BEHAVIOURAL EXPERIMENTS IN DATA PRIVACY
Acknowledgements

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Team

Busara Centre for Behavioral Economics
James Vancel | Senior Advisor and Board Member
Ridhi Podar | Engagement Director
Dhwani Yagnaraman | Associate
Jaspreet Singh | Associate

Centre for Social and Behaviour Change
Pooja Haldea | Senior Advisor
Pavan Mamidi | Director
Priyanka Goyal | Marketing Consultant
Tirtha Patel | Assistant Manager
Saksham Singh | Associate
Executive Summary

Why we did this research

The General Data Protection Regulation in Europe made data privacy a top priority for governments, businesses and individuals. In the Global South, the penetration of technology and internet is rapidly increasing while literacy and awareness levels vary widely. Users would like to protect themselves but falter at the decision making point, lured in by the instant gratification of access to services or apps.

This intent-action gap, along with myopia or present bias exhibited by users, is one of our core challenges as we seek to understand and design solutions to increase user privacy consciousness within the Indian and Kenyan context.

The core research questions we seek to answer are:

- Can users be nudged to be more privacy conscious?
- Can better privacy practices by organisations be a business advantage?
We began with the proven premise that users’ privacy related decisions are impacted by behavioural biases.

*There are many biases at play, two of which are these:*

**Cognitive overload**
Privacy statements are several pages long and full of complex legal jargon that prevent users from reading and understanding the policy.

**Present bias**
Users prefer instant access to the service or app as the harm from unmindful data sharing is in the future and intangible today.
Information nudges that provide a snapshot indication of the quality of the privacy policy

They enhance the presentation of the privacy policy to make it more salient

They provide financial ‘guarantees’ in case of data loss

It mandates a user to stay of the privacy policy page for a fixed period of time

They use principles of conformity with social norms, third party validation and a relatable anchor to influence privacy choices

They provide granular breakup of the uses of data and an element of choice to the users
The Experiment Design

Participants from the experiment were divided into groups. Each group was shown a standard privacy statement along with one of the nudges; we compared these to a ‘control group’ that was only shown the privacy statement and no nudge.

All the groups were subsequently asked to play behavioural games followed by questions pertaining to the key points of the privacy policy to check their comprehension.

The responses were recorded and compared to understand the impact of each nudge vis-a-vis other nudges and the control group. We were measuring for four outcomes that are detailed in the next page.
Participants Profiles
Males and females of average age of 28.5 years, mostly with at least bachelor’s degree and average monthly income of over INR 20,000 in India and over KES 15,000 in Kenya.
4 Key Outcomes

Privacy means different things to different people. Is it how much of the users’ personal information is available online, how the information is being used or who has access to this information? Everyone feels differently to varying degrees. As such we set out to make the users more cognizant of their own preferences and notions of privacy. This is what we call *privacy consciousness*

We set out to measure impact on four key privacy-related behaviours.

- **Time spent on the privacy policy**
  We measured the amount of time (in seconds) spent by the users on the privacy page as it would indicate their effort to obtain privacy related information.

- **Understanding of the policy terms**
  We asked a set of questions to measure recall and comprehension of key points from the privacy policy to reveal the quality of user engagement and whether they actually understood what they were consenting to.

- **Sharing sensitive information**
  We asked users a set of invasive questions to be answered as Yes/No to measure willingness to admit to behaviours, ranging from slightly sensitive to highly sensitive, like "Have you eaten meat, fish or poultry in the last year?" to "Have you had sexual relations with the current partner of a friend or family member?" We hypothesized that if the users trusted the entity asking the questions, they would be more willing to divulge responses to these questions.

- **Sharing personal information**
  We created a list of ten questions about the users’ political beliefs, financial habits, and health, like "Which political party do you support?" and "Which medication do you take regularly?" We told participants that the purpose of this survey was to contact them with studies that they were interested in or cared about to see if there is more willingness to share information if users see benefits. If the users select ‘Yes’, that they would like to answer the question, they are then asked to type in their answer.
Change in these behaviours due to exposure to our interventions revealed whether the users were successfully nudged to be more mindful of their privacy or not. We found that some of our interventions impacted trust of the users and thus their data sharing while others moved the needle on time spent or understanding of the policy. In some cases, data sharing reduced when privacy concerns were made salient. Some ideas had no significant impact on any of these outcomes. We also observed differences in responses of Indian and Kenyan participants for some nudges, signifying the role of context in how people behave. A brief snapshot of intervention - outcome impact mapping is presented in the next page.
### Executive Summary

#### Behavioural Experiments in Data Privacy

<table>
<thead>
<tr>
<th></th>
<th>India</th>
<th>Kenya</th>
<th>India</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Privacy Star Rating 1</strong></td>
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<tr>
<td><strong>Privacy Star Rating 2</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Privacy Star Rating 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summary Factsheet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Usage Case</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Costly Signal - Price</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Costly Signal - Fine</strong></td>
<td></td>
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<td><strong>Info-label - Below Average</strong></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Info-label - Average</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Info-label - Above Average</strong></td>
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<td><strong>Cool Down Period</strong></td>
<td>N/A</td>
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</tbody>
</table>

#### Index

**Positive Impact**

- Significant
- Not Significant

**Negative Impact**

- Significant
- Not Significant

- Opposite results in India and Kenya

*(compared to results of the control group)*
### BEHAVIOURAL EXPERIMENTS IN DATA PRIVACY | EXECUTIVE SUMMARY

<table>
<thead>
<tr>
<th></th>
<th>Time spent</th>
<th>Comprehension</th>
<th>Sharing sensitive information</th>
<th>Sharing personal information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDIA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KENYA</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td><img src=".../simple.png" alt="Diagram" /></td>
<td><img src=".../simple.png" alt="Diagram" /></td>
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<tr>
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<td><img src=".../detailed.png" alt="Diagram" /></td>
<td><img src=".../detailed.png" alt="Diagram" /></td>
<td><img src=".../detailed.png" alt="Diagram" /></td>
</tr>
<tr>
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<td><img src=".../negative.png" alt="Diagram" /></td>
<td><img src=".../negative.png" alt="Diagram" /></td>
<td><img src=".../negative.png" alt="Diagram" /></td>
</tr>
<tr>
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<td><img src=".../privacy.png" alt="Diagram" /></td>
<td><img src=".../privacy.png" alt="Diagram" /></td>
<td><img src=".../privacy.png" alt="Diagram" /></td>
<td><img src=".../privacy.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Anchoring</td>
<td><img src=".../anchoring.png" alt="Diagram" /></td>
<td><img src=".../anchoring.png" alt="Diagram" /></td>
<td><img src=".../anchoring.png" alt="Diagram" /></td>
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</tr>
<tr>
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<tr>
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<td><img src=".../essential.png" alt="Diagram" /></td>
<td><img src=".../essential.png" alt="Diagram" /></td>
<td><img src=".../essential.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Index**

**Positive Impact** *(compared to results of the control group)*
- ![Diagram](.../positive.png) Significant
- ![Diagram](.../not_positive.png) Not Significant

**Negative Impact** *(compared to results of the control group)*
- ![Diagram](.../negative.png) Significant
- ![Diagram](.../not_negative.png) Not Significant
- ![Diagram](.../opposite.png) Opposite results in India and Kenya
Key Findings from the Research

1. Comprehension of privacy policies is low, and is hard to nudge; further link between comprehension and user behaviour is weak.

   Nudging comprehension is not easy: In its current form, comprehension of standard privacy policy is low (not surprising). Even when results showed a significant increase in time spent on the privacy policy page, like in the case of positive descriptive norm nudging, it was not accompanied by an increase in comprehension of the policy terms. The cool down period nudge stood out in improving comprehension in both India and Kenya. In India, users’ comprehension is surprisingly resilient to soft nudges; this is seen across multiple interventions. Negative norm nudging and the opt-in option for the granular consent nudge in Kenya impacted this outcome significantly.

   Further, increasing comprehension of the privacy policy alone may not always lead to change in information sharing behaviour. In treatments like the summary factsheet, where comprehension has been nudge, willingness to share measures remain stubborn.
It is possible to nudge users’ behaviour when it comes to data sharing - by increasing trust or by making privacy concerns salient.

Data sharing can be increased by increasing trust:

In India, the cool down period and the high star ratings nudges increased trust among users. The former worked by mandating them to stay on the policy page for a predetermined period of time, while users accepted the higher star rating as a viable indicator of better privacy practices. These perhaps indicated the platform was user centric and had nothing to hide.

Data sharing can be reduced by making privacy concerns salient, easiest way is to show ‘how data is being used’:

When users understood how their data would be used, they were more conscious of the privacy of their data. Usage case and blanket consent nudges, which laid out different uses of data in a more easy and comprehensible way, directionally reduced data sharing. In Kenya, nudges such as Summary Factsheet and Costly Price Signal also primed privacy concerns and worked similar to the usage case.
Default settings are critical; giving users more control less so

Most effective nudges are “hard” nudges that require integration into the product design

People don’t change the default choice presented to them. 64% of respondents in India and 83% in Kenya accepted all the preselected options in the granular consent nudge where they could opt out of the various data usage cases presented to them. This also proves that giving more control to users does not necessarily lead to them exercising it and hence has limited benefits.

Different nudges have been successful in influencing user behaviour in different country contexts. In India, hard nudges, like the cool down period and defaults which shape the choice architecture and are integrated into the design, are more effective. On the other hand, ‘soft’, non-intrusive nudges like privacy signalling messages, the negative norm message and summary factsheet have worked well in Kenya.
Implications of Our Research

An overarching implication we have arrived at is that real impact in protecting the privacy interest of users can only be driven by regulation. Individuals are less capable and businesses are not-so incentivised to put privacy first.

Users need to be protected by regulators

It is hard for the users to take decisions in their best interest. Their privacy related behaviour is subjected to biases that are hard to overcome, like the high cognitive load they experience while going through the long and jargon filled privacy policy statement. Users can be nudged, but there aren’t any easy fixes. For instance, improving comprehension or handing greater control to users seem to have limited impact on driving privacy conscious behaviours.

Businesses need a regulatory push to adopt better privacy practices

Nudges that have shown promise require design changes, like the cool down period or use of better default settings. It is unlikely for industry to formulate and adapt standards that could lead to business risk, like increasing friction in the user journey that can lead to higher drop outs or have defaults that lead to less data collection.

Some nudges have shown that better privacy features can increase trust and in some cases, even data sharing. Thus, it’s a win-win for businesses and consumers. However, industry wide adoption of such practices would still require a regulatory push. For example, adopting a star rating framework is an increased cost for all players, as they would have to invest more to achieve and/ or maintain high ratings. It could also impact smaller players disproportionately.
Next Steps

Our experiments have opened the privacy landscape for further behavioural research through some compelling findings. We propose use of behavioural principles to further the better-privacy discourse.

Further experimentation

We must focus on further development of nudges that have shown promise, like the star ratings and cool down period and also explore the scope to combine treatments. Some of the specific areas that require deliberation are listed here.

- **Star ratings**
  What framework is used to generate these ratings? Who will be responsible to provide these ratings? How to ensure that this does not innately put a disproportionate burden on small players and give an unfair advantage to big players?

- **Cool down period**
  What is the optimal time period to balance user friction with improved comprehension? How to execute in real life? Could a shorter cool-down time combined with simplifying the policy work?

- **Defaults**
  What are the right default settings? Which privacy giving defaults need a statutory push? Meanwhile, regulators also need to keep an eye out for how defaults are being used in the industry since there is potential for overriding true user preference.
Live market tests

Working with service providers to test the adoption and applicability of the treatments in real market setting is a necessary step before any scale up plans.

Advocating ‘privacy by design’

Privacy should not be superimposed as an afterthought, but should be an important element or key parameter impacting the design and architecture of digital solutions. Thus, we recommend continued dialogue with service providers and regulators to adopt a more integrated approach to privacy and make consent part of the planned user experience.
THE BEHAVIOURAL EXPERIMENT
Why Privacy is a Behavioural Problem

Many core issues in data privacy are primarily behavioural in nature. Consumers strongly prefer protecting their data, but when it comes to actually sharing their data, their resolution crumbles. Individuals feel a sense of ownership over their personal data, which makes them believe their data is more valuable than it actually might be. Users are often plagued by the “intention-action” gap, which can be seen by people wanting to protect their data but failing to do so due to distractions, competing priorities, or behavioural biases.

In addition to individuals facing behavioural barriers and inconsistencies in their own preferences, they are also subject to complex choice environments. Most apps have detailed policies at the beginning, which provide too much information in completely inaccessible ways. Privacy settings are often hidden away and need to be looked for. The notion of transparency between the user and business is compromised because businesses can benefit from collecting as much user data as possible.

Improving data privacy for users requires an understanding of human behaviour and how to design choices that help people make better decisions. Studying these barriers to good decisions will give businesses and regulators ideas about how they improve their own systems and foster a safer environment for users. At IntAct, we are using our understanding of people’s behaviours to encourage them to be more privacy conscious while encouraging businesses to build trust, transparency, and loyalty for a longer and mutually beneficial engagement with their consumers. The first step was to understand the nuances of how people behave online and what traps they faced.
There is a growing body of research showing that our data privacy preferences may be prone to a number of behavioural biases. Here are some examples of how behavioural science concepts can explain how people make decisions online.

**Framing Effect**
Choices can be presented in such a way that highlights either their positive or negative attributes. This influences the end user’s decision to share their data.

**Hyperbolic Discounting**
Users disclose personal information for immediate gratification, while simultaneously subjecting themselves to privacy costs that may be incurred months or even years later.

**Anchoring**
Tendency of individuals to disclose more personal information as a result of perceiving that other people have already or usually share this information.

**Illusion of Control**
Tendency of individuals to perceive more control over their own data and underestimating risks that are, in fact, out of their control.

**Rational Ignorance**
Individuals tend to disregard reading a data holder’s privacy policy as they believe the time cost associated with inspecting the notice will not be compensated by the expected benefit from information disclosure.

**Endowment Effect**
Users overvalue something that they see as belonging to them, in this case, their personal data.

**Information Overload**
Presence of too much information online prevents the individual from evaluating the various options and making a good decision.

**Status Quo Bias**
The preference to maintain their current state and avoid changes, even beneficial ones. For example, most individuals keep the highly permeable default privacy settings instead of changing the setting to reflect their privacy values.

**Loss Aversion**
Individuals are more willing to accept money in exchange for disclosing personal information than they are willing to pay to regain control over the same information.
OUR NUDGES
What are nudges

A nudge is the most common and handy tool in a behavioural scientist’s toolbox. Nudges are interventions which are designed to remove behavioural biases and barriers in a decision-making scenario without changing the nature of the decision being made. A nudge often targets a specific bias and is non-intrusive in nature i.e. a decision maker can choose to ignore the nudge altogether.

What are some examples of nudges we see around us?

Text reminders to pay phone bills

Messages on social media that tell you who will be able to see photos or posts you’re uploading

Your phone giving you a warning message when the battery drops to 20%
How our nudges target privacy decisions?

We carefully selected our nudges to target the most common behavioural biases that users face while making privacy related decisions. For example, presentation nudges target information overload and rational ignorance while cool down period targets present bias. In this section we map each of our nudges on to a relevant behavioural barrier/mechanisms.
With an understanding of how people make decisions online, we developed and tested ideas which would help consumers to be more privacy conscious and show businesses that creating user-centric privacy practices could be an advantage.

At IntAct, we were especially interested in how people start using a new app or online service, so we focused on the consent process of the privacy policy, which is one of the first steps in a user’s journey.
Privacy Star Ratings

What is the Nudge?
Users are given an indication of the quality of privacy policy through a star rating and are shown 1, 2 or 4 star ratings. This treatment is inspired by electricity appliance ratings.

Behavioural underpinnings
Ratings help users make a quick judgement about the quality/ strength of a privacy policy without having to go through the policy, circumventing common behavioural barriers like cognitive or information overload. This is likely to influence users’ trust in the data collector.

Hypothesis
We predicted that more stars will lead to greater information sharing.
Information Label Ratings

What is the nudge?
Users are given an indication of quality of privacy policy through a star rating along with some information, which explains the basis for the ratings. The inspiration comes from nutrition labels on food articles.

Behavioural underpinnings
Ratings help users make a quick judgement about the quality/ strength of a privacy policy without having to go through the policy, circumventing common behavioural barriers like cognitive or information overload. This is likely to influence users’ trust in the data collector.

Hypothesis
We predicted that a better label (along with correspondingly higher stars) will lead to more information sharing.
Summary Factsheet

What is the nudge?
Presenting a **short summary of the privacy policy** using infographics to make the presentation appealing. The summary itself was made user-friendly, jargon-free and concise. We presented the ~2500 word policy as a less than 500 word summary.

Behavioural underpinnings
The summary factsheet simplifies the privacy policy and avoids **behavioural impediments like cognitive overload**, allowing users to make an informed choice about their decision. Better understanding of policy can lead to more trust and information sharing.

Hypothesis
We predicted that the summary factsheet will lead to more information sharing and improved policy comprehension.
Usage Case

What is the nudge?
An infographic showing how user information will be utilised. It is important to users to know how collected data is used while making decisions about sharing their data. Simple icons and language which can easily be understood by all users.

Behavioural underpinnings
Sharing information on data use with users can address the problem of information asymmetry (that businesses know more about how data is used than users) and improve user trust in data sharing.

Hypothesis
We predicted that presenting the usage case will lead to more information sharing as businesses are more up front about how they use data.
Costly Signal

What is the nudge?
We tested two costly signals:
• A price signal where users will be paid a certain amount as compensation in case of a breach
• A fine signal where the company will be subjected to a fine by the government in case of a breach

Behavioural underpinnings
Costly signal works like a traditional guarantee to influence user trust in sharing information. It provides users with a risk mitigating option against the risk of losing their data or its unauthorised use.

Hypothesis
We predicted that costly signal will lead to more information sharing.
Cool Down Period

What is the nudge?
Users are made to stay on the privacy policy page for a few minutes (6 minutes in this case) before moving ahead. The aim was to ensure they read through the policy to have a better understanding of its terms.

Behavioural underpinnings
By mandating users to stay on the privacy policy for a stipulated period of time, a cool down period mitigates the present bias - where the users agree to the policy solely to gain immediate access to the desired product or service without duly considering personal cost of sharing data.

Hypothesis
We predicted that cool down period will lead to more information sharing and better policy comprehension.
Positive Descriptive Norms

What is the nudge?
Users are shown a normative message just before reading the privacy policy. The message nudges users to spend a specific amount of time in reading the privacy policy. Positive norms show the prevalence and benefits of engaging in the recommended behaviour.

Behavioural underpinnings
Conformity with social norms is a key motivator of human behaviour. It has been seen in previous literature that normative messaging can be used to influence perceived and descriptive norms which can lead to behaviour change.

Hypothesis
We predicted that positive descriptive norms will lead to more time spent on policy and better policy comprehension.

Over 70% of users spend 5 minutes to read and understand our privacy policy.

According to our research on users who took this survey before you, those who spend around 5 minutes reading our policy report higher comprehension scores and are able to make informed privacy decisions.
Negative Descriptive Norms

What is the nudge?
Users are shown a normative message just before reading the privacy policy. The message nudges users to spend a specific amount of time in reading the privacy policy. Negative norms show the prevalence and risks of not engaging in the recommended behaviour.

Behavioural underpinnings
Conformity with social norms is a key motivator of human behaviour. It has been seen in previous literature that normative messaging can be used to influence perceived and descriptive norms which can lead to behaviour change.

Hypothesis
We predicted that negative descriptive norms will lead to more time spent on policy and better policy comprehension.

89% of internet users do not read privacy policies before agreeing to share data, exposing themselves to avoidable risk. Please do not skip this privacy policy.
Privacy Signal

What is the nudge?
Users read a message showing adherence to standard privacy principles like the GDPR framework. The aim is to use objective, verifiable statements as signalling device to communicate the data collector’s commitment towards data privacy.

Behavioural underpinnings
Using standardised privacy frameworks which give an objective third-party validation to the data collector’s intentions to keep user data safe can prime users to trust the data collector and that their data is safe. This can make them comfortable in sharing more information.

Hypothesis
We predicted that privacy signal will lead to more information sharing.

We have appointed a Data Protection Officer as stipulated under the GDPR (an internationally recognized legal framework for privacy) to address any of your concerns. You can reach them at info@intactprivacy.com.
Anchoring

What is the nudge?
Users are shown a message relating the recommended time spent on the privacy policy with an everyday task, say brushing their teeth. This gives them a relatable estimate on how long they should spend on the privacy policy to reap benefits.

Behavioural underpinnings
The length of the privacy policy can pose a cognitive barrier for users who might give up on reading the policy. Relating this to a common use case for time spent can overcome this barrier by making the task of reading the policy appear less challenging and time consuming.

Hypothesis
We predicted that anchoring will lead to more time spent on privacy policy and better policy comprehension.

It takes only 5 minutes to brush your teeth everyday, the same amount of time as reading this policy and making informed decisions.
Granular Blanket Consent

What is the nudge?
Users are shown a **granular breakup of how their data is used**, similar to cookie policy declarations on websites. Under the blanket consent, they can only say "Yes to All" or "No to All".

Behavioural underpinnings
Showing users how their data is used and giving them an element of choice over this can make users comfortable in sharing more information by improving their **self-efficacy towards data-sharing decisions**.

Hypothesis
We predicted that granular blanket consent will lead to more information sharing by users.
Granular Consent - Opt-out

What is the nudge?
Users are shown a granular breakup of how their data is used, similar to cookie policy declarations on websites. Under the in-out consent, users can choose any or all options with all options selected as the default.

Behavioural underpinnings
Showing users how their data is used and giving them an element of choice over this can make users comfortable in sharing more information by improving their self-efficacy towards data-sharing decisions.

Hypothesis
We predicted that granular consent will lead to more information sharing by users.

We expected users to consent to data collection for more purposes in the opt-out default as compared to the opt-in default.
Granular Consent - Opt-in

What is the nudge?
Users are shown a granular breakup of how their data is used, similar to cookie policy declarations on websites. Under the opt-out consent, users can choose any or all options with only the essential option selected as the default.

Behavioural underpinnings
Showing users how their data is used and giving them an element of choice over this can make users comfortable in sharing more information by improving their self-efficacy towards data-sharing decisions.

Hypothesis
We predicted that granular consent will lead to more information sharing by users.

We expected users to consent to data collection for more purposes in the opt-out default as compared to the opt-in default.
After designing our privacy nudges, we needed to check if they worked, which we did using an experiment. Our experiment had three main parts:

1. Privacy policy
2. Interventions to make individuals more privacy conscious
3. Questions that help us understand if our interventions are working

The privacy policy looked much like any other privacy policy. Our interventions or nudges were designed to accompany the privacy policy. Some interventions captured the same information as the privacy policy but in a more succinct way, while others encouraged people to spend some time going through the privacy policy.

To see how well the interventions were working, we needed to measure if people became more privacy conscious. Privacy consciousness meant that users started acting in line with their preferences, knew more about the privacy standards of the apps and online platforms they were using, and thought about sharing information. To test their understanding and recall of the privacy standards, individuals were asked to answer comprehension questions about the privacy policy. We also tracked how long they spent on the policy. To understand how the interventions affected how much information they shared, we asked respondents a series of invasive and personal questions.

Each individual went through the three different parts of our experiment. Once we had a number of respondents, we could start drawing conclusions about which interventions were working and which were not.
Experiment Flow

Around 5547 respondents in India and 4746 respondents in Kenya answered our survey online. As they began the experiment, they were randomly assigned into different groups, each of which received a different nudge. Respondents were first shown the standard privacy policy and one of the nudges. One of the groups was the ‘control’ group that was shown only the privacy policy and no nudge. Everyone, regardless of the intervention they received, then answered different sets of questions.
INDIA

No. of Interviews: 5,547

% Female: 38%

Education Levels:
- Primary and Lower: 2%
- Secondary: 14%
- Bachelors: 29%
- Masters: 39%
- Certificate / Diploma: 16%

Monthly Income:
- Less than Rs. 20,000: 42%
- Rs. 20,000 - Rs. 80,000: 40%
- Greater than Rs. 80,000: 18%

Average Age (Range):
- 30 Years (18-60)

WHO ANSWERED OUR SURVEY

KENYA

No. of Interviews: 4,746

% Female: 58%

Education Levels:
- Primary and Lower: 0.2%
- Secondary: 14%
- Bachelors: 47%
- Masters: 4%
- College/Vocational: 33%

Monthly Income:
- Less than KES 3,000: 29%
- KES 3,000-KES 15,000: 23%
- Greater than KES 15,000: 48%

Average Age (Range):
- 27 Years (18-55)
BEHAVIOURAL EXPERIMENTS IN DATA PRIVACY

MEASURING PRIVACY
Outcome Variables

We measured how users responded to our interventions by measuring behaviour across four outcome variables.

1. Time spent on privacy policy
   - Time spent, in seconds, on the privacy policy page to measure effort expended to obtain privacy related information

2. Comprehension
   - Set of questions to measure recall and comprehension of key points from the privacy policy

3. Willingness to share sensitive information
   - Set of invasive questions to be answered as Yes/No to measure willingness to admit to behaviours, ranging from slightly sensitive to highly sensitive

4. Willingness to share personal information
   - Set of questions which mimic an online service provider survey to improve service by asking for personal preferences and information
What was measured?

- How much time did a respondent spend on the full privacy policy, measured in seconds.

Why is it important?

- The amount of time a user spends reading the privacy policy reflects the importance they attach to understanding a privacy policy.
- More time spent indicates that a user wants to know what they are consenting to and displaying “privacy-conscious” behavior.
- Thus, in the interest of protecting and promoting user privacy, our research aims to understand how we can improve time spent on reading the privacy policy.

Research results

- Time spent was positively influenced by the normative message nudges - both positive and negative - in India and Kenya. These messages also directly targeted time spent and worked successfully.
- In Kenya, usage case (lower than control), anchoring (higher) and granular consent opt-in (higher) treatments influenced time spent. While in India costly fine signal lowered the time spent than control group.
Time spent (in seconds) - Treatment vs. Control

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>29</td>
<td>147</td>
</tr>
<tr>
<td>Privacy Rating 1 Star</td>
<td>24</td>
<td>85</td>
</tr>
<tr>
<td>Privacy Rating 2 Star</td>
<td>25</td>
<td>90</td>
</tr>
<tr>
<td>Privacy Rating 4 Star</td>
<td>27</td>
<td>72</td>
</tr>
<tr>
<td>Summary Factsheet</td>
<td>27</td>
<td>63</td>
</tr>
<tr>
<td>Usage</td>
<td>23</td>
<td>57*</td>
</tr>
<tr>
<td>Costly Signal - Price</td>
<td>28</td>
<td>98</td>
</tr>
<tr>
<td>Costly Signal - Fine</td>
<td>21*</td>
<td>67</td>
</tr>
<tr>
<td>Info-label Combo - Below Average</td>
<td>27</td>
<td>61</td>
</tr>
<tr>
<td>Info-label Combo - Average</td>
<td>27</td>
<td>68</td>
</tr>
<tr>
<td>Info-label Combo - Above Average</td>
<td>26</td>
<td>77</td>
</tr>
</tbody>
</table>

Cool Down Period

Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.

Statistically significant:

*** at the 1% level  ** at the 5% level  * at the 10% level
Time spent (in seconds) - Treatment vs. Control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>India</th>
<th>Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>20</td>
<td>55</td>
</tr>
<tr>
<td>Descriptive Norm - Simple</td>
<td>38***</td>
<td>86***</td>
</tr>
<tr>
<td>Descriptive Norm - Detailed</td>
<td>46***</td>
<td>110***</td>
</tr>
<tr>
<td>Descriptive Norm - Negative</td>
<td>31*</td>
<td>95***</td>
</tr>
<tr>
<td>Privacy Signal</td>
<td>21</td>
<td>62</td>
</tr>
<tr>
<td>Anchoring</td>
<td>25</td>
<td>73*</td>
</tr>
<tr>
<td>GC Blanket Consent</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>GC All Selected (Opt-out)</td>
<td>21</td>
<td>65</td>
</tr>
<tr>
<td>GC Essential Selected (Opt-in)</td>
<td>22</td>
<td>78**</td>
</tr>
</tbody>
</table>

Statistically significant:
*** at the 1% level  ** at the 5% level  * at the 10% level

Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.

GC - Granular Consent
Policy comprehension

What was measured?

- This outcome variable was designed to measure if a respondent understands the terms of the privacy policy.
- Respondents answered a short set of questions on the provisions of the privacy policy. A score was generated representing the total numbers of questions answered correctly.

Why is it important?

- A user’s understanding of the privacy policy determines how ‘informed’ their consent actually is.
- Higher comprehension score indicates that a user went through the privacy policy and understood its salient points, thus exhibiting a desirable behavior.
- In terms of our research aims, we wanted to see how we can improve user comprehension of the privacy policy.

Research results

- Cool down period significantly improved user comprehension in both India and Kenya, reflecting that forcing people to spend time on the privacy policy works.
- In Kenya, 1 star rating (lower than control), 4 star rating (lower) and negative norm message (higher) treatments influenced comprehension. While in India, summary factsheet and 2 star rating had better comprehension than control.
Comprehension score - **Treatment** vs. **Control**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Privacy Rating 1 Star</td>
<td>2.0</td>
<td>2.7*</td>
</tr>
<tr>
<td>Privacy Rating 2 Star</td>
<td>2.2*</td>
<td>2.9</td>
</tr>
<tr>
<td>Privacy Rating 4 Star</td>
<td>2.1</td>
<td>2.7*</td>
</tr>
<tr>
<td>Summary Factsheet</td>
<td>2.2*</td>
<td>2.9</td>
</tr>
<tr>
<td>Usage</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Costly Signal - Price</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Costly Signal - Fine</td>
<td>2.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Info-label Combo - Below Average</td>
<td>2.0</td>
<td>2.9</td>
</tr>
<tr>
<td>Info-label Combo - Average</td>
<td>2.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Info-label Combo - Above Average</td>
<td>2.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Cool Down Period</td>
<td>2.6***</td>
<td>3.8***</td>
</tr>
</tbody>
</table>

Statistically significant:
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Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.
Comprehension score - Treatment vs. Control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>India</th>
<th>Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>2.04</td>
<td>2.75</td>
</tr>
<tr>
<td>Descriptive Norm - Simple</td>
<td>2.12</td>
<td>2.80</td>
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<tr>
<td>Descriptive Norm - Detailed</td>
<td>2.18</td>
<td>2.86</td>
</tr>
<tr>
<td>Descriptive Norm - Negative</td>
<td>2.17</td>
<td>3.04**</td>
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<tr>
<td>Privacy Signal</td>
<td>2.24</td>
<td>2.93</td>
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<tr>
<td>Anchoring</td>
<td>2.19</td>
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<tr>
<td>GC Blanket Consent</td>
<td>1.98</td>
<td>2.82</td>
</tr>
<tr>
<td>GC All Selected (Opt-out)</td>
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<td>2.90</td>
</tr>
<tr>
<td>GC Essential Selected (Opt-in)</td>
<td>2.02</td>
<td>3.05**</td>
</tr>
</tbody>
</table>

Statistically significant:
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Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.
What was measured?

This outcome variable was designed to measure if a respondent is willing to share invasive information captured using a set of survey questions.

The sensitive questions consisted of a list of thirty yes-or-no questions ranging from moderately sensitive to highly sensitive behaviours using the method developed in Aquisti et al. (2013).

The questions addressed sexual behaviours, personal habits, and potentially offensive behaviours. An invasive score was generated by totalling the number of questions answered in the affirmative.

Why is it important?

This outcome measure was selected as it functioned as a proxy for sharing sensitive information, such as usage data, browsing behaviours, and other forms of de-identified information.

A high invasive score shows the willingness to share such information with businesses, reflecting a certain measure of trust. In terms of our research aim of business advantage, we wanted to see how we can improve data sharing by users.

Research results

In India, the cool down period significantly improved willingness to share invasive information while in Kenya, it was the 4 star rating which promoted invasive data sharing.

Soft nudges like normative messaging, granular consent did not influence this metric, reflecting the need for “hard” nudges like cool down to influence data sharing.
Willingness to share sensitive information (sensitive score) - Treatment vs. Control

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>12.8</td>
<td>15.0</td>
</tr>
<tr>
<td>Privacy Rating 1 Star</td>
<td>13.0</td>
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</tr>
<tr>
<td>Privacy Rating 2 Star</td>
<td>13.7</td>
<td>15.0</td>
</tr>
<tr>
<td>Privacy Rating 4 Star</td>
<td>13.7</td>
<td>15.8*</td>
</tr>
<tr>
<td>Summary Factsheet</td>
<td>13.6</td>
<td>15.0</td>
</tr>
<tr>
<td>Usage</td>
<td>13.8</td>
<td>14.8</td>
</tr>
<tr>
<td>Costly Signal - Price</td>
<td>13.7</td>
<td>15.2</td>
</tr>
<tr>
<td>Costly Signal - Fine</td>
<td>13.8</td>
<td>15.1</td>
</tr>
<tr>
<td>Info-label Combo - Below Average</td>
<td>13.4</td>
<td>14.9</td>
</tr>
<tr>
<td>Info-label Combo - Average</td>
<td>13.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Info-label Combo - Above Average</td>
<td>13.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Cool Down Period</td>
<td>14.9**</td>
<td>15.6</td>
</tr>
</tbody>
</table>

Statistically significant:

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Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.
Willingness to share sensitive information (sensitive score) - Treatment vs. Control

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>11.8</td>
<td>14.3</td>
</tr>
<tr>
<td>Descriptive Norm - Simple</td>
<td>12.4</td>
<td>13.5</td>
</tr>
<tr>
<td>Descriptive Norm - Detailed</td>
<td>12.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Descriptive Norm - Negative</td>
<td>12.2</td>
<td>14.0</td>
</tr>
<tr>
<td>Privacy Signal</td>
<td>11.4</td>
<td>13.8</td>
</tr>
<tr>
<td>Anchoring</td>
<td>11.8</td>
<td>14.7</td>
</tr>
<tr>
<td>GC Blanket Consent</td>
<td>10.9</td>
<td>14.4</td>
</tr>
<tr>
<td>GC All Selected (Opt-out)</td>
<td>11.5</td>
<td>13.7</td>
</tr>
<tr>
<td>GC Essential Selected (Opt-in)</td>
<td>11.3</td>
<td>14.2</td>
</tr>
</tbody>
</table>

Statistically significant:

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GC - Granular Consent

Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.
Willingness to share personal information

What was measured?

- This outcome variable was designed to measure if a respondent is willing to share personal information as measured by a set of survey questions.
- The personal questions consisted of a list of ten personal questions (on topics like political beliefs and health), administered in two parts - the first asked if the respondent is willing to answer the question and if 'Yes', they were required to answer the question.
- Personal questions were aimed to simulate any form of voluntary data sharing among consumers for perceived marginal benefit.

Why is it important?

- This outcome measure consisted of questions about political beliefs, health, and financial behaviours and was constructed with the aim of mimicking an online product survey.
- A high personalisation score shows the willingness to share such information with businesses, reflecting a certain measure of trust.
- Our aim was to see how user data sharing can be improved, hence becoming a business advantage.

Research results

- In India, the cool down period significantly improved willingness to share personal information similar to invasive questions. Mandating people to stay on the policy page seems to prime trust and make users confident in sharing data.
- In Kenya, summary factsheet, 4*, usage and costly privacy signal reported lower sharing than control while privacy signal was higher.
Willingness to share personal information (personalisation score) - Treatment vs. Control

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>5.9</td>
<td>7.9</td>
</tr>
<tr>
<td>Privacy Rating 1 Star</td>
<td>5.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Privacy Rating 2 Star</td>
<td>5.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Privacy Rating 4 Star</td>
<td>6.2</td>
<td>7.4*</td>
</tr>
<tr>
<td>Summary Factsheet</td>
<td>6.1</td>
<td>7.2**</td>
</tr>
<tr>
<td>Usage</td>
<td>5.7</td>
<td>7.4*</td>
</tr>
<tr>
<td>Costly Signal - Price</td>
<td>5.8</td>
<td>7.2**</td>
</tr>
<tr>
<td>Costly Signal - Fine</td>
<td>6.1</td>
<td>7.8</td>
</tr>
<tr>
<td>Info-label Combo - Below Average</td>
<td>5.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Info-label Combo - Average</td>
<td>6.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Info-label Combo - Above Average</td>
<td>6.0</td>
<td>7.4</td>
</tr>
<tr>
<td>Cool Down Period</td>
<td>6.6**</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Statistically significant:
*** at the 1% level  ** at the 5% level  * at the 10% level

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Willingness to share personal information (personalisation score)

**Treatment vs. Control**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>INDIA</th>
<th>KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>6.7</td>
<td>8.0</td>
</tr>
<tr>
<td>Descriptive Norm - Simple</td>
<td>6.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Descriptive Norm - Detailed</td>
<td>6.5</td>
<td>8.0</td>
</tr>
<tr>
<td>Descriptive Norm - Negative</td>
<td>6.4</td>
<td>8.2</td>
</tr>
<tr>
<td>Privacy Signal</td>
<td>6.7</td>
<td>8.3*</td>
</tr>
<tr>
<td>Anchoring</td>
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<tr>
<td>GC Blanket Consent</td>
<td>6.6</td>
<td>8.0</td>
</tr>
<tr>
<td>GC All Selected (Opt-out)</td>
<td>6.8</td>
<td>8.1</td>
</tr>
<tr>
<td>GC Essential Selected (Opt-in)</td>
<td>6.5</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Statistically significant:

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**GC - Granular Consent**

Statistical significance quantifies how confidently we can attribute results to our interventions rather than chance. The lower the significance level, the more confident we are of our results.
CONTEXT IS KEY
Differences Between India and Kenya Results

1. Our control groups in India and Kenya were consistently different, reflecting that different socio-cultural factors in both countries influence how users approach privacy and data-sharing. Kenyans have a more vigilant approach to the privacy policy but also share more data, showing more trust in online data sharing as compared to Indians.

   In the control group, Kenyan respondents report higher scores* on all outcome variables than Indians i.e. Kenya respondents spend more time on the privacy policy, understand its terms better and share more sensitive and personal information.

2. Treatment group respondents in Kenya shared personal information differently than respondents in India.

   While Indians who were shown nudges such as star ratings, information labels, costly signals shared more personal information as compared to the control group (as expected), Kenyans who were shown these nudges shared less than the control group.

   On the other hand, descriptive norm messages and granular consent nudges lead to higher personal information sharing by Kenyans compared to the control group, unlike Indians who ended up sharing lesser information, in most cases when shown the same nudges.

3. The impact of nudges on privacy behaviours is highly contextual - different nudges worked in India and Kenya.

   User data sharing behaviour was influenced by a range of nudges such as privacy signalling messages, usage case, the negative norm message and summary factsheet in Kenya. On the other hand, the cool down period nudge, which was our most deliberate or ‘hard’ nudge worked best in India.

* this is a directional finding not statistically significant
NUDGING PRIVACY
Results and Implications | What worked

- The cool down period, which forced respondents to stay on the privacy policy for six minutes, and defaults, which created pre-decided sharing settings, are powerful tools to influence how much information consumers share. These “hard nudges” shape the environment in which users make sharing decisions.

  **Implication:** Businesses and developers should focus on an integrated approach and redesigning the entire system within which data sharing decisions are made, rather than adding features or make small alterations to existing systems. This approach will be able to address several behavioural barriers at once and even have the potential to be personalised across different users. More specifically, defaults can be designed to keep the end user in mind. This will build trust between the customer and business, leading to better outcomes and more information sharing in the long-run.

- What others do is very powerful. Both positive and negative ‘social norm’ messages had a significant impact on how much time people spent on the policy. It is human tendency to want to conform to behaviours exhibited by the larger community. When told majority of people spent more time on the policy or suffered because they did not, respondents were influenced to change their own behaviour.

  **Implication:** Short messages or reminders which convey favourable behaviour of other users are useful tools to get individuals to do something. They are cost-effective and simple to implement. They can easily be added to existing service platforms and apps.
Results and Implications | What worked

Star ratings are an effective shortcut for consumers to understand how safe their data is with a platform or how much a service provider cares about protecting data. Our experiments have also shown us that higher star ratings can lead to more information sharing. This would be a great advantage for businesses to adopt as they will signal compliance to regulation and care for customer wellbeing.

**Implication:** While the exact format or features would have to be developed further, the rating holds an immense amount of potential. Consumers will be able to understand complex and abstract topics in a simple way, while businesses will have a standard to aspire to. The rating will have to be designed by regulators or a third-party to ensure that it is valid, trustworthy, and unbiased. Ratings will also have to be dynamic to account for growing size of the business, their changing revenue streams, and keeping them accountable over time, rather than just at a single point.
Many of the interventions that simplified information in the privacy policy [summary factsheet, granular consent] or disclosed consequences of poor privacy [costly signalling] were unsuccessful at making users read the policy in more detail, spend time on the policy, or alter their information sharing behaviour. While simplification is an important tool for behavioural scientists, it needs to be studied in greater detail in the field of data privacy. Based on these findings, we believe that data privacy is not solely an information gap but also a motivational challenge. People often do not want to take the initiative to know these things or spend more time deliberating their data sharing decisions.

**Implication:** Simplification needs to be accompanied by a harder nudge or change in the data sharing environment. For example, simplified versions of the privacy policy could be coupled with a cool-down or recommended default setting that holds the user’s hand and leads them towards safer behaviours online.

Information about privacy is complex. Getting people to spend more time on the privacy policy [in case of social norm messages] did not lead to better understanding of its terms and conditions. Further, simplifying the policy [summary factsheet] did not lead to participants understanding policy terms better.

**Implication:** Reading a policy and understanding a policy are two different things. Businesses interested in building trust and remaining socially responsible will have to examine their customer profiles and think about the best way to make sure their customers are informed. This could take the form of videos or small audio clips for semi-literate populations or comic strips or simplified tools for semi-aware populations. The perfect solution will vary based on customer base and the business’s intention. These ideas require further formative research and testing.
Results and Implications | What requires further thought

Highlighting how data is used [usage case, blanket consent] or providing a summary of privacy policies [summary factsheet] make privacy terms salient. In Kenya, this led to users sharing less information, perhaps due to activating privacy concerns among participants. However, this does not mean that all similar nudges will lead to low data sharing. Showing how data is used is not guaranteed to lead to more or less data sharing.

**Implication:** Usage cases tend to expose exactly how data is collected and shared, which gives customers a chance to understand what happens when they sign up to use an app. Adapting this solution will need to be thought about in more detail. Regulators might be the perfect stakeholder to get involved and mandate that how data is shared must be made clear in the consent form, preferably in a visual manner.
Recommendations and Next Steps
Recommendations and Next Steps

Our experiments helped us learn a lot about users’ privacy related behaviours. Here are our recommendations for what should come next, based on our deep analysis.

1. Further experimentation
   Further development of nudges that have shown promise, like the star rating, to address weaknesses will help towards market readiness. There is a good scope to also combine treatments like the cool down period with a presentation nudge to seek better results.

2. Live market tests
   Working with service providers to test the adoption and applicability of the treatments in real market setting is important.

3. Privacy by design
   We recommend continued dialogue with service providers and regulators to adopt an integrated approach to include privacy and consent as part of the user experience. Responsible innovation should be the name of the game.
CONCLUSION
Conclusion

Through our experiments, we learned that data privacy is a complicated concept for consumers to understand and make decisions about. They are often unaware or unmotivated to read detailed policies and spend time thinking about whether they should share information. At the same time, we found that hard nudges, such as the cool-down and defaults, can play a big role in shaping how consumers share data. We believe that consumers need to be assisted and taught about how to make better decisions online. The responsibility cannot just fall on them. We recommend two methods of tackling this challenge: redesigning the choice environments in which consumers navigate data sharing online and involving regulators more.

Our evidence suggests that one strong solution could be developing a system of privacy ratings. These systems capture key information without excluding populations with low literacy or awareness levels. A system of standardized and dynamic ratings would not only ensure that users understand the privacy values of the apps or services they employ but also keep businesses accountable. We recommend that ratings be taken up by a credible independent agency or regulators with the goal of putting in place dynamic standards of privacy.

Our study also indicates that businesses could stand to gain from this. Introducing a cool down period or ratings seem to make users share more information - a win for both businesses and users. Beyond gaining the trust of the customers, businesses will also be able to use their privacy features to attract new users and gather more data consensually. As more people living in the global south move towards owning smartphones and tablets, user-centric businesses will lead the way in balancing user loyalty alongside their own priorities. In order to start designing for those advantages today, our next steps would be to run similar experiments on the cool-down, perhaps by combining it with other nudges. We would also recommend doing a live market test with privacy-conscious providers to see how consumers using an actual service respond to the concept of a cool down.

There is a long path ahead towards the perfect data privacy solutions, IntAct has set us on it by opening up avenues to imagine a future in which businesses and users can share the same priorities while achieving their respective goals. Our results have given us a glimpse into what that could look like. We are looking forward to applying these insights, designing and documenting privacy behaviours as well as working on our second round of interventions. We hope our work will one day become part of a larger body of privacy research that makes the world a better and safer place for all.
BEHAVIOURAL EXPERIMENTS IN DATA PRIVACY

The Busara Center for Behavioural Economics is a research and consulting firm that applies and advances Behavioural science to address the most challenging development problems in India and across Africa. Busara works with academics, policymakers, and organizations to evaluate and implement Behavioural and social interventions. Busara has consistently improved its partners’ products, programs and had policy impact across a number of sectors, including financial inclusion, health, agriculture, and governance.

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Centre for Social and Behaviour Change (CSBC) at Ashoka University is set up by a grant from the Bill and Melinda Gates Foundation (BMGF). The vision of the Centre is to establish an institution in India that is globally reputed for thought leadership and excellence in impactful behaviour change interventions for poor and marginalized populations. CSBC works in the areas of nutrition, sanitation, maternal health, family planning, financial inclusion and data privacy through a mix of behavioural change programmes, capacity building and foundational research. They have set up the Behavioural Insights Unit for the Government of India at the NITI Aayog in partnership with BMGF to improve development indicators on the ground using behavioural insights.

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