Development Learning Lab

DLL
Evidence Review

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Digital Financial Services and Women's Economic Empowerment in Low- and Middle-Income Countries: A Review of Causal Evidence (2015-2025)

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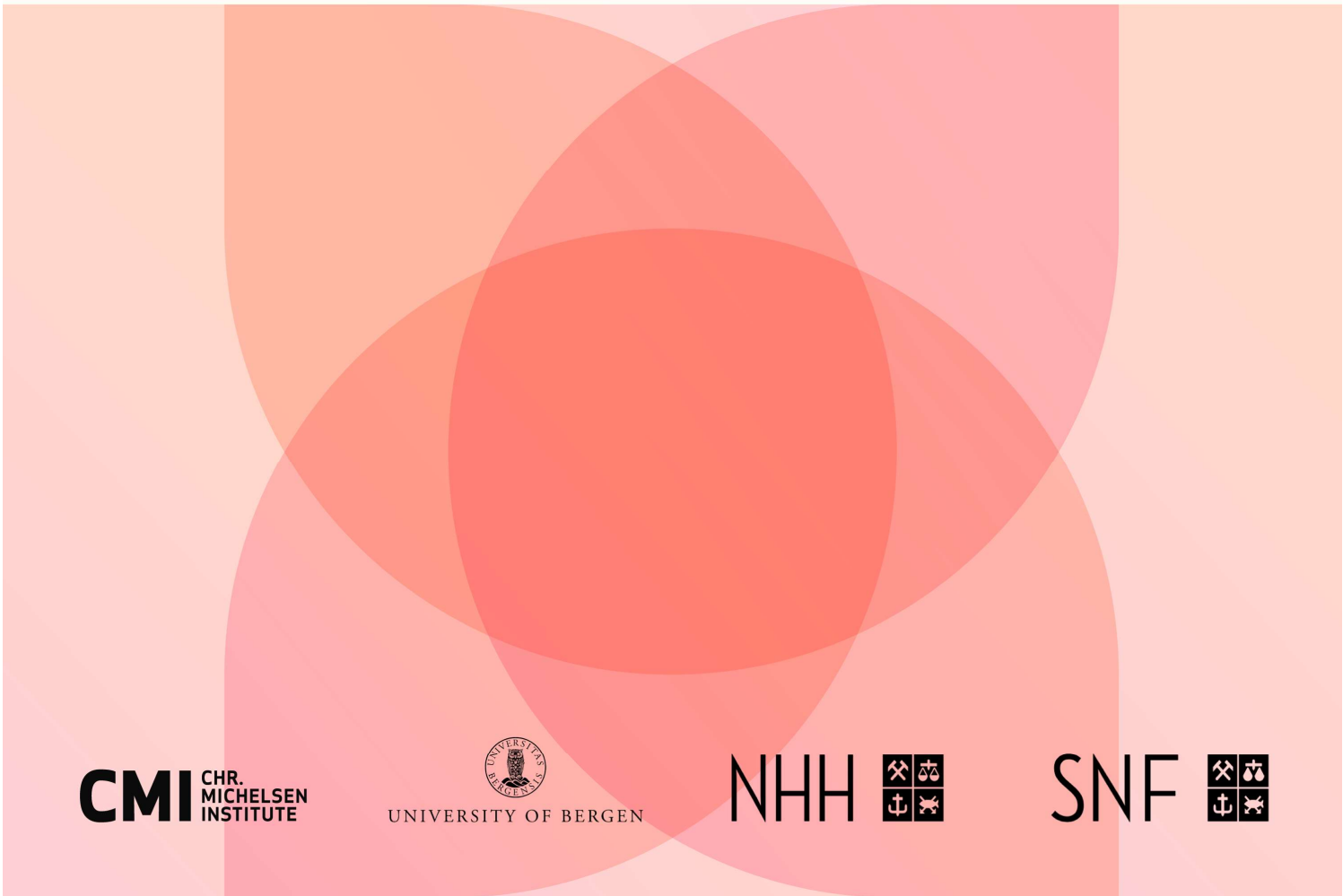

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Abstract

This review assesses how digital financial services (DFS)—mobile money, debit-card transfers, branchless savings and similar tools—shape women's economic empowerment in low- and middle-income countries. We screened 54 studies located through AI-assisted and bibliographic searches and include 22 with credible causal designs (17 RCTs; 5 quasi-experiments). Across settings, DFS consistently boosts women's formal or mobile savings and increases account ownership and use. Women's say in household financial decisions also rises when accounts are in their own (or joint) names. Effects on labor supply, occupational choice, and enterprise profits are conditional: they emerge when products place earnings under women's control and keep user costs low; simple "digitization" without those features seldom shifts work. Access to formal credit rarely expands unless it is bundled into the platform or explicitly linked to a verifiable digital history. Program design matters: lowering withdrawal frictions without adequate privacy can reduce use among low-bargaining-power women, and poorly structured fees can erode benefits. Overall, DFS can be a powerful lever for empowerment when accounts are inexpensive, private, and, where relevant, transparently linked to credit.

Main points

- **Savings & inclusion win:** A majority of trials show large, additive jumps in women's formal or mobile balances and account use
- **Agency rises:** personal or jointly named accounts lift decision-making indices, with no evidence of backlash.
- **Real-economy gains are conditional:** labor-market and profit effects appear only when DFS also safeguards women's own earnings.

1 Introduction

Over the past two decades, rapid digitalisation has transformed how people in low- and middle-income countries move, store and borrow money. Mobile money alone serves more than 640 million active accounts worldwide, a service that did not exist before the mid-2000s; in Kenya, for example, the nationwide spread of M-PESA has been credited with lifting thousands of households—especially female-headed ones—out of extreme poverty (Suri and Jack 2016). Yet large gender gaps persist in both digital access and formal finance, making it essential to understand whether—and how—digital financial services (DFS) translate into meaningful economic gains for women.

The Alliance for Financial Inclusion defines DFS as *"financial services accessed and delivered through digital channels, including payments, credit, savings, remittances and insurance*" (Alliance for Financial Inclusion 2019). Digital channels include mobile phones, the internet, ATMs, chip-enabled or contactless cards and other electronic networks. Because each transaction is linked to a uniquely identified account, DFS leave a verifiable data trail that can be mined for credit scoring or product design innovations (Bill & Melinda Gates Foundation 2021). Providers range from regulated banks to mobile-network operators, micro-finance institutions and fintech start-ups.

Despite explosive growth, women still trail men in access to the underlying technology and the financial products that ride on it. In 2023, women were 8 percent less likely than men to own *any* mobile phone and 13 percent less likely to own a smartphone (Jeffrie et al., 2024).The gender gap in active mobile-money use has barely budged in Sub-Saharan Africa and the Middle East & North Africa since 2017, although it has narrowed sharply—from 26 percent to 15 percent—in South Asia (Jeffrie et al. 2024). Further, according to the World Bank's 2021 *Global Findex*, only 34.5 percent of women in low-income countries held an account in a financial institution or through their mobile-money service provider, compared with 43.9 percent of men. In lower-middle-income countries the figures rise to 59.2 percent for women and 65.5 percent for men, and in upper-middle-income countries to 82.3 percent and 86.3 percent, respectively.

UN Women summarises WEE as women's *ability to participate equally in, gain from and make decisions about economic activity*—including control over their own income and assets, equal access to decent work, entrepreneurship, credit, education and training (UN Women 2024). It shows up in the ability to decide how money is spent at home, to take a paid job, to start or grow a business, to save for the future and to cope with unexpected shocks.

Digital finance might push women toward that goal in several ways (Garz et al. 2020). Because a phone can act as a pocket-sized bank branch, it lets a woman who faces mobility limits—whether from safety concerns, social norms or simple lack of time—manage her money without leaving home. Digital channels cut queuing and transport costs and, by replacing face-to-face encounters at the counter, can sidestep the bias some women meet at traditional institutions. Storing money electronically also keeps it safer from theft or appropriation by relatives, and the ability to send small transfers instantly strengthens informal safety nets when disaster strikes. At the same time, these services can backfire if a woman must borrow a husband's handset or share her personal identification number: control over the phone then becomes control over the money.

The review that follows looks at what rigorous research—especially randomized controlled trials and other causal studies carried out during the past ten years—tells us about these channels. It traces how access to digital financial services affects women's bargaining power within the household, their work and earnings, their saving and spending patterns, their chances of running a profitable enterprise, their inclusion in the formal financial system and their resilience when shocks hit. By weighing where the evidence is strong, where it is mixed and where questions remain open, the review aims to show not only whether digital finance helps women, but how program design can ensure that it does.

2 Methods

We followed a four-stage search and screening strategy between April and May 2025:

1. **Exploratory AI assisted search*:*** We used *ChatGPT Deep Search* and *Elicit* to run a series of structured prompts covering (i) women's economic empowerment (WEE), (ii) digital-financial-service (DFS) terms, and (iii) causal-identification. The exact prompts can be found in the appendix.
2. **Targeted search for existing reviews**: An additional search for systematic and scoping reviews were done in 3ie evidence portal using keywords *digital finance*, *mobile money*, *digital*, *mobile*, *women's economic empowerment*, *women's empowerment, female empowerment*. Although 115 records were screened, none of them covered DFS and WEE.,
3. **Formal search for existing reviews.** We searched *Web of Science* (for full search string, see the Appendix) for literature reviews on the topic. One systematic review was retrieved, but excluded for methodological shortcomings.
4. **Backward and forward snowballing:** Reference lists of all AI-identified articles included in the review were hand-searched. Google Scholar's "cited-by" links were followed to pick up later studies.

After de-duplication we reviewed 54 unique studies. Titles, abstracts and, where necessary, full texts were screened against three a-priori criteria:

- the intervention provides—or the exposure concerns—digital financial services (payments, transfers, savings, credit or insurance delivered via phone, card, agent or internet);
- the study reports a **causal impact estimate** (RCT or credible quasi-experimental design);
- outcomes are **women-specific or gender-disaggregated** and map onto recognized WEE dimensions.

Twenty-two studies satisfied all criteria and were included. The 32 exclusions were due to absence of gender-disaggregated results (n = 17), failure to involve DFS (n = 9) or non-causal designs/insufficient data (n = 6).

3 Literature review

Table 1 brings together the 22 studies that met our inclusion criteria (see the appendix for a detailed overview). Eighteen are individually or cluster-randomized trials, giving the evidence base a strong experimental backbone. The remaining five exploit credible quasi-experimental variation—large-scale

program rollouts, agent-density instruments, or matched-comparison designs—to complement the RCTs with real-world scale.

The work is geographically diverse but still skewed: twelve studies are set in Sub-Saharan Africa, four in South Asia, three in East/South-East Asia, and four in Latin America. Most interventions revolve around mobile-money wallets or digital saving accounts; only a handful bundle formal credit, insurance, or wage digitization. Sample sizes range from 575 women in a Philippine micro-finance trial to more than 300 000 beneficiaries in Mexico's debit-card reform, with a median of roughly 2 800 individuals or households. Two-thirds of the papers are already peer-reviewed, while the remainder are working papers released in the past years.

Overall, the literature is well suited to answering "Can DFS influence women's economic empowerment?" but less so for "Which product features matter most, and for whom?" Few studies directly compare alternative designs, and fewer still track outcomes beyond two or three years. Those gaps are worth bearing in mind when interpreting the effect sizes reported in the sections that follow.

Table 1: Snapshot of included studies

Designs	• 17 randomized controlled trials • 1 natural experiment • 2 roll-out studies • 1 IV study • 1 propensity-score matching study
Geographic spread	• Sub-Saharan Africa (13 studies): Niger 1, Tanzania 2, Mozambique 1, Ethiopia 1, Uganda 2, Kenya 5, Ghana 1 • South Asia (2 studies): India 1, Pakistan 1 • East/Southeast Asia (3 studies) studies: Indonesia 1, Cambodia 1, Sri Lanka 1 • Latin America (3 studies): Mexico 4
Publication status	• Peer-reviewed journal articles: 17 • Working papers: 5
Typical DFS tested	• Mobile money payments or savings pockets: 10 studies • Digital wage or transfer deposits to women's accounts: 6 studies • Digital or branchless savings accounts: 6 studies
Sample sizes	Range from 575 women (Philippines matched-pair RCT) to ~350,000 accounts in the Mexican debit-card rollout.

3.1 Savings and asset building

Across the studies we review, women's savings show the clearest and most consistent gains from digital finance. In roughly three-quarters of experiments that tracked balances or deposit flows, digital channels raised women's formal or mobile savings, often without crowding out the informal devices they already used. Examples include Mexico's debit-card rollout where savings built up to about 2% of annual income (Bachas et al. 2021), Kenya's labelled M-PESA pocket with approximately KSh 450 higher balances with no offsetting fall elsewhere (Dizon, Gong, and Jones 2020), Sri Lanka's mobile-linked accounts led to more frequent and larger formal deposits (de Mel et al. 2022), nationwide and micro finance instituion programs in Kenya and Tanzania that crowd in total savings rather than shift it around (Dupas, Keats, and Robinson 2019; Heath and Riley 2024), and a peer-endorsement model (leader training and small referral bonus), layered on top of a one-off user incentive, doubled digital adoption relative to incentives alone and lifted linked bank balances by approximately 30% over six months (Riley et al. 2025)

When women can save digitally and keep balances private, they lean less on costly emergency finance and are less likely to cut essentials during shocks, e.g., better food security and smaller non-food shortfalls after shocks in Kenya (Dizon, Gong, and Jones 2020); and less reliance on others for emergency cash, with consumption and poverty gains concentrated among female-headed households during Kenya's M-Pesa rollout (Suri and Jack 2016).

However, DFS that lower withdrawal frictions without safeguarding privacy can backfire for low-bargaining-power women. Kenyan evidence shows an ATM card halved withdrawal costs yet reduced women's account use (Schaner 2017). Overall, the evidence suggests that cheap, convenient digital channels almost always raise women's savings, unless the new product removes the very frictions that helped women protect their money. Programs that pair easy deposits with some form of privacy (personal PINs, labelled sub-accounts, or joint signatures) are the most reliable route to larger liquid balances and, ultimately, greater economic security.

3.2 Financial inclusion and access to credit

Most programs start by giving women a new way to transact (including mobile wallets, debit cards, or agent-mediated accounts), so the first gains in financial inclusion are more women owning an account and actually using it. Shifting transfers onto debit cards in Mexico led to more active account use (Bachas et al. 2021). In India, paying wages directly into women's own accounts made them more likely to visit the bank independently, transact confidently, and prefer wages paid to their account (Field et al. 2021). In Ethiopia, subsidized joint husband-and-wife accounts raised women's ownership and control over deposits and withdrawals (Galdo 2025). Simple, low-cost delivery also sustains use: in Sri Lanka, more than 90% opened a mobile-linked account, women used the mobile channel more, and a larger share of deposits flowed through it (de Mel et al. 2022); in Kenya, about two-thirds opened and used a labelled M-PESA sub-account, with roughly one in five women depositing each week (Dizon, Gong, and Jones 2020); and in Ghana, pairing a small user incentive with peer endorsement (leader training plus a tiny referral bonus) kept women using mobile banking over six months and shifted activity toward **deposits** rather than withdrawals (Riley et al. 2025).

Active use is not automatic. Even when many women open accounts, a smaller share become regular users, and use sticks only when services are cheap, private, convenient, and supported. In Kenya, free bank accounts lifted ownership by 51 percentage points, yet only 10 percentage point more women made a monthly deposit (Dupas, Keats, and Robinson 2019). With a labelled M-PESA pocket, about two-thirds of Kenyan women opened and used the sub-account, but only about 1 in 5 deposited in a typical week (Dizon, Gong, and Jones 2020). And design can backfire: when withdrawal costs were halved with free ATM cards, low-bargaining-power wives used accounts less because the account's "safe-keeping" role eroded (Schaner 2017).

Active use is not automatic, however. Women keep transacting only when the product remains cheap, private and physically reachable. In Tanzania, weekly loan repayments forced through mobile money raised a composite usage index by 0.33 standard deviations (Heath and Riley 2024). Likewise, a free ATM card in rural Kenya encouraged women with high bargaining power to use their accounts more but led low-power wives to use theirs less, because cheaper withdrawals undermined the "safe-keeping" role of the account (Schaner 2017).

Access to credit is harder to shift. A new payment or savings tool rarely unlocks formal borrowing on its own: recent trials in Tanzania and Ghana found no change in loan sizes, arrears, or new disbursements after digitizing transactions; other programs similarly report limited movement on the credit margin (Buvinic, Knowles, and Witoelar 2022; Heath and Riley 2024; Riley et al. 2025). Where we do see borrowing rise, credit is built into the platform or eligibility explicitly uses the digital trail. In Tanzania, the M-Pawa wallet (mobile savings paired with automated micro-loans) increased the share of women borrowing and the number and amount of loans, especially when combined with business training (Bastian et al. 2018). In Cambodia's garment factories, digital-finance training nudged more women to use in-app salary advances, with loan transactions up roughly 7–10% (Fu and Salyanty 2024).

3.3 Labor force participation occupational choice

The evidence is more mixed on labor-force participation and occupational choice than for savings, but a pattern stands out: when digital finance routes new income into a woman's own account, and, where relevant, gives her some privacy, women are more likely to enter paid work or shift toward higher-return activities. In rural India. paying public-works wages into women's own accounts with light training raised women's market work, with gains concentrated among "constrained" women who faced social-norm costs and weren't working at baseline (Field et al. 2021). At a macro scale in Kenya, denser M-PESA agent access reallocated women out of farming into small business, with little change for men (Suri and Jack 2016). A Tanzanian trial that paired a mobile savings wallet with instant micro-loans nudged women away from farming toward non-farm self-employment (Bastian et al. 2018). A Ugandan transfer experiment points to the same control mechanism: when an unconditional grant arrived in a woman's own mobile-money wallet, hours worked in self-run activities rose by one-third and personal labor income by 31 per cent; the identical grant delivered in cash instead boosted joint husband-wife enterprises but left women's own hours unchanged (Greco et al. 2025).

Not every DFS product moves labor outcomes. Where control over funds does not meaningfully shift, or where women are already fully engaged in work, hours and occupations often do not change. In Tanzania, BRAC borrowers were encouraged to repay via mobile money; women used mobile money more and

reported greater financial control, but business hours and performance did not move, and wage income rose only modestly, plausible in a sample of women already working full time (Heath and Riley 2024). In Uganda, mobile-wallet loan disbursement raised profits and capital but not hours worked (Riley 2024). In Mexico, shifting benefits into accounts did not change whether women worked, their hours, or self-employment (Marquez-Padilla and Parker 2024).

Taken together, the studies point to control over incoming funds, via deposits into her own account, as the key lever for shifts into paid work or higher-return activities. Privacy helps manage household dynamics but is not essential for those labor gains. In Uganda, sending the same grant to a woman's mobile-money account increased her own-activity hours and earnings whether or not her husband was told, while disclosure mainly shaped relationship outcomes (e.g., public cash reduced IPV; public mobile-money raised men's controlling behaviors) which points to a real design trade-off (Greco et al. 2025). Where control does not meaningfully change or women already work full-time, labor supply often does not move even if profits do (Heath and Riley 2024; Riley 2024). And when both spouses share access, easier liquidity can intensify joint production (e.g., farm work) rather than women's independent work(Galdo 2025). Finally, keep transaction costs low: raising fees or hassles can blunt take-up and dampen any occupational reallocation (Marquez-Padilla and Parker 2024).

3.4 Entrepreneurship and business performance

Digital finance can boost women's businesses through two channels: it can protect working capital from competing claims at home, and it can make paying suppliers/customers cheaper and easier. When those features are present, profits and investment tend to rise. In Uganda, paying microfinance loans straight into women's mobile-money wallets raised business capital by 11% and profits by 15% within ten months, with the largest gains among women facing strong sharing pressures at baseline (Riley 2024). At the macro level, Kenya's rapid expansion of M-PESA reallocated women out of subsistence farming and into petty trade/small business, increasing women's business ownership and reducing farming as the main occupation (Suri and Jack 2016). In Mozambique, a mobile-savings tool paired with simple record-keeping raised profits and closed the gender profit gap among higher-performing micro-entrepreneurs (Batista, Sequeira, and Vicente 2022).

Effects are not universal, however. Tanzania's M-Pawa (mobile savings and instant micro-loans) drew some women into secondary businesses but did not raise average profits (Bastian et al. 2018). In Tanzania again, BRAC borrowers were encouraged, to repay via mobile money, profits and hours did not move (Heath and Riley 2024). In Ghana's women-only microfinance groups, peer-endorsed mobile banking raised formal savings but did not change short-run business profits (Riley et al. 2025). Together, these results underline that enterprise gains depend on design and baseline constraints.

A recurring pattern is that training or coaching often amplifies enterprise gains, especially for less-experienced owners. In Tanzania, adding a four-session business course to M-Pawa produced improvements in profits and record-keeping that the wallet alone did not (Bastian et al. 2018). In Mozambique, the mobile-savings tool lifted women's earnings only when paired with bookkeeping training (Batista, Sequeira, and Vicente 2022). Indonesia's branchless-banking trial shows a similar **complementarity**: stronger business practices, capital, and profits when high-touch agent rollouts were matched with group-based financial training (Buvinic, Knowles, and Witoelar 2022). By contrast, in

Uganda, profits rose without any business training when the disbursement itself shifted to a private, low-friction mobile channel (Riley 2024).

3.5 Household decision-making and agency

Across studies that track intra-household dynamics, digital finance often expands women's decision-making power—especially when payments land in her own account (or a joint account with shared authorization). In India, routing public-works wages into women's personal accounts, plus brief training, increased women's say over spending, saving and their own work choices, with gains concentrated among norm-constrained women who faced social-norm barriers at baseline (Field et al. 2021). In Tanzania, encouraging micro-loan repayments via mobile money strengthened women's decision power, consistent with greater control over funds; the largest gains were again among women starting with lower agency (Heath and Riley 2024). In Ethiopia, simply subsidizing an account for the (male) household head did little, but opening a joint digital savings account increased women's control over deposits and withdrawals by about 25 percentage points and delivered broad improvements on an empowerment index – clear evidence that who can authorize transactions matters (Galdo 2025). In Kenya, instrumented active mobile-money use is associated with greater control over personal earnings, purchases and financial-service choices for women (Kipchumba and Sulaiman 2021). In Niger, mobile delivery of food assistance improved women's bargaining power compared with cash payout systems, echoing the advantage of money arriving in her account (Aker et al. 2016).

A Uganda RCT goes a step further by testing privacy directly. The same one-off grant paid into a woman's mobile-money account increased her say in household decisions (especially children's schooling/health and her own health) and raised her own earnings from self-run activities, whether or not her husband was told. In other words, the mode (digital into her account) drives the agency gains; privacy isn't required for those gains. But privacy does shape household dynamics: when husbands were told, cash reduced intimate-partner violence, while mobile-money increased men's controlling behaviors; making the transfer private muted that rise under mobile money (Greco et al. 2025).

Not all studies find shifts in household decision-making. In Ghana, a peer-endorsement model that successfully raised mobile-banking use and bank balances did not change women's composite empowerment index at short-run follow-up (Riley et al. 2025). In Cambodia's garment factories, peer-led digital-finance training increased app use and discretionary transactions but showed no significant change on a survey index of who decides how wages and savings are used (Fu and Salyanty 2024).

Importantly, no study in this review finds systematic backlash or violence arising from women's increased control; some even record welfare-enhancing spending shifts. For example, women with greater say after the Tanzanian mobile-loan intervention redirected household budgets toward children's schooling and clothing, without reducing total consumption (Heath and Riley 2024). Taken together, the evidence indicates that when digital finance gives women secure, personal access to funds, it reliably strengthens their voice in household decisions and steers resources toward their preferred uses.

4 Discussion

Across 21 causal studies, the weight of the evidence shows that digital financial services are a reliable tool for expanding women's financial resources and influence – provided products are designed for privacy, affordability, and ease of use. The most consistent finding is a rise in liquid savings: shifting Mexico's transfer payments onto debit cards lifted the share of female beneficiaries who saved formally from 13% to 87% (Bachas et al. 2021), a pattern echoed by Ethiopia's joint husband-and-wife accounts, which raised first-time deposits and reallocated household wealth into formal balances (Galdo 2025).

These larger, safer balances, and the ability to move money at low cost, translate into better shock-management in settings where DFS are the delivery rail. In Niger, paying food transfers via mobile money rather than cash improved diet diversity by roughly 10–16% as women saved travel time and could shop when prices were favorable (Aker et al. 2016). At scale, Kenya's expansion of M-PESA raised per-capita consumption and reduced extreme poverty among female-headed households in more exposed areas, even as national poverty was otherwise flat (Suri and Jack 2016). In micro-evidence from Kenya, a labeled M-PESA "pocket" for vulnerable women also helped households smooth shortfalls after shocks without cutting essentials (Dizon, Gong, and Jones 2020).

Labor-supply and entrepreneurship impacts are conditional rather than automatic. When earnings flow into a woman's own account and she can transact confidently, work shifts are sizable: in India, routing public-works wages to women's personal bank accounts raised work outside the home for norm-constrained women and nudged some into their first private-sector job (Field et al. 2021). When digital rails protect working capital from competing claims, enterprise performance improves: in Uganda, disbursing microfinance loans into women's mobile wallets increased business capital and profits within a year, with the largest gains where sharing pressure was high (Riley 2024). But if a product does not enhance control or fees eat into margins, profits and hours often do not move (Bastian et al. 2018; Heath and Riley 2024).

On household decision-making and agency, effects are robust when the account is personal or jointly named. India's wage-digitization increased women's say over spending, saving, and work among norm-constrained women (Field et al. 2021); Tanzania's shift to mobile channels for group-loan payments increased women's decision power; and Ethiopia's joint accounts directly raised women's control over deposits and withdrawals (Galdo 2025; Heath and Riley 2024). A new Uganda RCT adds an important nuance: paying a one-off grant into women's own mobile-money accounts increased their individual earnings and strengthened their say in household decisions, but also raised reports of husbands' controlling behaviors and did not reduce IPV; by contrast, the same grant paid in cash with both spouses informed cut IPV substantially. The design implication is a real trade-off: DFS can boost women's economic independence and voice, while publicly disclosed cash can be more effective at reducing IPV in the short run (Greco et al. 2025).

The collective lesson is straightforward: digital rails are necessary but not sufficient. To translate access into empowerment, programs must keep transactions cheap, guarantee personal control, and—when aiming for credit—use transparent, data-linked lending products. Well-designed DFS can deliver rapid gains in women's savings, bargaining power and resilience, laying a foundation for longer-term shifts in

work and enterprise. Poorly designed channels, by contrast, risk entrenching existing power imbalances or even nudging women back toward lower-return activities.

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6 Appendix

6.1 Overview of studies included

#	Author, year, journal	Method	Setting	Sample size	DFS intervention
1	Field et al. (2021), *American Economic Review*	RCT	Rural India (Madhya Pradesh) focused on the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	Approximately 4500 across 197 villages	Direct deposit of wages into women's accounts (instead of male household head's account). Four treatments; (1) Open account in woman's name, (2) Open account + training on how to use it, (3) Open account + direct deposits, (4) Open account + training + direct deposit. Paper focus on the difference between (1) and (4).
2-3	Parker and Marquez-Padilla (2024), Revista Economica Marquez-Padilla and Parker (2024) Economic Development and cultural change.	RCT	Mexico	4385 households across 147 communities	Direct deposit into bank account (as opposed to cash). Two treatment; (1) Benefits via deposits, (2) Benefits via deposits + reminder via SMS

4	Ahmad, Lensink, and Mueller (2023), *Journal of Development Economics*	RCT	Pakistan, Multan district	2220, 87% women	Three interventions designed to encourage poor Muslim women to open and use Islamic savings accounts. I1: Intervention that increases religious salience (compared to no religious salience). I2: Subsidy that covers the account opening fee (compared to no subsidy). I3: Assistance with completing the account opening form (compared to no assistance). All cross-randomized
5	Aker et al. (2016), *Economic Development and Cultural Change*	RCT	Niger	1152 households across 96 villages	Monthly social transfers to women via mobile money vs. cash. Three treatments; T1: Cash transfers in envelopes, T2: Cash transfers delivered electronically together with a m-transfer enabled phone, T3: Cash transfers in envelopes together with a

					m-transfer enabled phone.
6	Bachas et al. (2021), The Journal of Finance	Natural experiment	Mexico	350,000 beneficiary bank accounts in 357 bank branches over 5 years.	Debit cards were given to cash transfer recipients (mostly women) who already had a bank account. Debit cards were rolled out geographically over time to beneficiaries of Oportunidades
7	Bastian et al. (2018),Unpublished, WP	RCT	Tanzania	Approximately 4000 female microentrepreneurs	Aim to improve business performance of female microentreprenеurs. Intervention 1: 2.5 hours training session on the uses and benefits of Vodacom's M-Pawa savings account (including registration with the product). Intervention 2: Business training intervention over 12 weeks + M-Pawa
8	Batista, Sequeira, and Vicente (2022), Management Science	RCT	Mozambique (Maputo area)	1270 market vendors (both male and female)	Four intervention groups. T1: Mobile money (opened mobile money account and enrolled participants in an incentive scheme

					for savings that provided bonus corresponding to 5% of the average amount). T2: Financial management training (four 1-hour visits, given business books to fill out and received bonus if filled out correctly). T3: Combined treatment.
9	Buvinic, Knowles, and Witoelar (2022), *World Development*	RCT	Indonesia	2852 female business owners	*Branchless-banking mobile savings accounts delivered through village shop-keepers acting as bank agents.* • Supply-side arm: agents received a high fee (Rp 10,000 ≈ US$0.70) instead of the standard Rp 2,000 for every new saver they signed up and kept active, designed to raise women's take-up of digital savings. • Demand-side arm: WBOs got small-group financial/business training (4 sessions) emphasising record-keeping

					and the new e-savings product. • A quarter of women were indirectly exposed to both treatments (high-incentive agent *and* training).
10	Fu and Salyanty (2024), *Unpublished*	Quasi-experimental staggered rollout	Cambodia, garment-sector factories	22 treated factories (≈26,000 workers) and 218 controls; full panel covers 240 factories / ~280,000 employees from Jan 2021–Jun 2023. A phone survey interviewed 2,781 female workers in 13 factories.	Digital-financial-capability training delivered mid-2021: "peer-ambassador" (training-of-trainers) sessions, Khmer infographics, hands-on app walkthroughs and SMS reminders. Goal: shift workers from cash-out–only behaviour to active use of the Wing app and other e-channels.
11	Galdo (2025), World Bank Economic Review	RCT	Ethiopia, coffee farmers in rural areas	900 treated (450 single, 450 joint) + 300 controls;	Voucher (70 Birr single / 100 Birr joint) to cover account-opening costs at Commercial Bank of Ethiopia. • **Single account:** in the (mostly male) household-head's name. • **Joint account:** co-owned by husband & wife. Both are branch-based digital

					savings accounts paying 5 % p.a.; no fees; encouragement meetings plus financial-literacy session.
12	Greco et al. (2025), Unpublished WP	RCT	Uganda	2000 women from 250 communities	A one-off unconditional cash transfer of UGX 175,000 (USD 50) delivered either in physical cash or digitally into the woman's own mobile money account. All women already owned a phone and a registered mobile-money account. Half the couples were jointly informed, half were told only to the wife (public vs private)
13	Heath and Riley (2024), Unpublished WP	RCT	Tanzania	750 female micro-entrepreneurs (all borrowing from BRAC)	152 village-level BRAC micro-finance groups were randomly assigned to switch weekly loan repayments from cash to mobile money. Control groups kept repaying in cash
14	Kipchumba and Sulaiman	IV estimation where	Kenya	2374 married household heads or	**Active use of mobile-money** for payments,

	(2021), Unpublished WP	mobile money used is instrumented by proximity to mobile money agents		spouses (60% women)	deposits/withdrawals, transfers or bill pay. No programme was assigned; variation in agent density drives differential uptake.
15	Masino & Niño-Zarazúa (2020), Journal of Development Studies	Quasi-experimental matching study.	Mexico	3003 households	Government deposited CCT benefit directly into a savings-account instead of cash. Not randomly assigned, but had to live less than 10 km away from La Red de la Gente branch.
16	de Mel et al. (2022), Review of Economics and Statistics	RCT	Sri Lanka	2006 income-earning adults (70% women)	A mobile-linked savings accounts with different ad-valorem fee (0, 2, 4, 8%). The bundle included help opening the account (minimum-balance subsidy), a free handset+SIM, in-home demos and two test deposits.
17	Dizon, Gong, and Jones (2020), Journal of Human Resources	RCT	Kenya – Kisumu County and Kadibo	627 women at baseline, 579 re-interviewed eight months later	Opening of a "labelled" M-PESA savings sub-account in the woman's own name; zero fees for 12 weeks;

			sub-county		individual goal-setting session; weekly SMS savings reminders; free SIM/handset; one arm also received 5 % monthly interest for three months.
18	Riley (2024), American Economic Review	RCT	Uganda	750 female micro-entrepreneurs followed for 10 months	Mandatory weekly loan repayments through women's own mobile-money wallets; created a digital transaction history and habitual phone use. No change to interest rate or loan terms.
19	Schaner (2017), Journal of Human Resources	RCT	Kenya	1114 accounts owned by 740 married couples	Newly opened bank accounts were randomly assigned an interest rate and a free ATM card (reducing withdrawal fees by 50%).
20	Suri and Jack (2016), Science	Quasi-experimental long-panel study that instruments access to M-Pesa with exogenous rollout of	Kenya	3000 households in 2008, 1608 re-interviewed in 2014	Market-wide expansion of M-Pesa-

		mobile money agents			
21	Dupas, Keats, and Robinson (2019), Economic Journal	RCT	Kenya	885 households (1700 adults). 486 dual-headed households, 399 single-female-headed households.	Voucher waiving all opening and maintenance fees for a low-fee bank savings account at either a commercial bank (with free ATM card) or a village bank.
22	Riley et al. (2025) Journal of Development Economics	RCT	Ghana	115 microfinance groups, total of 398 women interviewed	All groups were given information about mobile banking. Then in T1, all group members were offered an incentive if they carried out a mobile transaction. In T2, all group members were offered the same incentive and the group leader received training and an incentive for referral (for each group member who completed a mobile money transaction).

6.2 ChatGPT

ChatGPT o3 was used on May 20, 2025, together with the "Deep Search" function. The exact prompt was:

What is the effect of access to digital financial services on women's economic empowerment in low- and middle-income countries? Please focus on:
1) Causal quantitative studies, ideally RCTs, from the past 15 years
2) Well-published economics and/or general science studies

You can also include:
(i) working papers from the last 5 years
(ii) studies from World Bank or other UN organizations

The output should be a summary table with the reference in the first column, the kind of DFS in the second column, and then the effect on different outcomes in the next columns. I'd like information on: household decision-making/agency, labor force participation, savings, consumption, entrepreneurship, financial inclusion, savings, access to finance, and resilience to shocks.

Table provided:

Study (Authors, Year; Country; Design/Sample)	**DFS Intervention**	**(a) Decision-making / Agency**	**(b) Labor Force Participation**	**(c) Savings**	**(d) Consumption**	**(e) Entrepreneurship**	**(f) Financial Inclusion**	**(g) Access to Finance**	**(h) Resilience to Shocks**
Aker et al. (2016; Niger; RCT ~1,100 HH) – Monthly social transfers to women via **mobile money vs. cash**.	Mobile transfers (unconditional cash program)	+ (↑ intrahousehold bargaining power)	n/a (transfer program, not labor)	0 (no net savings change noted)	++ (↑ diet diversity; children's food intake)	n/a (not a business intervention)	+ (↑ formal account usage)	n/a	+ (↑ privacy/ time saved enabled women to better manage funds)
Suri & Jack (2016; Kenya; Quasi – agent rollout) – Expansion of **M-PESA mobile money**	Mobile money (general use)	+ (↑ women's financial independence qualitatively)	+ (↑ 3% of women shifted from farming to small business)	++ (↑ 22% rise in savings for female-headed HH)	++ (↑ 18.5% increase in per-capita consumption for female-headed HH)	+ (↑ 2–3% more women in self-employment)	++ (↑ widespread mobile account adoption)	n/a (no new credit, just payments)	++ (↑ improved shock-coping; consumption smoothed during crises)

Study (Authors, Year; Country; Design/Sample)	DFS Intervention	(a) Decision-making / Agency	(b) Labor Force Participation	(c) Savings	(d) Consumption	(e) Entrepreneurship	(f) Financial Inclusion	(g) Access to Finance	(h) Resilience to Shocks
network (10-year panel).									
Field et al. (2021; India; RCT 197 villages) – Women's MGNREGS wages **paid into own bank acct + training** vs. status quo (husband's acct).	Digital wage deposit + financial training	++ (↑ involvement in household financial decisions, agency)	++ (↑ more women worked outside home)	n/a (no significant change reported)	n/a (not measured)	n/a (not a business intervention)	++ (↑ access to own bank accounts)	n/a (no credit component)	+ (↑ women's approval of women working, norm change)
Heath & Riley (2024; Tanzania; RCT 750 female MFI clients) – Weekly microloan **repayments via mobile money** vs. cash.	Mobile money for microloan payments	++ (↑ decision-making index by 0.22σ; control over finances +0.37σ)	0 (no change in labor supply or business profits)	+ (↑ savings "crowded in" – mobile savings ↑ without reducing other savings)	0 (total HH consumption unchanged, but more spent on women's & children's goods)	0 (no significant change in business outcomes)	+ (↑ mobile account use, comfort and privacy in transactions)	0 (no change in credit access)	0 (no major shock during study; consumption smoothing not tested)
Riley (2024; Uganda; RCT 3,000 women) – Microfinanc	Mobile loan disbursement (labeled account)	+ (↑ women's reported financial decision power;	0 (no change in labor hours)	0 (loan $$ stored temporarily on phone,	+ (↑ total household consum	++ (↑ business investment +11%; profits +15%)	+ (↑ formal account usage during	0 (no additional credit beyond loan)	+ (↑ financial security; fewer financia

Study (Authors, Year; Country; Design/Sample)	**DFS Intervention**	**(a) Decision-making / Agency**	**(b) Labor Force Participation**	**(c) Savings**	**(d) Consumption**	**(e) Entrepreneurship**	**(f) Financial Inclusion**	**(g) Access to Finance**	**(h) Resilience to Shocks**
e loans **disbursed to women's mobile money account** vs. cash.		less $$ diverted to others)		drawn as needed – no long-run saving beyond loan)	ption +7%)		loan period)		l worries, no spousal backlash)
Bastian et al. (2018; Tanzania; RCT 1,2XX women) – Offer **mobile savings account (M-Pawa)** + training (some with biz training).	Mobile savings + digital credit access	+ (↑ self-reported empowerment and well-being)	n/a (all were microentrepreneurs)	+ (↑ mobile account savings ↑; other forms ↓, net slight ↑)	n/a (not reported)	+ (↑ some opened secondary businesses, though no avg profit gain)	+ (↑ account adoption and usage)	+ (↑ more women qualified for and took digital micro-loans)	0 (no specific shock measured; short horizon)
Batista et al. (2022; Mozambique; RCT ~800 women) – Provide **mobile savings account** + financial management training to female	Mobile savings + training	+ (↑ ability to retain earnings; reduced informal transfers)	n/a (all already self-employed)	++ (↑ accessible savings increased)	n/a (not reported)	++ (↑ profits ↑, esp. with training – closed gender profit gap for high-performers)	+ (↑ formal financial usage and bookkeeping)	0 (no explicit credit, focus on savings)	+ (↑ "financial security" ↑; women more buffered against needs)

Study (Authors, Year; Country; Design/Sample)	DFS Intervention	(a) Decision-making / Agency	(b) Labor Force Participation	(c) Savings	(d) Consumption	(e) Entrepreneurship	(f) Financial Inclusion	(g) Access to Finance	(h) Resilience to Shocks
microentrepreneurs.									
Aggarwal et al. (2020; Malawi; RCT ~3,000 mixed) – First **mobile money accounts** for micro-entrepreneurs (fees temporarily waived).	Mobile money account access	n/a (gender impact not disaggregated)	– (↓ time in business; many shifted to farming)	++ (↑ savings via mobile – 83% saved when fees waived)	0 (no notable change reported)	– (↓ entrepreneurship intensity as some moved to agriculture)	+ (↑ account ownership/use among unbanked)	0 (no credit component)	+ (↑ improved ability to save may improve future shock preparedness) (mixed evidence)
Breza et al. (2020; Bangladesh; RCT 3 factories) – Factory workers' **wages paid digitally** (to bank or mobile account) vs. cash.	Digital payroll (bank/mobile acct)	n/a (no direct empowerment measure)	n/a (employment unchanged)	++ (↑ savings accumulation; learned to use accounts)	0 (consumption overall unchanged, but **shock coping** improved)	n/a (not applicable in wage context)	+ (↑ financial literacy and account use)	0 (no new credit, just wage access)	++ (↑ maintained consumption in face of income shocks due to savings)
Kipchumba & Sulaiman (2021; Kenya; IV using rollout) –	Mobile money (general use)	++ (↑ women's financial control & decision index)	0 (no notable LFP effect)	n/a (not specifically measured)	n/a	n/a	+ (↑ account ownership/use among women)	n/a	+ (↑ privacy of MM allowed women greater control

Study (Authors, Year; Country; Design/Sample)	DFS Intervention	(a) Decision-making / Agency	(b) Labor Force Participation	(c) Savings	(d) Consumption	(e) Entrepreneurship	(f) Financial Inclusion	(g) Access to Finance	(h) Resilience to Shocks
Mobile money uptake (instrumented by M-Pesa agent rollout) in national survey.									over money)
Bachas et al. (2020; Mexico; Natural exp ~340k women) – CCT beneficiaries given **debit cards** to access bank accounts (vs. manual withdrawals).	Debit cards for govt transfers	+ (↑ perceived trust & control: women could keep cash in account)	0 (no effect on employment)	++ (↑ share saving rose from 13% to 87%; new savings = ~2% of income)	– (↓ spending on temptation goods, offset by higher saving)	n/a	+ (↑ active use of ATMs, bank services)	0 (no credit aspect)	+ (↑ ability to accumulate funds safely improved household financial stability)

6.3 Elicit

Elicit was asked to generate a Research report on May 20, 2025 answering the following question:

> *What is the impact of digital financial services on women's economic empowerment in low- and middle-income countries?*

It was asked to do a broad search where it identified 498 relevant papers and screened 40 papers.

While reviewing the report, we realized that many cross-sectional papers were included as well. Therefore, we refined the question to:

What is the impact of digital financial services on women's economic empowerment in low- and middle-income countries? Focus on causal studies, including experimental, quasi-experimental and longitudinal studies.

6.4 Web of Science

1. (((ALL=("digital finance")) OR ALL=("digital finance services")) OR ALL=("mobile money")) OR ALL=("digital")
    a. Hits: 1,219,541
2. ((((ALL=("systematic review")) OR ALL=("scoping review")) OR ALL=("umbrella review")) OR ALL=("evidence review"))
    a. Hits: 454,606
3. Combining 1 and 2:
    a. Hits: 12,271
4. ((ALL=("women's economic empowerment")) OR ALL=("women's empowerment")) OR ALL=("female empowerment")
5. Combining 3 and 4:
    a. Hits: 3
6. (((ALL=("household decision-making")) OR ALL=("women agency")) OR ALL=("female labor force participation")) OR ALL=("female entreprenurship")
    a. Hits: 1,643
7. Combining 3 and 6:
    a. Hits: 0