

Digital financial services to improve formalized access and inclusion

Last updated: June 2024

Digital financial services have dramatically improved access to formal accounts, especially for marginalized communities. Increased access to digital services has led to a reduction in remittance transaction costs, which has facilitated sharing of financial burdens and alleviated poverty.



Shutterstock.com

Summary

Between 2014 and 2021, the share of adults making digital payments in low- and middle-income economies doubled, rising from 26 percent to 51 percent. Concurrently, the proportion of account owners engaging in digital payments increased from about half to over two-thirds¹. Digital financial services enhance financial inclusion by providing cost-effective, efficient, and secure access to financial products, bridging the gap for underserved populations. Moreover, mobilizing savings, improving resilience, providing pathways to increase credit access, and reaching last-mile users offer opportunities to boost financial inclusion for marginalized groups. The widespread availability of cell phones, even in low-income and rural areas, facilitates the adoption of services like mobile banking, credit, and payments. However, further research is needed to understand overborrowing, consumer protection risks, bank accounts linked to formal institutions versus privately provided accounts, and women's uptake and usage. Additionally, the structural design of digital services, including considerations such as trade-offs between government-implemented and privately provided infrastructure, identification access, prioritizing interoperability², and addressing regulatory frameworks and technology compatibility, is crucial for maximizing the potential of digital finance in advancing global financial inclusion efforts.³

A review of twenty-eight randomized evaluations underscores the extensive and diverse impacts of digital financial services on economic and welfare measures across contexts. Further, the integration of mobile banking with traditional systems showcases substantial advantages for microentrepreneurs, highlighting the multifaceted benefits that extend beyond addressing transaction costs. The studies emphasize the importance of tailoring interventions to diverse populations, promoting financial literacy, and prioritizing consumer protection to unlock the full potential of digital financial services for inclusive economic growth and overall well-being.

Table 1 . Observed Benefits of Digital Financial Interventions Across Studies

Intervention	Impact
Access to mobile money and mobile banking	<ul style="list-style-type: none">• Increased profit [9]• Increased ability to cope with shock [8,][25,][29,][35]• Increased consumption [8,][29,][32,][33]• Financial security [9]• Increased savings [7,][29]• Increased subjective well-being [7,][8]• Migration [8,][29]• Labor reallocation [1,][8,][34]

Intervention	Impact
Digitized payments	Social Protection
	<ul style="list-style-type: none">• Increased financial well-being [26]• Increased food security, resilience [3,][14,][26]• Reduction in leakages [14]• Increased administrative efficiency, transaction costs [2,][3,][14]
	Financial Services and Wages
Digital credit	<ul style="list-style-type: none">• Increased profits [32]• Financial control [23]• Increased resilience [13]• Increased savings [13]• Promotes technological literacy [13]
	<ul style="list-style-type: none">• Subjective welfare [10]• Reduced sales volatility [16]
	<ul style="list-style-type: none">• Increased resilience [35]• Perceived financial well-being [12]

Supporting evidence

In contexts where mobile money can be rolled out effectively, its introduction enables users to send money, which significantly reduces remittance transaction costs and leads to increased migration, enhanced financial resilience, and poverty reduction [8], [25], [29], [34], [35]. Non-experimental research in Kenya revealed that mobile money improves resilience to income shocks; while non-users responded by cutting consumption by 7 percent, users' consumption was unaffected. These benefits are attributed to a reduction in transaction costs, which increases the likelihood of receiving money during a crisis, receiving larger amounts of money, and receiving support from more members of their network[25]. The accessibility of the mobile money system M-PESA lifted 194,000 households, equivalent to 2 percent of households in the country, out of poverty. Additionally, women were more likely to switch their main occupation from agriculture to business, indicating positive outcomes from increased consumption and savings. These changes in financial behavior enhance the efficiency of allocating resources over time and influence labor market outcomes, such as job choice[34].

In a randomized evaluation in Bangladesh, where both remittance senders and receivers received training and support for mobile money, families increased their use of mobile banking accounts, migrants sent 30 percent more in remittances, and households receiving remittances increased their consumption by 7.5 percent. Rural recipients' well-being improved, borrowing decreased, and savings increased. They also saw an increase in migration and consumption increased during the lean season. However, urban migrants experienced trade-offs, including declines in physical and emotional health due to heightened pressures to work longer hours and increase remittances, which were enabled by the new technology[29]. A randomized evaluation in Mozambique shows how money being sent via mobile money makes migration more attractive, its introduction increased out-migration by 14.5 percentage points, and households increased their expenditures by 35.2 percent in the first year and 24.3 percent in the second. Remittances increased sharing of financial burdens and resilience, all while households shifted from subsistence agriculture to more productive occupations by 4.4 percentage points, highlighting the potential for mobile money to drive significant economic shifts[8]. This makes the investment in the rollout of mobile money a promising policy option for policymakers seeking to foster poverty reduction, resilience against shocks, and financial inclusion in underserved regions. However, local constraints may limit the impacts of mobile money. In Afghanistan, violence and conflict deterred individuals from using mobile money as a means of financial inclusion, emphasizing the need to address security issues to unlock the potential of such services[11], . Similarly, in remote areas of northern Uganda, the rollout of mobile money agents did not lead to the expected increase in usage, likely due to low baseline rates of mobile phone ownership, mobile money transactions, and remittance receipts. However, there is evidence it did reduce transportation costs by 76 percent for those receiving remittances and enhance food security[36].

The advent of mobile banking has given people an alternative way to accrue savings. Studies consistently find that the integration of mobile money accounts with traditional banking systems increased savings deposits in addition to providing a variety of other benefits [1], [9], [24], [33]. In Malawi, urban microentrepreneurs were more likely to increase both the quantity and value of mobile money deposits (ranging from 55 to 80 percent and 67 to 83 percent, respectively) when they received access to mobile money provider saving accounts, support in opening accounts, training on basic transactions, and a waiver on withdrawal fees. It is worth noting, in this context, that access to mobile money influenced a shift in labor allocation toward farming away from their main business, potentially suggesting that farm labor has higher expected financial gains, while business earnings are used for meeting more immediate daily financial needs. However, the delay in payoff and risk had induced people to instead work in their main microenterprise[1], . In other economies like Mozambique, providing access to mobile savings accounts and enhancing financial management skills has proven beneficial for female-led microenterprises. This resulted in nearly doubling profit gains six years later, particularly for women who started with intermediate baseline profits, ultimately

contributing to the closing of the gender profit gap, where women-led businesses often earn less than half of those led by men[9]

. In Kenya, offering parents of primary school leavers access to a mobile-linked bank account, along with information on the importance of continued education and savings, has been shown to be effective. The mobile-linked accounts increased student enrollment in high school by 6 percentage points and increased total savings by three to four times compared to just providing information highlighting unique ways to promote educational and financial well-being[24]. Policymakers should recognize that integrating mobile banking with traditional systems increases savings deposits and has broader positive impacts, such as improving labor allocation and narrowing gender profit gaps, suggesting that the benefits extend beyond addressing transaction costs alone.

The digitization of government-to-person (G2P) payments,⁴ facilitated by mobile money, holds promise for reducing the misappropriation or diversion of payments while reducing administrative costs and increasing efficiency[2], [3], [14], [26]

. Mobile money platforms enhance transparency and accountability, reducing leakages by creating a traceable digital trail that minimizes opportunities for funds to be siphoned off or diverted illicitly, while streamlining processes to prevent theft or corruption[14], . In Ghana, the digitization of mobile money payments emerged as a transparent and rapidly scalable approach to social protection during the Covid-19 pandemic, effectively mitigating economic shocks by providing cash transfers to low-income households, which resulted in economically significant improvements in household financial well-being, food security, and social distancing behaviors[26], . Similarly, in Niger, electronic delivery via mobile money improved the efficiency of cash transfer programs, with per-transfer costs 20 percent lower than manual cash distribution. Using mobile money agents for “cash outs” instead of requiring participants to travel to a centralized single location reduced recipients' travel time by half, or from an average of 4 kilometers (round-trip) to 2 [3], . In Togo, digital cash transfer payments through mobile money platforms, coupled with targeting using machine learning and non-traditional data sources like satellite and mobile phone networks, provided an efficient means to deliver relief to economically vulnerable populations during crises. By leveraging mobile money rails, targeting efforts became more precise and streamlined, ensuring that aid reached those most in need while minimizing errors and administrative burdens in humanitarian assistance efforts[2]. The adoption of mobile money for cash transfer programs, combined with innovative approaches, offers a promising strategy to mitigate the leakage of funds and more efficiently deliver social protection to vulnerable populations.

Digital financial services are uniquely positioned to support women's financial inclusion and control over money, though gender gaps and barriers persist [9], [20], [23], [32], [33].

In Uganda, the transition from cash to digital disbursement for microfinance loans among female entrepreneurs increased their business profits by 15 percent, business capital by 11 percent, and total household income and consumption. This shift not only allowed women to overcome family-sharing pressures but also provided a secure means to handle loans via a mobile money account, leading to improved business outcomes and greater household welfare[32], . In Tanzania, women increased their use of digital financial services when their weekly loan repayments were switched from cash to mobile money. This shift not only enhanced women's familiarity and comfort with mobile money but also empowered them by providing a private and secure platform to manage their funds, thereby enabling greater financial control and decision-making within their households[23], . The promotion of savings among vulnerable women in Kenya through mobile banking increased individual financial security but led to a reduction in informal sharing of financial burden arrangements within communities, potentially leaving vulnerable populations more exposed to shocks. While savings initiatives can positively impact welfare, policymakers should carefully consider their interaction with existing informal systems to ensure comprehensive risk management strategies for women in low- and middle-income countries[20]. Policymakers must prioritize promoting digital financial services for women's empowerment, while ensuring interventions address barriers and unintended consequences to foster comprehensive financial inclusion strategies.

Mobile instant credit can improve resilience, subjective well-being, and investments in education of consumers.

However, it is important to acknowledge the potential risks to borrowers. Some studies suggest positive impacts, such as a decrease in forgoing expenses in response to negative shocks and increased feelings of subjective well-being. For example, a non-experimental study in Kenya found that while borrowers offered small short-term digital loans were 6.3 percentage points (from a base of 68 percent) less likely to forgo any expenses in response to a negative shock and increased spending on education, they found no impacts on assets, wealth, or consumption[35], . In Nigeria, auto-approval for digital credit increased formal credit use and improved subjective well-being, but it had neither positive nor negative impacts on measures of welfare such as income and expenditures, resilience, or women's economic empowerment [10].

However, the absence of detection of potentially harmful effects doesn't imply their nonexistence, underscoring the need for additional research⁵. In Malawi, researchers found robust demand for small loans, but they also discovered that the provider misled borrowers by advertising incorrect late repayment fees. An evaluation of informing customers of late fees had no impact on repayment, as 47 percent of borrowers failed to repay their loans on time and incurred a late fee. This raises questions about whether people are fully informed and if financial education can change demand or loan repayment behaviors, particularly in contexts where there is scope for misleading information[12], . Innovations in credit contract design such as digital collateral and pay-as-you-go financing can expand credit supply and enable the acquisition of assets with minimal down payments. However, the costs of these innovations, such as the deactivation of assets in the case of missed payments, should be considered [22]. With limited borrower awareness, high costs, and late repayment fees there's a need to prioritize funding digital credit research in addition to financial literacy and responsible lending practices to harness the potential benefits of digital credit while safeguarding borrowers in the long run.

The rapid expansion of digital financial services has given rise to a concerning prevalence of vendor overcharging and misconduct, emphasizing the critical need for robust consumer protection measures to uphold market integrity and trust [6], ⁶.

Mobile money agents play a pivotal role in facilitating the dissemination and adoption of new financial services. In Indonesia, offering financial incentives to mobile agents significantly impacted the adoption of new financial services. When these incentives were kept private, uptake nearly tripled, leading to an 18–20 percent increase in total deposits/withdrawals, balances, and savings. When agent incentives were made public, there was no impact on take-up, as clients questioned agents' motives, leading to decreased trust in the product, agent, and bank. This highlights the importance of considering levels of transparency in promoting new technologies, particularly in contexts with limited information and trust [19], . In Ghana, consumers benefited from low-cost anti-misconduct information programming, resulting in a 72 percent reduction in misconduct and an 86 percent reduction in its severity. Additionally, it increased the uptake of transactional services and savings likelihood, enhanced resilience to unexpected shocks, and improved perceptions of vendor honesty. These findings underscore the efficacy of such programs in curbing vendor misconduct, while also highlighting the need to address gender-based misconduct and discrimination within the financial sector for improved market efficiency [5], [6].

In Kenya, researchers investigated the effectiveness of common fraud prevention tips in an online experiment. While they did not find clear evidence that the tips enhance the detection of scams, they did find an increase in correctly identified scams and a decrease in correctly identified genuine messages, suggesting that the tips led to overcaution[28], . In Ghana, researchers studied how peer interaction on new technologies and collaborative learning can boost fraud prevention knowledge, increase confidence in using financial accounts securely, and encourage the uptake of new financial services. They examined a one-off incentive and peer endorsement of a mobile money account linked to a formal bank account. Incentivized peer referrals by microfinance group leaders tripled usage, resulting in a 27 percentage point increase in mobile banking usage, while the incentive alone led to a 15 percentage point increase; peer endorsement led to an average 50 percent (US\$7) increase in savings in the linked bank account after six months[30], . Among factory workers in Bangladesh, directly depositing wage payments into mobile money accounts

facilitates consumer learning and decreased susceptibility to illicit fees. Recipient workers were more likely to make unassisted transactions outside the factory, increase transaction volumes excluding withdrawals, and decrease their reliance on costly intermediated send-money transactions [13]. Policymakers should prioritize implementing robust consumer protection measures, including low-cost anti-misconduct information programs, transparent incentives for mobile agents, and targeted education initiatives, to curb vendor overcharging and misconduct, promote trust in digital financial services, and enhance market efficiency and consumer welfare.

Sector chair(s) or Academic lead(s)

Emma Riley Emily Breza

Insight author(s)

Tyler Spencer

Abdul Latif Jameel Poverty Action Lab (J-PAL). 2024. "Digital financial services to improve formalized access and inclusion." J-PAL Policy Insights.

1. Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, and Saniya Ansar. 2022. "The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19." Washington, DC: World Bank. Research Paper
 2. See Russell Toth, Phillip Roessler, Hsin-Tien Tsai, Hussam Razi. 2022. "Inclusive Instant Payment Systems: An Evidence Based Approach from Design to Impact," Innovations for Poverty Action.
 3. See J-PAL's [Inclusive Financial Innovation Initiative](#), and [Digital Identification and Finance Initiative](#).
 4. G2P payments are direct transfers of funds or benefits from a government entity to individuals or households, typically aimed at supporting social welfare programs or providing financial assistance.
 5. Cassara, Dan, Arianna Zapanta, and Seth Garz. 2024. "Mobile Instant Credit: Impacts Challenges, and Lessons for Consumer Protection." Center for Effective Global Action, Innovations for Poverty Action. Research Paper
 6. Garz, Seth, Xavier Giné, Dean Karlan, Rafe Mazer, Caitlin Sanford, and Jonathan Zinman, . 2021. "Consumer Protection for Financial Inclusion in Low- and Middle-Income Countries: Bridging Regulator and Academic Perspectives." *Annual Review of Financial Economics* 13: 219-246. Research Paper
-

1. Aggarwal, Shilpa, , Valentina Brailovskaya, and Jonathan Robinson, . 2020. "Cashing in (and Out): Experimental Evidence on the Effects of Mobile Money in Malawi." AEA Papers and Proceedings 110: 599-604. Research Paper, | J-PAL Evaluation Summary
2. Aiken, Emily, Suzanne Bellue, Dean Karlan, Chris Udry, , and Joshua E. Blumenstock. 2022. "Machine Learning and Phone Data Can Improve Targeting of Humanitarian Aid." *Nature* 603, no. 7903: 864-870. Research Paper, | J-PAL Evaluation Summary
3. Aker, Jenny C., Rachid Boumnijel, Amanda McClelland, and Niall Tierney. 2016. "Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment in Niger." *Economic Development and Cultural Change* 65, no. 1: 1-37. Research Paper, | J-PAL Evaluation Summary
4. Annan, Francis, . "Gender and Financial Misconduct: A Field Experiment on Mobile Money." SSRN Working Paper #3534762, January 2022. Research Paper
5. Annan, Francis, . "Misconduct and Reputation under Imperfect Information." SSRN Working Paper 3691376, January 2021. Research Paper, | J-PAL Evaluation Summary

6. Annan, Francis, , William Blackmon, Xavier Giné, Brian Mwesigwa, Arianna Zapanta. 2023. "Transaction Cost Index: Year 1 Comparative Report." Innovations for Poverty Action. Research Paper
7. Bastian, Gautam, Iacopo Bianchi, Markus Goldstein, and Joao Montalvao. "Short-term Impacts of Improved Access to Mobile Savings, with and without Business Training: Experimental Evidence from Tanzania." CGD Working Paper #478, March 2018. Research Paper
8. Batista, Catia, , and Pedro C. Vicente, . 2023. "Is Mobile Money Changing Rural Africa? Evidence from a Field Experiment." *Review of Economics and Statistics*: 1-29. doi: https://doi.org/10.1162/rest_a_01333. Research Paper
9. Batista, Catia, , Sandra Sequeira, and Pedro C. Vicente, . 2022. "Closing the Gender Profit Gap?." *Management Science* 68, no. 12: 8553-8567. Research Paper
10. Björkegren, Daniel, , Joshua Blumenstock, , Omowunmi Folajimi-Senjobi, Jacqueline Mauro, and Suraj R. Nair. "Instant loans can lift subjective well-being: A randomized evaluation of digital credit in Nigeria." SSRN Working Paper #4385266, February 2023. Research Paper, | J-PAL Evaluation Summary
11. Blumenstock, Joshua, , Michael Callen, Tarek Ghani, and Robert Gonzalez. 2024. "Violence and Financial Decisions: Evidence from Mobile Money in Afghanistan." *Review of Economics and Statistics* 106, no. 2: 352-369. Research Paper
12. Brailovskaya, Valentina, Pascaline Dupas, , and Jonathan Robinson, . "Is Digital Credit Filling a Hole or Digging a Hole? Evidence from Malawi." NBER Working Paper w29573, December 2021. Research Paper
13. Breza, Emily, , Martin Kanz, and Leora F. Klapper. "Learning to Navigate a New Financial Technology: Evidence from Payroll Accounts." NBER Working Paper w28249, December 2020. Research Paper, | J-PAL Evaluation Summary
14. Callen, Michael, , Miguel Fajardo-Steinhäuser, Michael G. Findley, and Tarek Ghani. "Can Digital Aid Deliver During Humanitarian Crises?" arXiv Working Paper, December 2023. Doi: <https://doi.org/10.48550/arXiv.2312.13432>. Research Paper
15. Cassara, Dan, Arianna Zapanta, and Seth Garz. 2024. "Mobile Instant Credit: Impacts Challenges, and Lessons for Consumer Protection." Center for Effective Global Action, Innovations for Poverty Action. Research Paper
16. Dalton, Patricio S., Haki Pamuk, Ravindra Ramrattan, Burak Uras, and Daan van Soest. 2023. "E-payment Technology and Business Finance: A Randomized Controlled Trial with Mobile Money." *Management Science*. 70, no. 4: 2590–2625. <https://doi.org/10.1287/mnsc.2023.4821>. Research Paper
17. De Mel, Suresh, Craig McIntosh, , Ketki Sheth, and Christopher Woodruff. 2022. "Can Mobile-Linked Bank Accounts Bolster Savings? Evidence from a Randomized Controlled Trial in Sri Lanka." *Review of Economics and Statistics* 104, no. 2: 306-320. Research Paper, | J-PAL Evaluation Summary
18. Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, and Saniya Ansar. 2022. "The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19." Washington, DC: World Bank. Research Paper
19. Deserranno, Erika, , Gianmarco León-Ciliotta, , and Firman Witoelar. 2023. "When Transparency Fails: Financial Incentives for Local Banking Agents in Indonesia." *Review of Economics and Statistics*: 1-45. Research Paper, | J-PAL Evaluation Summary
20. Dizon, Felipe, Erick Gong, and Kelly Jones. 2020. "The Effect of Promoting Savings on Informal Risk Sharing: Experimental Evidence from Vulnerable Women in Kenya." *Journal of Human Resources* 55, no. 3: 963-998. Research Paper
21. Garz, Seth, Xavier Giné, Dean Karlan, Rafe Mazer, Caitlin Sanford, and Jonathan Zinman. 2021. "Consumer Protection for Financial Inclusion in Low- and Middle-Income Countries: Bridging Regulator and Academic Perspectives." *Annual Review of Financial Economics* 13: 219-246. Research Paper
22. Gertler, Paul, , Brett Green, and Catherine Wolfram. "Digital Collateral." NBER Working Paper w28724, 2022. Research Paper
23. Heath, Rachel, , and Emma Riley. "Digital Financial Services and Women's Empowerment: Experimental Evidence from Tanzania." Working Paper, April 2024.
24. Habyarimana, James, , and William Jack. 2024. "High Hopes: Experimental Evidence on Financial Inclusion and the Transition to High School in Kenya." *Economic Development and Cultural Change* 72, no. 3: 1189–1212. Research Paper, | J-PAL Evaluation Summary

25. Jack, William, , and Tavneet Suri. 2014. "Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution." *American Economic Review* 104, no. 1: 183-223. Research Paper
26. Karlan, Dean, Matt Lowe, , Robert Darko Osei, , Isaac Osei-Akoto, Benjamin N. Roth, , and Christopher R. Udry, . "Social Protection and Social Distancing during the Pandemic: Mobile Money Transfers in Ghana." NBER Working Paper w30309, July 2022. Research Paper, | J-PAL Evaluation Summary
27. Karra, Mahesh, Mindy Hernandez, Catherine Brennan, and Margaret McConnell, . "Supply-Side Innovations to Increase Equitable Access to Digital Financial Services: Experimental Evidence from Mozambique." Boston University, April 2022. Research Paper
28. Kubilay, Elif, Eva Raiber, Lisa Spantig, Jana Cahlíková, and Lucy Kaaria. 2023. "Can You Spot a Scam? Measuring and Improving Scam Identification Ability." *Journal of Development Economics* 165: 103147. Research Paper
29. Lee, Jean N., Jonathan Morduch, Saravana Ravindran, Abu Shonchoy, and Hassan Zaman. 2021. "Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh." *American Economic Journal: Applied Economics* 13, no. 1: 38-71. Research Paper
30. Riley, Emma, , Abu Shonchoy, , Robert Darko Osei, . "Incentives and Endorsement for Technology Adoption Evidence from Mobile Banking in Ghana." Center for Effective Global Action (CEGA) WPS Working Paper 240, 2024. Research Paper
31. Riley, Emma, , and Abu Shonchoy, . "A National Information Campaign Encouraging Financial Technology Use in Ghana." Florida International University Working Paper, January 2024. Research Paper, | J-PAL Evaluation Summary
32. Riley, Emma. 2024. "Resisting Social Pressure in the Household Using Mobile Money: Experimental Evidence on Microenterprise Investment in Uganda." *American Economic Review*, 114, no.5: 1415-1447. Research Paper
33. Roessler, Philip, Peter Carroll, Flora Myamba, Cornel Jahari, Blandina Kilama, and Daniel Nielson. "The Economic Impact of Mobile Phone Ownership: Results from a Randomized Controlled Trial in Tanzania." Center for the Study of African Economists (CSAE) Working Paper, April 2021. Research Paper
34. Suri, Tavneet, , and William Jack, . 2016. "The long-run poverty and gender impacts of mobile money." *Science* 354, no. 6317: 1288-1292. Research Paper
35. Suri, Tavneet, , Prashant Bharadwaj, and William Jack. 2021. "Fintech and household resilience to shocks: Evidence from digital loans in Kenya." *Journal of Development Economics*, 153. Research Paper
36. Wieser, Christina, Miriam Bruhn, Johannes Philipp Kinzinger, Christian Simon Ruckteschler, and Soren Heitmann. "The Impact of Mobile Money on Poor Rural Households: Experimental Evidence from Uganda." World Bank Policy Research Working Paper 8913, June 2019. Research Paper