

Major Research Project

Nudging Privacy Behaviour to Address the Privacy Paradox in Personalised Fintech UX

01

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| Research Goal

02

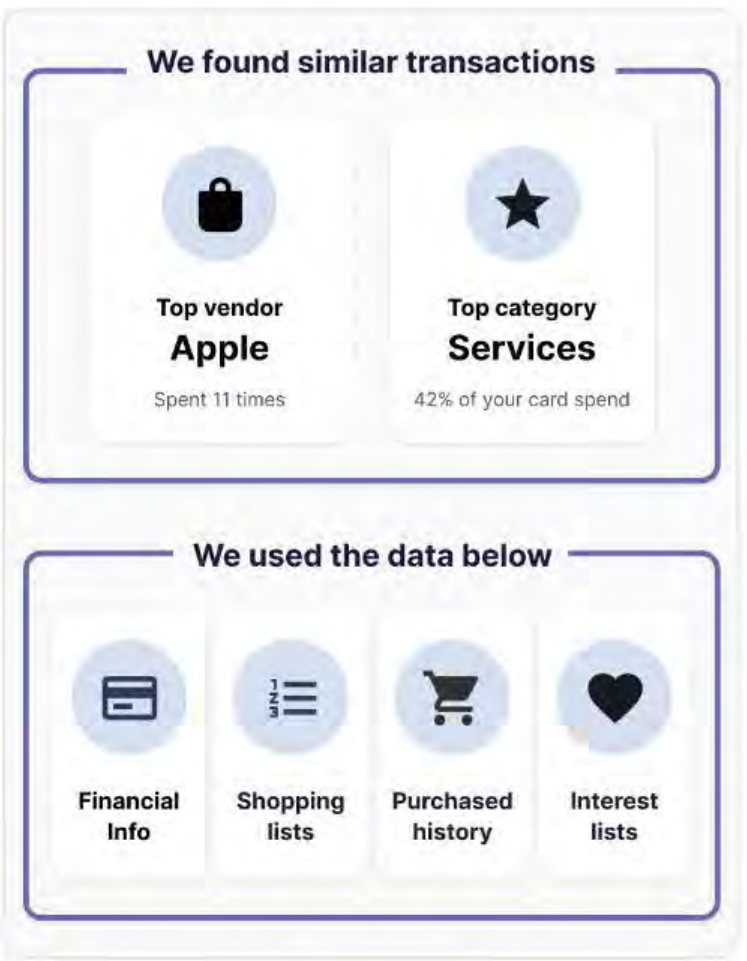
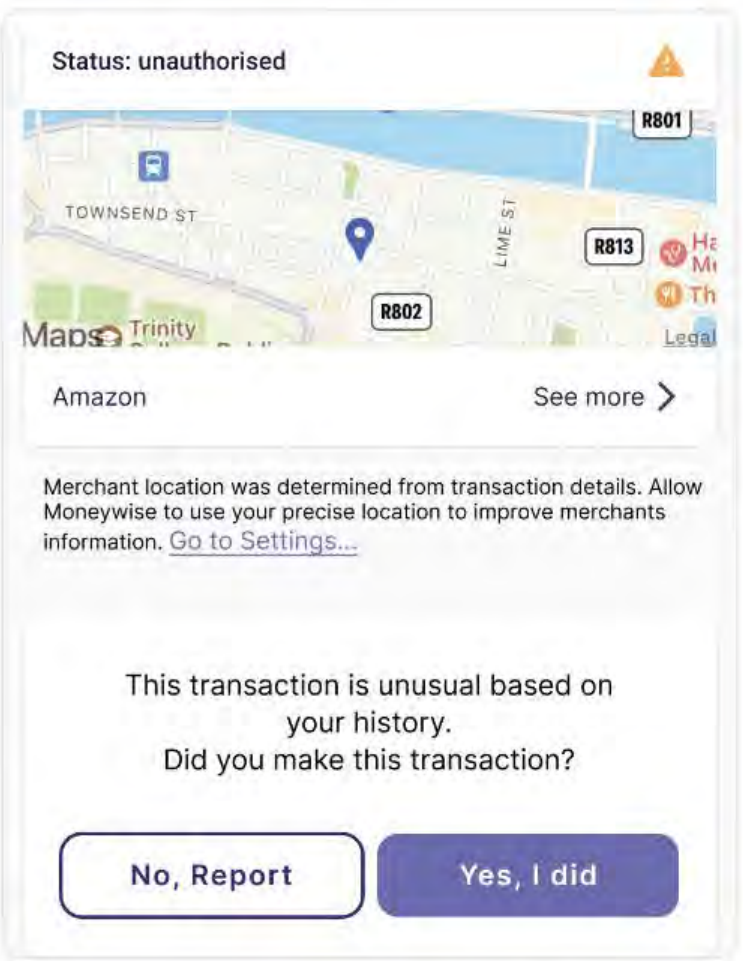
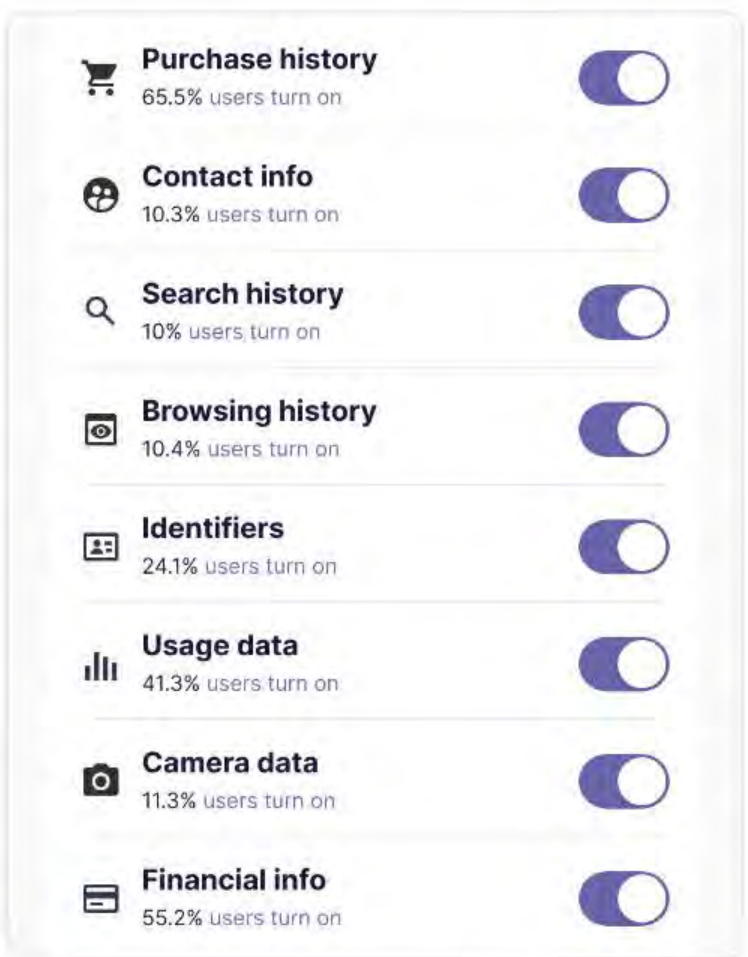
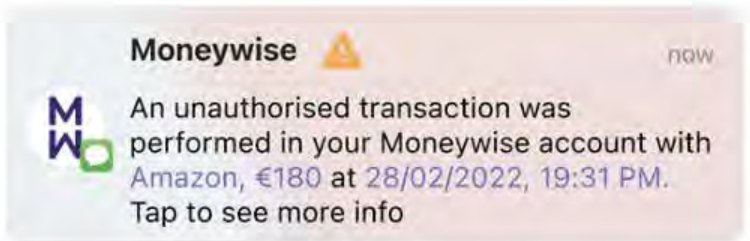
Exploring **how nudge theory** can be used to **influence sensitive privacy data disclosure behaviour** for the benefit of hyper-personalised products and services **in the Fintech industry.**

| Privacy Nudge

Empower user privacy-friendly self-disclosure behaviour
(Barev et al., 2021)

- 1. Information :** Education, Feedback
- 2. Presentation:** Framing, Ordering, Saliency, Structure
- 3. Defaults**
- 4. Incentives:** Increasing cost, Rewards/Punishment
- 5. Reversibility (error resiliency)**
- 6. Timing**

- Overview of nudging dimensions and the relevant hurdles from Acquisti et al. (2009 & 2017).



| Paradox of Privacy

Discripency between privacy concerns and actual privacy disclosure behaviour.
(Norberg et al., 2007, p.100)

'Dual process' model of cognition

System 1 ('thinking fast')
System 2 ('thinking slow')
(Kahneman, 2003)

Heuristics

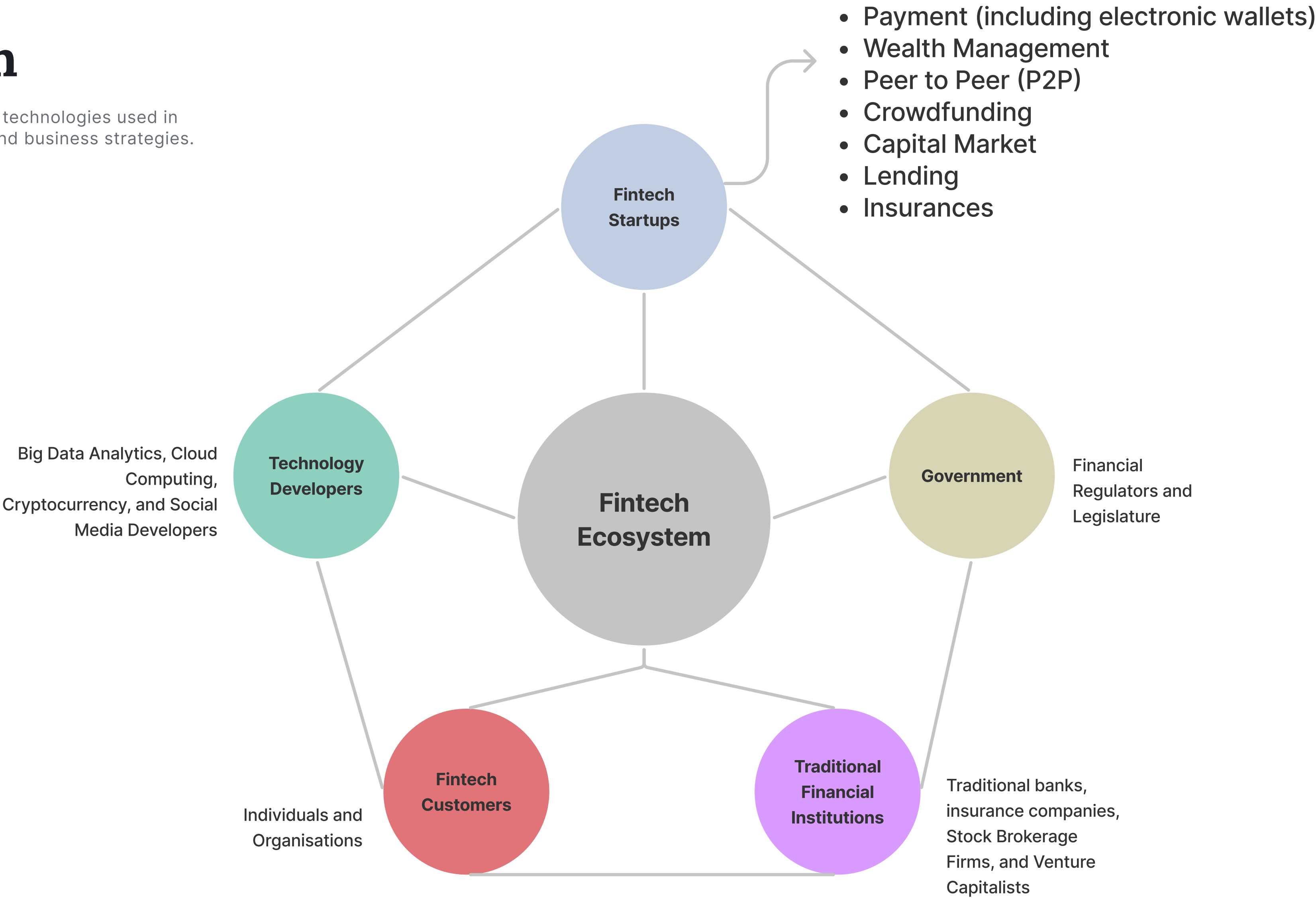
Shortcuts in decision-making
(Kahneman, 2003)

Asymmetry of Information

Often exists between users and data collectors
(Acquisti et al., 2017)

| Fintech

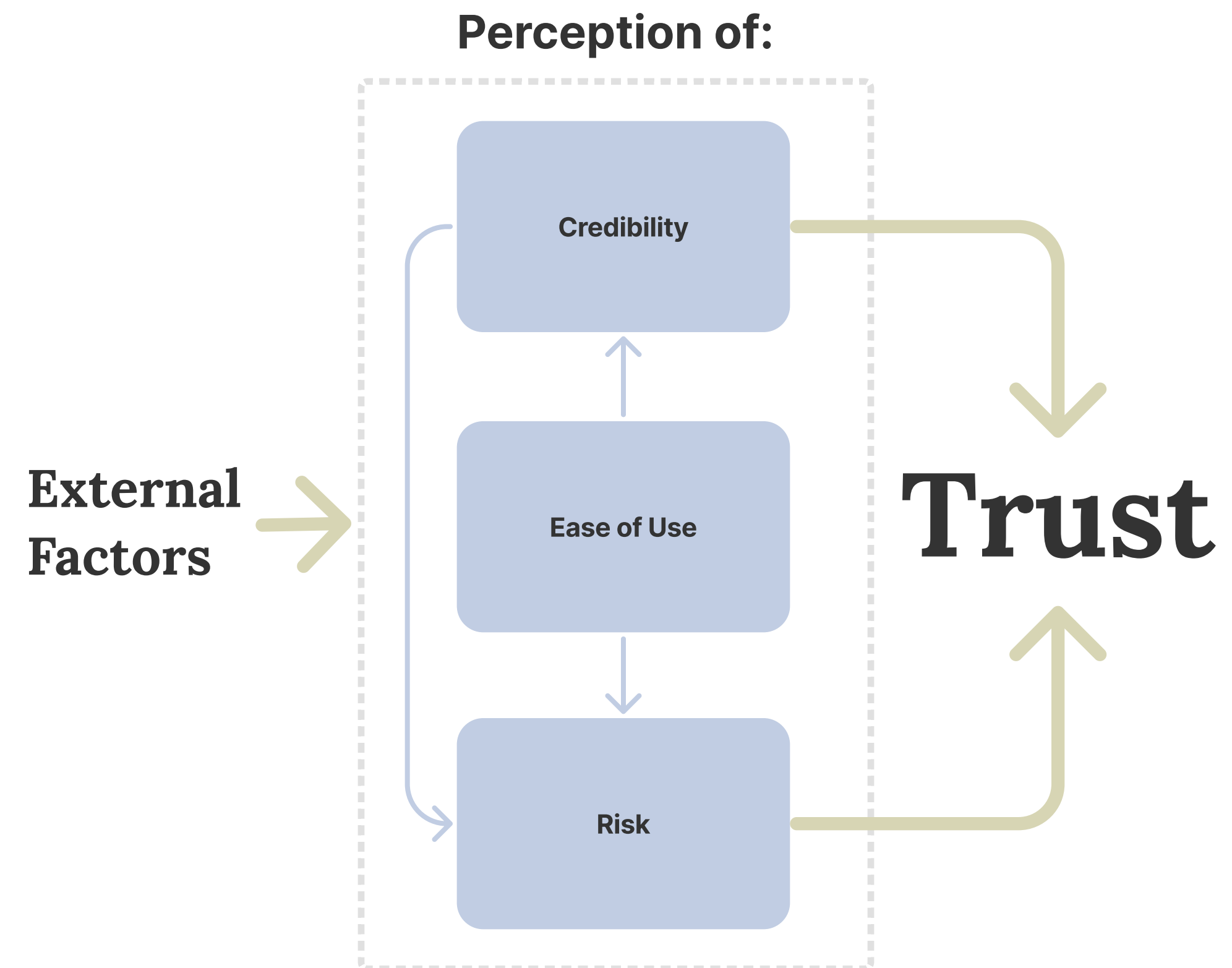
Creative innovative technologies used in financial services and business strategies.
(Lee & Shin, 2018)



The five elements of the fintech ecosystem (Lee & Shin, 2018)

| Summary & Research gap

- **Trust** is a principal factor and **the critical motivational cue** for users considering disclosing personal data (Kobsa et al., 2006)
- **Will the privacy nudge influence** the privacy disclosure behaviour and trust established **in the Fintech sector** as in other research?
- Whether **individuals perceive privacy** disclosure appreciatively **after being nudged to trust** a product/service?



Model of online trust effects by a perceptual experience of external factors From Corritore et al. (2003)

| Research questions (qualitative)

07

RQ1. How are **users' attitudes affected** by **the presence or absence of privacy nudges** in the Fintech product/service?

RQ2. How do **interviews with users help to explain any quantitative differences** in trust, subjective usability and privacy disclosure behaviour when using the Fintech prototypes with/without privacy nudges?

| Hypotheses (quantitative)

There will be no significant difference (_) between the two prototypes, one with nudge aspects and one without.

H1.

The privacy disclosure behaviour

H1.1

'Accept all'

H1.2

'Reject all'

The binary choice task completion of “Acept all” and “Reject all”

H2.

Level of trust

Questionnaire: The level of perception of credibility and ease of use (Corritore et al., 2003)

H3.

The subjective usability

Questionnaire: Usefulness, Satisfaction, Ease of use (USE) (Lund, 2001 and Gao et al.,2018)

| Mixed Methods

09

The complexity of the problems that must be addressed and the practical **requirement to collect various types of qualitative data** from diverse audiences, **combined** quantitative and qualitative **methodologies yielded a better understanding of research challenges** than either strategy alone.

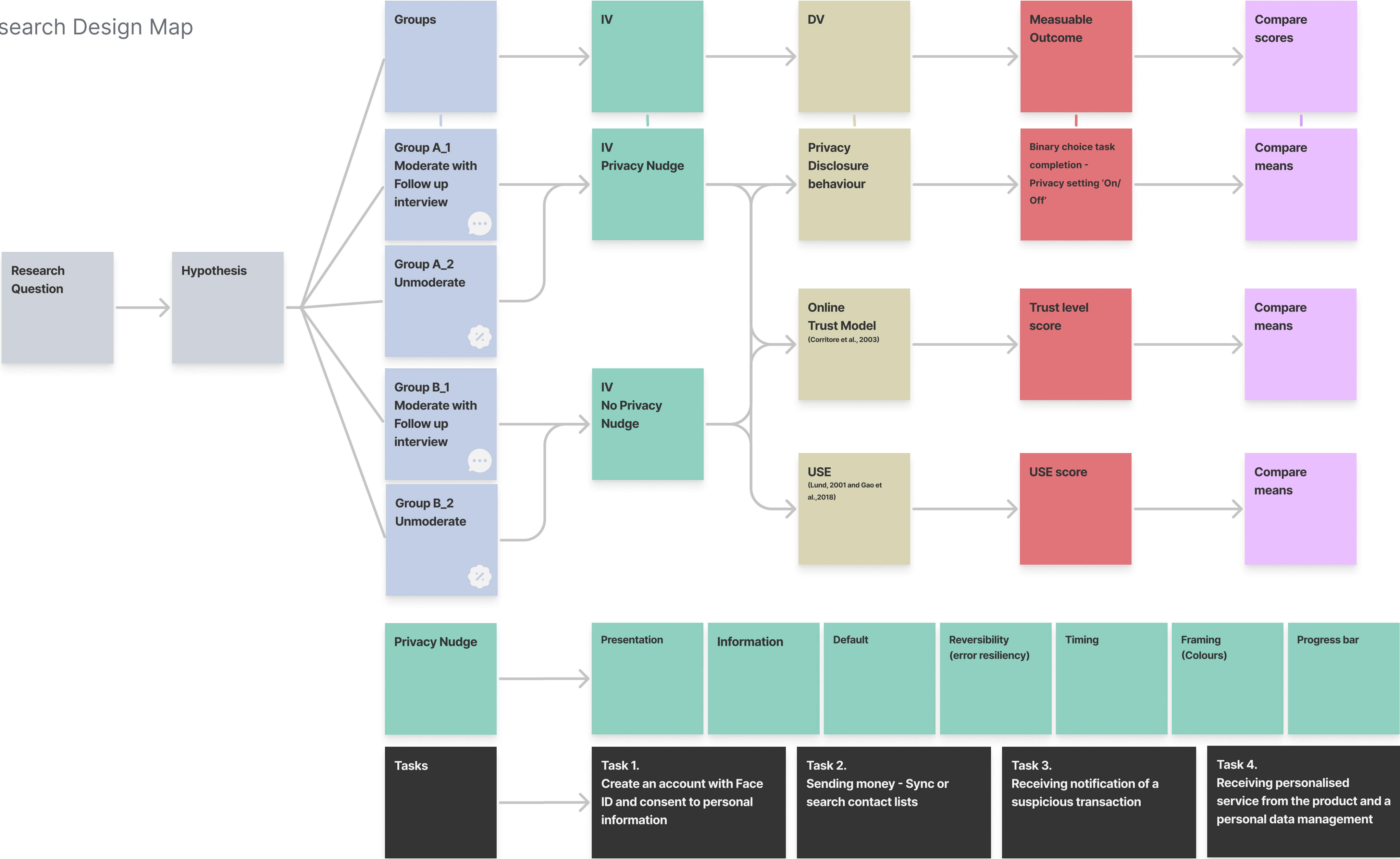
-  Quantitative **Questionnaire**
-  Qualitative **User Interview**

(Creswell, 2018)

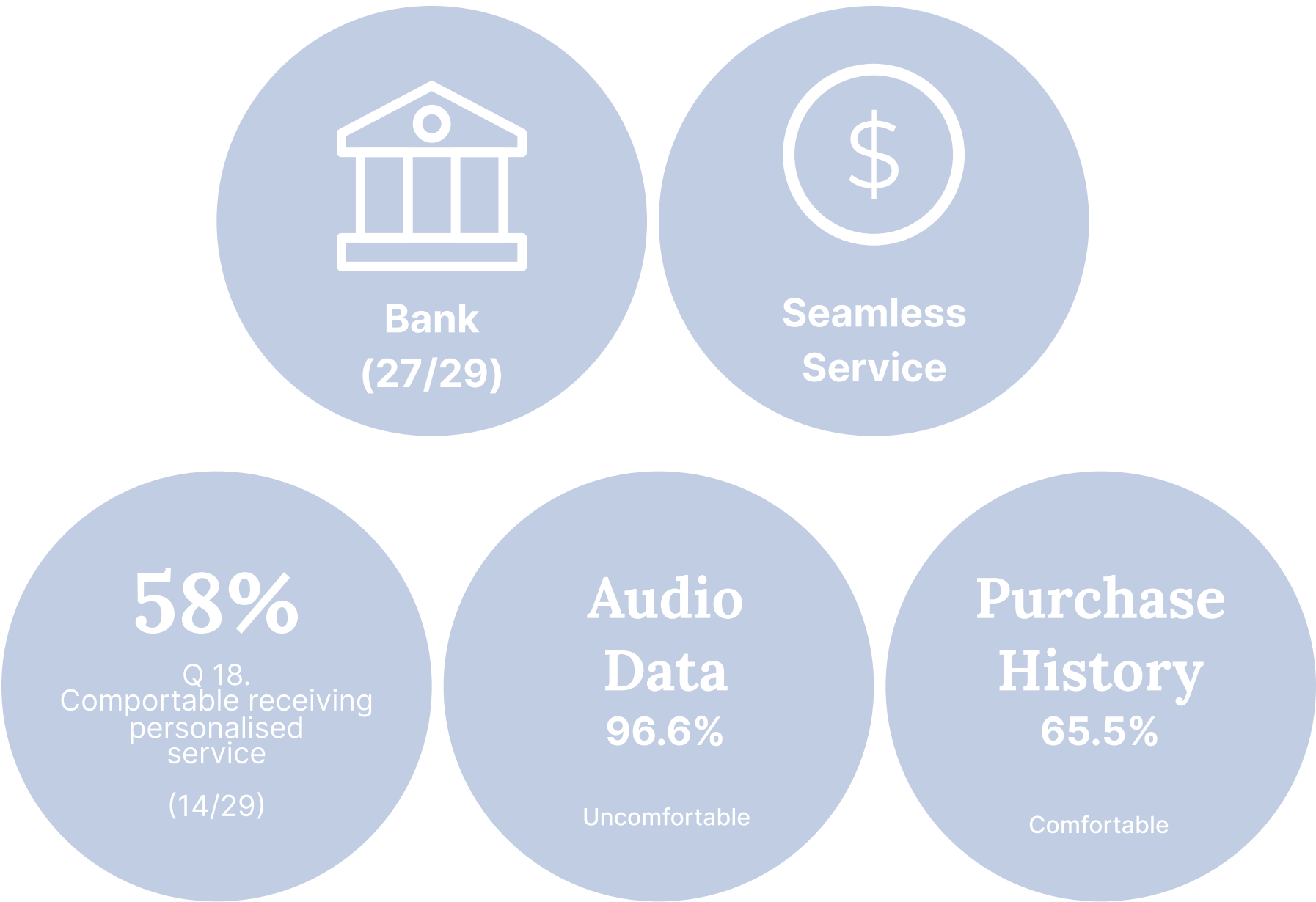
Double Diamond Design process



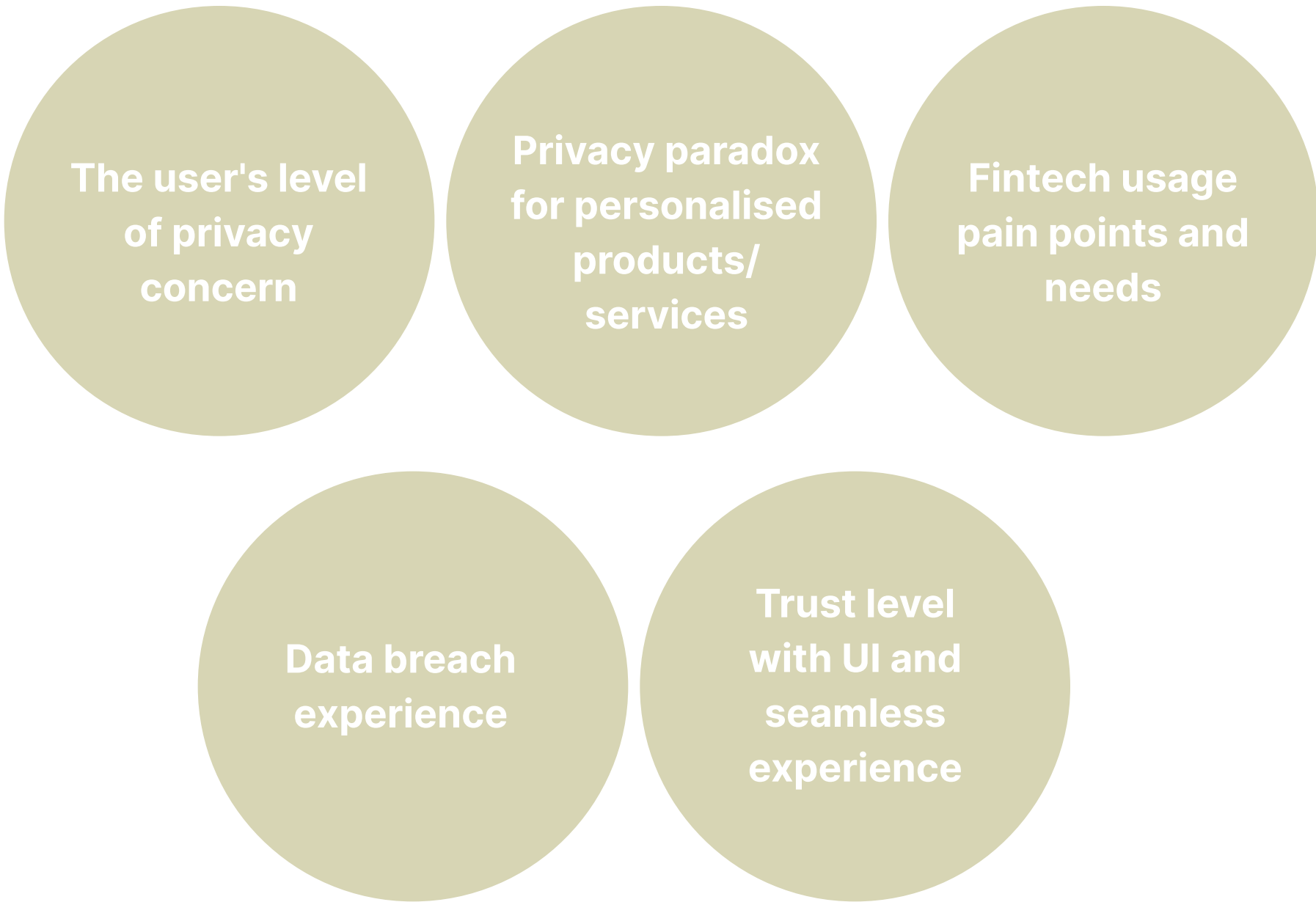
Research Design Map



| Research findings

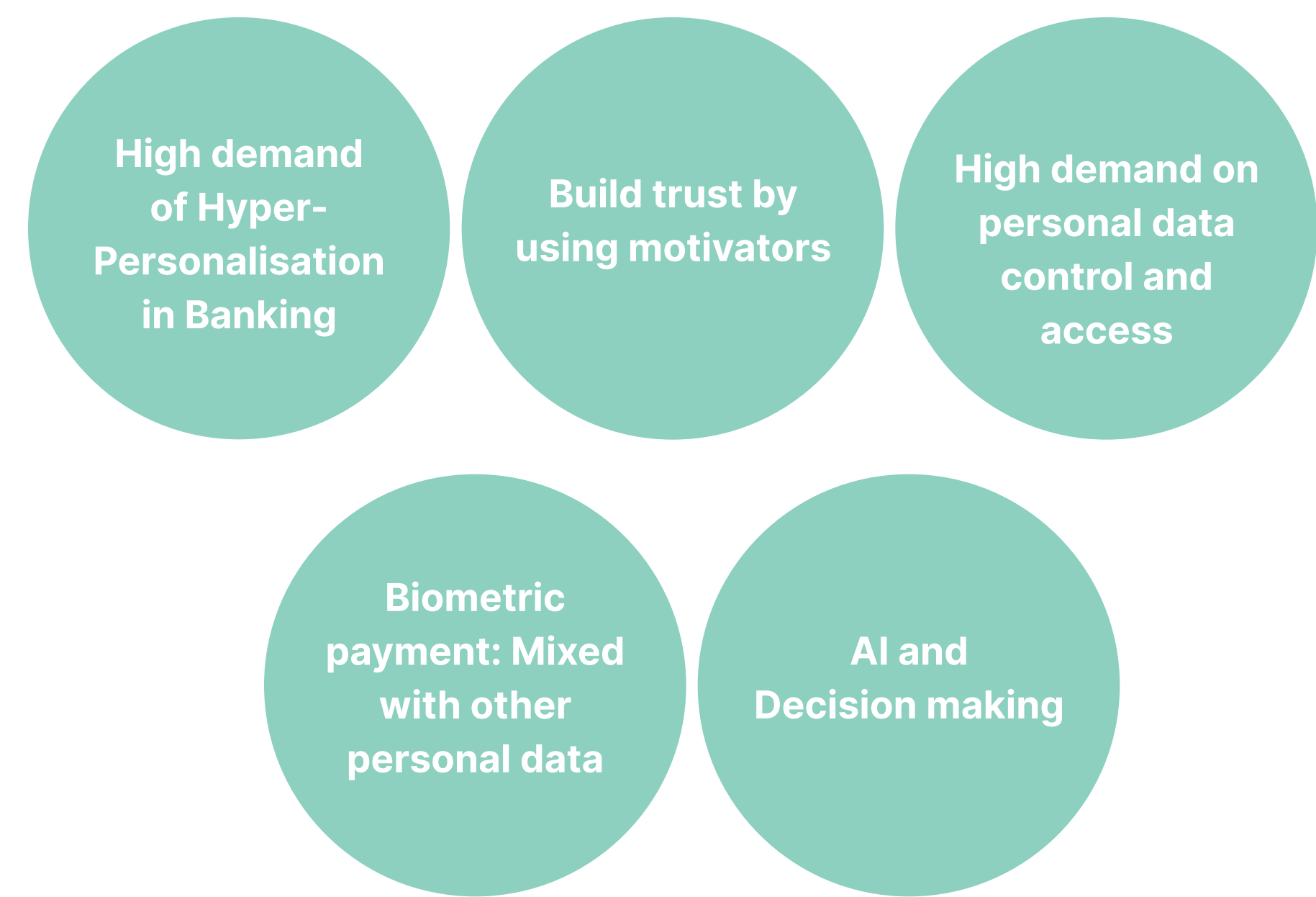


Survey
(N=29)



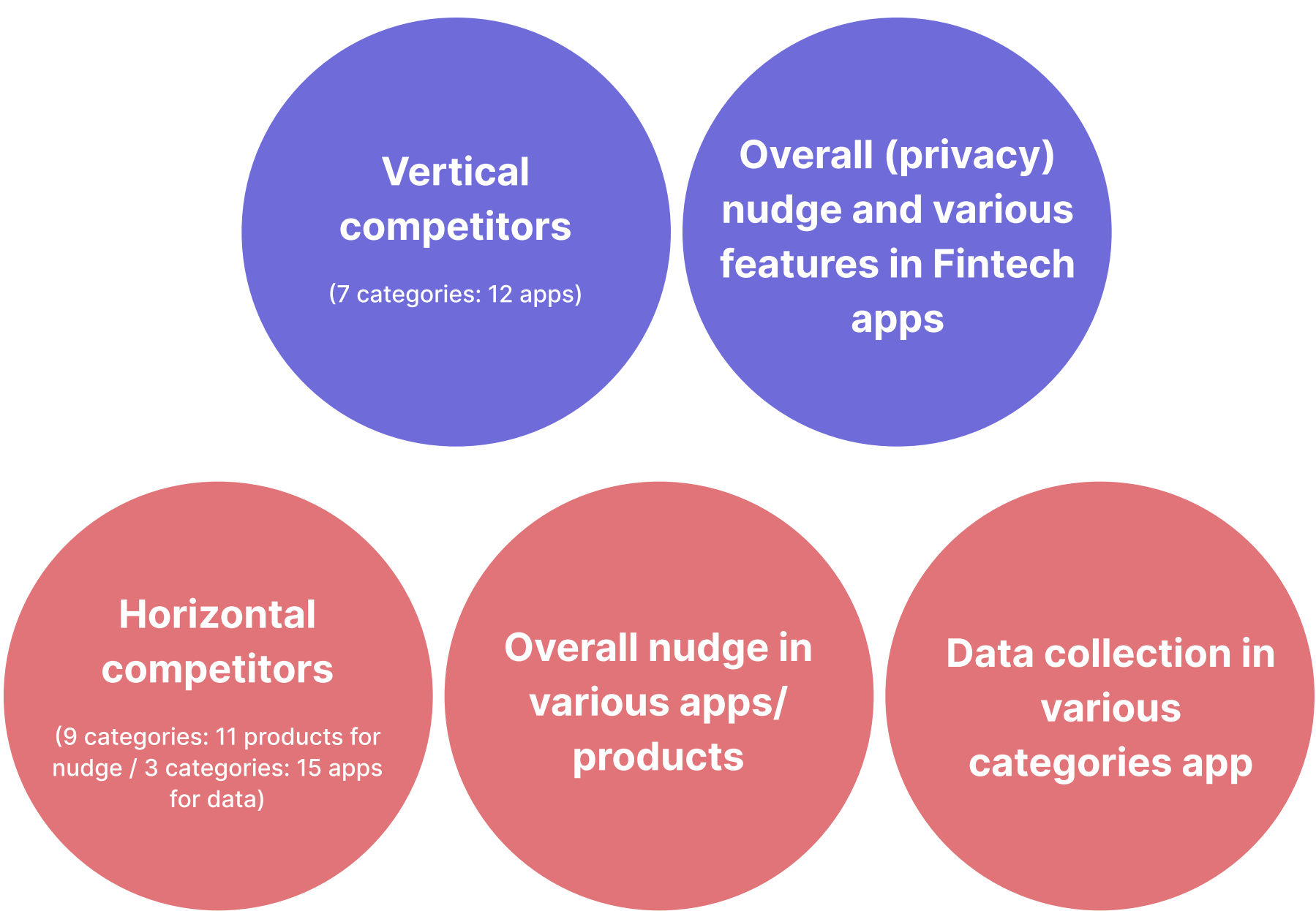
Interview & observation
(N=5)

| Research findings

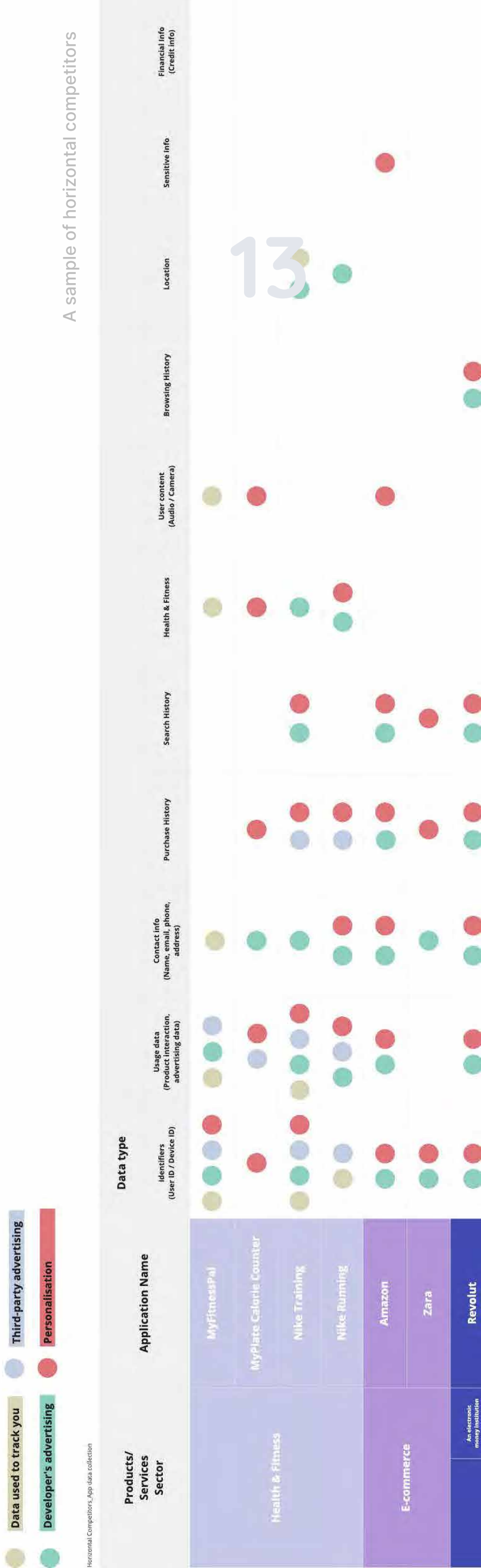


Desktop research

(Deloitte, 2020; The Clearing House, 2018; Anthony, 2021)



Competitor Analysis



| Persona & JTBD

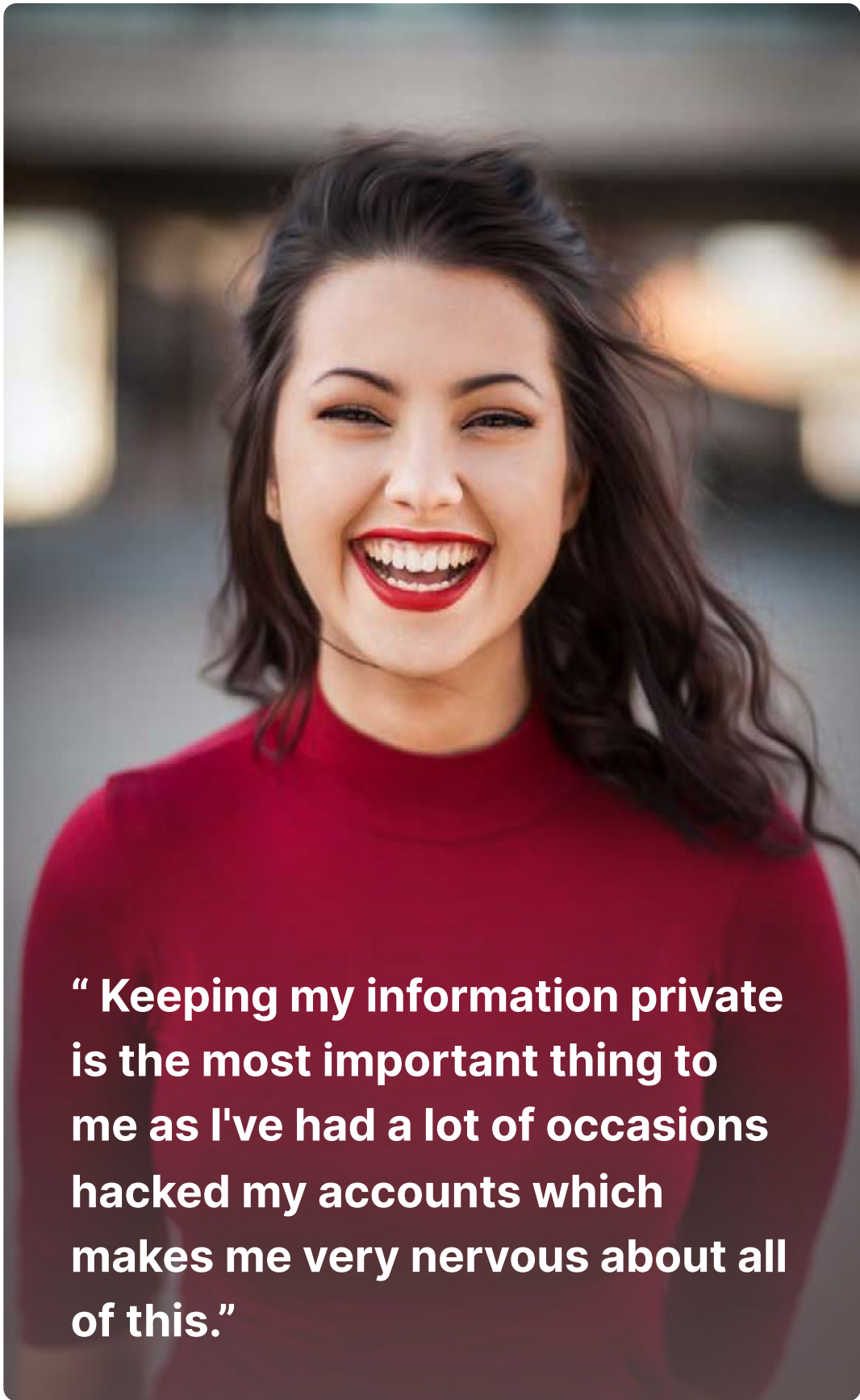
Jane
Walsh



Occupation
Master Student



Age
25



JTBD

When: I use the Fintech app
I want to: create a strong credential for the log-in process
So I can: protect them from hacking

“ Keeping my information private is the most important thing to me as I've had a lot of occasions hacked my accounts which makes me very nervous about all of this.”

Daniel
Santos



Occupation
Software developer



Age
32



JTBD

When: I use the Fintech app
I want to: control all my privacy data
So I can: check how it can be used and protect them from third-party

“ Personalisation is good, according to me. FinTech companies, however, like using my data to target ads at me in any way. I would be really, really uncomfortable with that.”

| Scenario



Jane and Daniel hung out one day, and Jane paid the bill. Daniel needed to pay her back and asked if there was any way he could do it quickly. Jane recommended one of the apps she uses for money transactions with other friends.

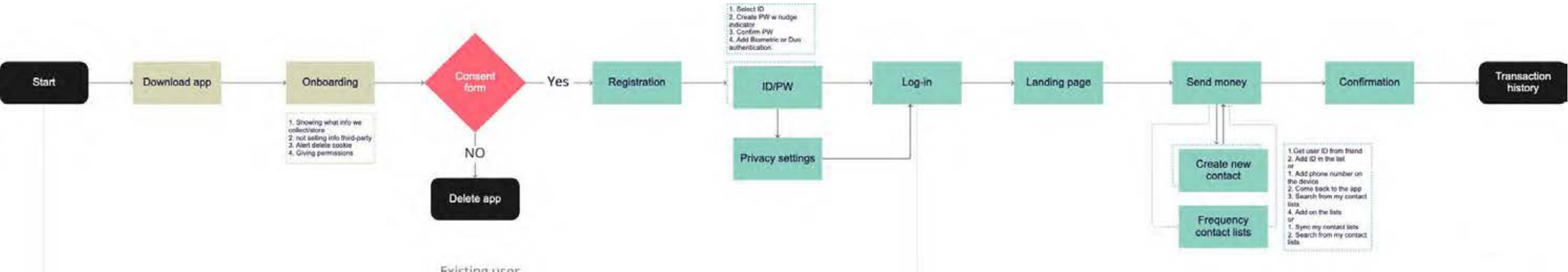


Daniel had a look at the app store and decided to download it. He created an account and sent the money to Jane.

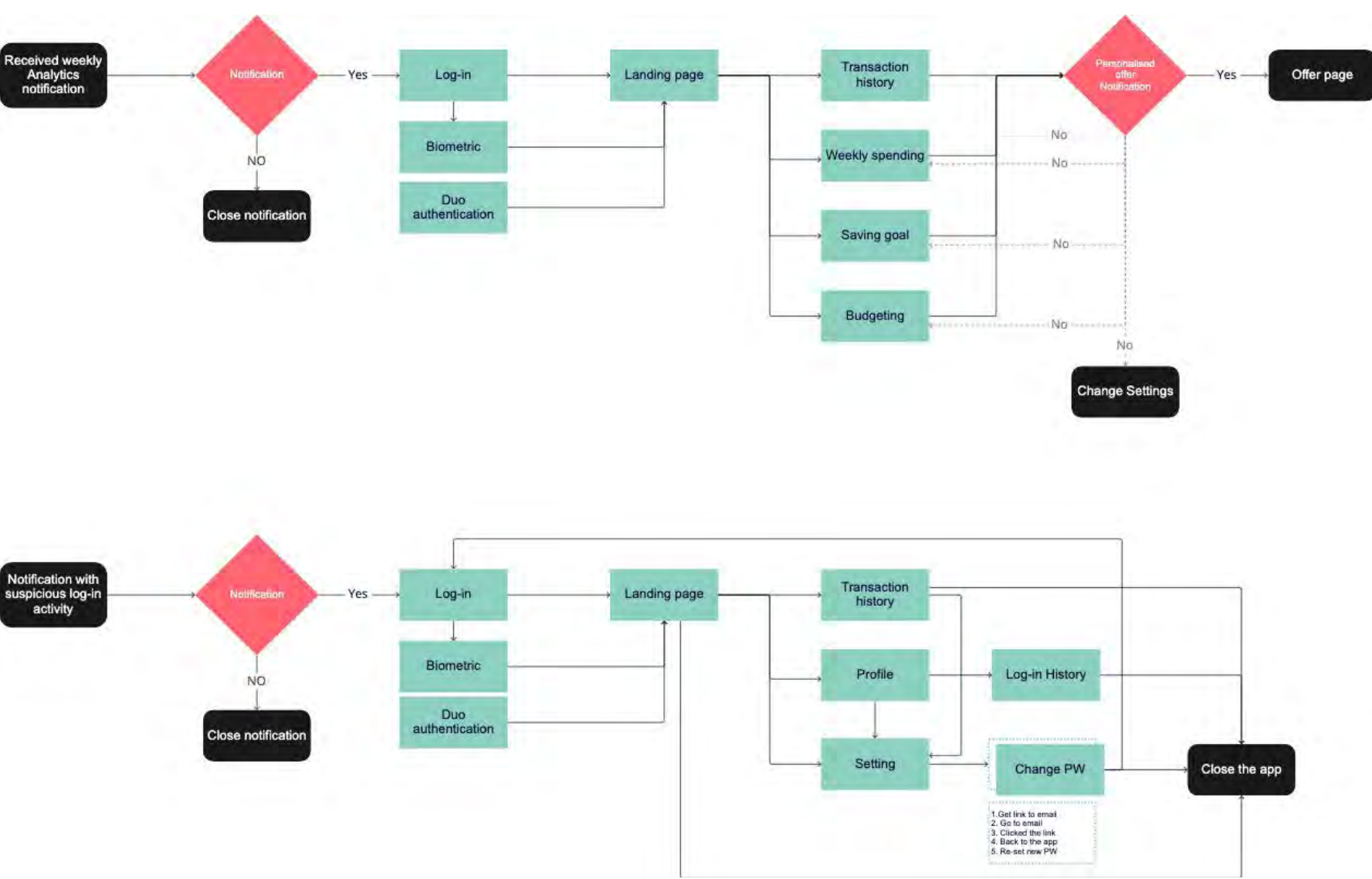
After a few days, you get a notification about a suspicious transaction from 'Moneywise' and check the transaction history.

Task flows

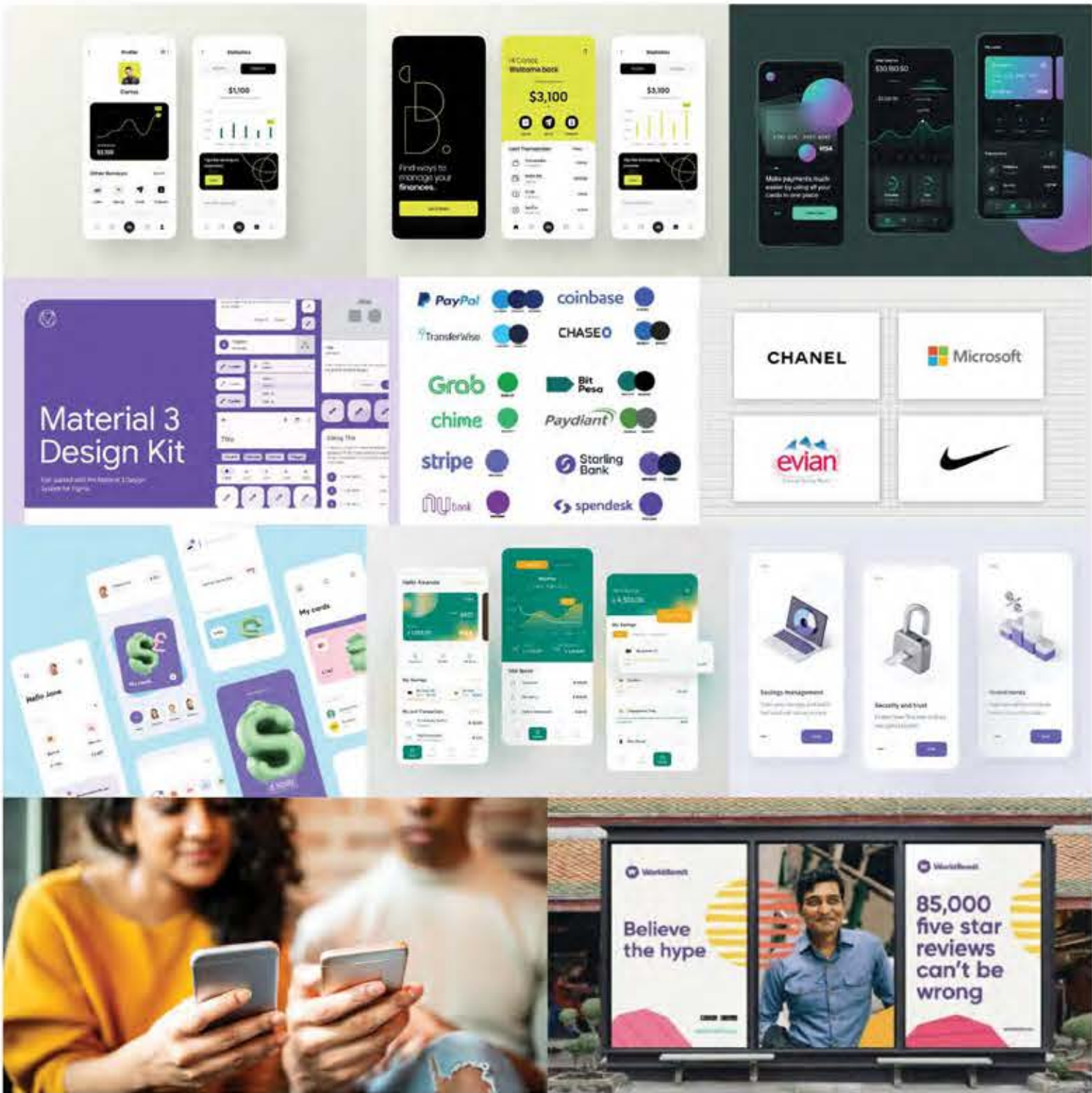
First time and existing user - sending money to friend



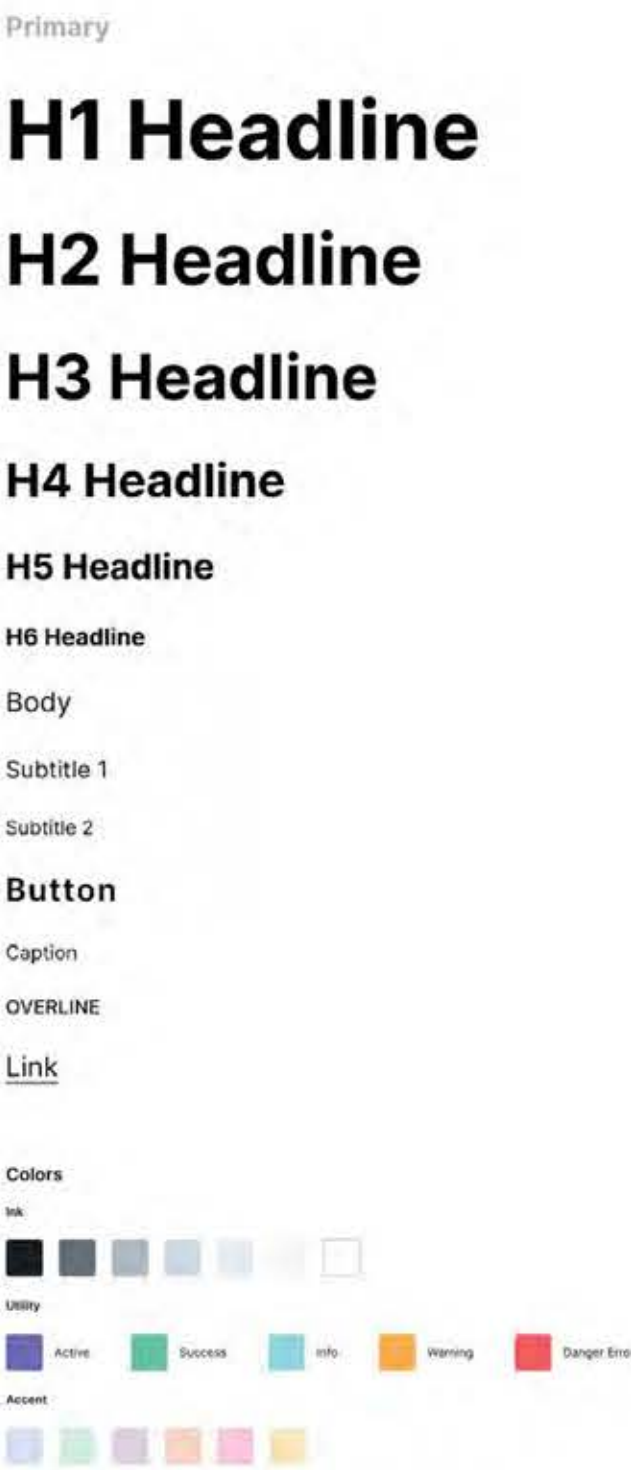
Existing user - Personalised offer & suspicious log-in activity Notifications



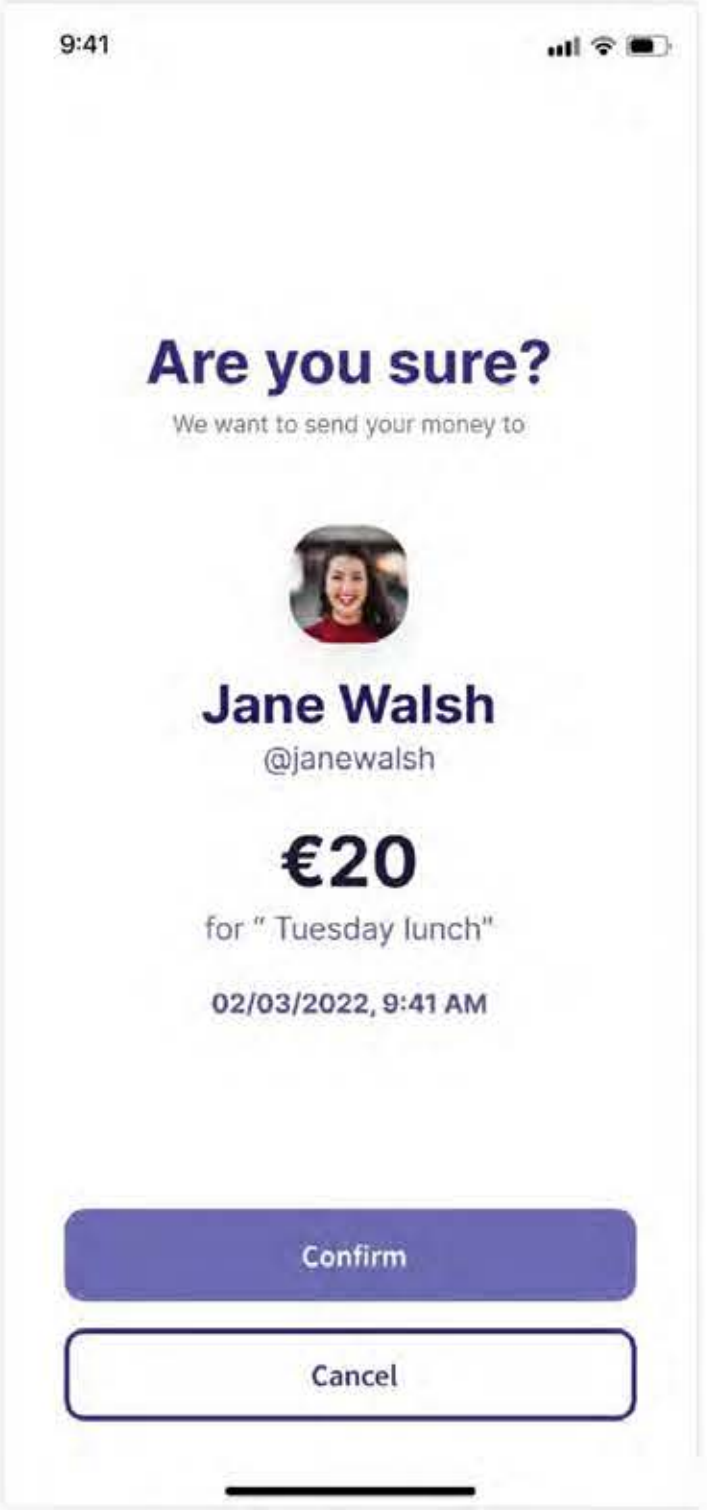
| Design



Moodboard



Design system



Tone of voice



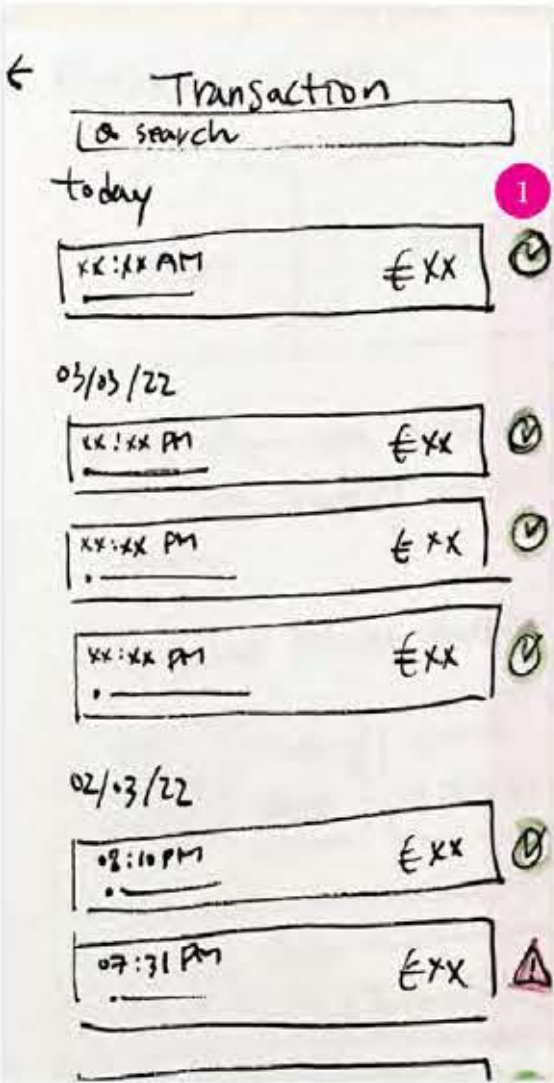
Logo

Low-fid Prototype

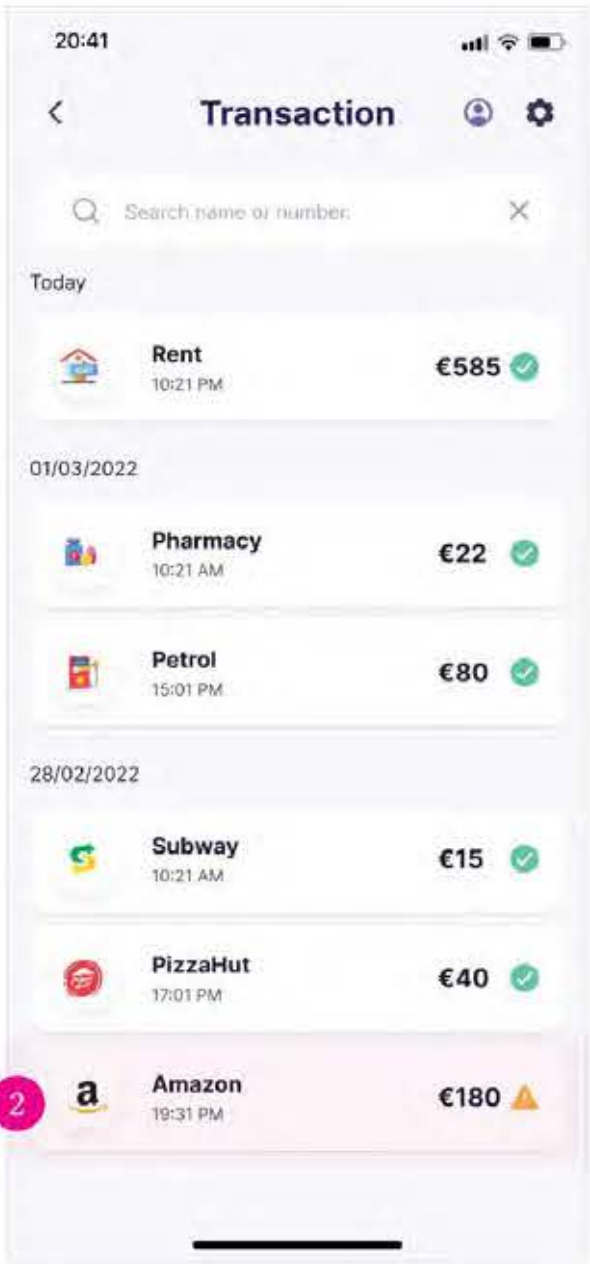
Guerilla testing (N = 3)

- Suspicious transaction card
- Progress bar
- Wording - Edit and Insight
- Social nudge

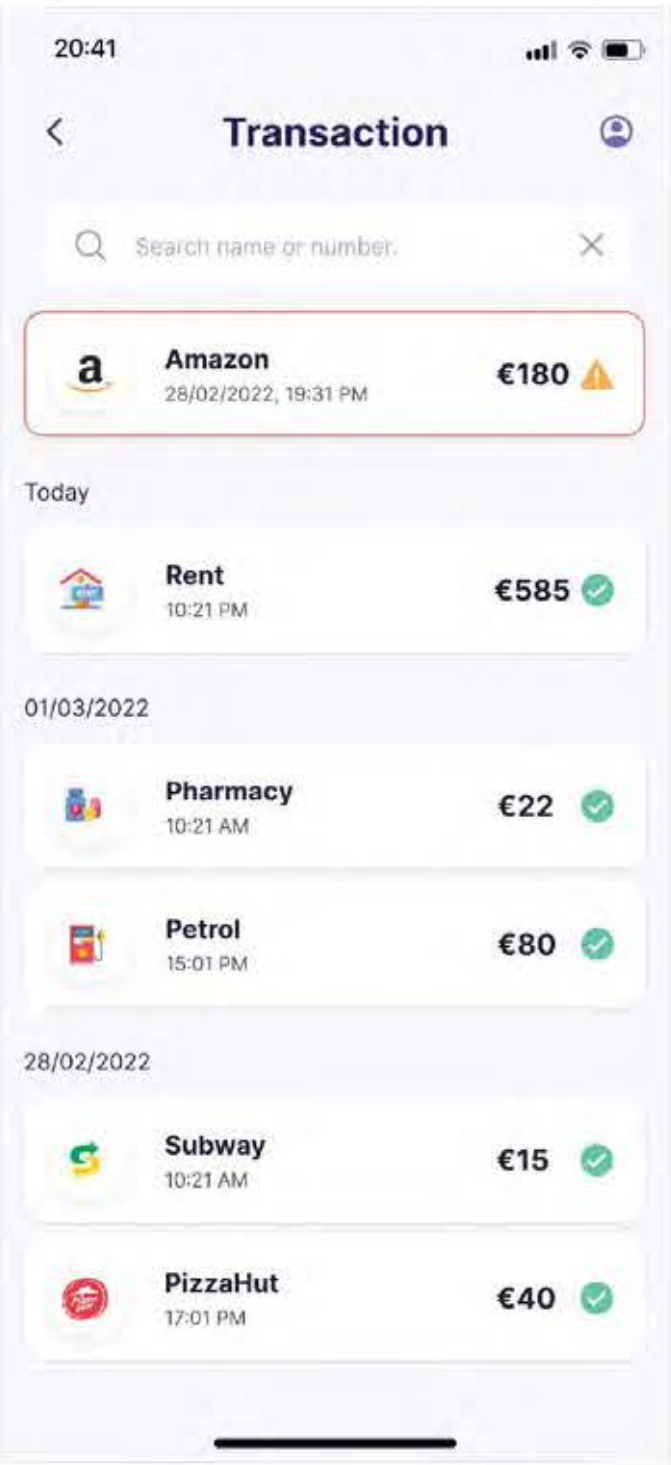
Low to high fidelity prototype iteration



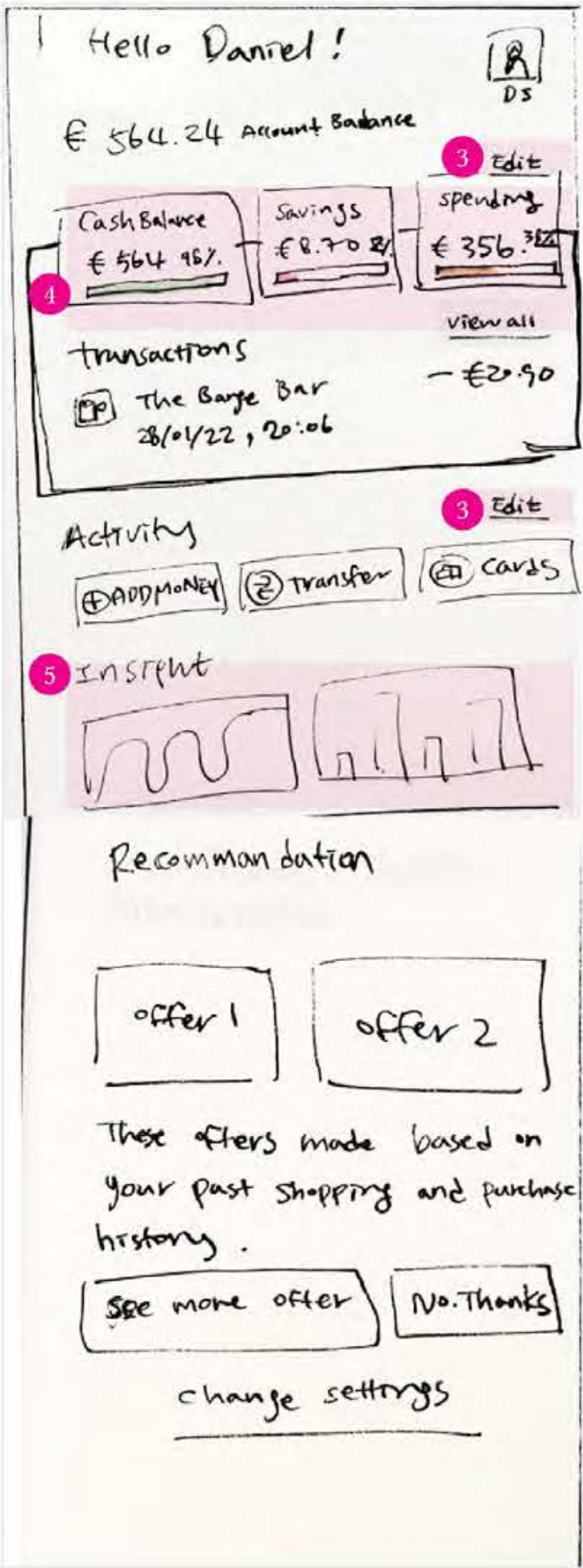
1. "Colour-code is good to know what is right and wrong. I want to unmark if it is not suspicious."



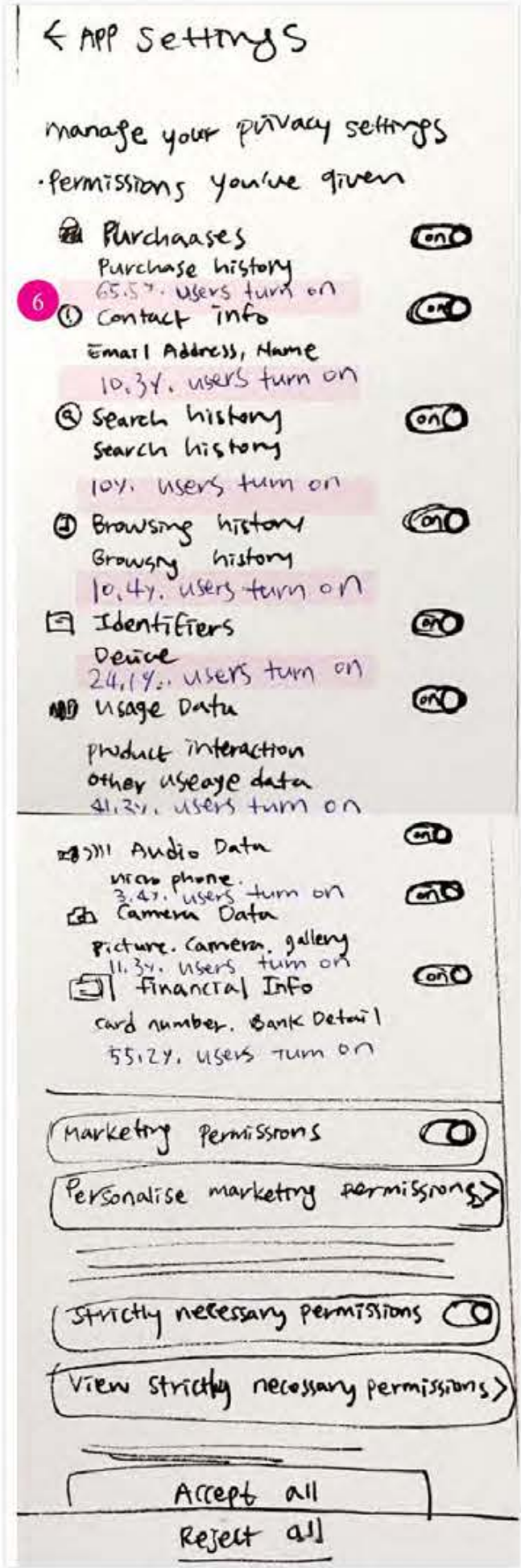
2. "Urgency of this I will move it to the top with red box around it"



Updated transaction history page design for the final experiment



3. "I am not sure what I can edit."
4. "Like colour bar to show my goals."
5. "I do not understand what 'Insight' means."

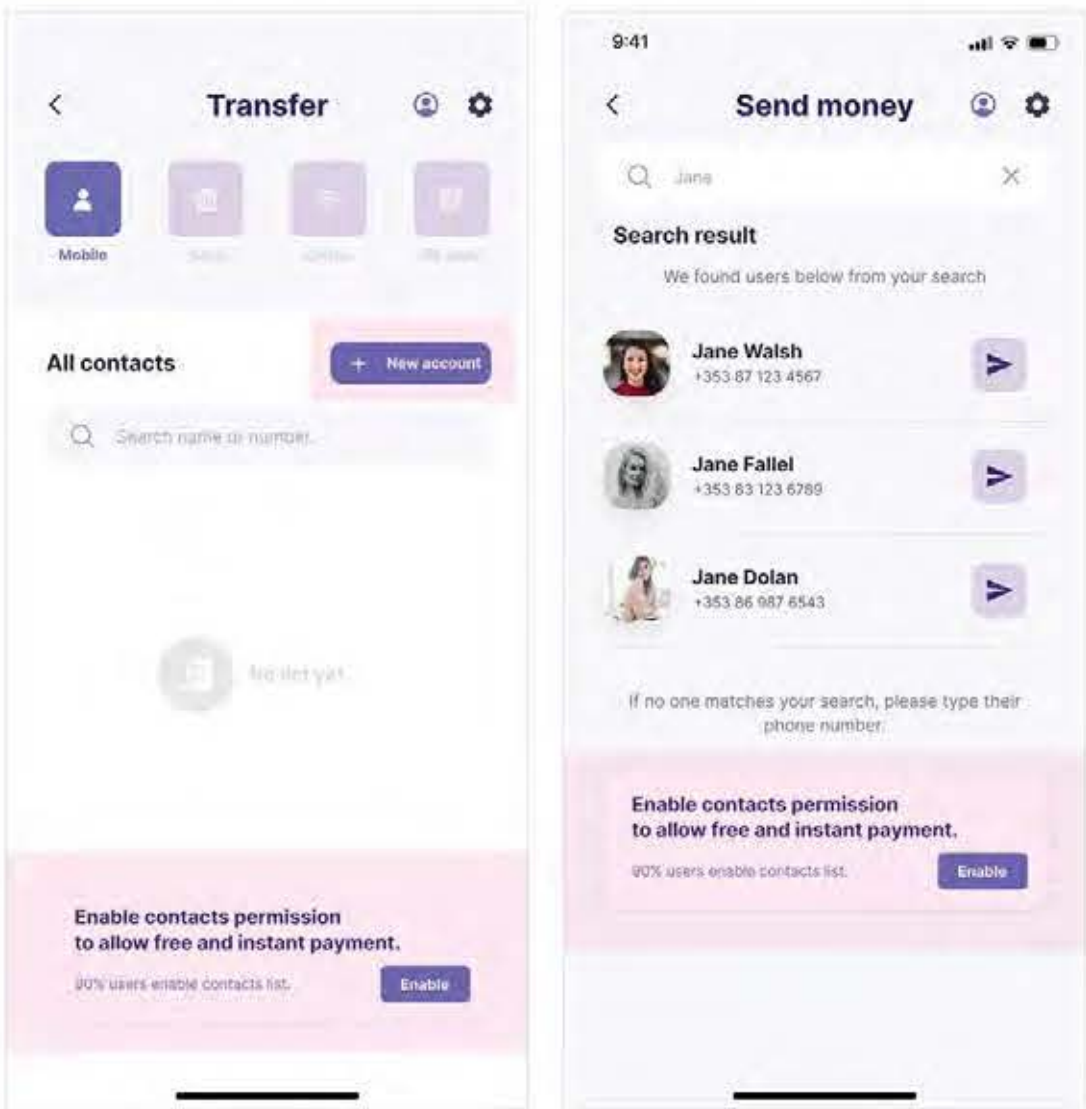


6. "This is showing me they are using someone's data and showing me. It is showing me opposite than trust." "Do not care about social nudge."

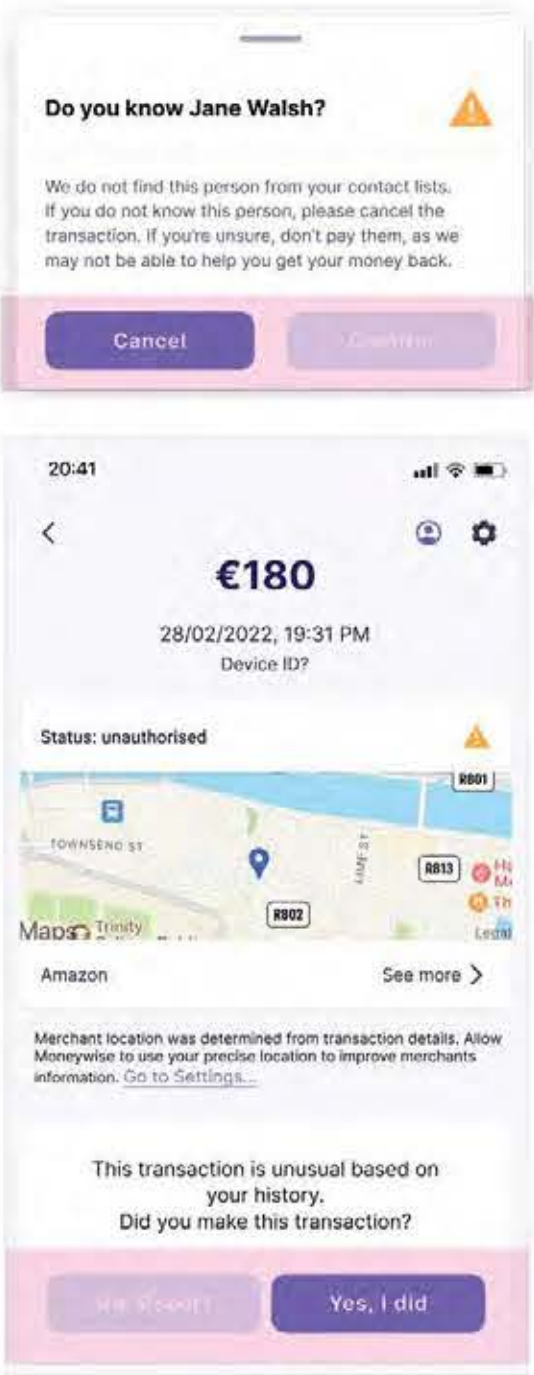
Mid-fid Prototype

Pilot testing (N = 13)

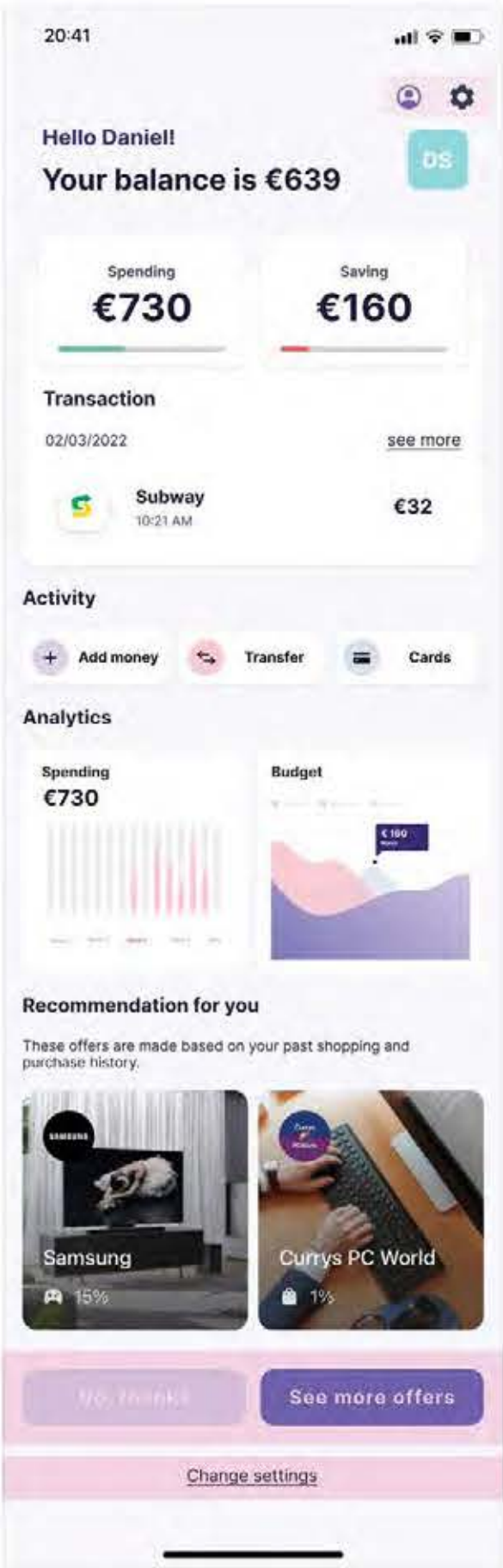
- Buttons
- Change settings
- Data display
- Permission page
- Search or sync contact lists



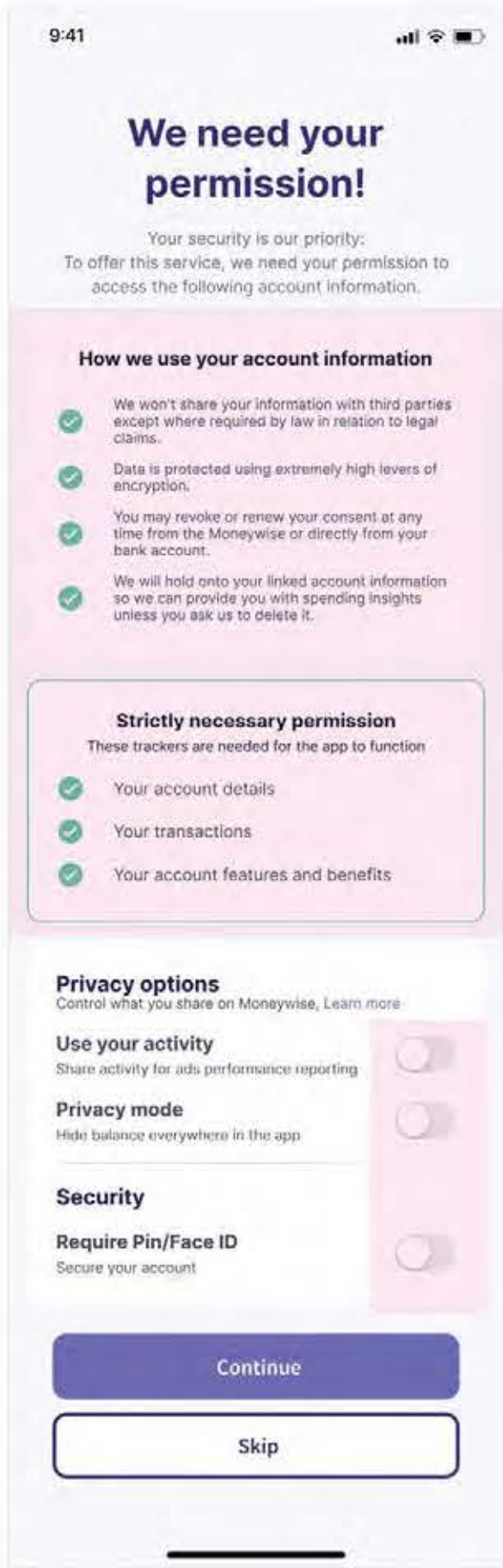
“Enable box: it looks like a cookie box, therefore I disregarded it.”



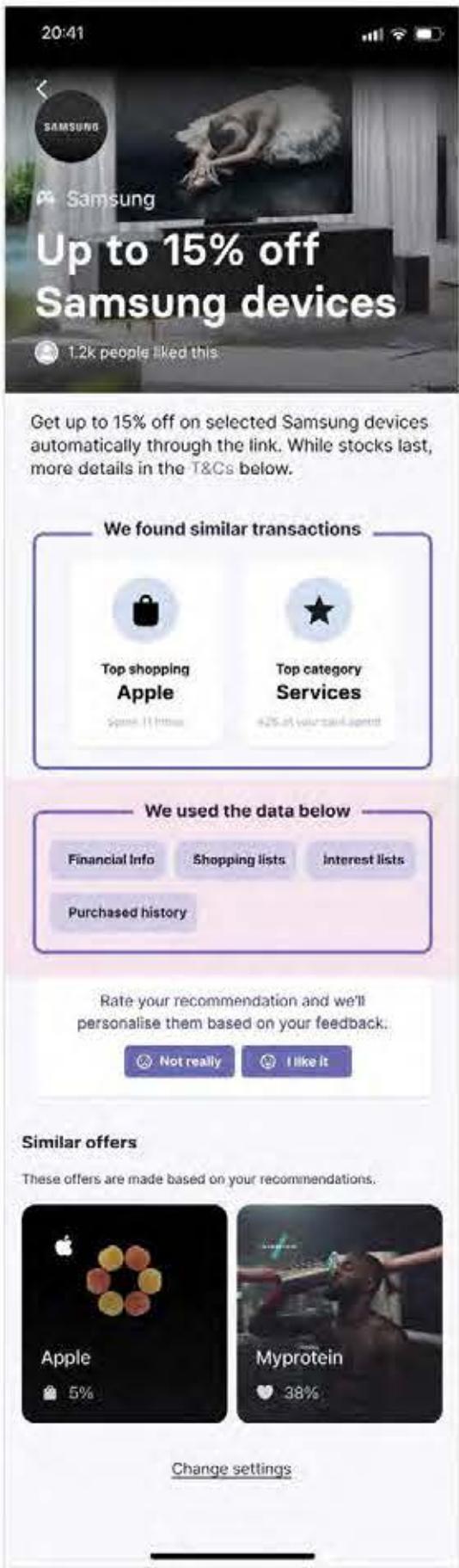
“I am not sure if I am confirming that I know Jane or transferring money.”



“The button looks disabled and confused.”



“Face ID security, it should match with the permission page”.
“There is quite a lot of information on the last page, and it’s too long to read. I’d skip it.”

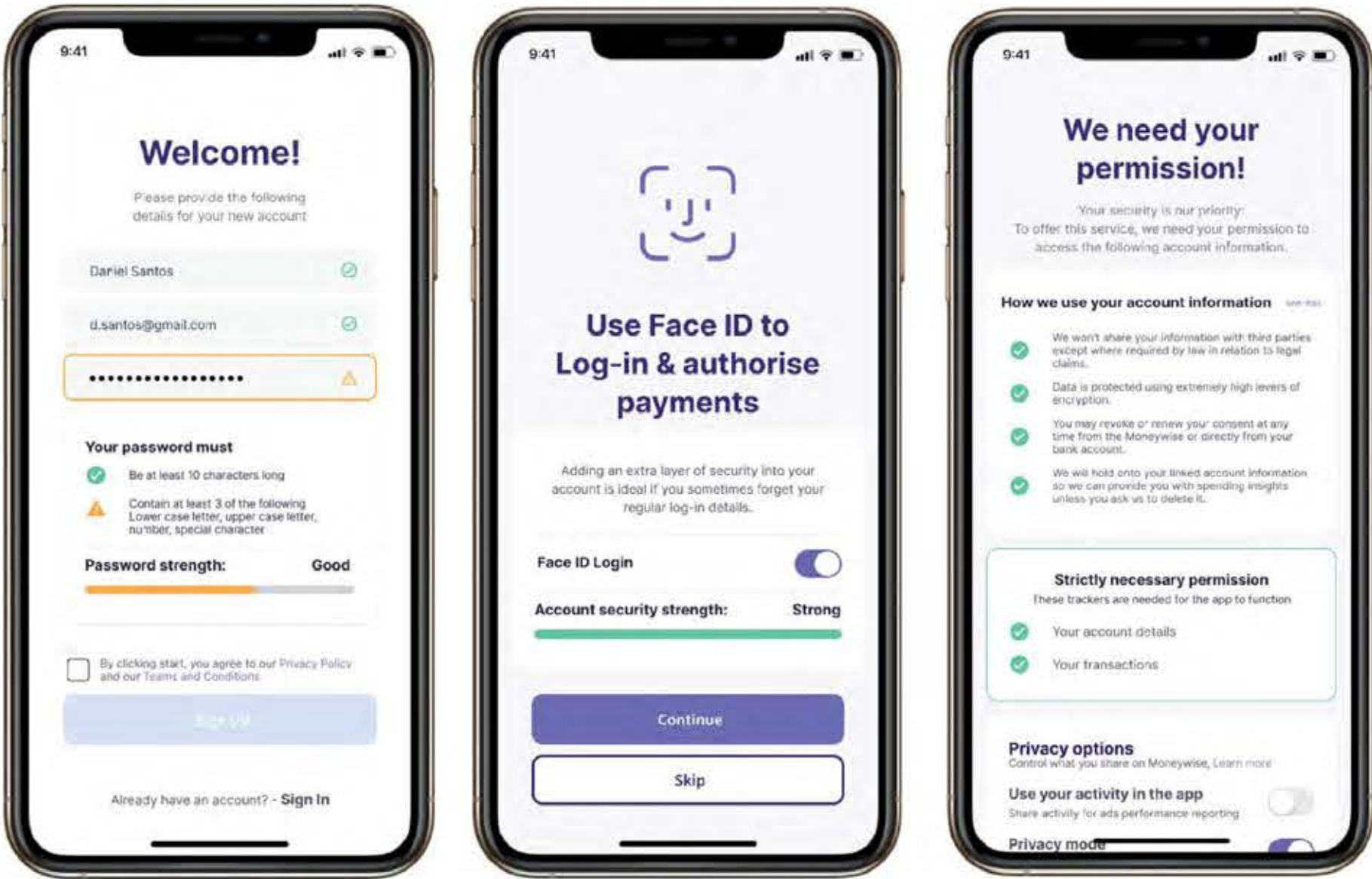


“I liked the transparency of the data usage, however want more visual design like above box”.

High-fid Prototype

TASK 1. CREATING AN ACCOUNT

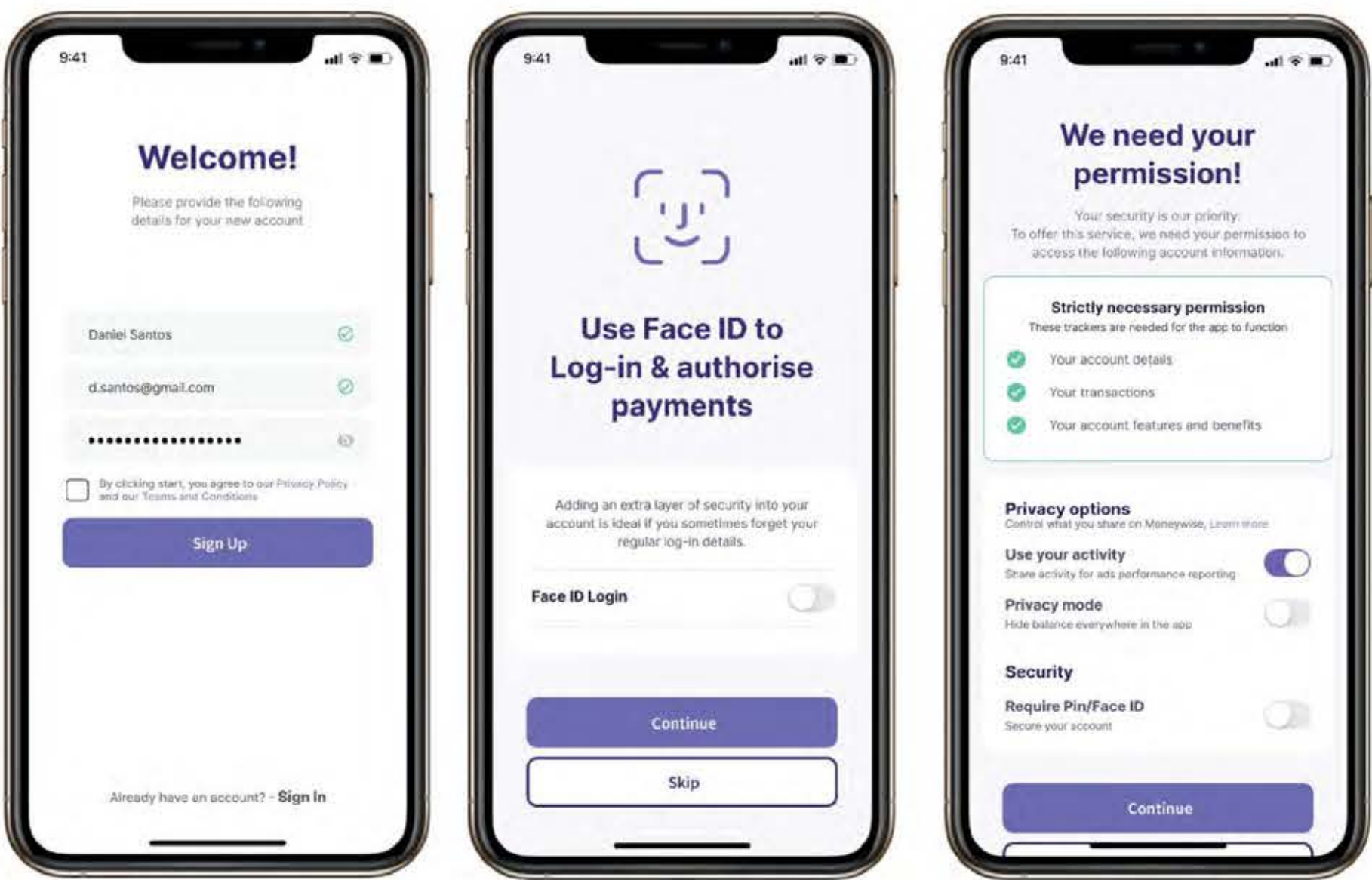
App information and assign permissions



Version A

Privacy nudge

Information, Presentation, Framing with colours, Progress bar, Reversibility (Error resiliency), Default



Version B

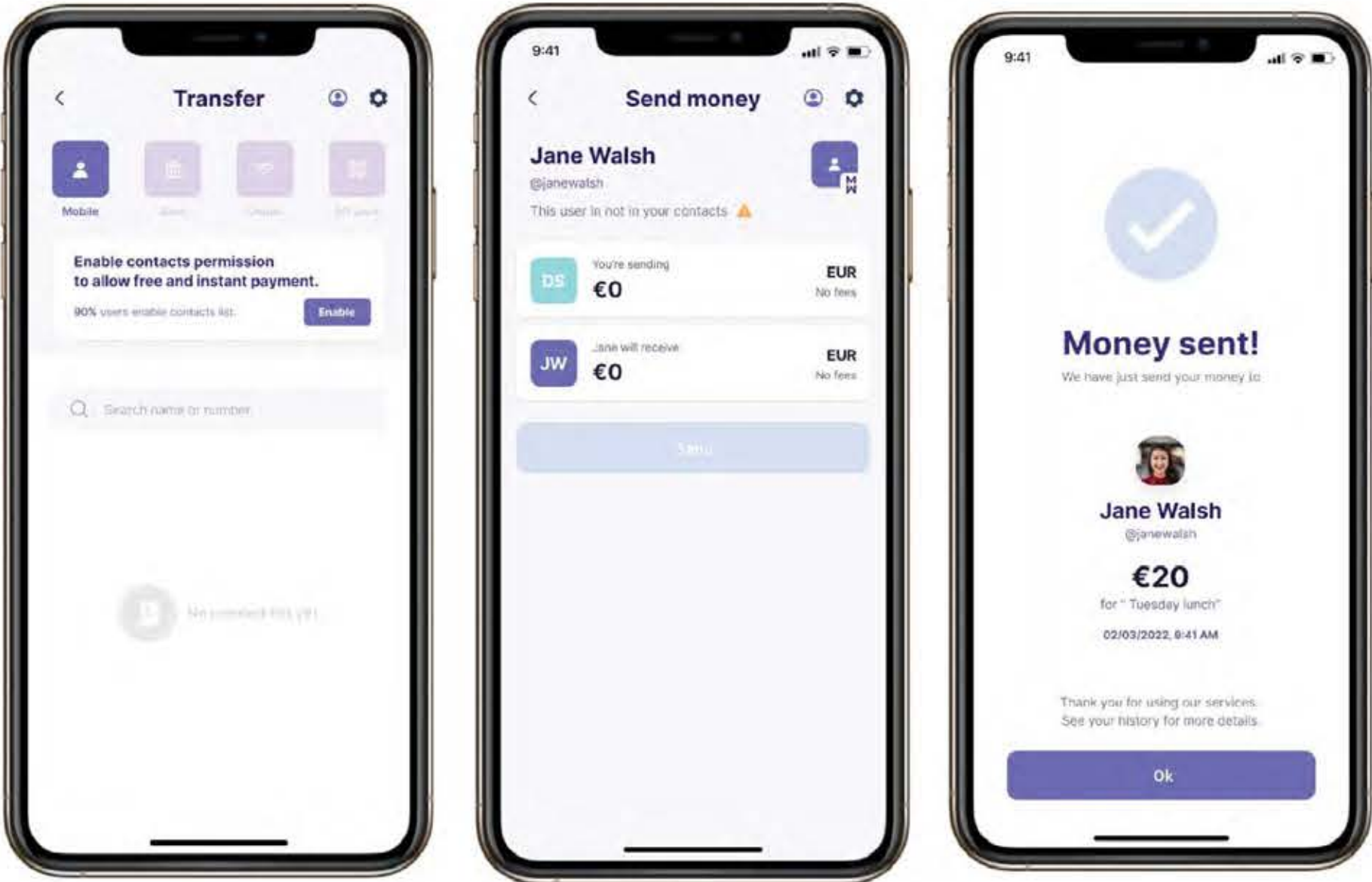
Privacy nudge

Information, Reversibility (Error resiliency), Default

| High-fid Prototype

TASK 2. SENDING MONEY

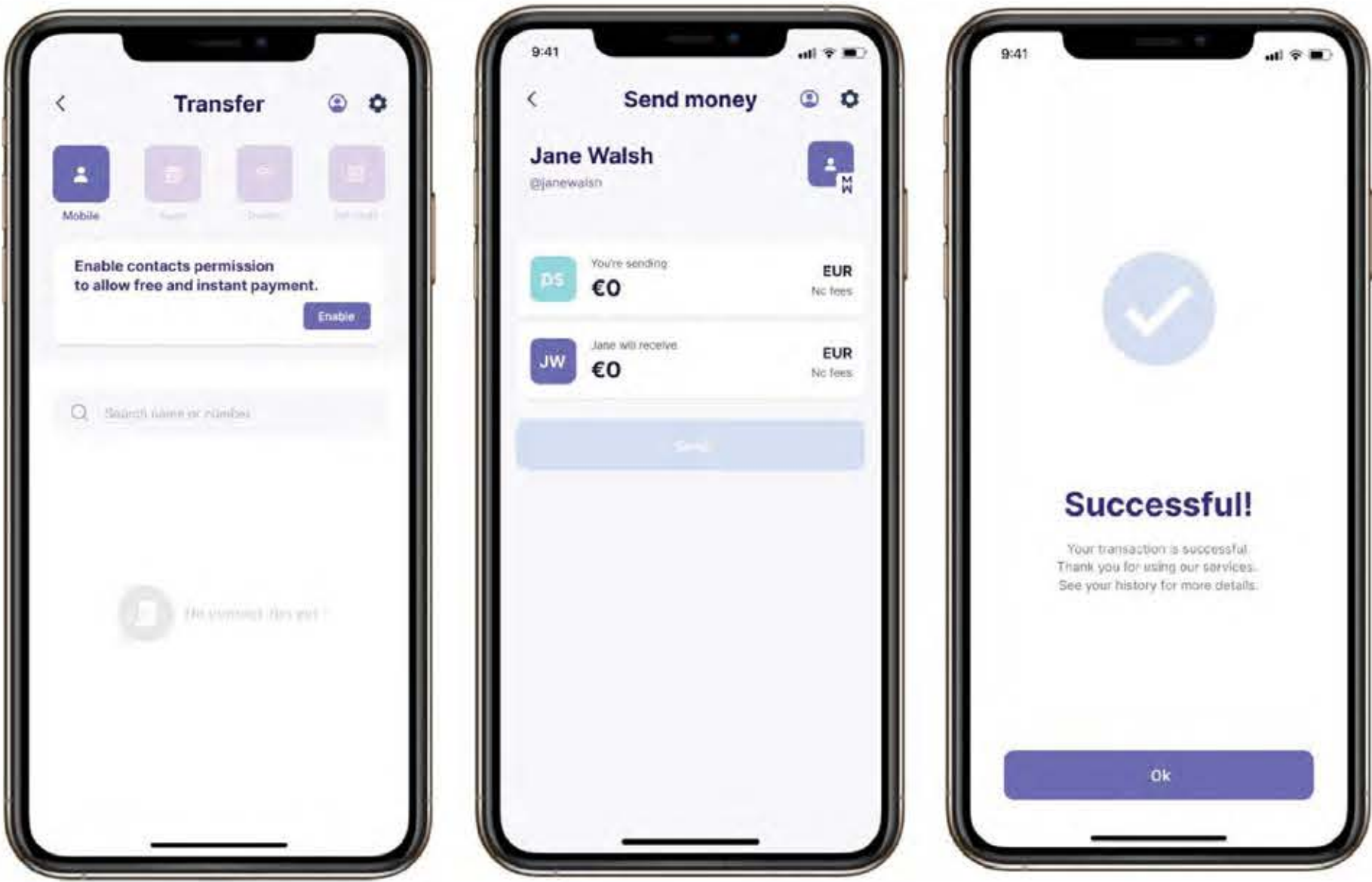
Assign permissions and data access request



Version A

Privacy nudge

Information, Presentation, Framing with colours,
Social nudge



Version B

Privacy nudge

Information

High-fid Prototype

TASK 3. CHECKING FOR SUSPICIOUS TRANSACTIONS

Data management



Version A

Privacy nudge

Timing, Information, Presentation, Framing with colours, Reversibility (Error resiliency)

Version B

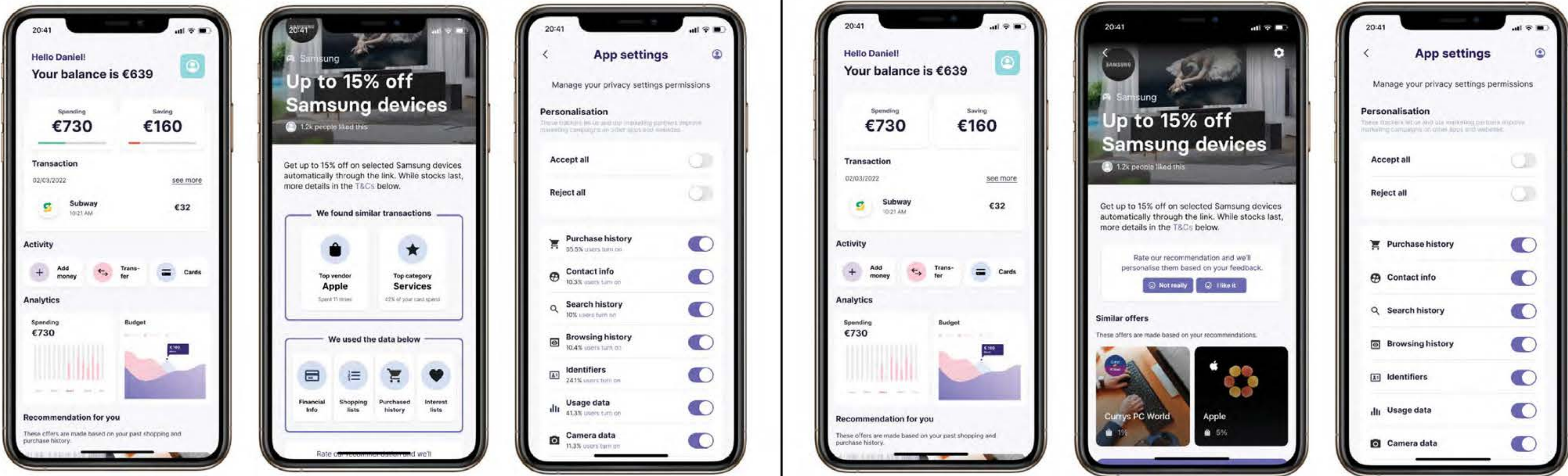
Privacy nudge

Timing, Information

High-fid Prototype

TASK 4. CHANGING THE APP SETTINGS

Data management



Version A

Privacy nudge

Information, Presentation, Default, Social nudge, Reversibility (Error resiliency), Progress bar

Version B

Privacy nudge

Information, Default, Reversibility (Error resiliency)

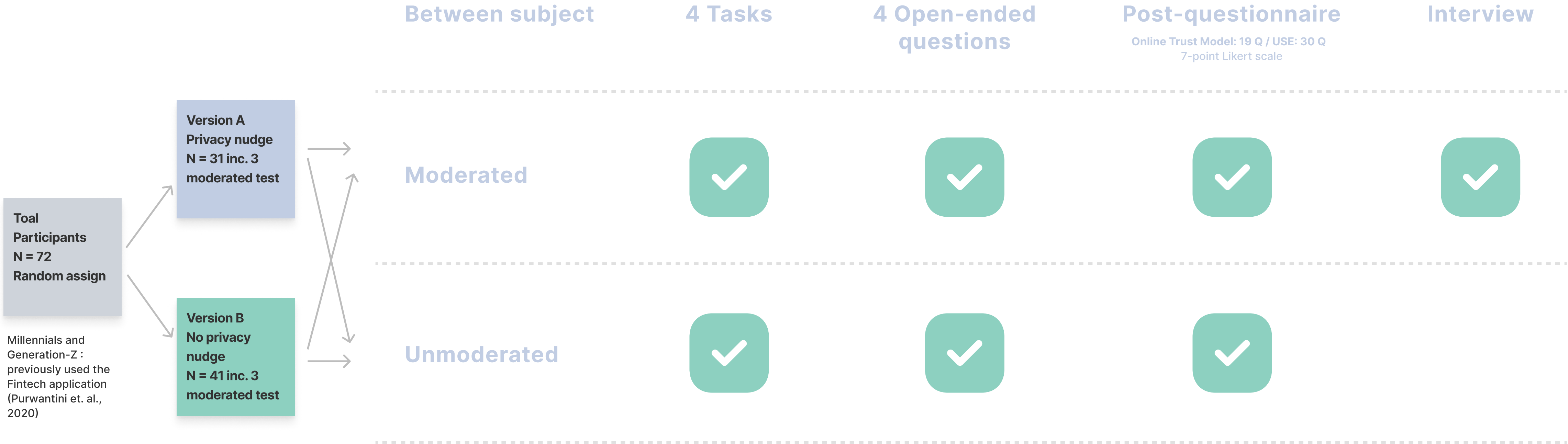
| MoneyWise app

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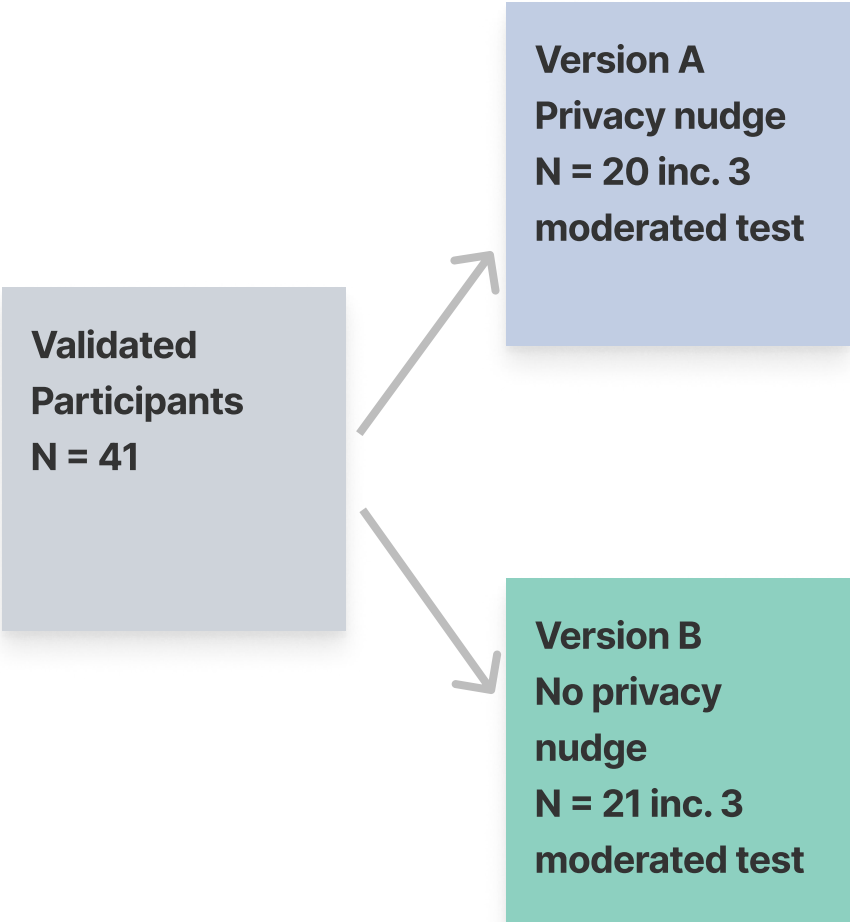


Screen casting

| Test set up



| Quantitative result



Dependent Variables	Result
Privacy setting ‘On/Off’ Chi-Square analysis (a 2 × 2 table)	1.1. Accept all: Significant 1.2. Reject all: N/A *Accept all count = 7.32 / Reject all count = 3.90
TRUSTM (Online Trust Model) Mann Whitney U (not normally distributed)	No significant **P - Value: 0.540 / R - Value: 0.06
Honesty and Expertise correlations Pearson product-moment correlation coefficient	Positive relationship ***Version A. r = 0.87 / Version B. r = 0.83
USE Mann Whitney U (not normally distributed)	No significant **P - Value: 0.696/ R - Value: 0.09



Cronbach's Alpha (N of items: 7 / TRUSTM_total and USE_total): 0.934 - High internal consistency
* The Chi-square assumption of a minimum count of 5
**The r values are less than .1 (the small impact size) / Significant levels (p) are above .05
*** r value above .05 (Cohen, 1988; Pallant, 2020)

| Qualitative result

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Ease of use

*Easy to use, quick
and simple.*

– P18

Visual design

*Its clearly laid out and
appears very trustworthy.*

– P6

Data control and privacy

*Everything needs permission, nothing
automatic, everything driven by user.*

– P3

Privacy nudge

*I care more what I
want to turn on or off.*

– P1

vs

*If many people turn on I'd
live it on as it must be to
standard to use.*

– P3

User experience

*Unclear what the settings were
adjusting. text about tracker was tiny
and low contrast.*

– P4



| Null hypotheses validation

H1.

~~There will be no significant difference in levels of privacy disclosure behaviour between the two prototypes, one with nudge aspects and one without.~~

H1.1

There will be no significant difference between the two prototypes in the default setting adjustments in 'Accept all' in privacy settings.

H1.2

~~There will be no significant difference between the two prototypes in the default setting adjustments in 'Reject all' in privacy settings.~~

H2.

There will be no significant difference in levels of trust between the two prototypes, one with nudge aspects and one without.

H3.

There will be no significant difference in levels of subjective usability between the two prototypes, one with nudge aspects and one without.

| Privacy disclosure behaviour



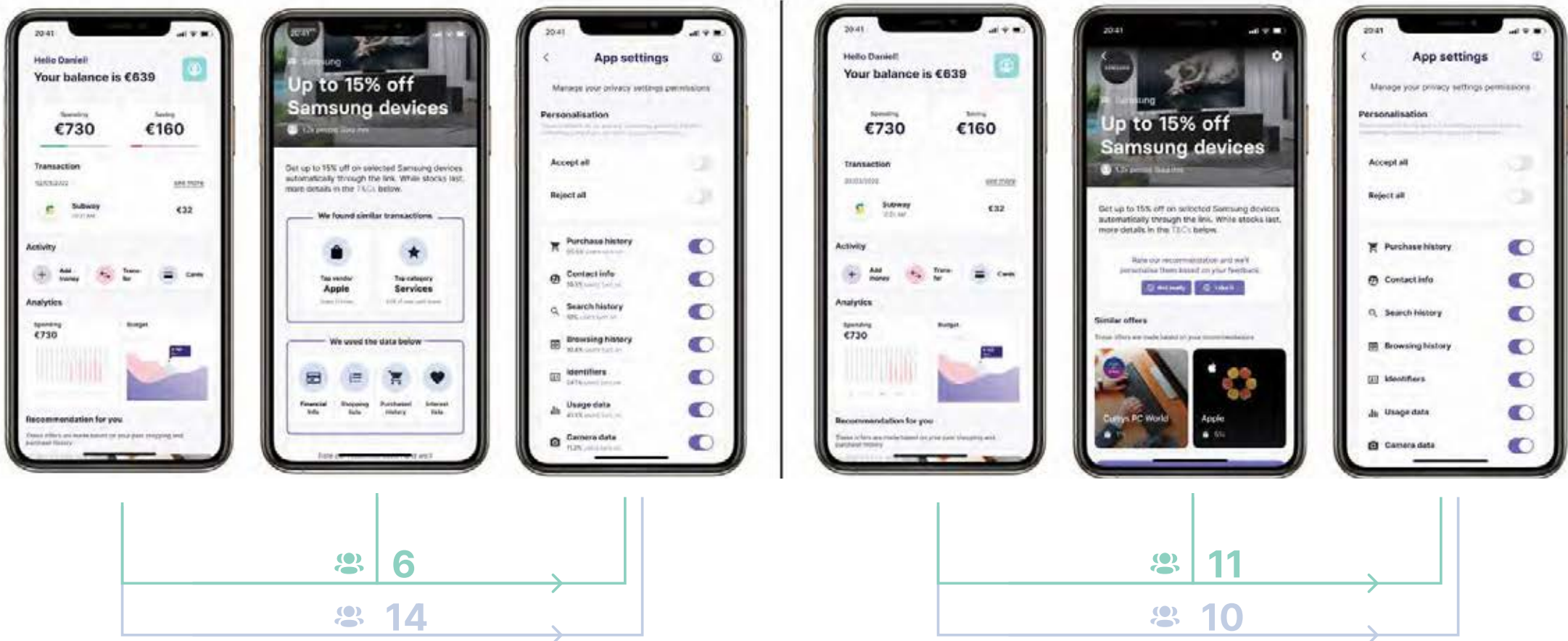
No difference but correct results cannot be achieved

No validity of the H1 (H1.2) due to small sample size



Version A

Version B



● Landing - offer - setting
● Landing - setting

| Online trust model



No difference in subscale outcomes



A positive connection between honesty and expertise



The perception of credibility was altered

(Fogg and Tseng, 1999)



| **USE**



No variation in
perceived USE level



An easy-to-use, intuitive,
and seamless experience

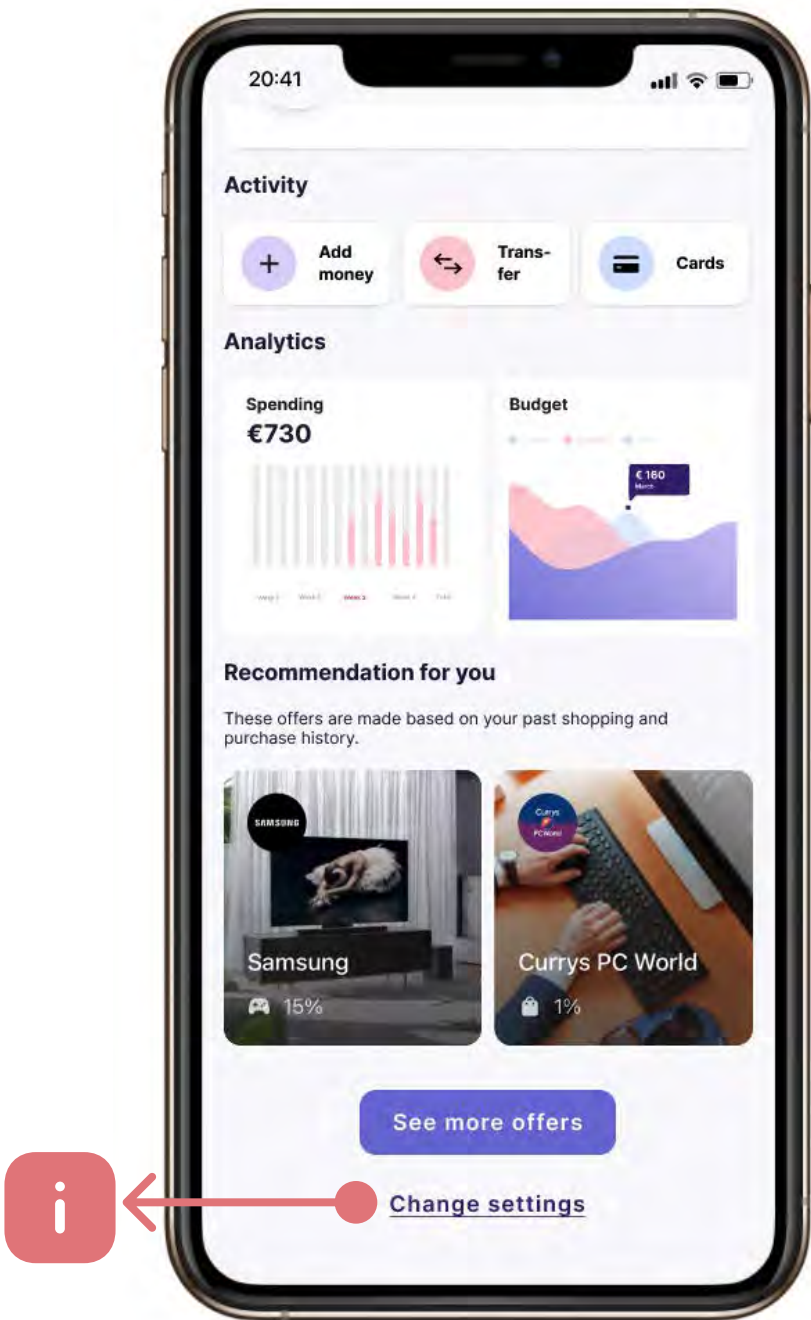


Negative responses
in Version A
prototype



| User Experience

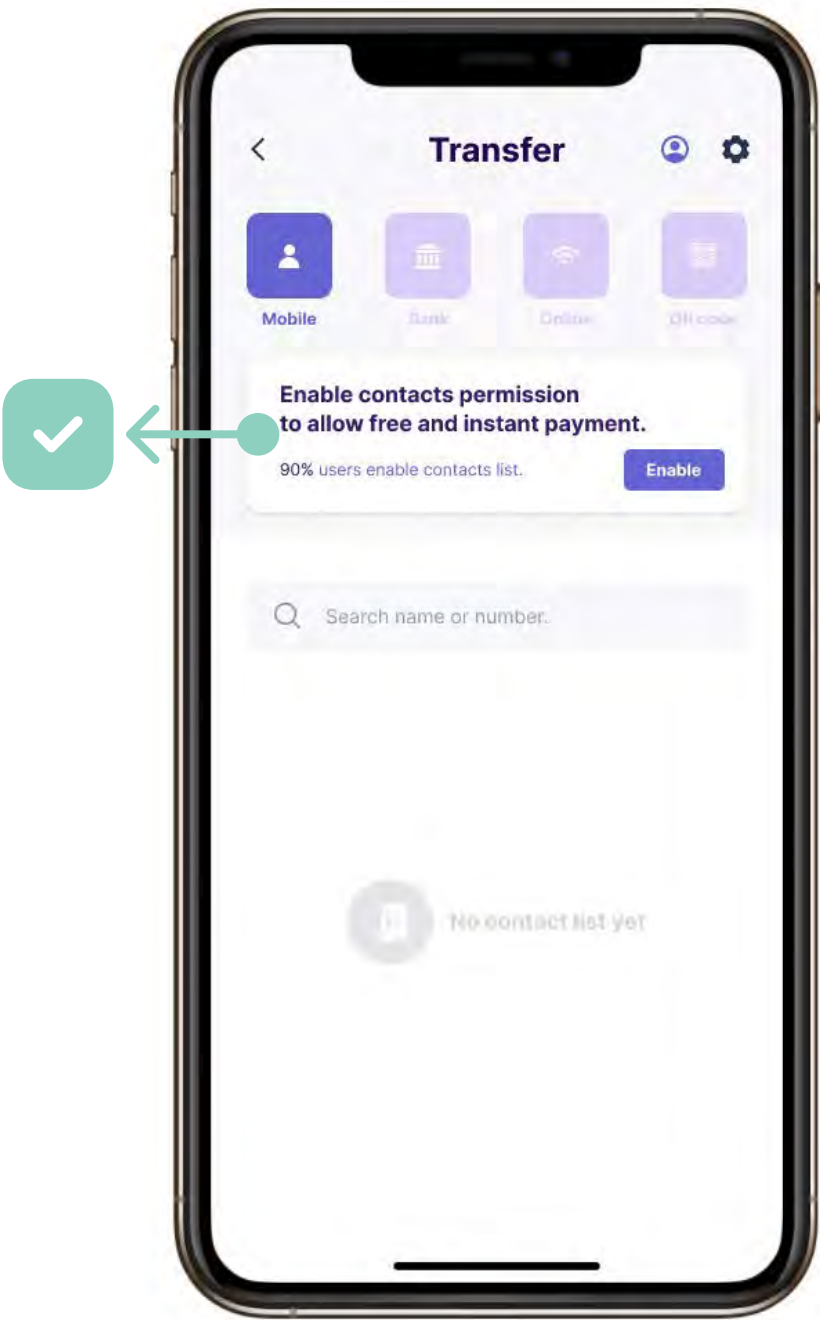
Version A & B



Task 4.
The highest unfavourable UX reaction



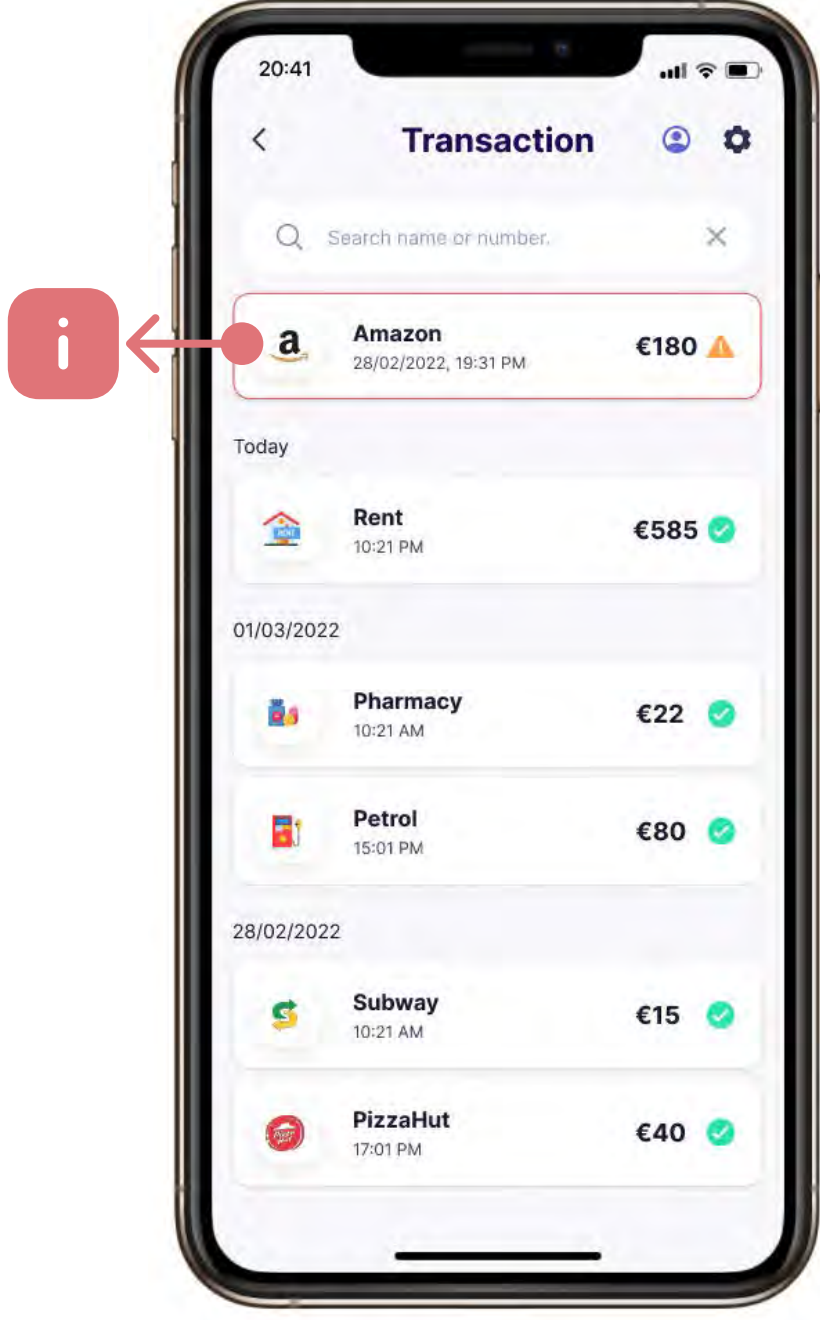
Version A & B



Task 2.
Aided participants' engagement processes



Version A



Task 3.
Obstructed the flow



| Conclusions

Privacy disclosure behaviour and trust level

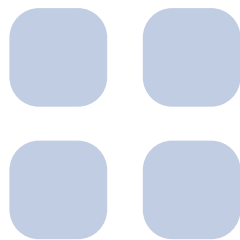


One's prior experience
A vibrant interface



Privacy Nudge

| Limitations and Future work/research



Test a complete
online trust
model



Moderated test for
Privacy disclosure
behaviour in Task 4



Two distinctive
prototype for the test



A longitudinal study
with a larger sample
size

Reference

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