

An experiment in Recife, Brazil, looked at how behaviorally informed messages could motivate digital payment of water bills. Text messages providing an explanation of how to pay digitally increased the adoption of digital methods by 6 clients in each 1,000 and overall payment compliance by 9 clients in each 1,000.

The Recife Metropolitan Region (RMR), located in the state of Pernambuco in Northeast Brazil, has 4.1 million inhabitants, of which 99% have access to water and 34% (SNIS, 2019) to sanitation. However, water losses remain a policy challenge: 57% of the water provided by the utility company in 2018 did not generate sales revenue and around half of the utility's clients defaulted or delayed their bill payment. Facing such financial water losses, the utility's capacity to make investments, operate and maintain the current infrastructure is harmed, potentially limiting the access to water and sanitation for the citizens.

The World Bank and the Pernambuco State's water utility company, with support from the United Kingdom Prosperity Programme, designed and deployed a randomized controlled trial to test whether behaviorally informed text messages could nudge clients to pay their water bills through digital means. With only 18% of bill payments made digitally before the experiment, digital payment options were considered as means to potentially reduce the hassles associated with bill payment and increase clients' compliance. Automatic debit, bank apps, or paying websites can minimize time, costs, and inconvenience of travel and queues for customers.

The Project

Around 166,000 residential clients¹ of RMR were randomly assigned to either one of nine treatment groups that received a Short Message Service (SMS or text message) or to a control group that had no communication sent.

Clients in one of the treatment groups received the standard SMS notification sent monthly by the utility company. This message consisted of a reminder about the due date and bill amount.

The remaining participants were assigned into groups to receive one of eight SMS behaviorally designed. Each message content was designed to address clients' barriers and beliefs related to digital payment identified on a previous behavioral diagnostic²: lack of information on how to use digital means, lack of perception of the advantages of the digital payments, a perception of lack of skills or capacity to use these means (self-efficacy), distrust on alternative payment methods, and procrastination (status quo bias). For personalization purposes, all messages included the client's first name, bill amount, and due date.

Four out of eight behavioral messages had **motivational content**, each of them associated with a different behavioral concept. These messages also provided a link to a short instructional video:

1. Loss aversion, framing the potential waste of time associated to the non-use of digital payment methods as a loss that is valued more than a gain. This is a strong motivator to address the status quo bias.
2. Reciprocity, suggesting that paying digitally can retribute the good work done by the utility, in an attempt to tackle clients' distrust of alternative payment methods.
3. Social norm and self-efficacy, highlighting that many people adopt digital payments, and thus the message recipient can do it as well; seeing that others are using digital payments easily can boost self-efficacy ("You can do it too!" message).
4. Novelty, framing the digital payment method as a novelty that one should try, can help in dealing with clients' procrastination.

The additional four behavioral messages included **capability content**, aiming at clients' lack of information about digital payment. Each message presented a step-by-step explanation of how to pay using one of the following digital options:

5. Internet banking apps.
6. Automatic debt.
7. *Caixa Tem*.³
8. The utility company's app.

In November 2021, a single SMS was sent to each client assigned to a treatment group. The messages were sent three days before their bill due date. Based on a previous successful experiment⁴, the goal was to reach clients at a timely moment to get their attention and, ideally, prompt them to change their behavior and pay the water bill using a digital channel.

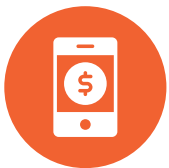
During the implementation process, a decision to remove participants that had paid their bill by roll-out date from the SMS list resulted in a smaller than expected treated sample.



The Results⁵



The message with capability content explaining how to set up automatic debits of bills on banks apps increased digital payment and overall payment compliance. For every 1,000 clients that received this SMS, six additional clients paid digitally⁶, and nine additional ones paid their bill regardless of the payment method⁷, compared to those who did not receive any message. As the utility company has constantly promoted campaigns to increase the number of clients paying using automatic debit, the observed positive impact of this message may also be due to a complementary incentive and reinforcement of the procedure to clients.



Messages on how to pay via the utility company's payment app had a positive effect on on-time payment. For every 1,000 clients that received an SMS explaining how to pay online on the utility company's app, 11 additional clients paid their bills on time⁸ compared to those who did not receive any message.



No statistically significant effect was observed for the remaining behaviorally informed SMS and the standard utility company notification. Clients might be used to receiving messages, fatigue and habituation effects might have decreased their response to any SMS that involves water bill, as suggested by the non-effect from the standard monthly reminder. Also, many clients tend to pay ahead of the due date so that an SMS three days before would not influence their behavior. Moreover, such a result might also be due to the limited sample size that did not allow us to capture impacts.

Policy Implications

The experiment reinforces the idea that SMS messages can be simple yet powerful tools to test communications that promote behavioral change. In addition to communication units in utility companies already employing SMS messages widely to remind clients of their due dates

and billing amount at low implementation costs, their impact is immediate and can be assessed quickly with available administrative data. Effects can be measured regularly (e.g., monthly), the evidence can be readily used for scaling-up, and standard communications can be modified and tailored to the clients' needs with the existing utility's capacity.

Further experimentation is essential. Not all messages were delivered or read, and a portion of the clients had already paid their bills before receiving the SMS. Even for the messages with positive impact, the question remains on how

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persistent the observed behavioral change will be in the long term. Further research is needed to understand how payment can be eased, considering specific conditions and barriers, including the low financial and digital access.

Finally, the experiment implementation was affected by the COVID-19 pandemic impacts. Digital payments were pertinent solutions during the pandemic, considering sanitary measures of social distancing. However,


the economic impact of the pandemic imposed liquidity constraints on a broad population sector, increasing clients' default behavior. Moreover, the cognitive overload associated with the adjustment to the pandemic conditions may have influenced clients' capacity to add yet another behavioral change. In other words, clients might have found it difficult to adopt a new technology in an already stressing and demanding context.


About eMBeD

The Mind, Behavior, and Development Unit (eMBeD), the World Bank's behavioral science team in the Poverty and Equity Global Practice, works closely with project teams, governments, and other partners to diagnose, design, and evaluate behaviorally informed interventions. By collaborating with a worldwide network of scientists and practitioners, the eMBeD team provides answers to important economic and social questions, and contributes to the global effort to eliminate poverty and enhance equity.

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REFERENCES:

- 1 Selected participants accounted for 28% of the utility's residential clients with access to water supply.
- 2 The results of the fieldwork to diagnose behavioral barriers to water connections are documented in "Using Behavioral Insights to Increase Water Revenue in the Recife Metropolitan Region (Portuguese). eMBeD brief Washington, D.C.: World Bank Group." Available at: <http://documents.worldbank.org/curated/en/913631620836985463/Using-Behavioral-Insights-to-Increase-Water-Revenue-in-the-Recife-Metropolitan-Region>
- 3 This app allows beneficiaries of federal conditional cash transfer, such as Bolsa Família, to use funds for paying utility bills through digital payment.
- 4 <https://documents1.worldbank.org/curated/en/385301620678875042/pdf/A-Little-Reminder-Can-Go-a-Long-Way-for-Water-Revenue-in-Brazil.pdf>
- 5 This section presents the results for the full sample randomly assigned to treatment arms, independently of their actual participation in the experiment. As such, they represent an Intention to Treat analysis
- 6 This result is statistically significant at 10%.
- 7 This result is statistically significant at 5%.
- 8 This result is statistically significant at 10%.