Why Do People Adopt, or Reject, Smartphone Password Managers?

Norah Alkaldi & Karen Renaud
Motivation...

Password Managers can help people to manage their passwords.

They are not widely used!

How can we encourage their adoption?
Password Managers provide a vault to store all passwords... securely. These are accessed via ONE strong password.

We all carry smartphones so we could use one of the Smartphone apps.

So, why don’t people use them?
Factors from Related Areas

1. **Contextual** – usefulness, ease of use, security, cost, effort, gender, interest in technology
2. **Psychological & Sociological** – support for relatedness, social needs, subjective norms, ethics, habit
3. **Age Specific** – technology-anxiety, resistance to change
4. **Hedonic** – enjoyment
Our Study

Carried out to determine:

1. Current Use of Smartphone Password Managers
2. Identify Adoption/Rejection Factors
Methodology

Collected data from:

1. Playstore and iTunes Appstore Password Manager Reviews
2. Online Survey
Adoption Life Cycle

Influencing Factors

SEARCH → DECIDE (Choose) → TRY → ADOPT

SEARCH → DECIDE (Choose) → TRY → REJECT
Study

120 Reviews (60% positive)
• UK & USA Stores
• None from Saudi Arabia

352 Responses to Online Survey
• Snowball Sampling
• 17 were discarded due to not answering questions or nonsense responses
17.6% (62) used a password manager
BUT!
• Only 24 provided the name of an actual password manager
• The others used browser password recording
• Some thought it referred to the screen lock mechanism
• 32 didn’t understand the term
Adoption Factors (13)

1. Subjective Norms
2. Time Saving
3. Experience of being hacked
4. Privacy
5. Security (including feeling secure)
6. Social Need Fulfilment
7. Perceived Usefulness
“Go read a book or something with all the free time you now have”

(Review)
“It has truly kept me from losing my mind due to the amount of passwords stored in my head”
(Review)
“shudder to think what it would be like to type an actually secure password on one of your phones” (Review)
“It acts as a complete storage for everything important such as wallet items, router & server info, and much much more” (Review)
Rejection Factors (18)

1. Poor/No Awareness
2. No Perceived Usefulness
3. Cost
4. Security/Privacy Concerns
5. No Control
6. Need Mastery
7. (Un)certainty
8. Insignificance

Daniel Pink’s Motivators
“I have no idea about their existence” (Survey)

“I did not hear about it before” (Survey)
“I can remember my passwords I use. And I would not feel safe with all passwords saved accessible through just one other password” (Survey)
“If I get rich or became a politician then I would think about strong passwords” (Review)
“I do not fully trust that the software will be able to provide enough security. After all, there is no such thing as an impenetrable security, especially in digital world” (Review)
<table>
<thead>
<tr>
<th></th>
<th>Adoption</th>
<th>Rejection</th>
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<tbody>
<tr>
<td>Contextual</td>
<td>Time, Ease of Use, Perceived Usefulness, Perceived</td>
<td>No perceived usefulness, Negative Features, Cost, Perceived Effort</td>
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<tr>
<td></td>
<td>Effort Amelioration, Experience</td>
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<tr>
<td>Psychological &amp; Sociological</td>
<td>Subjective Norms, Social Need, Security, Privacy</td>
<td>Not wanting to be first, Privacy Concerns, Security Concerns, Competency, Control, Mastery, Uncertainty</td>
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Encouraging Adoption

SEARCH
- More Effective Advertising
  - Awareness

DECIDE
- Better App Store Description
  - Reduce Uncertainty

TRY
- Give Users Sense of Control
  - Support Basic Human Need
Limitations

1. We did not collect gender or any other demographics. (to encourage disclosure)
   a) Country-specific differences could have been missed
2. Snowball sampling means the sample might not be representative of the general population
3. Reviews might not reflect the views of all users
4. The impact of different factors were not weighted.
   a) Future work should do this
We carried out a study to find out why password managers were not being used.

We discovered a number of factors that encouraged and discouraged adoption.

We made some suggestions about how adoption can be encouraged.

Conclusions
Thanks for your attention!
Any Questions?