Applying Behavioral Insights

FSD Kenya – IBM
Financial Inclusion Roundtable
April 23, 2015
Agenda

BEHAVIORAL INSIGHTS: What do we know, why does it matter, and how does it change our approach?

IDENTIFYING NEW MODELS OF DECISION-MAKING: Recent lab research that pushes the frontier of behavioral science

OBSERVING BIASES IN THE MARKET: Understanding behavioral barriers to optimization and savings in the mobile money sector

DESIGNING INFORMED PRODUCTS: Applying behavioral insights to improve savings and usages of a mobile pension product

CONCLUSIONS: Outline of immediate applications and insights for firms in the financial space
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System 1: Reacting

- Unconscious and automatic
- Effortless
- Vulnerable to biases and systematic errors

System 2: Reasoning

- Conscious and deliberate
- Effortful
- Logical, skeptical and reasoned
2 + 2 = 4

17 x 26 = 442
1) Read through the list to the right, stating the text word for each item (e.g. “blue – green…”)

<table>
<thead>
<tr>
<th>BLUE</th>
<th>BLUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>RED</td>
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<tr>
<td>PURPLE</td>
<td>ORANGE</td>
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<tr>
<td>ORANGE</td>
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<td>PURPLE</td>
</tr>
<tr>
<td>RED</td>
<td>GREEN</td>
</tr>
</tbody>
</table>

2) Read through the list to the left, stating the COLOR of the text for each item. (e.g. “red– blue…”)
How many animals did Moses take into the ark?
If a baseball and a bat cost KSH 1100 and the bat costs 1000 KSH more than the ball, how much does that ball cost?

1050 KSH  pressed  50 KSH

1050 KSH  +  50 KSH  =  1100 KSH

1050 KSH  ➖  50 KSH

1000 KSH
<table>
<thead>
<tr>
<th>Behavior</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANCHORING</td>
<td>Relying or ‘anchoring’ on one piece of information when making a decision</td>
</tr>
<tr>
<td>LOSS AVERSION</td>
<td>Valuing losses more than equivalent gains</td>
</tr>
<tr>
<td>STATUS QUO BIAS</td>
<td>Sticking to defaults and avoiding changes, even beneficial ones</td>
</tr>
<tr>
<td>SALIENACE</td>
<td>Limiting attention to the obvious, thereby missing important information</td>
</tr>
<tr>
<td>SOCIAL NORMS</td>
<td>Being influenced by the decisions and actions of those around us</td>
</tr>
<tr>
<td>MENTAL ACCOUNTING</td>
<td>Allocating pots of money for different purposes</td>
</tr>
<tr>
<td>INFO OVERLOAD</td>
<td>Choosing poorly in the face of too much information</td>
</tr>
<tr>
<td>PRESENT BIAS</td>
<td>Favoring immediate payoffs over future ones</td>
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</tbody>
</table>
“I’m calling to remind you about the upcoming election

What time will you vote?
Where will you be coming from?
How will you get to the polling station?”

Making plans to vote increased turnout by 9%
Mental Accounting

46% bought new ticket after losing ticket

88% bought ticket after losing money
10% Increase in Reported Mileage
Dear James,

Your energy consumption this month was 884 Kwh. The average for an energy efficient user is 912 Kwh. Great job!

- OPower

Learning about peers energy consumption led to 4% reduction in energy consumption or $75 million in savings on energy bills.
Targeting specific norms makes them more powerful – users who were informed about behavior in their room were 5% more likely to adopt that behavior those given the same information at the hotel level.

Dear James,

The majority of guests in this hotel room reuse their towels rather than request new ones.
Loss aversion

Group 1: Gain frame

- Teach
- Test
- Bonus calculated
- Bonus paid

Group 2: Loss frame

- Teach
- Test
- Bonus calculated
- Net bonus paid or removed

No change in Group 1
10% Increase in Math Scores in Group 2
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The Cost of Keeping Track

- June 2012: Molly gives James a check for $800
- James can’t cash it immediately, make plan to do it when back in the US
- May 2014: James finds the check (not cashed)
- What happened then:
  - Can I cash it?
  - No no hang on that account doesn’t have money
  - Oh no wait, it does have money
  - Oh no wait, the check is expired
  - What was your account number again?
  - No no, the other one
  - Etc....
- 2 Weeks, 17 emails
- We are still friends
- But this was costly
The Cost of Keeping Track

- Standard economic thinking says people would maximize their interest earned from their resources and delay payments until the last possible minute.
  - This is completely unintuitive and contrary to how we behave:
    - Paying credit card bills in advance
    - Taking care of a friend’s loan earlier / rather than later
    - Etc.
  - This model assumes that humans never forget, and never make decisions based on the potential they might forget
    - We’re pretty confident this is not true, but we ran a few quick test to check
The Cost of Keeping Track

- Experimental Test:
  - **Prediction 1**: People fail to act on tasks in the future
  - **Prediction 2**: They are partly aware of this and therefore pre-crastinate
  - **Prediction 3**: They are willing to pay for reminders
- Three studies in Nairobi; total N = 360
The Cost of Keeping Track

- **Experiment 1:**
  - Do people fail to act on tasks in the future?
  - Ask people to send a “request” for a large payoff at a particular point in time (e.g. exactly 1 week in the future)
  - Request can be an SMS, phone call, or “Please call me” message
  - Different groups are asked to send the request on different days: Immediately, Today, Tomorrow, 1...5 weeks. Total N = 210
  - What proportion of people send the request?
Experiment 1

Option 1:
- Call 1
- Call 2
- Get $1
- Send Request
- Get $6
- Immediately
- Today
- Tomorrow
- 1 week
- 3 weeks
- 5 weeks

Option 2:
- Call 1
- Call 2
- Get $1
- No Request
- No $6
- Immediately
- Today
- Tomorrow
- 1 week
- 3 weeks
- 5 weeks
Option 1:

- Get $1
- Send Request

Option 2:

- Get $1
- No Request

Experiment 1

- Call 1
- Call 2

- Immediately
- Today
- Tomorrow
- 1 week
- 3 weeks
- 5 weeks

- Get $6
- No $6
Experiment 1

Option 1:

- Get $1
- Send Request
- Get $6

Option 2:

- Get $1
- No Request
- No $6
Experiment 1

Option 1:
- Get $1
- Call 1
- Call 2
- Send Request
- Get $6

Option 2:
- Get $1
- Call 1
- Call 2
- No Request
- No $6
Experiment 1

Option 1:

Call 1
Get $1
Call 2
Immediately
Today
Tomorrow
1 week
3 weeks
5 weeks
Send Request
Get $6

Option 2:

Call 1
Get $1
Call 2
Immediately
Today
Tomorrow
1 week
3 weeks
5 weeks
No Request
No $6
Experiment 1

Proportion remembering

Delay

Immediately, Today, Tomorrow, 1 week, 2 weeks, 3 weeks

$y = \exp(-0.03t)$ (t in days)

$N = 20$ at each time horizon
The Cost of Keeping Track

- **Experiment 2:**
  - Are users aware of their tendency to forget, and do they sometimes incur costs to take actions today?
  - Do people prefer to pre-crashtinate future tasks (because they are aware of their probability of forgetting)?
  - Ask people to pay $0.50 to receive a large payoff later. Can choose to pay $0.50 either now or later. (N = 50)
  - Do people prefer to pay $0.50 sooner rather than later?
Experiment 2

Option 1
Get $1
Call 1
Call 2
Today
1 week
2 weeks
Send $0.5

Option 2
Get $1
Call 1
Call 2
Today
1 week
2 weeks
Send $0.5

Option 3
Get $1
Call 1
Call 2
Today
1 week
2 weeks
Do not send $0.5

Get $6

Do not get $6
Experiment 2

Option 1 (Send money today) - 35
Option 2 (Send money in 1 week) - 11
The Cost of Keeping Track

- Experiment 3:
  - Are people willing to pay for a reminder?
  - **Group 1:** Can earn $1 if send an SMS request either in exactly 1 week or in exactly 2 weeks – which do you prefer?
  - **Group 2:** Can earn $1 if send an SMS request either in exactly 1 week or in exactly 2 weeks – which do you prefer? If you choose to send the SMS in 2 weeks, you can expect to be reminded on the day.
  - Question: What proportion of people are willing to wait an extra week for $1 in return for receiving a reminder?
Experiment 3

<table>
<thead>
<tr>
<th>No Reminders</th>
<th>Reminders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

Prop. Choose 2 Weeks

Graphs by Condition
The Cost of Keeping Track

- So, people do often forget tasks in the future, even when there are financial stakes at hand, they are somewhat aware of this and make decisions based on it, and they are even willing to pay for reminders to help them.
- Standard decision-making models need to take this into account:
  - Actions in the future are not just pure cost/benefit decisions, but cost/benefit/will-I-remember-to-do-it decision.
The Cost of Keeping Track

- What does this mean for finance?
  - That means that traditional incentives may not work if people don’t believe that things will happen in the future, nor believe they will remember them.
  - People are willing to pay for reminders, which we know is an effective tool for increasing adherence and savings.

- What does this mean for payments?
  - People who are delinquent aren’t necessarily bad borrowers / savers, they just often forget.
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Question: Kenyans are price aware and sensitive in other industries (food stuffs, call and data) – if prices were salient to users, would they exhibit the same sensitivity?
Timing of Transparency is Critical to Consumer Welfare and Choice

Send money to 0723950660
Ksh500

Cancel Accept

Please confirm the name before you send money.
Enter PIN to Send Money to:
0762789277. Amount: Tsh 2,000. Fee:
Tsh 535

Dismiss Reply
Design and Approach

- 500 Low-income MPesa users in Nairobi
- Measure actual transactional data 3 months prior and 3 months post tariff change
- Survey consumers on price awareness for P2P, Paybill, and Airtime
- Analyze awareness and sensitivity against actual transaction data before and after tariff changes

<table>
<thead>
<tr>
<th>P2P Transaction Value</th>
<th>Old P2P Fee</th>
<th>New P2P Fee</th>
<th>% Change in Fee</th>
<th>Nominal Change in Fee (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-49</td>
<td>3</td>
<td>1</td>
<td>-67%</td>
<td>-2</td>
</tr>
<tr>
<td>50-100</td>
<td>5</td>
<td>3</td>
<td>-40%</td>
<td>-2</td>
</tr>
<tr>
<td>101-500</td>
<td>27</td>
<td>11</td>
<td>-59%</td>
<td>-16</td>
</tr>
<tr>
<td>501-1,000</td>
<td>33</td>
<td>15</td>
<td>-55%</td>
<td>-18</td>
</tr>
<tr>
<td>1,001-1,500</td>
<td>33</td>
<td>25</td>
<td>-24%</td>
<td>-8</td>
</tr>
<tr>
<td>1,501-2,500</td>
<td>33</td>
<td>40</td>
<td>21%</td>
<td>7</td>
</tr>
<tr>
<td>2,501-3,500</td>
<td>33</td>
<td>55</td>
<td>67%</td>
<td>22</td>
</tr>
<tr>
<td>40K-45K</td>
<td>82</td>
<td>110</td>
<td>34%</td>
<td>28</td>
</tr>
<tr>
<td>45,001-50K</td>
<td>110</td>
<td>110</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>50,001-70K</td>
<td>110</td>
<td>110</td>
<td>0%</td>
<td>0</td>
</tr>
</tbody>
</table>
Perceptions of Awareness

- **What Consumers Told Us:**
  - 46% recalled recent M-Pesa price change (but not always accurately)
  - 39% reported changing behavior (11% use MPesa more often, 17% less often)

- **Yet consumers are still anchored to old prices:**
  - 500Ksh Payment:
    - 3% correctly cited 11Ksh fee
    - 27Ksh cited by 38%
  - 1,000Ksh Payment:
    - 2% correctly cited 15Ksh fee
    - 33 Ksh cited by 17%
Optimization and Behavior Change

- For the entire sample there was not significant behavior change post-tariff.

- However, higher users of Mpesa did change behavior:
  - They increased/decreased their transactions to “optimize” by 33% more than lower frequency users

- This implies that users who *felt* the pain of the fees (that the fees were more salient to them) were more likely to respond to the change.

- Often information isn’t enough, building structures to make fees salient is the only way to ensure consumers make fully informed decisions.
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Behavioral Applications to Savings

- How do we use behavioral science to improve savings among informal sector workers in Kenya?
  - Loss aversion and the endowment effect
  - Salience of savings
  - Top of the mind
  - Long term value proposition
Behavioral Applications to Savings

- Interventions:
  - Gold Coin to increase salience of savings
  - Pre-matching contributions to induce loss aversion
  - Post-matching contributions to control for base incentives
  - Text messages framed from children to enforce the long-term value proposition
Behavioral Applications to Savings
Behavioral Applications to Savings

Figure 1: Average Savings by Offer Group

Providing golden coins to scratch off and enhance the saliency of weekly savings was by far the most effective way to increase savings. Savings quintupled over 6 months.
Behavioral Applications to Savings

- **Primary Findings:**
  - Simple gold coins were more effective than a 20% matching contribution!
    - Salience, and a more effective reminder
  - Loss aversion did not work when transmitted via text messaging
    - Inability to induce the endowment effect
    - People did not fully understand the messages / deposits
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# Behavioral Applications to Finance

<table>
<thead>
<tr>
<th>Goals</th>
<th>Economic factors</th>
<th>Behavioral factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve loan repayment</td>
<td>• Interest rates/prices</td>
<td>• Social norms</td>
</tr>
<tr>
<td></td>
<td>• Loan only to those with good credit</td>
<td>• Mental accounting</td>
</tr>
<tr>
<td></td>
<td>• Enforcement</td>
<td>• Present bias</td>
</tr>
<tr>
<td>Incentivize fine payment</td>
<td>• Adjust the size of fines</td>
<td>• Anchoring</td>
</tr>
<tr>
<td></td>
<td>• Enforcement</td>
<td>• Loss aversion</td>
</tr>
<tr>
<td></td>
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<td>• Social norms</td>
</tr>
<tr>
<td>Increase tax compliance</td>
<td>• Rethink tax rates</td>
<td>• Anchoring</td>
</tr>
<tr>
<td></td>
<td>• Improve public services</td>
<td>• Loss aversion</td>
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<tr>
<td></td>
<td>• Enforcement</td>
<td>• Status quo bias</td>
</tr>
<tr>
<td></td>
<td>• Enforcement</td>
<td>• Social norms</td>
</tr>
<tr>
<td>Boost savings rates</td>
<td>• Interest rates</td>
<td>• Mental accounting</td>
</tr>
<tr>
<td></td>
<td>• Credit constraints</td>
<td>• Present bias</td>
</tr>
<tr>
<td></td>
<td>• Access to savings products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Status quo bias</td>
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**Goals:**
- Improve loan repayment
- Incentivize fine payment
- Increase tax compliance
- Boost savings rates

**Economic factors:**
- Interest rates/prices
- Loan only to those with good credit
- Adjust the size of fines
- Rethink tax rates
- Improve public services
- Enforcement
- Credit constraints
- Access to savings products

**Behavioral factors:**
- Social norms
- Mental accounting
- Present bias
- Anchoring
- Loss aversion
- Status quo bias
- Social norms
- Mental accounting
- Present bias
Behavioral Applications to Finance

A better understanding of human decision making can improve access to financial services, enabling people to make the right choices about their savings, borrowings, and future.

Behavioral interventions have been effective in:

- Increasing savings rates
- Increasing take-up of insurance
- Expanding access to credit
- Improving assessments of creditworthiness
- Encouraging people to save for their retirement
Behavioral Applications to Finance

However, every context brings different challenges. While we have some initial understanding of how consumers systematically behave, these are often shaped by how information is disseminated, and what mental models users filter information through:

   Example: Loss Aversion worked in Chicago with Teachers, did not work for pension savings in Kenya

Experimentation and testing is critical to understanding and effectively applying these insights.
THANK YOU