Show Me the Money!

Experimental Evidence on Preferences for Cash vs. Digital Payments

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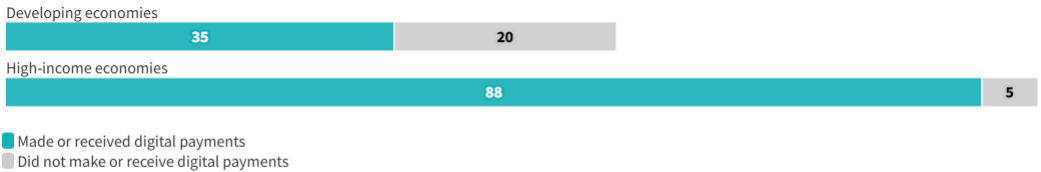
Use of digital payments is growing around the world

Share of account holders using digital payments in 2014



Source: Global Findex database

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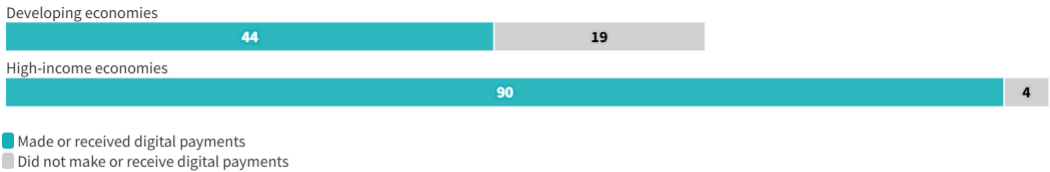
Use of digital payments is growing around the world

Share of account holders using digital payments in 2017



Source: Global Findex database

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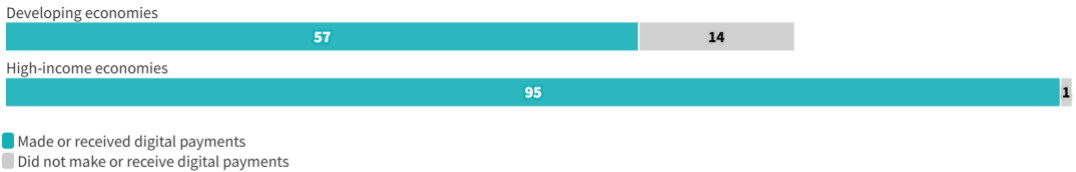
Use of digital payments is growing around the world

Share of account holders using digital payments in 2021



Source: Global Findex database

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The Purported Benefits of Digital Payments

- Many agree that shifting existing cash payments to digital payments carries the potential to improve the lives (e.g., the Better Than Cash Alliance)
  - **Women's economic empowerment** by giving women more control over their finances
  - **Inclusive growth** by helping to unlock economic opportunity for the financially excluded
  - **Transparency and security** by enhancing payment traceability and accountability, and reducing corruption and theft
  - **Financial inclusion** by increasing access to a range of financial services (i.e., savings, credit, insurance)
  - **Cost savings** by providing greater efficiency and speed
  - **Climate resilience** by helping vulnerable individuals and governments to mitigate and adapt to climate and disaster risks

- **Mobile money** is a digital payment technology potentially enabling a shift away from dependence on cash payments (Suri et al., 2023)
  - Possibly "leapfrogging" the use of formal banking services (Aron, 2017)

Existing Literature

- Studies showing the overall benefits of mobile money
  - Helped lift nearly 200,000 Kenyan households out of poverty (Suri and Jack, 2016)
    - Aid responses to unexpected health events (Suri et al., 2012)
  - Enables households to smooth consumption and maintain investments in human capital during shocks (Riley, 2018; Abiona and Koppensteiner, 2022; Batista and Vicente, 2022)
  - Increased saving among micro-entrepreneurs (Aggarwal et al., 2020; Riley 2022) and garment workers (Breza et al. 2020)
  - Fosters entrepreneurship and growth (Beck et al., 2018)

- Studies showing the benefits of sending **one-way transfers** via mobile money vs. cash
  - Reduced leakage of cash transfer distribution (Muralidharan, Niehaus and Sukhtankar, 2016)
  - Increased diet diversity, food consumption, and intra-household bargaining power for women, due to the reducing travel costs (Aker, Boumnijel, McClelland and Tierney, 2016).

Different Types of Digital Transactions

- **Remittance**: Different users, different locations
  - User X in location $A \rightarrow$ User Y in location B
  - Existing estimates suggest users are price inelastic (Economides and Jeziorski, 2017)

- **Self-transportation**: Same user, different location
  - User X in location $A \rightarrow$ User X in location B
  - Users are willing to pay 1.24 percent of the transaction amount to avoid walking an extra km with cash (Economides and Jeziorski, 2017)

- **Savings**: Same user, different time
  - User X at time 1 $\rightarrow$ User Y at time 2
  - Users are willing to pay 0.8 percent of the transaction amount to avoid storing cash at home for an extra day (Economides and Jeziorski, 2017)

- **Payments**: Different users, same location
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  - This paper: What is consumer demand for mobile money vs. cash?

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Motivation for Our Study

- Contrary to one-way transfers, **two-way transactions** (i.e., where a good or service is exchanged for payment) are more frequent
  - Often require travel to facilitate the transaction even with a digital payment
  - It is less clear what benefit there is for mobile money payments over cash payments
  - Preferences for cash or mobile money payments might reflect this ambiguity.

- A positive willingness-to-pay for a cash payment, relative to a payment via mobile money, highlights the existence of constraints limiting the adoption—and increased use—of mobile money as a payment system
  - Design features, structural weaknesses, network externalities, fraud, etc. (Garz et al. 2021; Annan, 2024; Higgins, 2024)

- For mobile money to be a genuine payment system it must expand use beyond its two most frequent uses (Suri et al., 2023)
  - Transactions over long distances
  - Transactions in settings where holding cash is exceedingly risky

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We Design a Survey Experiment

- We embed a survey experiment within the endline of an RCT in Bangladesh
- We offer a choice between a payment of 200 Taka paid in cash or X Taka paid via mobile money
  - $X = 200, 220, 250, 300, 350,$ or 400
  - Cash out fees for most mobile money at the time of our data collections was about 1.6 percent (Annan et al., 2023)
    - Additionally, in order to cash out, respondents need to physically travel to visit a mobile money agent
    - The amount offered T1 is intended to cover both the fee and the associated travel cost required to cash out this digital payment
  - Other treatment groups generate varying wedges between the cash and mobile money payment amounts: 125 percent, 150 percent, 175 percent, and 200 percent
- 30-40 percent of the typical harvest-season agricultural daily wage (500-600 Taka)

Our Sample

- Our sample includes 2,815 respondents
  - 49.3 percent male and 50.7 percent female
  - We stratify our randomization by gender and mobile money account ownership
  - Treatment assignment is balanced across household demographic variables, bank account ownership, and variables indicating treatment assignment to the “main” intervention

- 54 percent of the respondents report that they have a mobile money account.
  - Higher than estimates generated by the World Bank’s Findex survey for the general adult population in Bangladesh
    - 29 percent in 2021 (Demirguc-Kunt, Klapper, Singer and Ansar, 2022)
  - Comparable to: Ghana, (60 percent), Uganda (54 percent), and Zimbabwe (51 percent)
  - Higher than: Malawi (34 percent) and Senegal (45 percent)
  - Lower than: Kenya (69 percent)

We have a Balanced Sample

Variable	(1) Control N	(1) Control Mean/(SE)	(2) T1 N	(2) T1 Mean/(SE)	(3) T2 N	(3) T2 Mean/(SE)	(4) T3 N	(4) T3 Mean/(SE)	(5) T4 N	(5) T4 Mean/(SE)	(6) T5 N	(6) T5 Mean/(SE)	F-test for balance across all groups N	F-test for balance across all groups F-stat/P-value
Female	469	0.510	472	0.504	475	0.512	463	0.497	466	0.509	470	0.509	2815	0.053
		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		0.998
Use digital account	469	0.533	472	0.549	475	0.566	463	0.559	466	0.558	470	0.560	2815	0.264
		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		0.933
Have digital account	448	0.536	446	0.534	456	0.526	446	0.543	445	0.537	455	0.543	2696	0.069
		(0.024)		(0.024)		(0.023)		(0.024)		(0.024)		(0.023)		0.997
Household size	469	4.006	472	4.102	475	3.947	463	4.060	466	3.957	470	4.117	2815	1.454
		(0.061)		(0.058)		(0.059)		(0.064)		(0.057)		(0.062)		0.202
Number of children under five	469	0.109	472	0.106	475	0.097	463	0.121	466	0.114	470	0.115	2815	0.314
		(0.016)		(0.014)		(0.014)		(0.015)		(0.015)		(0.015)		0.905
Have bank account	469	0.339	472	0.383	475	0.347	463	0.374	466	0.333	470	0.368	2815	0.861
		(0.022)		(0.022)		(0.022)		(0.023)		(0.022)		(0.022)		0.507
Main experiment, control	469	0.473	472	0.417	475	0.425	463	0.425	466	0.438	470	0.438	2815	0.754
		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		0.583
Main experiment, T1	469	0.373	472	0.430	475	0.432	463	0.428	466	0.408	470	0.453	2815	1.442
		(0.022)		(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		0.206
Main experiment, T2	469	0.154	472	0.153	475	0.143	463	0.147	466	0.155	470	0.109	2815	1.178
		(0.017)		(0.017)		(0.016)		(0.016)		(0.017)		(0.014)		0.317

Notes: This table reports balance tests of our treatment assignment across key variables. The table reports the number of observations within each group, the mean and standard error of a given variable within each group, and results for an F-test of balance across each group.

Stated Preference for Cash in our Sample

	(1) Full sample	(2) Male	(3) Female
How do you usually make these payments?			
Use cash when purchasing food for your family	99.9	99.9	100
Use cash when purchasing household items	99.9	99.7	100
Use cash when purchasing agricultural inputs[a]	99.8	99.6	100
Use cash when giving money to friends or family	89.3	86.9	91.7
How would you like to make these payments?			
Use cash when purchasing food for your family	98.7	98.1	99.2
Use cash when purchasing household items[a]	98.7	98.1	99.4
Use cash when purchasing agricultural inputs	98.8	98.3	99.4
Use cash when giving money to friends or family	85.4	82.4	88.4
How do you usually receive these payments?			
Use cash when selling harvested crops[a]	99.4	99.0	99.8
Use cash when paid for wage/salary work[b]	95.5	94.7	96.6
Use cash when receiving money from friends or family	84.4	81.9	86.9
How would you like to receive these payments?			
Use cash when selling harvested crops[a]	98.6	97.6	99.7
Use cash when paid for wage/salary work[b]	93.6	93.0	94.4
Use cash when receiving money from friends or family	84.8	83.4	86.2

Notes: This table reports the percent of respondents who report using cash (or preferring to use cash) relative to digital services for various types of transactions. [a]Statistics about purchasing agricultural inputs or selling harvested crops are reported conditional on purchasing agricultural inputs or selling harvested crops, respectively. [b]Statistics about wage/salary work payments are conditional on having wage/salary work.

Estimation Specification

- Our outcome variable: binary variable indicating if the respondent chooses to accept the payment digitally via mobile money.

$$y_i = \alpha + \sum_{k=1}^{N} \beta_k Tk_i + \lambda_i + \epsilon_i \quad (1)$$

  - With the control group representing the comparison group where the cash and mobile money amounts are equal
  - β_k, with $k = 1, 2, 3, 4,$ or 5, are coefficients estimating the difference in the share of respondents who prefer the digital payment in each treatment group (i.e., Tk)
  - λ_i represents stratification fixed effects that account for the respondent's gender and mobile pre-existing mobile money account ownership or use

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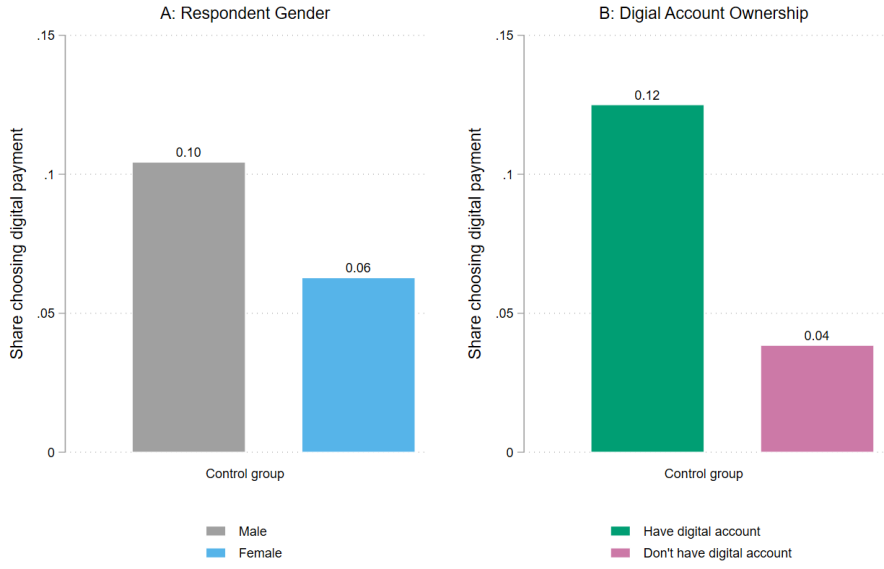
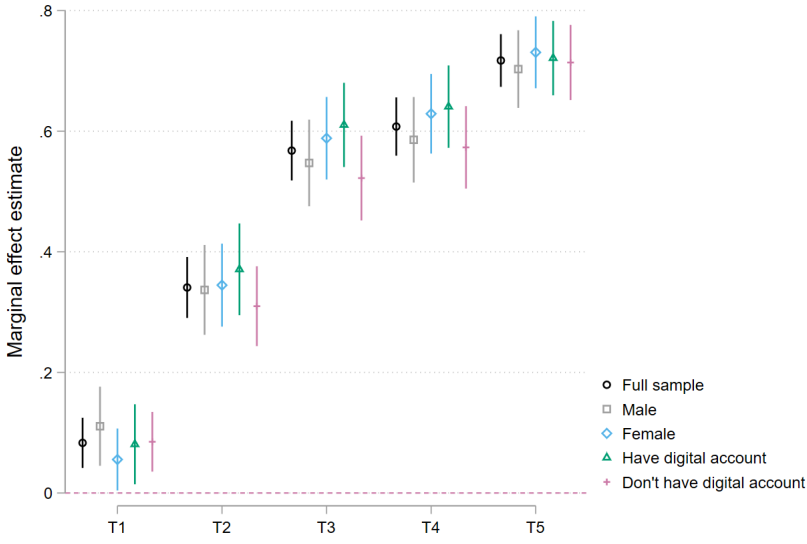
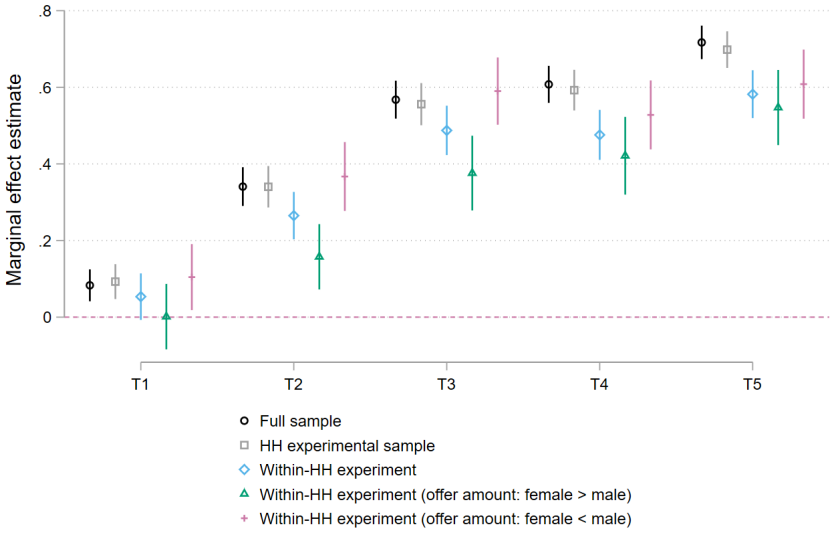
The Preference for Digital Payments at Parity



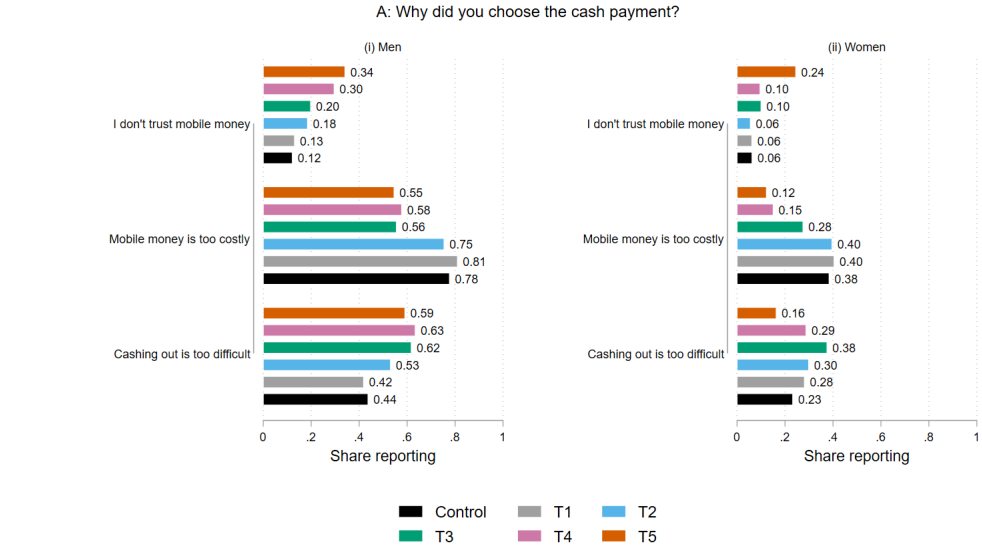
Treatment Effect Estimates



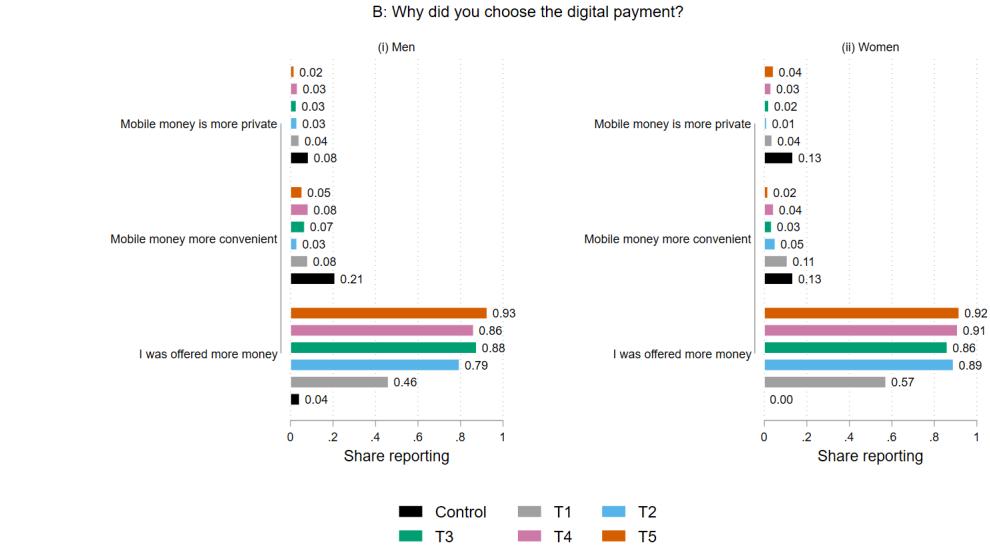
Within-Household Experimental Results



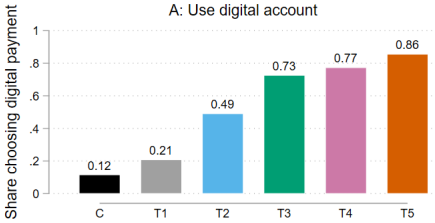
Reported Reasons for Choosing the Cash Payment

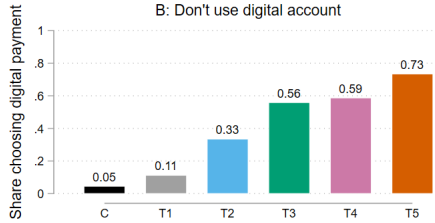


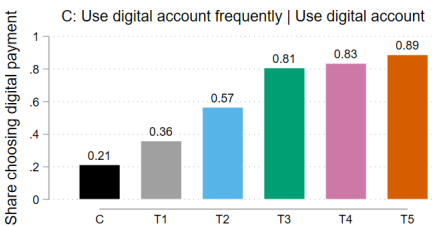
Reported Reasons for Choosing the Digital Payment

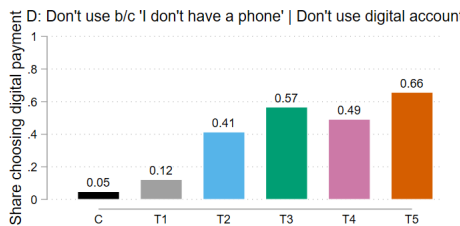


Additional Heterogeneity Results

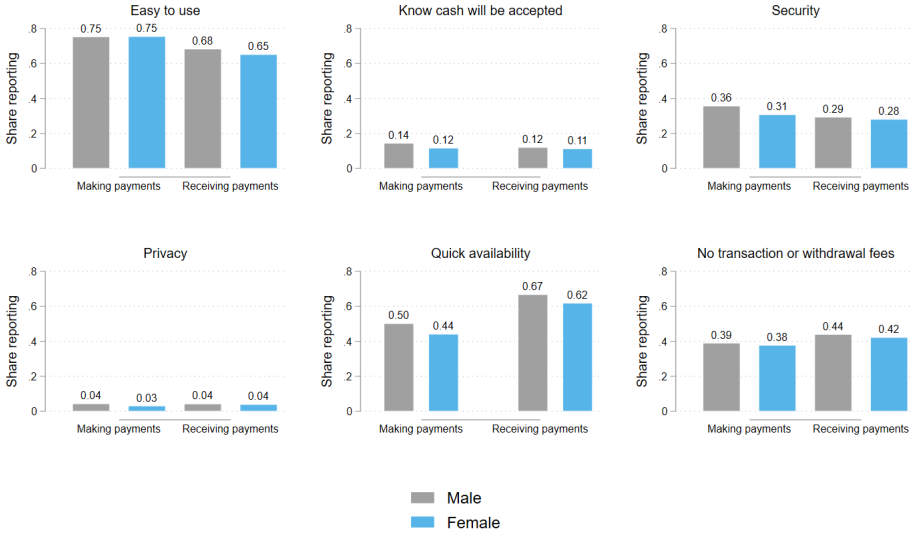




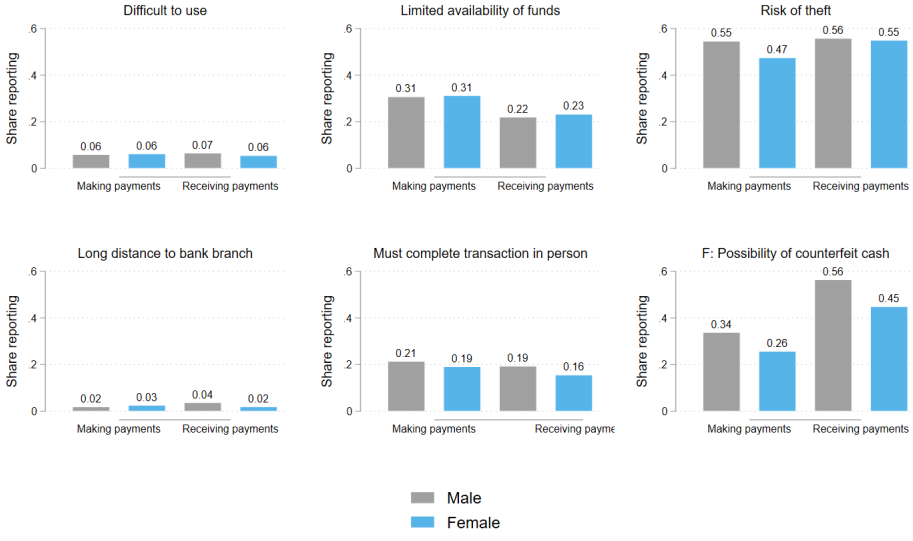




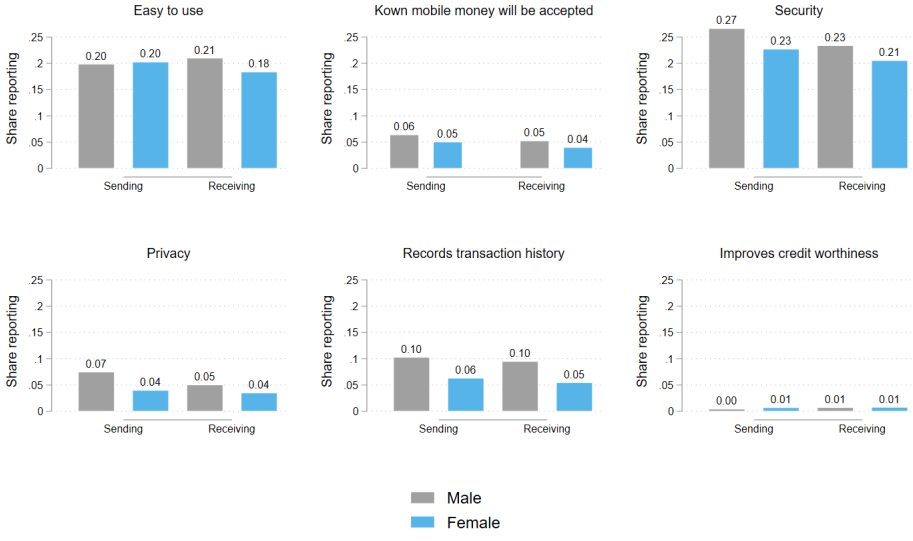
Reported Benefits of Cash Transactions



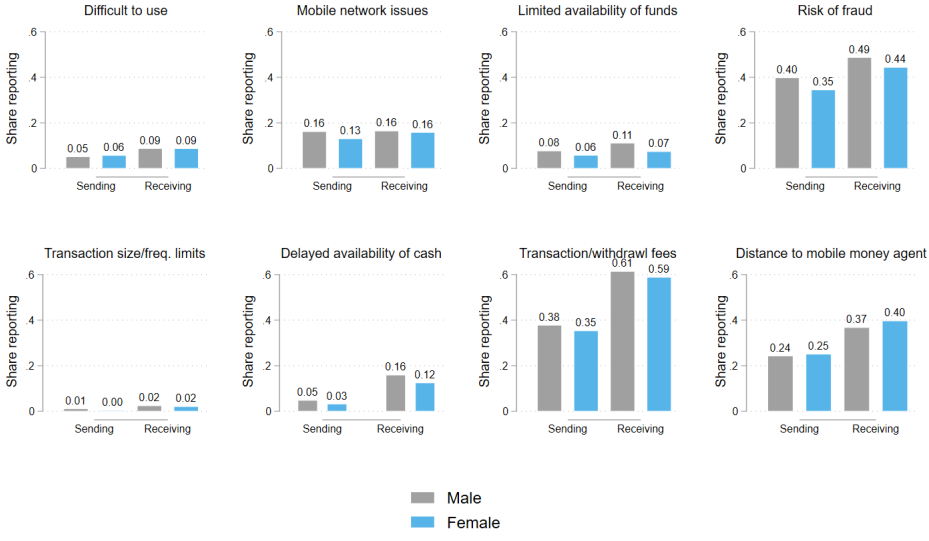
Reported Challenges of Cash Transactions



Reported Benefits of Mobile Money Transactions



Reported Challenges of Mobile Money Transactions



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Barriers on the Expanded Use of Mobile Money for Payments

- Most frequently stated reasons for not using a mobile money account:
  - Not having a mobile phone (28.7 percent)
  - Not needing a mobile money account (67 percent)
  - Not being able to use a mobile money account (39 percent)

- Less frequently stated reasons:
  - High cost to withdraw (2.6 percent)
    - Despite **over half** reporting fees as a challenge
  - Long distance to a agent (3.3 percent)
    - Despite **40 percent** reporting distance as a challenge
  - Liquidity constraints of agents (0.6 percent)
    - Consistent with **about 10 percent** listing limited availability of funds as a challenge
  - Limited ability to purchase digitally (1.4 percent)
    - Despite **near zero percent** reporting acceptance of digital payments as a benefit
  - Due to fear of fraud (1.2 percent)
    - Despite **nearly half** reporting risk of fraud as a challenge

Thank you!