

The Future of Our Money

Centering Users in the Design of Digital Currency



MAIDEN

Research made possible by the MIT Digital Currency Initiative

Project Leadership

Maiden Labs: Shira Frank, Director

MIT Digital Currency Initiative (DCI): Dr. Neha Narula, Director

Report Authors

Maiden Labs: Erin Gjefle, Zach Herring, Cris Kubli, Brennan O’Rear, and Georgia Rakusen

Additional Contributors

CultureCraft (design), Mia Herring (project management), Ray Reichenberg (quantitative analysis), Melissa K. Wrapp (methodology review), Chichi Wu (data and executive assistance), Sumedha Deshmukh, Julie Frizzo-Barker, Robin Marlowe, and Reuben Youngblom (copy editing and review)

Funders

MIT Digital Currency Initiative with contributions from Citi Ventures, Google, and PayPal



Executive Summary

Despite the leadership and technical prowess of the United States, its payment system trails behind, struggling to move money in ways that are fast, cheap, and easy.¹ Infrastructural challenges persist, and millions of Americans experience financial pain, insecurity, and uncertainty.

There is a fierce debate about how to upgrade the US payments system. The discussion revolves around five alternative—and potentially complementary—options:

- making incremental improvements to the traditional banking sector,
- investing further in private-sector financial technology innovation,
- advancing regulatory clarity and the mainstream viability of private stablecoins,
- advancing regulatory clarity and the mainstream viability of decentralized cryptocurrencies, and
- issuing a US retail central bank digital currency (CBDC).²

While technologists design the future of money, central bankers from nearly every nation are exploring a digital version of their currency.³ Not since the foundation of the internet have such critical and far-reaching financial technology decisions been on the table.

Web 2.0—the “Social Web”—was built without meaningful user influence at the protocol layers.

Some of the architectural choices made by technologists and entrepreneurs led to socially and politically harmful outcomes, including concentrations of power that continue to pose risks to democracy today, and that have sweeping effects on user privacy, agency, data, security, and trust.

To prevent such outcomes in the rise of digital currency, the MIT Digital Currency Initiative (DCI) and Maiden aim to integrate user research at inception, and to empower policymakers with relevant data about user needs and values, so that their decisions are proactive rather than reactive.

The potential creation of a US retail CBDC is thought to promise systemic efficiency and improved financial

circumstances for millions of Americans.⁴ Yet this hypothesis, and the assumptions about users and use-cases driving the exploration of a US CBDC, remain untested. By conducting user research in close collaboration with leading technologists, we aim to ensure that any attempts to improve the US financial system are grounded in, and guided by, a deep understanding of potential users and use cases.

As a CBDC is only one possible way of improving the financial system, our insights are applicable beyond this use case, intended for anyone critically evaluating the risks and benefits of various approaches to improving the US payments system for users. Our insights are especially designed for technologists, policymakers, and business leaders seeking to design interventions that give people a greater sense of financial agency, security, clarity, and control.

This work seeks to contribute to the vital feedback loops needed—and often missing—between people, technologists, and policymakers that can ensure we are designing and deploying infrastructure-layer technology systems responsibly and equitably.

To help technologists, central bankers, and private-sector leaders begin to distinguish between a hypothetical user (easily conceptualized through unfounded biases), and users and user behaviors that can be verified at scale, we identified and examined a few of the most common assumptions among digital currency designers and decision makers regarding likely users.

Following consultations with technical, policy, and private-sector stakeholders, three research themes emerged:

- What are the needs, pains, behaviors, and attitudes of Americans within the current financial system, specifically regarding their relationship to and use of money and payment systems?
- What are Americans' perceptions regarding financial-transaction privacy that might affect core architectural digital currency design choices?
- What common assumptions can be validated or discarded regarding presumed early users of digital currencies (including, but not limited to, a US retail CBDC), namely assumptions regarding unbanked

Americans, people who send remittances, and Small and Medium Sized Enterprises (SMEs)?

To learn about the unique and personal experiences Americans have with the US payments system, we conducted 91 one-on-one qualitative interviews through recorded video calls with a diverse range of participants. The screened characteristics for interview participants are outlined in Figures 1-4. To generate additional insights at scale, we conducted a national survey of 1,319 people. Respondents were largely representative of the US population (see Figures 5-8 for demographics, as well as Appendix C for a detailed comparative table of our survey respondents to the US population).

Insights

Pain Points for Users in the Current US Payments System

Assumption:

"The existing US payments system is not optimized for users, and a well-designed digital currency (including, but not limited to, a US retail CBDC) might be able to address users' pain points."

Insight:

Uncertainty surrounding financial transactions emerged as the least-addressed and most-persistent pain point for Americans.

For those considering systemic improvements to the US payments system, focusing on design features that could alleviate uncertainty for users will be key. Most people have their needs generally met by the range of financial products available to them, but real pains arise when there is uncertainty surrounding financial transactions, also characterized as a sense of not being in control.

Based on our research, alleviating uncertainty would require concrete improvements for users in four areas:

- **Clear expectations:** there are no surprise fees, people are clear what their account status is, and the terms of the payment providers they use are both clear and reliably honored.
- **Visibility:** people always know how much money they have, they can see up front how long transactions might take, and they have access to view a clear and reliable history of their transactions.

- **Speed:** people know that their money is available to them (or anyone they send it to) quickly, they will not experience variable times for money to move, and they will not have to engage in time-intensive, onerous processes to transact.
- **Security:** people know their money is safe, that it can't be easily stolen or lost, and they trust where it is held.

Unbanked Americans

Assumption:

"An appropriately designed digital currency (including, but not limited to, a US retail CBDC) could provide access to financial services previously out of reach for unbanked people because they will no longer have to experience costly fees."

Insight:

Distrust of banks by unbanked Americans is rooted in surprise punitive overdraft fees.

Digital currencies should have a low barrier to entry. In the case of a US retail CBDC, any person should be able to access the CBDC regardless of their credit history or previous banking record. Especially due to distrust in banks by unbanked Americans, people should not have to access a CBDC via a traditional retail bank; other avenues should be made available.

People Sending Remittances

Assumption:

"People in the US who make remittance payments to their family and friends abroad pay high fees to do so.⁵ An appropriately designed low-or-no-fee CBDC could be a desirable alternative to existing remittance payment solutions."

Insight:

The biggest pain point shared by people making international remittances is not fees; it is *poor user experience*.

Despite popular assumptions, our research found that cost was not the main concern shared by people sending remittances (usually money sent abroad to friends or family). Fees are high, but it's unimaginable to senders that this service would be free.

Overshadowing cost is the anxiety-ridden experience of making such payments, with issues related to speed, unclear

expectations, and low visibility, including long and variable send-times and poor tracking. To address these pains, and remove stressful periods of doubt, any improvement to the status quo would need to be faster, and would need to provide improved clarity through real-time transaction tracking and confirmation.

Small and Medium Sized Enterprises (SMEs)

Assumption:

“Currently, accepting customer payments incurs fees; SMEs will likely be early adopters of a US retail CBDC because it will reduce the costs of doing business.”⁶

Insight:

SMEs tolerate payment fees as the cost of doing business, and see it as a service they expect to pay for.

Current merchant processing (assessment and interchange) fees, including credit cards and third-party payment services can range anywhere from 1.3% to 3.5%.⁷ In interviews, we heard that SMEs understand these payment fees as an inevitable part of doing business, and don't foresee a world where accepting payments is free. This could signify an innovation opportunity, should a new system come along that provides free transactions for businesses. However, when testing the assumption that SMEs would be among the first to adopt a new low-to-no-cost payment system, we learned that SMEs are often customer-led when it comes to adopting new digital payment methods. SMEs may not be the first adopters of alternative payment tools, instead waiting for customers to first demand a shift.

Financial Transaction Privacy

Assumption:

“If the government were to launch a CBDC, people would gravitate towards one that was privacy-centric, because money is a private matter and people would be concerned about the government being able to view their financial transactions.”

Insight:

While financial privacy from the government is desirable, financial privacy from those in one's own social circle or community is even more important.

Americans assume that the government already has access to some of their financial information. While people react differently to this, they accept it as a fact of life.⁸ Far greater

concern arises around the risk of people's financial data not being confidential from people they know, as it could lead to significantly harmful social embarrassment or judgment. Users' concerns related specifically to the government having access to their financial information include: data security, authoritarian use of data, censorship, and lack of control. This suggests that a successful US retail CBDC should be designed to give users confidence that they will maintain control of their finances, that their data will be protected, and that their money is secure.

Conclusion

Standard aspects of the current US financial system create anxiety and undermine a sense of control for users. Unexpected fees create uncertainty, as do outdated processes and obfuscation of data—for example, delayed bank wire clearing, checks bouncing or being delayed, bank accounts being frozen, poor user experience, and unclear fee structures.

Financial technology or “fintech” companies (defined as startups offering a broad set of general banking, payments, investments, and lending services direct to consumers, e.g., PayPal, Venmo, Zelle, and Cash App) have raised the bar for user experience and thus user expectations, going part of the way towards fostering a greater sense of control through more transparent fees, easier-to-use features, and accessible money-management.

Based on our research, developing a new payment tool or system that would competitively meet people's needs is a tall order. Significantly improving upon Americans' current experience would mean optimizing for removing uncertainty, as well as increasing a sense of control for users in the US payments system.

Endnotes

1. Catalini, C., & Lilley, A. (2021). *Why is the United States Lagging Behind in Payments?* SSRN Electronic Journal. Published. <https://doi.org/10.2139/ssrn.3893937>
2. CBDCs are typically grouped into two categories: retail and wholesale. "Wholesale CBDCs are intended for the settlement of interbank transfers and related wholesale transactions, for example to settle payments between financial institutions." In contrast, "Retail CBDCs modify the conventional two-tier monetary system in that they make central bank digital money available to the general public, just as cash is available to the general public as a direct claim on the central bank." *III. CBDCs: an opportunity for the monetary system.* (2021, June 23). Bank for International Settlements. Retrieved December 15, 2021, from <https://www.bis.org/publ/arpdf/ar2021e3.pdf>
3. According to the Atlantic Council, 87 countries, representing over 90% of global GDP, are exploring a CBDC as of December 2021, up from 35 in May of 2020. <https://www.atlanticcouncil.org/cbdctracker/>
4. *Inclusion by Design: Crafting a Central Bank Digital Currency to Reach All Americans.* (2020, December 2). Federal Reserve Bank of Kansas City. Retrieved November 24, 2021, from <https://www.kansascityfed.org/research/payments-system-research-briefings/inclusion-by-design-crafting-central-bank-digital-currency/>
5. Department of Economic and Social Affairs Sustainable Development. (2021). *Goal 10 | Department of Economic and Social Affairs. United Nations.* <https://sdgs.un.org/goals/goal10>
6. Marek, L. (2021, March 17). *Merchant trade groups press legislative action against Visa, Mastercard. Payments Dive.* <https://www.paymentsdive.com/news/visa-mastercard-merchants-payments-coalition-national-retail-federation-durbin/596881/>
7. Daly, L. (2021, April 13). *Average Credit Card Processing Fees and Costs in 2021.* The Motley Fool. <https://www.fool.com/the-ascent/research/average-credit-card-processing-fees-costs-america/>
8. Our research documented the sentiment but did not inquire into whether people had any evidence of the assumption that the government had access to their financial information.



By engaging in neutral user research, Maiden centers people in the essential decisions shaping the future of money. We empower global technology, policy, and business leaders with the insights necessary to mitigate the risks and realize the opportunities of new, more equitable financial protocols.

Maidenlabs.org