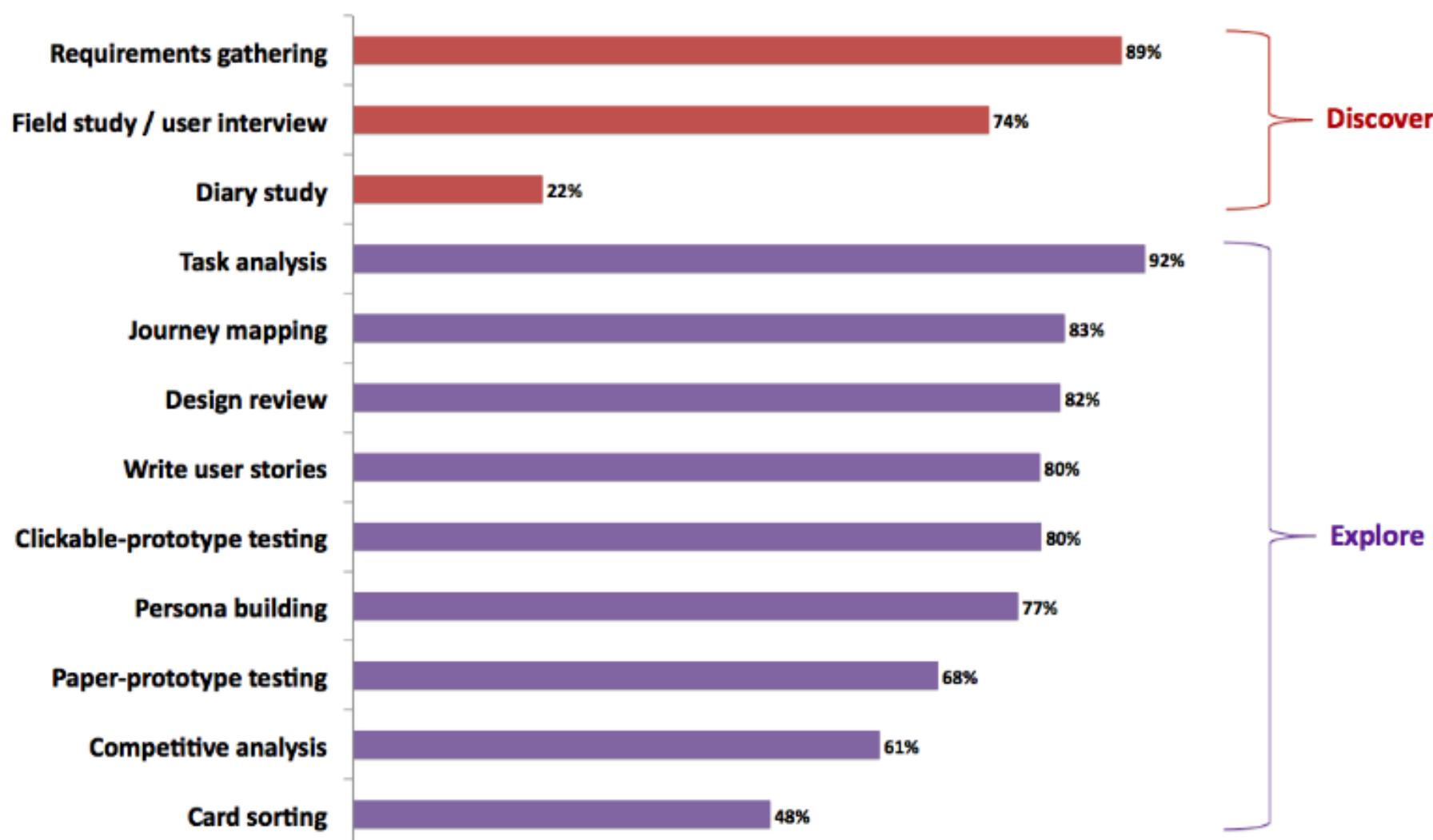
UX Research Methods

Most-Frequent UX Research Methods
Source: NN/g UX Careers Survey

Method	Percentage	Category
Requirements gathering	89%	Discover
Field study / user interview	74%	Discover
Diary study	22%	Discover
Task analysis	92%	Explore
Journey mapping	83%	Explore
Design review	82%	Explore
Write user stories	80%	Explore
Clickable-prototype testing	80%	Explore
Persona building	77%	Explore
Paper-prototype testing	68%	Explore
Competitive analysis	61%	Explore
Card sorting	48%	Explore

Journey map

A visualization of the process that a person goes through in order to accomplish a goal

Key Components of a Journey Map

1. Actor

2. Scenario + Expectations

3. Journey Phases

4. Actions, Mindsets and Emotions

5. Opportunities
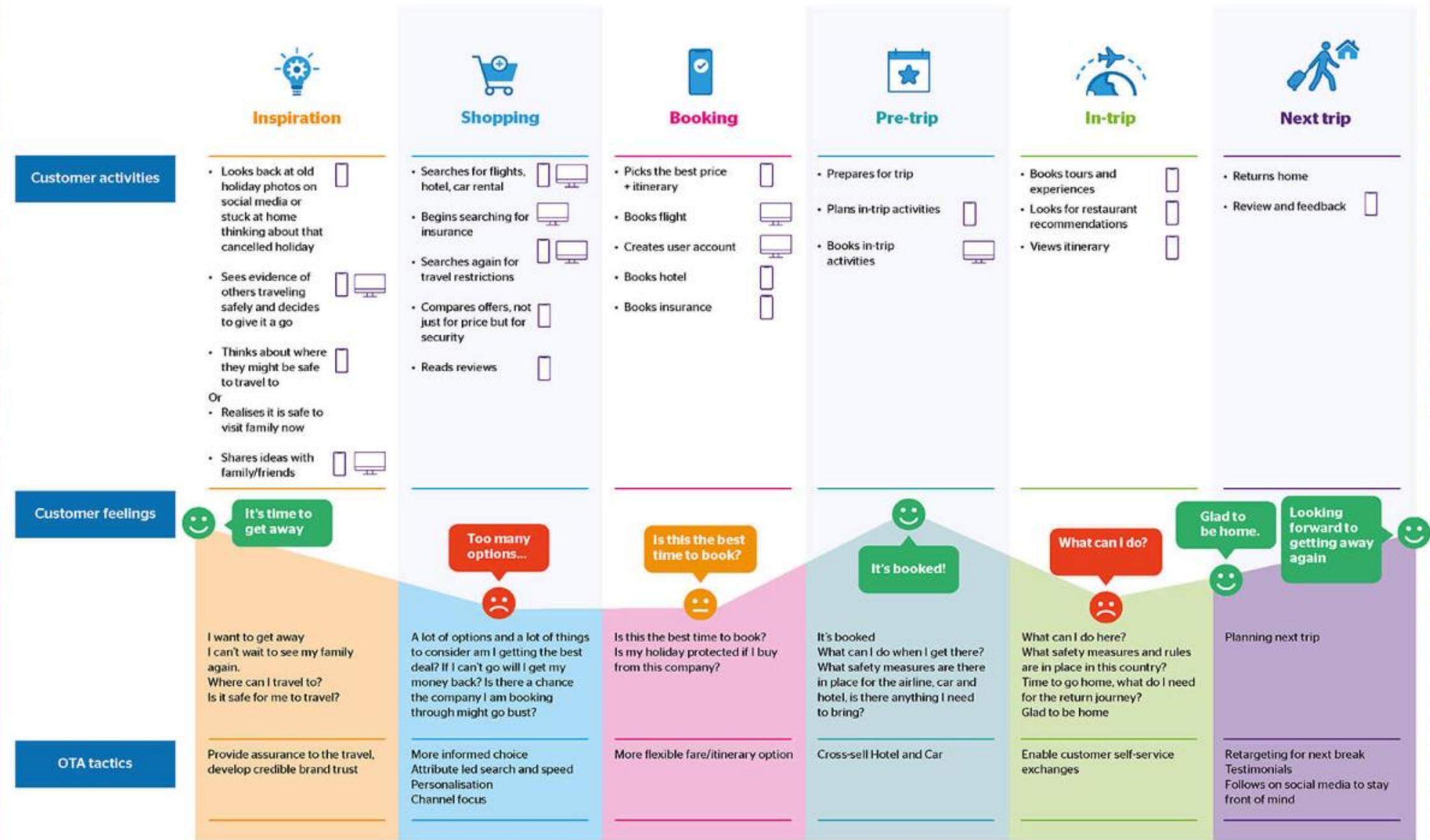
Journey map

Online Shopping Customer Journey Map

| Stages of Journey	Motivation	Searches for Websites			Browses the Site	Evaluates Products		Pay	
Activities	Wants to buy a Christmas gift for a friend	Searches products keywords on search engines	Clicks the 1st ads. result.	Checks online again and go to the 1st. original result	Checks out ongoing deals and hot sale products	Opens a product page to check product details.	Opens more product pages to compare info.	Processes to pay a preferred product.	Contacts online service for help.
Feelings					80%				
Very Happy	😄				😄				
Overall Satisfied		🙂		🙂			🙂		🙂
Unhappy			☹️			☹️		☹️	
Experiences	Excited to give a surprise to the friend.	• Happy to see many options • Confusing about how to choose.	Annoyed at the useless info.	• Happy with the informative shopping website. • Not sure about how to find the best price.	Surprise to see lots of discounts	Frustrated about reviews from other customers.	• Pleased with usages & designs. • Sad to see out of stock products.	Frustrated to find only the Paypal payment option.	• Satisfied with bank card payment. • Feels unhappy to wait for a bit of long time.
Customer Expectations	Easily to obtain discount news.	More user-friendly search engine.	Allow to hide unnecessary ads.	Clear and innovative website design.	More discounts during holidays.	Higher quality products.	Faster supply chain system.	More payment choices.	Faster website speed.

Customer journey map

	Inspiration	Shopping	Booking	Pre-trip	In-trip	Next trip

Customer activities

Inspiration
- Looks back at old holiday photos on social media or stuck at home thinking about that cancelled holiday
- Sees evidence of others traveling safely and decides to give it a go
- Thinks about where they might be safe to travel to
Or
- Realises it is safe to visit family now
- Shares ideas with family/friends

Shopping
- Searches for flights, hotel, car rental
- Begins searching for insurance
- Searches again for travel restrictions
- Compares offers, not just for price but for security
- Reads reviews

Booking
- Picks the best price + itinerary
- Books flight
- Creates user account
- Books hotel
- Books insurance

Pre-trip
- Prepares for trip
- Plans in-trip activities
- Books in-trip activities

In-trip
- Books tours and experiences
- Looks for restaurant recommendations
- Views itinerary

Next trip
- Returns home
- Review and feedback

Customer feelings

It's time to get away 😊

Too many options... 🙁

Is this the best time to book? 😐

It's booked! 😊

What can I do? 🙁

Glad to be home. 😊

Looking forward to getting away again 😊

Inspiration
I want to get away
I can't wait to see my family again.
Where can I travel to?
Is it safe for me to travel?

Shopping
A lot of options and a lot of things to consider am I getting the best deal? If I can't go will I get my money back? Is there a chance the company I am booking through might go bust?

Booking
Is this the best time to book?
Is my holiday protected if I buy from this company?

Pre-trip
It's booked
What can I do when I get there?
What safety measures are there in place for the airline, car and hotel, is there anything I need to bring?

In-trip
What can I do here?
What safety measures and rules are in place in this country?
Time to go home, what do I need for the return journey?
Glad to be home

Next trip
Planning next trip

OTA tactics

Inspiration
Provide assurance to the travel, develop credible brand trust

Shopping
More informed choice
Attribute led search and speed
Personalisation
Channel focus

Booking
More flexible fare/itinerary option

Pre-trip
Cross-sell Hotel and Car

In-trip
Enable customer self-service exchanges

Next trip
Retargeting for next break
Testimonials
Follows on social media to stay front of mind

Data Analysis in UX Research

- Research analysis is the umbrella term used to define the process of classifying, organizing, and transforming raw data into valuable information

"It's the act of taking raw data and turning it into something useful."

~ JJ Knowles ~

Data Analysis in UX Research

Quantitative data analysis methods

1. Descriptive statistics

2. Regression analysis

3. ANOVA (Analysis of Variance)

4. Correlation analysis

5. Factor analysis

6. Cluster analysis

7. Multivariate analysis

8. Machine learning

Data Analysis in UX Research

Quantitative data analysis methods

Questions that quantitative analysis can help to answer include:

1. How long does it take the average user to complete a certain task?

2. What features do they use?

3. Are there any user needs not being met by the product?

4. What features need the greatest attention for improvement? Why?

5. Do certain users have different experiences using the product? How so?

Data Analysis in UX Research

Qualitative data analysis

When analyzing qualitative data, ask yourself the following questions:

1. What are the major patterns and common themes in users' responses?

2. Did any findings surprise you, your colleagues, and/or the client? How so?

3. How do people view this product overall and how does it fit into their daily lives? How indispensable is this product to them? Why?

4. What features were most important to these users?

5. What did they like most about this product? What did they like least about this product? Why?

6. What values are most important to these users?

7. How are these users different from other users?

8. Are there any use-cases not adequately supported by the current interface?

Data Analysis in UX Research

Qualitative data analysis

1. Make a plan and set objectives for analysis.

2. Take notes immediately after sessions.

3. Review all the data upfront.

4. Organize your data.

5. Identify trends and synthesize your findings.

6. Write recommendations.

Qualitative data analysis

2. Take notes immediately after sessions.

This process is called **periodic analysis** and its benefits include:

- Preventing the wasted time and effort of redundant work

- Preventing your memory of different sessions from blending together

- Reducing the risk of you missing important details that might become the bedrock of your work's final quality

- Identifying what was most important to you and other stakeholders in the moment

Qualitative data analysis

2. Take notes immediately after sessions.

A	P1	P2	P3	P4	P5	P6
	🟥	🟧	🟨	🟩	🟦	🟦
User is annoyed by the slow login process	🟥	🟧	🟨		🟦	🟦
Uses the "Calculate" button	🟥		🟨	🟩		🟦
Says something positive about the calculator feature unprompted	🟥	🟧	🟨	🟩	🟦	🟦
Asks for help with finding the "Management" page	🟥		🟨		🟦	
Expected the process of adding a new contact to be much quicker	🟥			🟩		🟦
Discovered the voice feature	🟥				🟦	
Understands the meaning of submitting a lead request	🟥	🟧	🟨	🟩	🟦	
Surprised (in a bad way) by the results page of the lead search	🟥	🟧	🟨			🟦
The user experiences flow	🟥	🟧		🟩		
Double-clicks icons (rather than single-clicks)		🟧	🟨	🟩		🟦
Confused by the last paragraph in the Lead page		🟧	🟨	🟩	🟦	
Says that the Reports page has a clean look			🟨	🟩		🟦
Keep clicking the "visit now" text in the home page			🟨		🟦	
Attempted submitting a lead request without filling in 2 mandatory fields			🟨			🟦
Thinks the product is relatively slow			🟨	🟩		🟦
Didn't notice the message bar			🟨			
Complains about font size						🟦

Qualitative data analysis

4. Organize your data
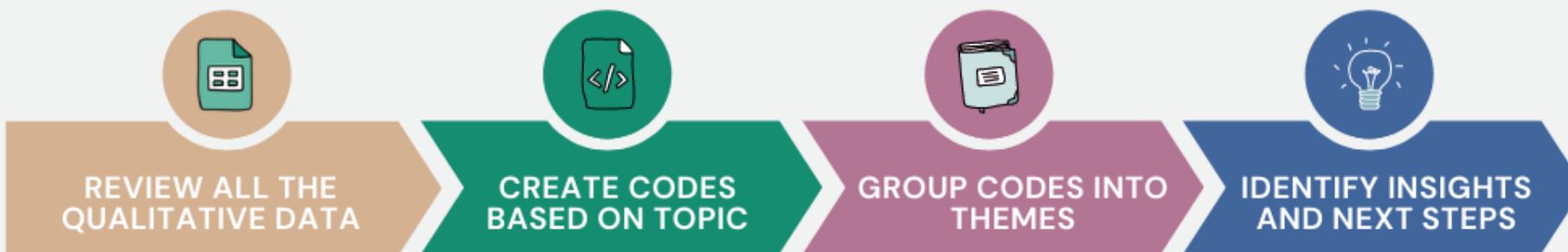
The most common methods in a UX research context are thematic analysis, content analysis, and narrative analysis.

Thematic analysis

- Thematic analysis is a systematic approach to grouping data into themes that represent user needs, motivations, and behaviors.
- In some cases, these themes may be directly adapted from your learning goals and research questions, while in others, you may see these themes emerge after the data is collected.

Open as page   Minimize   Saved   Share   Editable   ...

Series Demo Project

- Data
- Highlights
- Insights
- Add a view

Tags
- New tag board

Charts

Data group   Filter   Sort

Participant 3:

Yeah, so, I mean, this is nothing new for me. I've always been like, I mean, even when I was like younger, even when I was in college, I mean like volunteering my time working at like the, you know, some of the, you know, local places and helping out. I mean, so for me, like it's always been a part of my life to help out and even now, so I mean, like, you know, with just doing my part and I mean, like my husband and I feel, we both feel very strongly about, you know, giving back. So we, you know, there's a couple charities that we, you know, like we help individual families out to like, if we know like individual people need it also, you know, also like through the charities as well. I mean, it's not, it's not like we do, it's not like we have something where it's like an automatic or it's just the money, but we give regularly.

Identifying as a giver   1
Motivation for donat...   2

Knowing the cause   1
Motivation for donat...   2
Giving one-off donat...   1

Interviewer:

Gotcha. Could you tell me what charities you've donated to in the past?

Participant 3:

So there's one that I definitely give regularly. It's like the Islamic Relief organization and they do a lot just all over. They do things globally. And the thing about that is that you can actually pick and choose if you want it locally given if you want the money to stay, like where you're at, if you want to say, you know, within the United States or if there's a certain specific area that's been like, hit with like war, like Yemen, you can have like all your funding going to a specific country or, you know, at that time, which I think is really good. So, I mean, like, we always try to give like, wherever we, there might be a need at

Motivation donating ...   1
Personal choice   1

Extensions
Notifications
Settings

Qualitative data analysis

4. Organize your data

Content analysis

- **Objective Categorization**: Content analysis aims to objectively categorize and quantify specific elements within the data.
- **Pattern Recognition**: It is often used for identifying patterns, trends, or frequencies within the content.
- follows a systematic and deductive approach, often guided by predefined categories or coding schemes.

Narrative analysis

- Narrative analysis is a framework for understanding the stories people tell and the ways in which they're told. For example, you could use narrative analysis to understand the importance of specific content to their participant, their motivations behind certain actions, and their perspectives.

UX Research plan

Should include:

- Team and product basics

- Research purpose, method, and goals

- User profiles and anonymized participant profiles

- Screening questionnaire and recruitment plan (if applicable)

- Checklists, schedule, script, documents, and forms

- Anything that might be helpful to know about the location and travel

- Any tested prototypes, any photos, screenshots, or other important artifacts from the research study

- Deliverables list (file names, formats, responsible person, location), for the raw data, recordings, and report, if any

https://www.nngroup.com/articles/pm-research-plan/
https://media.nngroup.com/media/articles/attachments/User_
Research_Methods_A4-compressed.pdf

Q & A