

Essays on Improving Access to Digital Finance for the Economically Marginalised

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Chapter 2 is co-authored with Zaki Wahhaj

Maliha Rahanaz: Conceptualisation, Methodology, Software, Validation, Formal Analysis, Investigation, Data Curation, Writing - Original Draft, Visualisation, Project Administration and Funding Acquisition.

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Registration of Pre-Analysis Plan

The trial for Chapter 2 is registered <https://www.socialscienceregistry.org/trials/8164> and the pre-analysis plan was uploaded there on 30th August, 2021 before endline data collection started and analysis had begun. All analysis in this paper follows the pre-analysis plan unless stated otherwise.

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Ethical Approval

Chapters 2 and 4 have received research ethics approval from the University of Kent School of Economics Research Ethics Advisory Group.

Notice of Publication

An earlier version of Chapter 2 is available as a working paper to comply with funder requirements. It is available online and can be accessed [here](#).

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Chapter 1

Introduction

Financial inclusion refers to the availability of accessible and affordable financial products and services - such as payments, savings, credit, and insurance (World Bank, [2024](#)). It also involves increasing access to and use of financial services, particularly among low-income households, women, microenterprises, and other traditionally marginalised groups. A major challenge for the economically marginalised is turning unpredictable income streams into a reliable source to cover daily needs. This makes it difficult for them to account for emergencies, such as a home repair, a medical bill, or the loss of a job of the primary earner in the household.

Formal financial institutions are often unavailable, particularly in developing countries, where the majority of the economically marginalised live and work. For example, globally 1.7 billion adults are unbanked and 50% of them live in just 7 developing countries of Bangladesh, India, Pakistan, Indonesia, Mexico, Nigeria and China (Demirguc-Kunt et al., [2018](#)). The unbanked are vulnerable (40% are from the poorest households), have low educational attainment (62% have completed primary education or less), and are out of the labour force (47% do not work). Moreover, 60 million of the unbanked adults are reliant on government transfers (Demirguc-Kunt et al., [2018](#)). Hence, having access to a financial account and its uses - such as savings, credit, insurance and others - will provide an opportunity for them to save and borrow for emergencies, micro-businesses, reduce vulnerability to shocks and invest in education, housing or agriculture.

In recent times, there has been a digital financial revolution called Mobile Financial Services (MFS) or Digital Financial Services (DFS). It is the use of a mobile phone to access financial services and conduct financial transactions. Hence, it is popularly called “Mobile Money”. Mobile money is easily accessible through a feature phone or a smartphone and secured through a Personal Identification Number (PIN). With the help of a mobile money account, users can send money, receive money, make merchant payments, buy airtime, pay education, utility, and medical fees and purchase train and bus tickets. Mobile money is facilitated through financial intermediaries called mobile money agents. These mobile money agents

provide support by registering mobile money accounts and offering cash-in and cash-out services.

Mobile money agents are not employees of MFS providers but rather they are individual small business owners in localities operating under a franchise-like model. These agents form a distribution channel that is spread out across rural and urban areas. These agents are also embedded into their communities and are considered the faces of mobile money. Meaning, that apart from cash-in and cash-out activities, they also onboard, support and educate the customers (GSMA, 2024).

Can mobile phones deliver banking to the poor? 67% of the 1.7 billion unbanked adults own a mobile phone. Among those who are receiving government transfers, two-thirds own a mobile phone (Demirgüç-Kunt et al., 2015). Moreover, more than half of unbanked adults in South Asia have a mobile phone, including 51% in India, 55% in Pakistan and 69% in Bangladesh (Demirgüç-Kunt et al., 2022). According to the Global Findex Report of 2021, mobile money is driving significant growth in account ownership among adults in developing countries (Demirgüç-Kunt et al., 2022). Mobile money has enabled low-income households to reduce transaction costs in sending and receiving remittances, smooth consumption, and reduce their vulnerability to shocks (Jack and Suri, 2014; Jack and Suri, 2011; Batista and Vicente, 2020b; Lee et al., 2021; Batista and Vicente, 2023). For women, it has enabled them to increase control over earnings, (Riley, 2018) and improve bargaining power in the household (Aker et al., 2016; Van Biljon et al., 2018).

However, growth in account ownership does not necessarily translate into higher usage. The actual use of mobile money may be limited by lack of awareness, access to and control of digital devices, lack of trust in the service provider, and vulnerability to exploitation by intermediary agents. Women may face additional barriers in the use of mobile money accounts. For example, women are more likely to lack identification and access to a personal phone. They are also more likely to ask a family member or mobile money agent for help in using their accounts, making them vulnerable to financial abuse.

This dissertation consists of three chapters that contribute to improving access to digital finance, such as mobile money, for the economically marginalised within the context of South Asia. Each chapter of the dissertation addresses different research questions that assess the impact of demand-and-supply side interventions among low-income and vulnerable populations, such as beneficiaries of government-to-person (G2P) payments and women employed in the domestic work sector in Bangladesh.

Chapter 2 focuses on the impact of improving information and customer service to expand mobile money access to the poorest G2P beneficiaries. We present results from a field experiment conducted among recently digitised government-payment beneficiaries in Bangladesh. Using a randomised control trial (RCT) we measure the impact of three treatment arms: Beneficiaries are either provided information through posters, videos and calendars, an agent award scheme is rolled out in the locality of beneficiaries, or the two approaches are combined. Six months after the intervention, we find detectable effect on outcomes related to awareness, knowledge, trust and usage of mobile money accounts. This simple

information campaign paired with a non-monetary award scheme for agents increased beneficiaries' trust in mobile money accounts by 10 percentage points. The ability to perform transactions related to mobile money also increased (by 4 percentage points) but only among beneficiaries who received the information campaign. We also find large, positive and significant effects on self-reported savings and remittances 6 months after the study. While we find detectable effects of the award scheme on awareness of mobile money accounts, we observe no change in behaviour from running the award scheme on its own.

Chapter 3 focuses on the impact of social incentives, such as a non-monetary award scheme, in the delivery of mobile money. The management of financial intermediaries, such as mobile money agents, who are rather contracted than employed, is not similar to managing employees primarily due to the autonomy through which they operate. Since mobile money agents are at the forefront of accelerating the use of mobile money among low-income, poor, and vulnerable populations it is of interest to understand what are the factors that determine agent motivation in the delivery of mobile money services. Using an experimental design with recently digitised government-payment beneficiaries in Bangladesh, we identify how non-monetary incentives shape the behaviour and effort of local delivery agents, particularly in rural and urban regions. We explore the reasons why this occurs - finding that social capital among communities, proxied by the participation in local non-governmental organisations (NGOs), is of critical importance when improving the effectiveness of non-monetary award schemes.

Finally, **Chapter 4** focuses on the impact of DFS training on low-income urban women employed as domestic workers, in an Uber-like platform called HelloTask in Dhaka, Bangladesh. Participants were assigned to one of three groups: (T1) received digital/mobile financial services (DFS/MFS) training and the option to switch their wage payments to bKash—an MFS provider that offers an expanded range of services compared to their current provider at HelloTask; (T2) received DFS training only; or (control) received no intervention. 12 months after the DFS training, women in T1 acquire 7% more knowledge regarding mobile money, report 14% more savings via formal sources, 6% increase in savings held in personal mobile money accounts, and a 23% higher likelihood of sending remittances when compared to the baseline mean. For labour market outcomes, women in T1 work an additional 3 hours and earn approximately 1.5 times in wages compared to the control group. Women in T1 are also seen to earn 17% more wages via their mobile money accounts compared to the control group. Women in T2, report about 29% more savings in formal sources compared to the baseline mean. We also find them to earn 28% less in wages from HelloTask compared to women in T1. However, they offset this decrease by earning about three times more in wages from work outside the HelloTask platform compared to women in T1. Furthermore, this translates into five times more wages from work outside of the HelloTask platform compared to the baseline mean.

The chapters of this dissertation add to the literature by providing evidence on the impact of demand- and supply side interventions on improving access to mobile money. We capture a range of outcomes that

measure awareness, knowledge, and trust in and use of mobile money accounts. Additionally, we also capture changes on broader economic outcomes, such as on savings, remittances and women's economic empowerment. In Chapter 2, we investigate whether improving information regarding mobile money and encouraging mobile money agents to deliver good customer service can expand mobile money access among recently digitised government payment beneficiaries. To the best of our knowledge, this is yet to be explored in the literature. In Chapter 3, we investigate the effectiveness of a non-monetary agent award scheme. We add to the broader literature on evaluating the effects of incentives and to nascent literature studying the motivation of people who are engaged in prosocial activities, like mobile money agents who are expanding financial inclusion for the poor and marginalised. Finally, in Chapter 4, we investigate the impacts of an unmet demand for tailored and context-based DFS training on low-income urban women employed in the informal domestic work sector. To the best of our knowledge, this is yet to be explored in the literature. The two aspects of this paper that are novel are the lack of evidence for casual and informal workers and wage payments via mobile money. This dissertation, viewed together, speaks to the literature on financial inclusion. It enhances our understanding of how commitment mechanisms and default options in financial products, along with consumer education through informational campaigns and training on mobile money usage, can promote financial inclusion in developing countries.

The next three chapters consist of the essays described above, which are presented as self-contained journal-style articles. The essays include their sections on related literature, context, experimental design, methodology, description of data, results, and discussion of the findings.

Chapter 2

Improving Information and Customer Service to Expand Mobile Money Access to the Poorest Government Payment Beneficiaries

2.1 Introduction

Globally, the last decade has seen significant increases in financial account ownership with an estimated 71% of adults in developing countries having an account at a formal institution such as banks, micro-finance institutions, and mobile money providers (Demirgüç-Kunt et al., 2022). However, it is ‘mobile money’ that has been driving the growth in account ownership. Mobile Financial Services (MFS) or mobile money is considered a powerful tool that allows users to interact with the financial market through deposits, payments, and withdrawals (Demirgüç-Kunt et al., 2022; Breza et al., 2020). These digital accounts can be opened in any type of mobile phone (such as on feature phones and/or on smartphones) linked to a phone SIM card, secured and safeguarded through the use personal identification number (PIN).

Payments received in digital accounts may facilitate the adoption of a wider range of financial services. Such digital accounts can help users retain these payments by postponing withdrawals and then making direct payments (person-to-person), within accounts, when required. This accumulated digital balance can then be used to store and save money, borrow, pay for other services such as bill payments (including utilities), airtime, and purchasing goods and services (person-to-business).

Access to affordable and basic financial services can be beneficial for low-income, poor, and vulnerable households, that have traditionally had limited access to formal financial institutions. Recently, largely driven by government-led financial inclusion initiatives during the COVID-19 pandemic, approximately 865 million adults opened accounts to receive government payments (Demirgüç-Kunt et al., 2022). While these initiatives can prompt beneficiaries to use more robust financial services, a lack of awareness and knowledge regarding these services can deter consistent and long-term benefits of account ownership and MFS usage. Moreover, mobile money agents may charge illicit fees due to lack of information on the beneficiary end. Batista and Vicente (2023) use m-Kesh in rural Mozambique to encourage the use of mobile money. For their RCT design, they recruit and train an m-Kesh agent per study location. This worked as a threat-point and helped to significantly reduce these fees. Furthermore, these agents had large official posters signifying that they are m-Kesh agents and had a designated mobile phone for conducting m-Kesh transactions.

In this paper, we introduce and evaluate a simple, light-touch information intervention, along with a non-monetary award scheme, to address two key research questions: (1) Does information provision regarding mobile money accounts improve financial inclusion? and (2) Can incentives, given to financial intermediaries, improve customer services in the use of mobile money accounts? To answer these questions, using a randomised experiment on recently digitised Government-to-Persons (G2P) payment beneficiaries in Bangladesh, we measure the impact of three treatment arms: Beneficiaries are either provided information on mobile money through posters, videos, and calendars, an agent award scheme is provided in the locality of the beneficiaries, or the two approaches are combined.

The interventions designed served the following purposes. For the first treatment arm, the information campaigns were designed to reduce demand-side frictions. The information campaigns provided to the beneficiaries highlighted the basic and the most important features of a mobile money account. We call this treatment “T1”. For the second treatment arm, we introduce an agent award scheme in our study zones. The agent award scheme was designed to reduce supply-side friction. We inform mobile money agents in our study zones about a nationwide competition on improving customer service. We call this treatment “T2”. Finally, in the third treatment arm, we combine the information campaign and the agent award scheme as the third treatment arm. The idea is to understand whether there are differential gains by reducing both demand-side and supply-side market frictions. We call this treatment “T3”. And lastly, we have a control group that did not receive any of the treatments.

Overall, we find compelling evidence not only of increased awareness, knowledge, trust, and usage of MFS but also of improvements in economic outcomes, such as increases in savings and remittances. Specifically, we find that our information campaigns (T1) helped to increase awareness of MFS by 8 percentage points. Beneficiaries who received a combination of the interventions (T3), were about 7 percentage points more likely to be aware of MFS. These increases represent an eight-fold effect compared to the baseline. We also find that the agent award scheme (T2) increases beneficiaries’ awareness through friends and family by about 8 percentage points. This represents an increase of 23% in awareness compared to the baseline mean.

Having access to essential and relevant information that we provided through the information campaigns on using mobile money services, G2P beneficiaries in T1 were more likely to maintain account balances and learn to perform basic transactions related to mobile money. This, however, did not change withdrawal behaviour significantly to translate into using other additional features of a mobile money account, such as making deposits, bill payments, and earning interest on savings. However, we find an increase in trust by about 10 percentage point regarding mobile money only when the two interventions (T3) are combined. This represents an increase of 16% compared to the baseline.

Our treatments also influence economic outcomes, including increases in savings. Specifically, we observe a sharp and significant increase in the likelihood of having any savings by 7 percentage points among beneficiaries who received the information campaign (T1). Additionally, beneficiaries in all three treatment arms are more likely to have formal savings compared to the control arm. On average, we observe an increase of about 3-5 percentage points across all treatment arms, with the highest effect among beneficiaries who received the information campaigns only (T1).

Arrays of literature, largely using randomised control trials, show a significant demand for mobile money among specific subgroups of the population in Bangladesh and other developing countries including for example, remittance-receiving rural households in Bangladesh (Lee et al., 2021), female microfinance borrowers in Uganda (Riley, 2024), female employees in ready-made garments sector in

Bangladesh (Breza et al., 2020). However, there is limited evidence regarding the potential demand for mobile money among social protection beneficiaries, such as our G2P beneficiaries, who are likely to have fewer assets, less human capital, and more limited social networks compared to these other populations.

These challenges motivate our study, to experimentally evaluate the impact of an information campaign and a non-monetary award scheme for MFS agents on awareness, knowledge, trust, and usage of mobile money among recently digitised G2P payment beneficiaries in Bangladesh. The results of this study will provide evidence about the state of awareness and usage of MFS accounts among low-income, vulnerable populations. Additionally, it will provide insight into the effectiveness of programs and outreach strategies that can be scaled to address awareness gaps for financial inclusion.

2.2 Related Literature

Batista and Vicente (2023) evaluate the effects of a large-scale rollout of mobile money in rural Mozambique – a setting without prior access to formal financial services. The primary focus is on how mobile money – called m-Kesh - facilitates informal risk-sharing between urban migrants and their rural families through improved remittance flows. As part of the rollout, they implemented training using posters and leaflets. These interventions increased knowledge of mobile money services and also improved general financial literacy including concepts of savings, transfers, deposits and withdrawals. While initial adoption of mobile money was relatively high where 63% of treated individuals conducted at least one transaction in the first year of the study, however, over time transactions concentrated on remittances.

Lee et al. (2021) evaluate whether reducing adoption barriers can enable rural households to reduce transaction costs in receiving remittances via mobile money. The intervention focused on simplifying account registration and addressing basic technical obstacles to usage. Once adopted, mobile money allowed urban migrants to send remittances to rural households in a cheaper and more reliable way, leading to increased remittances, improved consumption and reduced poverty. While the intervention increased adoption, the accounts were mainly used to receive remittances with limited engagement with other mobile money services. The study also finds effects on savings, but these are largely driven by balances accumulating in accounts rather than by active use of mobile money as a savings instrument.

Breza et al. (2020) evaluate how repeated exposure to digital payroll accounts can facilitate consumer learning and improve financial behaviour among ready-made garments workers in Bangladesh. The intervention involved shifting workers' wage disbursement from cash to mobile or bank accounts. This was combined with a brief orientation on account usage. As workers regularly managed their wages through digital platforms, they engaged in learning-by-doing, gaining trust and confidence in navigating account features, avoiding illicit fees charged by agents, and adopting non-withdrawal transactions such as transfers and deposits. The intervention also affected broader economic outcomes such as formal

savings and improving workers' ability to cope with financial shocks.

Beyond addressing initial adoption frictions faced by consumers, the behaviour of agents or frontline providers may also affect engagement with mobile money. Agents may choose how much effort to exert, which can influence consumers' trust, usage and overall experience with services – factors that maybe particularly important for economically marginalised populations with limited financial experience or access to formal institutions. In such settings, prosocial behaviour by agents – such as offering reliable and honest customer service can play a critical role in fostering sustained engagement with mobile money.

Bénabou and Tirole (2006) develop a model of prosocial behaviour in which agents are motivated by intrinsic altruism, extrinsic rewards, and reputational concerns. They propose that financial incentives can weaken prosocial actions as it reduces the reputational return and crowds out intrinsic motivation. By contrast, non-monetary incentives preserve the reputational value of prosocial actions as signals of intrinsic motivation, which can lead to individuals exerting more effort. In the context of public goods, the paper outlines two sources of intrinsic motivation that may drive an agent's prosocial behaviour. First, the agent may care about the overall level of the public good and value their actions because they contribute to collective outcomes. Second, the agent may experience a “warm glow” or personal satisfaction by deriving utility from their own contribution regardless of what others do (Andreoni, 1990; Andreoni, 1989)

N. Ashraf et al. (2014) investigates how incentive design affects prosocial effort of agents involved in public service delivery. The study partnered with a public health organisation in Zambia to recruit hairdressers and barbers to sell female condoms – a task that has a strong prosocial component but requires promotion and sales effort among customers. Hair salons were selected as delivery points because of the familiar relationship shared between stylists and clients. This created opportunities to target at-risk individuals and deliver personalised information during appointments. Moreover, the widespread presence of salons across the study zone (Lusaka) allowed the program to work with a broad network of agents capable of reaching a large segment of the population. The agents in the study were randomly assigned to receive no award (volunteers), financial awards, or non-financial awards. They find that agents who were offered non-financial rewards exerted more effort than those who received financial rewards or those who offered to volunteer. The star award works by leveraging agents' prosocial motivation and by creating opportunities for social comparison that was visible through public recognition of performance.

This paper contributes to the literature by focusing on a population that differs from those studied in prior work. While earlier studies have examined remittance receivers, wage earners or those engaged in formal employment (Batista and Vicente, 2023; Lee et al., 2021; Breza et al., 2020), the population in this study consists of government-to-persons (G2P) beneficiaries. G2P beneficiaries are often amongst the most economically marginalised, with limited income sources, low financial resilience and few alternative channels for accessing financial services.

We also contribute to a scant literature that provides - using field experiment - causal effect of non-monetary incentives on service delivery in a market-based setting. Previous work on non-financial incentives focused on settings like teaching or healthcare or mission-driven NGOs and charities in developing countries, where improving the effort of agents is associated with positive social externalities (N. Ashraf et al., 2014; Muralidharan and Sundararaman, 2011; Lacetera and Macis, 2008; Ariely et al., 2009; Bandiera et al., 2007). In contrast, studying non-monetary incentives in market-based settings, helps to identify whether prosocial motivation can enhance service delivery and promote welfare gains for economically marginalised groups.

2.3 Context

The Government of Bangladesh (GoB) operates more than 150 active social safety net programs (SSNP) -such as wages support, cash transfer, in-kind support and education scholarships – distributed by the various government ministries and divisions.¹ As of 2018-2019, SSN programs comprise of 13.81% of total government expenditures. Such SSNP were delivered primarily via cash to the beneficiaries. The inherent costs for the government, such as administration costs and the risk of leakage, related to direct cash transfers are significant (Muralidharan et al., 2016). For the low-income and vulnerable population of beneficiaries, there are also costs associated with direct cash transfers, such as time and money needed to travel to the point of collection (Aker et al., 2016; Field et al., 2022).

In light of such challenges related to direct cash transfers, between 2020 and 2021, the Ministry of Social Welfare (under the Department of Social Services) and in partnership with Aspire to innovate (a2i) digitised the disbursement of SSNP to 8.8 million beneficiaries across the country. The Department of Social Services (DSS) operates three types of SSNP: (a) Old Age Allowance (OAA), (b) Allowance for Widow, Deserted and Destitute Women (WAA) and (c) Disability Allowance (DAA). Under the digitised system of receiving G2P allowance, the primary way the beneficiary is informed about the arrival of the allowance is via an SMS on their registered phones and into the accounts of their chosen mobile money account. While this new system has many benefits, there are concerns regarding beneficiaries' withdrawal experience, their awareness, and the usage of MFS accounts for broader financial inclusion.

To facilitate the adoption of digital G2P payments, the GoB built the payment infrastructure on an already well-developed, well-established and functional Mobile Financial Services (MFS) or mobile money network in the country. The GoB partnered with two leading MFS providers, Bkash, a subsidiary of BRAC Bank occupying 48% of market share, and Nagad, operating under the Bangladesh Post Office, occupying 21% of the market share. Users of bKash and Nagad benefit from a large and growing network of agents spanned across the country. According to Bangladesh Bank, the number of registered users of

1. For more information on the roll-out of government safety net programs in Bangladesh, please see [here](#)

mobile money grew by 203% between December 2015 and October 2020 (Hazra and Priyo, 2021) and 33% of adult women will be registered MFS users by December 2020 (Barooah et al., 2018). The GoB has also increased the integration of MFS in other sectors, whereby conditioning the introduction of MFS accounts for workers in the garments industry. Apart from operational benefits, switching from cash to digitised G2P payments can help to promote affordable and greater financial inclusion among the poor and marginalised who have traditionally had limited access to formal financial services.

G2P beneficiaries are society's poorest citizens, with low levels of connectivity and ability to pay, and are the least likely populations to recognise the benefits of mobile money beyond its use as an intermediary step to cash-out. Furthermore, the use of ancillary services, such as savings, and bill/merchant payments, among the poor continues to remain as they may have lower awareness and knowledge regarding mobile money services. While there may be posters advertising services or information on standard agent fees in circulation, such materials are often not tailored to the specific needs and interests of the poorest G2P payment beneficiaries. These demand-side constraints, such as these information barriers, may lead to exploitation and lower trust.

Moreover, the success of MFS-enabled G2P payments also rely on the agent infrastructure through which beneficiaries access their funds. G2P payments disbursed via MFS improve mobility and convenience for recipients by allowing them to cash out allowances from their nearest agent points. MFS agents serve as the first point of contact for beneficiaries—not only for withdrawals but also for deposits and more advanced financial services. Yet, if beneficiaries lack trust in their local MFS agents, they may be less likely to continue using their accounts beyond the initial cash-out.

Most MFS agents operate independent businesses prior to becoming agents and require a sufficient return on investment to justify reinvesting in liquidity (or float). Their earnings depend on transaction commissions, primarily from deposits, withdrawals, and account registration. Agents have discretion in which transactions to perform, and are often incentivised to prioritise higher-value, higher-frequency transactions. As such, they may deprioritise or even refuse services to low-income clients conducting small transactions (Davidson and Leishman, 2010), which includes the G2P beneficiaries. Market frictions such as limited information, high transaction costs (including informal fees), agent market power, behavioural frictions (like lack of trust or low confidence) may all lead to lower engagement with mobile financial services.

While the gap in financial inclusion has narrowed over the years, women, and the poor, are more likely to need support and assistance to productively use a mobile money account. In the context of usage of MFS by Bangladesh's poorest government payment beneficiaries, market frictions may arise due to a lack of information (among potential users about the range of MFS services available; or among MFS agents about the services that their clients would find useful), transaction costs (e.g fees related to each transaction, travel and waiting time to access MFS agents), market power (such as agents charging

illicit fees because of lack of competition), behavioural aspects (such as low levels of trust in MFS and MFS agents, experience and confidence) or social norms (such as prevailing norms preventing potential female clients from accessing services from male MFS agents). Hence, a pressing economic question is how to alleviate these market frictions.²

2.4 Conceptual Framework

2.4.1 Treatment 1 - Information Campaign: Posters + Videos + Desk Calendars

The information campaign consisted of posters, videos and desk calendars designed to improve usage of mobile money at the intensive margin among beneficiaries receiving digital G2P payments. In this study, we examine outcomes, at the beneficiary-level, related to awareness of mobile money, trust in and usage of mobile money, savings and remittances sent and received. These information campaign could affect these outcomes through two primary channels: (i) improving awareness and information and (ii) increasing trust in the technology.

We expect the information campaign – comprising of visual materials such as posters and desk calendars, alongside the two short videos – to improve awareness of MFS within both household and community networks. By keeping these materials in spaces with visibility and exposure, the information campaigns not only provides information to individual beneficiaries directly but may also catalyse interpersonal communications within their social networks. We hypothesise that treated individuals will be more likely to engage in discussions about MFS with friends and family, thereby increasing awareness of mobile money. This mechanism of social diffusion reinforced through familiar and trusted channels—is expected to increase reported awareness of MFS via friends and family. This reasoning is supported by Batista et al. (2018) that providing information about mobile money services – such peer-to-peer transfers (P2P) - can spread within exogenously formed social networks where individuals shared knowledge or experiences about using mobile money.

We expect the information campaign – delivered through posters, short videos, and desk calendars in local language – to potentially improve beneficiaries’ knowledge of mobile money accounts, including how to initiate, execute, and complete basic transactions. By presenting simple and visually accessible instructions on how to go to mobile money account menu, sending/depositing money through mobile money accounts, and checking balance kept in mobile money accounts, has the potential to lower informational barriers to use. Improved familiarity and confidence with the transaction process may increase the likelihood that beneficiaries can independently perform basic mobile money services.

2. See Scaling the Impact of Digital Financial Services: The Opportunity and Imperative during Covid-19. Mastercard Center for Inclusive Growth, September 2020

Moreover, the information campaign is designed to not only improve knowledge of how to initiate transactions but it also has the potential to build awareness of the importance of transaction confirmation, including how to verify balances and review transaction receipts, such as short-messaging services (SMS) received after a mobile money transaction. We hypothesise that, providing visuals such as videos, posters, and calendars that emphasise key steps such as checking for confirmation messages or updated account balances, has the potential of improving beneficiaries' ability and likelihood to confirm that a transaction has been successfully completed.

Beyond G2P transfers, the information campaign is designed to promote broader awareness of the various services offered by mobile money accounts. The posters, videos and the desk calendars feature examples beyond cash withdrawals, including remittances, mobile airtime purchases, and savings features. By improving beneficiaries' understanding of the range of services available through mobile money accounts and repeated exposure (additionally via the posters and the desk calendars), we hypothesise that this expanded awareness can improve the likelihood that beneficiaries use their mobile money accounts for other purposes beyond receiving and withdrawing G2P payments.

The evidence for the aforementioned hypotheses is supported by Breza et al. (2020). In this study, they find that ready-made garments workers receiving wages in their mobile money accounts, are seen to reduce the share of transactions intermediated by an agent and learnt to transact through their own accounts. Treated workers were more likely to make send-money transactions on their own and were also more likely to engage in non-withdrawal transactions, such as depositing and sending money using their own mobile money accounts. Given our G2P beneficiaries are unsalaried, have lower levels of literacy and more economically marginalised than the study population in the Breza et al. (2020) study, we focus on transactions that are defined as basic and/or primary, such as accessing the mobile money account menu, checking balance and sending money through their accounts.

Furthermore, we hypothesise that increased engagement with mobile money accounts, through conducting transactions and learning about different types of services available, may lead to accumulation of higher balances on their mobile money accounts. This hypothesis is supported by Breza et al. (2020) that find ready-made garments workers receiving wages in their mobile money accounts keep about 7% more of their median monthly wage as balances in their accounts compared to workers that were given mobile money accounts but continue to receive their wages via cash.

We expect that frequent engagement with mobile money accounts—encouraged by exposure to posters, desk calendars, and videos—will help G2P beneficiaries learn how to perform basic transactions and build confidence in using the technology. We hypothesise that this could lead to higher trust in mobile money accounts, such as whether they think it is wise to leave money in their mobile money accounts. This hypothesis is supported by Breza et al. (2020) that find trust in mobile money accounts increased by 16.8 percentage points, an increase of 44% relative to the control group, among ready-made

garments workers receiving wages in mobile money accounts in Bangladesh. They attribute their finding to consumer learning as workers learned to engage with other types of mobile money services, such as send money, deposits, and withdrawals.³

We expect that improved familiarity, engagement and trust with mobile money accounts – facilitated by exposure to posters, calendars and videos – can potentially increase transfers such remittances received and sent. By learning how to perform transactions, check balances, recognising incoming payments independently and avoiding reliance on agents or intermediaries, G2P beneficiaries may be able to send and receive money more efficiently. This hypothesis is supported by Lee et al. (2021) who find, treated households that received a short training, including basic steps and protocols to using mobile money accounts, remittances received increased by 26% relative to the control group. The study also highlighted that providing locally translated information about mobile money accounts reduced intimidation felt by households with limited education in using the technology.⁴

2.4.2 Treatment 2 - Non-monetary Incentive: Agent Award Scheme

We designed the agent award scheme to test the prosocial motivation of mobile money agents in the delivery of mobile money services to G2P beneficiaries (Bénabou and Tirole, 2006). We also examine outcomes at the beneficiary-level (as in Treatment 1), which may be influenced through the key channel of improved service delivery.

As part of the scheme, agents are eligible to receive a non-monetary award, which is a crest that identifies them as the “Best Agent in Customer Service”. Agents can display the crests in their shop where it can easily be seen by customers, other mobile money agents and the wider community. Through this visibility of service excellence, the scheme enables agents to publicly demonstrate their prosocial motivation to the wider community through their efforts that might otherwise go unnoticed. This in turn can generate warm glow resulting from creating benefits enjoyed by those other than MFS companies that recruit them or employers that hire them in shops (Andreoni, 1990; Andreoni, 1989; Bénabou and Tirole, 2006).

The non-monetary award scheme has the potential to affect the effort exerted by mobile money agents in reducing information barriers that prevent frequent engagement with mobile money among marginalised populations, such as G2P beneficiaries. Mobile money agents may promote awareness and knowledge of mobile money by providing assistance in the use of its services. For example, by showing or explaining how the balance kept in the accounts can be used to directly purchase mobile credit, how

3. While Breza et al. (2020) measure trust by asking whether respondents are comfortable keeping Bangladeshi Taka (BDT) 1,000/BDT 5000 in their accounts, we use a more general attitudinal measure—whether it is wise to leave money in mobile money accounts. This alternative framing was chosen to avoid the risk of unrealistic expectations among our sample of economically marginalised G2P beneficiaries, for whom BDT 1,000/BDT 5000 may be an implausible reference amount. Furthermore, our approach draws on survey designs used in African contexts, such as the Financial Access 2013 Questionnaire, with similarly vulnerable populations

4. Although not the focus of our study, Batista and Vicente (2023) also find an increase in remittances received among poor households in Mozambique, particularly when there is a presence of adverse shocks

to access account menus using PINs, and how to review SMSs (short-messaging-services) that confirms transaction fees. This can further improve trust among G2P beneficiaries in using mobile money more confidently and encouraging them to maintain balances, Hence, non-monetary incentive has the potential to improve outcomes related to awareness and knowledge, trust and usage of mobile money accounts.

Non-monetary incentive provided to mobile money agents may influence broader economic outcomes such as remittances and savings among G2P beneficiaries. Agents may take greater initiative in explaining that accounts can be used beyond just receiving G2P payments, such as for remittances. Agents may assist G2P beneficiaries in demonstrating how to complete a transfer and what fees apply, troubleshoot failed transactions and reassure users about the safety of mobile money in sending/receiving money. Similarly, agents may actively promote the use of mobile money accounts for storing funds, rather than just for immediate withdrawal. This can involve explaining the benefits of keeping money in the account, such as for safety, convenience or privacy. Agents can assist G2P beneficiaries in clarifying how to monitor balances, avoid paying unnecessary fees and re-access saved funds later. They could also provide reassurance that PINs will ensure funds remain secure over time.

These hypotheses are supported by existing evidence on how non-monetary award schemes that signal prosociality lead to improved service delivery (N. Ashraf et al., 2014). The study finds that agents receiving non-financial incentives exert more effort in increasing sales. Treated agents are also seen to display promotion materials and filling in sales record. Customers were also able to recognise the promotional materials displayed by the agents in the treated sample.

2.4.3 Treatment 3 - Information Campaign + Agent Award Scheme

We also introduce another treatment arm that combines the information campaign with the agent award scheme. The rationale for introducing a third treatment arm is that we may observe differential effects, such as complementarities between demand- and supply-side interventions. While information provision can increase knowledge, shift beliefs, and motivate uptake, its impact may be limited if service delivery is unreliable or trust in agents remains low. Similarly, improving agent motivation is unlikely to have an effect if potential beneficiaries lack sufficient knowledge and trust in the mobile money services they provide to approach these agents. We expect that by improving awareness and knowledge (on the demand side) of the potential of using and engaging with mobile money accounts and removing service delivery constraints (on the supply side) may generate multiplicative effects on our outcomes of interest, such as awareness, usage, trust, remittances and savings.

2.5 Sampling

The study was conducted across all 8 administrative divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, Mymensingh, and Sylhet. The study population consists of the beneficiaries of Old Age Allowance (OAA), Disabled Allowance (DAA), and Widowed and Destitute Women Allowance (WAA) provided by the Department of Social Services (DSS) in Bangladesh localities where these transfers were being made directly into the beneficiaries' MFS accounts in the third quarter of 2021.

To draw our sample, we first restricted the population of unions/wards to those that met the following criteria: (i) at least 30 G2P beneficiaries in each of the following categories: DAA, OAA, OAA and WAA; (ii) at least 5 bKash agents located within the union; (iii) not located in the Chittagong Hill Tracts.

Next, we randomly selected 50 unions/wards from those classified as urban or peri-urban ward, and 50 unions from those classified as rural.⁵ Within each union/ward, we selected the first 30 responders to the survey request. The 30 responders comprise of 10 beneficiaries from each of the three types: DAA, OAA, and WAA, from a randomly ordered list of beneficiaries. Thus, we obtained a total sample size of 3000 ($100 \times 30 = 3000$) beneficiaries for the study.

2.6 Experimental Design

Each of the sampled beneficiaries were randomly assigned to one of the four experimental arms (three treatment arms and control arms) according to a cluster randomisation design, with 25 unions in each arm. We verified balance across the experimental arms using data on union-level population, literacy rate and electrification drawn from the 2011 Bangladesh Population Census Report.⁶

The outcomes of interest are measured at the beneficiary level and the randomisation took place at the cluster level, where a cluster is defined as a rural union or an urban ward.

2.6.1 Description of the Interventions

The interventions were designed to address informational, behavioural, and service-related constraints that limit the ability of existing account holders to engage with mobile money accounts at the intensive margin. Given our cluster randomisation design, each treatment arm comprises of 25 unions/wards receiving the following interventions:

- **Intervention 1:** We designed posters that provided concise information regarding the use of money accounts, such as Cash-in/Cash-out, Send Money/Receive Money, MFS as a Saving Mechanism

5. (A union is the smallest rural administrative and local government unit. An urban ward is the smallest administrative unit in cities and town)

6. This was the latest document available, at the time of our study, that had union-level information for Bangladesh. The document can be accessed following this link

and PIN Remembrance/Safe-Keeping. We also designed a desk calendar to inform and aware G2P beneficiaries regarding the various services that are available to them via mobile money accounts. Each month of the year on the calendar corresponded to a service offered by their mobile money accounts, accommodating detailed instructions (using a step-by-step method) on how to perform these services/activities. We ensured that the services we mentioned in the desk calendars were available for both bKash and NAGAD, so as to avoid encouragement of using one mobile money platform over the other. The posters and calendars were distributed to the G2P beneficiaries in their homes by our implementation partner, IPA. Beneficiaries were asked where they would like the poster to be hung, ensuring visibility in a location of their choice, while the desk calendar was given to them to place where they found it most useful.

- **Intervention 2:** We circulated two short videos - Thematic Video and Functional Video- each under 2 minutes, to promote and encourage the use of mobile money accounts among our study population. Thematic Video was designed to focus on the benefits of using mobile money accounts, highlighting the basic features, such as receiving/sending remittances, but also the more advanced features such as making merchant payments and using mobile money accounts to save. The functional Video was designed to focus on addressing the various misconceptions about mobile money accounts and the role of mobile money agents and to build confidence and empowerment when using mobile money accounts. Through the Functional Video, we portrayed the services provided by the mobile money agents to remove information barriers that may lead to the charging of illicit fees and other ways of exploitation by agents. The videos were shown to G2P beneficiaries on a tablet by our implementation partner, IPA, during home visits when delivering the posters and calendars. This ensured that beneficiaries received the information through multiple formats at the same time. Additionally, QR codes linking to the videos on YouTube were included with the calendars, and beneficiaries were guided on how to access them for future reference.
- **Intervention 3:** We designed a non-monetary award to incentivise mobile money agents located in our study unions. Agents were provided instructions on the assessment criteria, such as measuring of customer satisfaction levels of users as and when they engage with the agents. In each rural union and urban union included in the study, the mobile money agent with the highest customer satisfaction rating received a crest titled, “Best Agent in Customer Service”, that can be displayed in their shops. Once the endline survey was completed, the enumerators contacted the mobile money agents who had won the agent award competition. Mobile money agents indicated their availability, and enumerators visited their shops at the agreed times to personally present the award crest.⁷

7. A dedicated helpline number was set-up for the mobile money agents to answer any queries regarding the competition

In [Figure 2.1](#) we summarise our experimental design and timeline of the project activities. In the Appendix, [Figures 1](#) through [9](#) provide images of the interventions.

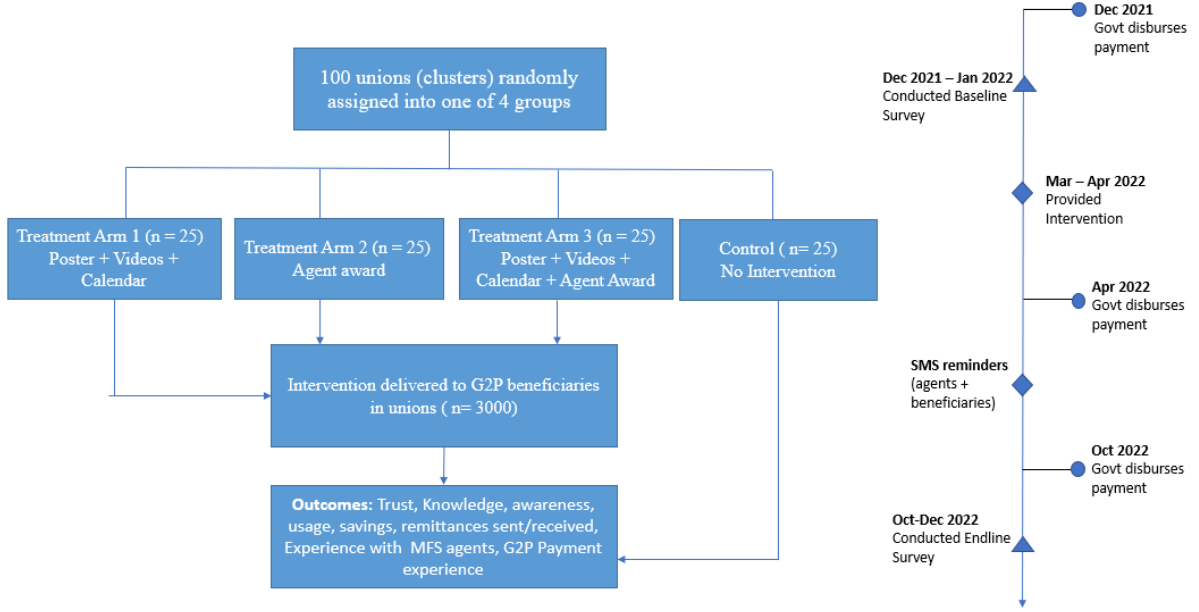


Figure 2.1: Research Design and Timeline

2.7 Data

We utilise three sources of data. Firstly to draw our sample of study unions/wards, we obtained administrative data from a2i that contained the number of beneficiaries (by gender), the type of allowance (Disability Allowance, Old Age Allowance, and Destitute and Widowed Allowance), the medium (either bank agent or MFS agent) via which they received the G2P allowance, segregated by all the Unions (by rural/urban), Upazilas, Districts and Divisions of Bangladesh. Secondly, as per one of the sampling criteria to select unions with at least 5 MFS agents in the union, we extracted the number of agents in each Upazila from the ‘Agent Locator’ option on bKash’s website. Thirdly, to select the beneficiaries in each union for the study, we obtained administrative data from the Department of Social Services (DSS). The administrative data contained contact information, including the type of allowance received, the location of the beneficiary, and type of MFS network, on all the beneficiaries receiving the G2P allowance across Bangladesh. We then matched the randomly selected unions with the beneficiaries in each union and selected 10 beneficiaries from each allowance type to be interviewed for the survey.

Finally, to collect the outcomes of interest for our study, we implemented a baseline survey and, an endline survey six months post the intervention period. The baseline survey, conducted via telephone, took place between January and February shortly after the DSS beneficiaries received their G2P payments in their mobile money account for the last quarter of 2021. We collected information on Household Demographics, Experience with G2P payments via Mobile Money Accounts, Remittances Received/Sent, Shocks and Coping Mechanisms, Savings, Knowledge and Understanding of MFS, and Experience with

MFS agents. Upon completion of the baseline survey, we implemented the interventions in the treatment unions/wards.

Finally, we collected information on mobile money agents, to be invited to participate in the agent award scheme, from two sources. Firstly, during the baseline survey, we asked beneficiaries for information on MFS agents they visit regularly such as the name of the MFS agent, name of their shop, location of the shop or a landmark nearest to the shop, and if available, the contact number of the MFS agent. Secondly, we developed a pre-defined protocol for identifying the pool of MFS agents in each study union. The protocol was followed during the intervention period when the enumerators visited the beneficiaries' homes in treatment unions/wards to show the two videos and deliver the posters and the calendars. In this way, we created a database of 2622 mobile money agents who were eligible for the intervention.

2.7.1 Summary Statistics and Balance Checks

[Table 2.1](#) reports the summary statistics, using data from the baseline survey, for our sample of G2P beneficiaries. The typical beneficiary in our sample is about 57 years of age, living with at least 3 other members of the household. Less than one-fourth of the sample of beneficiaries can read and write and nearly two-thirds in the sample are females. Overall financial inclusion is significantly low, with only 7% of the beneficiaries reported to have ever had any savings. Similarly, only 10% of the beneficiaries received remittances and 2% of the beneficiaries sent remittances in the last 3 months.

Given the popularity and high prevalence of mobile money markets in Bangladesh, there are pre-existing sources of information that is available to the public, such as posters on fee structures and adverts indicating agent points. To capture, at baseline, the level of awareness of MFS via such sources, we asked whether beneficiaries have heard or seen information about mobile money, digital money, or mobile money agent from a list of sources (such as through posters at MFS point, posters received at home or MFS posters seen elsewhere). At baseline, we find low levels of awareness among beneficiaries regarding mobile money through existing sources of information displayed by various MFS providers. Only about 15% of the beneficiaries are aware of MFS despite a significant portion (59%) of them visiting a mobile money agent within the same time frame. This is indicative that beneficiaries view their mobile money accounts as an intermediary step to claim and withdraw their money immediately. In the early days of the adoption of MFS in Bangladesh, much of the adverts and informational campaigns focused on positioning mobile money as a service to instantly transfer funds which can then be instantly withdrawn from a mobile money agent. Such placement of mobile money may limit consumer's adoption of other services, such as savings, bill/merchant payments, and send/deposit money, that are offered via mobile money.

Consequently, this can increase dependency on mobile money agents for performing basic transactions that consumers can perform themselves, thus eliminating the scope of being charged illicit fees. This is

Table 2.1: Baseline Summary Statistics

Variables	Mean	SD	Min	Max	Count
Panel A: Beneficiary Characteristics					
Beneficiary Age	57.03	18.82	18	110	3075
Beneficiary can read and write	0.24	0.42	0	1	3075
Beneficiary is a female	0.61	0.49	0	1	3075
Household Size	3.95	2.29	0	19	3075
Household experienced a shock, in past 3 months	0.39	0.49	0	1	3075
Panel B: Remittances Received/Sent and Savings					
Whether beneficiary received any remittances, in past 3 months	0.10	0.30	0	1	3075
Total Remittances Received (IHS)	0.83	2.57	0	13	3075
Whether beneficiary received remittances using mobile money account	0.07	0.26	0	1	3075
Whether beneficiary sent any remittances in past 3 months	0.02	0.14	0	1	3075
Total Remittances Sent (IHS)	0.17	1.16	0	11	3075
Whether beneficiary sent remittances using mobile money account	0.02	0.13	0	1	3075
Whether beneficiary has any savings	0.07	0.25	0	1	3075
Total Savings (IHS)	0.66	2.47	0	13	3075
Panel C: Awareness, Trust in and Use of Mobile Financial Services					
Whether beneficiary is aware of Mobile Financial Services (all sources)	0.42	0.49	0	1	3075
Whether beneficiary is aware of MFS (existing sources) in past 3 months	0.15	0.35	0	1	3075
Whether beneficiary is aware of MFS (family and friends) in past 3 months	0.31	0.46	0	1	3075
Whether beneficiary met an MFS agent in the past 3 months	0.59	0.49	0	1	3075
Whether beneficiary has balance in mobile money account	0.04	0.20	0	1	3075
Whether beneficiary thinks it is wise to leave money in the mobile money account	0.60	0.49	0	1	3075
Whether the beneficiary paid any fee to the agent to withdraw allowance	0.16	0.37	0	1	3075
Whether beneficiary spent his/her own allowance	0.91	0.28	0	1	3075
Whether beneficiary can perform transaction related to MFS without assistance	0.09	0.73	0	1	3075

revealed in our data where less than 10% of the beneficiaries are able to perform a transaction related to mobile money without any assistance. We also find evidence of mobile money agents charging illicit fees. About 16% of the beneficiaries were charged a fee by the mobile money agent for withdrawal of their G2P allowance even though the cash-out fees for the G2P allowance are paid for by the government. To measure levels of trust in MFS, we asked beneficiaries whether they think it is wise to leave money in mobile money accounts. Despite high levels of trust (60%) in keeping money in mobile money accounts – less than 5% had any balance in their mobile money accounts. Similarly, just about 10% have either received or sent remittances via mobile money accounts, despite the technology’s popularity in facilitating the low-cost transfer of remittances among poor and vulnerable rural households in Bangladesh (Lee et al., 2021). This is likely due to low levels of literacy and physical constraints faced by our beneficiary types that restrict their capacity to engage in financial transactions. Moreover, the adoption of mobile money is likely to be less among older populations who maybe be more accustomed to traditional methods of financial services or who may lack the confidence, and empowerment to operate such forms of technology (Demirgüç-Kunt et al., 2022).

We also report the validity of randomisation by performing a series of balance tests on a number of characteristics collected at baseline, the results of which are shown in Table A1. We follow broadly the suggestions proposed by McKenzie (2015). In addition to the conventional t-test, we also perform an F-test for joint orthogonality for each treatment group separately. This is shown in Table A2.

Additionally, following Imbens and Rubin (2015), we report the normalised differences, which is measured by taking the difference in means of two groups, divided by the square root of the average of the sample variances of the two groups. This calculation provides a scale-invariant measure of differences between our control and treatment groups. The balance tests in Table A2 demonstrate that the treatment and control groups are statistically indistinguishable on a number of observable characteristics. We detect a slight imbalance on 4 baseline observable in Panel B (joint-orthogonality test), for which we cannot reject the null hypothesis at the 10% level. However, the normalised differences between the means of the four groups in Panel A are all weakly smaller in absolute terms than 0.30, hence, can be considered well-balanced according to this sample-size free way of investigating balance in covariates (Imbens, 2015). As a robustness check, we included in the ITT specification the variables that we found to be imbalanced as controls. We do not find these variables to affect our estimates significantly.

2.7.2 Attrition

Furthermore, we anticipated potential attrition and non-response due to the use of remote surveys to reach our beneficiaries during the endline survey, such as lack of interest leading to refusals, network problems, or issues of trust. To recruit our study participants, the survey team contacted 6374 beneficiaries for the study to arrive at our final sample of 3075 beneficiaries. About a quarter of the non-response was due to phones being switched off and not receiving the call.⁸

This is likely to persist and be a potential source of attrition for our sample of beneficiaries during the endline survey. One likely reason for this is that despite a beneficiary reporting that it is a personal phone, in such contexts, it is also a shared commodity that might be used by other household members. We also updated our protocol by extending on the Intensive Tracking Guide proposed by Özler and Cuevas (2019). We updated the protocol, by including all days of the week than the official working days followed in Bangladesh, by dividing the day into four blocks, and by calling individuals every other day of the week. We were able to reach, following our revised protocol, 92% of our beneficiaries for the endline survey.

The attrition rate of approximately 8% is common among such populations. We present attrition rates across treatment/control arms in Table A3 in the Appendix. The table shows that attrition rates were very similar across all four arms. However, what is of concern is whether attrition is systematically different in the treatment and control arms. To check this, we conduct baseline balance check with endline data and report the mean and standard errors in Table A4, followed by the normalised differences in Table A5. Overall, we continue to have good balance at endline and so have conducted our analysis with a sample of 2833.

8. Note that as per our pre-defined protocol for phone surveys, we had called the beneficiary 6 days a week (Monday-Friday), by dividing the day into three blocks of the day for three consecutive days

2.8 Empirical Strategy

To measure the effects of the intervention, we estimate intent-to-treat (ITT) estimates using an Analysis of Covariance (ANCOVA) specification of the form as suggested by McKenzie (2012):

$$Y_{ui,t+1} = \beta_0 + \beta_1 T_{1u} + \beta_2 T_{2u} + \beta_3 T_{3u} + \beta_4 Y_{iu,t} + X_{iu,t} + \epsilon_{iu,t+1} \quad (2.1)$$

Where: Y_{ui} is the outcome for individual i in union/ward u , T_{1u} , T_{2u} , and T_{3u} are treatment arm status in union/ward u , Y_{iu} is the baseline value of the outcome of interest (when measured at baseline, otherwise excluded), $X_{iu,t}$ is a vector of baseline controls, including any unbalanced variable at baseline. Finally, $\epsilon_{iu,t+1}$ is the error term, clustered at the union/ward level. Periods t and $t + 1$ refer to the baseline and endline, respectively.

2.8.1 Outcomes of Interest

We use the survey questionnaire to construct our outcomes of interest. Specifically, as shown in Table 2.2, we provide a definition of the variables that capture outcomes measuring awareness regarding MFS (Panel A), trust, learning, and usage of mobile money (Panel B), and impact on remittances received/sent, and savings behaviour of beneficiaries (Panel C).

Table 2.2: Definition of Outcomes of Interest

Panel A: Awareness of Mobile Money	
Beneficiary is aware of MFS through friends and family	Dummy variable if beneficiary has heard or seen information about mobile money, digital money, mobile money agent from family and friends
Beneficiary aware of MFS through Intervention Sources: posters received at home	Dummy variable if beneficiary has heard or seen information about mobile money, digital money, mobile money agent from intervention sources: posters received at home
Beneficiary received intervention: Admin Data	Dummy variable if the beneficiary received the intervention materials.
Panel B: Trust, Learning, and Usage of Mobile Money	
Wise to Leave Money in MMO	Dummy variable if beneficiary thinks that it is wise to leave money in the mobile money account.
Has Balance in MMO	Dummy variable if beneficiary has balance in mobile money account
Performs Transactions	Dummy variable if beneficiary can do the following on his/her own: send money through mobile money account, check balance, go to mobile money account (MMO) menu
Confirms Transaction	Dummy variable if beneficiary can confirm that a transaction has been completed
Uses MMO for Other Purpose	Dummy variable if beneficiary uses his/her mobile money account (MMO) for other purposes besides cashing-out G2P payments.
Panel C: Remittances Received/Sent, and Savings	
Received Any Remittances	Dummy variable if beneficiary received any remittances in the last 3 months
Sent Any Remittances	Dummy variable if beneficiary sent any remittances in the last 3 months
IHS Remittances Sent Amount	Inverse-Hyperbole Sine of remittances sent in the last 3 months
Has Any Savings	Dummy variable if beneficiary has kept savings from all sources
Saves in MMO	Dummy variable if beneficiary has kept savings in mobile money account
Saves in Formal Sources	Dummy variable if beneficiary has kept savings in formal sources, such as: bank account, micro-credit account, post-office account, and local ROSCA.

2.9 Results

2.9.1 Impact on Awareness of Mobile Money

In this section, we analyse treatment effects compared to the control group on outcomes related to awareness regarding mobile money. We capture awareness of MFS by asking respondents whether beneficiaries have heard of the terms “mobile money”, “mobile money agent” and “digital money” in the last three months and the sources through which they have heard these terms.

We group these sources of information into three types, where the outcome of interest are binary variables that are equal to 1 and zero for all others when beneficiaries report that they have heard the terms “mobile money”, “mobile money agent” and “digital money from sources such as (1) friends and family, and (2) MFS posters received at home. We report the intent-to-treat estimates in [Table 2.3](#)

As seen in column (1) we find detectable effects on beneficiary awareness regarding mobile money from sources such as friends and family, but only when the agent award is provided (T2). Specifically, the agent award intervention increased beneficiary awareness regarding mobile money by about 8 percentage points (significant at the 10% level) relative to the control group. This is an increase of 26% compared to the baseline mean.

In column (2), we observe that when information is catered specifically to the beneficiaries, such as the information campaigns (T1), awareness regarding mobile money increases by 8 percentage points (significant at 1% level) relative to the control group. We also find increases, by 7 percentage points (significant at 1% level), in awareness when beneficiaries are provided with a combination (T3) of informational campaigns and the agent-award scheme.

Additionally, as a fidelity check, we used the administrative to capture whether beneficiaries received the intervention they were assigned to, based on programme delivery records. The estimates based on the administrative data show that 90% of the beneficiaries received the posters in T1 and T3. This is reported in column (3). The baseline mean of 0.45 corresponds to the share of beneficiaries in the total sample who received the treatment in T1 and T3. Approximately 5% of individuals assigned to T1 and T3 combined did not receive the intervention as planned; however, our results are robust to excluding these observations.

2.9.2 Impact on Trust, Learning and Usage of Mobile Money

In this section we analyse the treatment effects on outcomes related to trust, learning and usage. An aspect of consumer learning is to understand if individuals can perform some of the basic transactions related to mobile money. Such as accessing the menu of their mobile money account, checking the balance in their mobile money account, or identifying whether mobile money transaction has been completed.

We present intent-to-treat estimates in [Table 2.4](#). Column (1) measures trust among beneficiaries in

Table 2.3: Treatment Effects: Awareness regarding Mobile Money, Digital Money, and Mobile Money Agent

	(1)	(2)	(3)
	Beneficiary aware of MFS through friends and family	Beneficiary aware of MFS through Intervention Sources: posters received at home	Beneficiary received intervention: Admin Data
T1: Poster + Video + Calendar	0.00309 (0.0420)	0.0818*** (0.0193)	0.903*** (0.0147)
T2: Agent Award	0.0769* (0.0405)	0.00308 (0.00828)	0.00241 (0.00188)
T3: Poster + Video + Calendar + Agent Award	0.0479 (0.0430)	0.0690*** (0.0234)	0.898*** (0.0122)
R^2	0.021	0.035	0.820
Baseline Mean	.311	.008	.45
Observations	2833	2833	2833

Notes: The table reports intent-to-treat. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, and given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Baseline controls include age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.0$

using mobile money accounts. While we do not find a statistically significant effect of the interventions on trust on T1 and T2, we find that a combination of the interventions (T3) is seen to increase trust by about 10 percentage points (significant at 5% level). This is an increase of 15.6% relative to the baseline mean. It should also be noted that rolling out the agent award on its own did not increase trust in mobile money accounts. Trust in mobile money accounts, rather, is seen to fall by 2.72 percentage points although it is statistically insignificant. In column (2), we report whether the interventions encouraged beneficiaries to store money in their mobile money accounts, i.e. whether they held balances in their accounts. Beneficiaries in T1 are about 3.2 percentage points more likely to keep money in their account. Although statistically significant at the 10% level, this translates to an increase of 78% relative to the baseline mean.

Column (3) captures an outcome related to beneficiary learning regarding mobile money. Our results show that the information campaigns (T1) increase the likelihood, by about 4 percentage points (significant at the 10% level), of beneficiaries performing at least one basic transaction related to mobile money. To capture how learning is happening, in the absence of administrative data, we asked beneficiaries a series of questions on whether they have conducted a person-to-person (such as send money) transaction and agent-to-person transaction (such as deposit). However, as reported in [Table A6](#) in the Appendix,

we do not find any statistically significant differences across treatment arms.

Finally, we capture the usage of mobile money accounts among beneficiaries by asking respondents whether they use these mobile money accounts for other purposes besides receiving their allowance. Column (4) shows that we do not find any detectable effect on the increased usage of mobile money services apart from using it to cash-out G2P payments.

Table 2.4: Treatment Effects: Trust, Knowledge and Usage of Mobile Money

	(1)	(2)	(3)	(4)	(5)
	Wise to Leave Money in MMO	Has Balance in MMO	Performs Transactions	Confirms Transaction	Uses MMO for Other Purpose
T1: Poster + Video + Calendar	0.0392 (0.0435)	0.0317* (0.0164)	0.0355* (0.0207)	0.0215 (0.0472)	0.0106 (0.0238)
T2: Agent Award	-0.0272 (0.0396)	0.00215 (0.0141)	0.00397 (0.0201)	-0.0147 (0.0517)	0.0173 (0.0220)
T3: Poster + Video + Calendar + Agent Award	0.0960** (0.0410)	0.0208 (0.0146)	0.0177 (0.0211)	0.0640 (0.0447)	0.00767 (0.0228)
R^2	0.025	0.087	0.151	0.025	0.059
Baseline Mean	.607	.041	.097	.535	.104
Observations	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Baseline controls include age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

2.9.3 Impact on Remittances Received, Sent and Savings

In this section, we examine the impact of the interventions on economic outcomes such as remittances received, sent, and savings behaviour. These results are reported in [Table 2.5](#). As revealed in the baseline statistics, we find very low demand for remittance transfer services - only 10% of the study population received remittances and only 2% sent remittances, from all sources, at baseline.

As reported in column (1) we present the results on the inflow of remittances, at the extensive margin. The point estimates are negative for all the treatment effects, although they are statistically insignificant. In column (2), we present the results on whether beneficiaries sent any remittances at the extensive margin. Beneficiaries in the information campaigns (T1) are about 2 percentage points more likely to send remittances, while beneficiaries who received a combination of the interventions (T3) are 1.3 percentage points more likely to send remittances. Both of these effects are significant at the 10%

Table 2.5: Treatment Effects: Remittances Received/Sent, and Savings

	(1)	(2)	(3)	(4)	(5)	(6)
	Received Any Remittances	Sent Any Remittances	IHS Remittances Sent Amount	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	-0.0173 (0.0203)	0.0158* (0.00888)	0.141* (0.0715)	0.0697*** (0.0259)	-0.00702 (0.00559)	0.0454*** (0.0155)
T2: Agent Award	-0.000127 (0.0238)	0.00685 (0.00814)	0.0658 (0.0668)	0.0264 (0.0225)	0.000149 (0.00633)	0.0427*** (0.0137)
T3: Poster + Video + Calendar + Agent Award	-0.0237 (0.0193)	0.0134* (0.00745)	0.104* (0.0599)	0.000935 (0.0236)	0.000168 (0.00647)	0.0280* (0.0160)
R^2	0.032	0.032	0.032	0.037	0.015	0.064
Baseline Mean	.098	.021	.166	.072	.003	.049
Observations	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Baseline controls include age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

level. The point estimates are weakly significant and economically small; however, the increased effects are almost double than those observed at baseline. At the intensive margin, as seen in column (3), we find that for beneficiaries in T1 and T3, there is an increase of 14% and 10%, both significant at the 10% level.

In column (4), the results show that the information campaigns (T1) had a strong positive effect on the extensive margin of savings. Specifically, the intervention increased the share of beneficiaries who reported having any savings by about 7 percentage points (significant at the 1% level). For savings via mobile money accounts, as reported in column (5), we see no effect of the treatments on savings via mobile money. In column (6), we turn to the impact of the treatments on the share of formal sources of savings. We find that the interventions increase the share of savings that beneficiaries keep in formal sources. These effects are large, relative to the baseline mean, and are highly significant. Specifically, the information campaign (T1) increased the likelihood of saving in formal sources by about 5 percentage points (significant at the 1% level). For beneficiaries in T2, the treatment increased the likelihood of savings via formal sources by 4 percentage points (significant at the 1% level). For beneficiaries in T3, the treatment increased the likelihood of savings via formal sources by about 3 percentage points (significant at the 10% level).

2.10 Heterogeneity Analysis

In this section, we examine heterogeneity in treatment effects based on participant characteristics: beneficiary type, gender and literacy level. In theory, treatment effects may vary across these dimensions due to differences in mobility, agency, and the ability to understand and engage with digital tools. Here, we focus on outcomes related to awareness, trust, usage and savings.

Beneficiary Types

Recipients of different types of allowance may face, on average, different barriers to engagement with mobile money accounts (Demirgüç-Kunt et al., 2022). For example, recipients of old age allowance may experience physical or cognitive limitations that reduce their ability to adopt new technologies. Similarly, recipients of disability allowance may face accessibility challenges when navigating mobile money interfaces or agent locations. Additionally, recipients of widowed allowance may have more autonomy over transfer use in the absence of other household decision-makers or dependents and can influence their willingness to experiment with mobile money.

In Table A7, Table A8 and Table A9, in the Appendix, we study heterogeneity in impacts on trust, awareness, usage of mobile money accounts and savings by beneficiary types. We modify equation 2.1 to include a dummy variable for heterogeneity (whether beneficiary receives Disability Allowance, Old Age Allowance or Destitute and Widowed Allowance, respectively) as an interaction term with each treatment.

In Table A7, in columns (1) through (5), we see that the treatments had no differential effects on outcomes related to trust, awareness, and usage of mobile money accounts among beneficiaries receiving the disability allowance. However, in column (6) we do find that G2P beneficiaries receiving the disability allowance are 2 percentage points (significant at the 10% level) more likely to save in a mobile money account when the agent award is provided.

Additionally, as seen in column (7), we find that G2P beneficiaries receiving the disability allowance are about 5 percentage points (significant at the 5% level) more likely to save in formal sources when the two treatments are combined. One possible reason for this could be that since this group faces distinct barriers, including mobility constraints and a higher dependence on intermediated transactions, receiving improved information with greater agent support could have reduced the perceived and actual frictions in saving formally. We do not have the relevant data to test the difference between perceived and actual costs in savings, however, it remains an interesting question for future research.

As seen in Table A8, columns (1) through (4), we do not observe significant effects of the treatments on outcomes related to trust and usage of mobile money accounts among beneficiaries receiving the old age allowance. Regarding awareness as seen in column (3), we find that G2P beneficiaries receiving the old age allowance at about 6 percentage points less likely (significant at the 10% level) to be aware

through intervention sources in T1. They are also less likely to have savings, at the extensive margin, when given T1. This is however, weakly significant at the 10% level.

We also observe that G2P beneficiaries receiving old age allowance are about 9 percentage points (significant at the 5% level) less likely to have savings at the extensive margin when the agent award treatment is provided. One possible reason for this could be that this beneficiary type maybe less likely to ask for help or respond to agent nudges regarding savings via mobile money due to lower levels of confidence in using technology. However, we are limited by data to test this but it remains a focus for future research.

As seen in [Table A9](#) , we do not find differential effects of the treatments on outcomes related to trust, awareness of MFS through friends and family, usage, or savings among beneficiaries receiving the widowed and destitute women allowance. However, interestingly, we do observe that G2P beneficiaries receiving the widowed and destitute women are 4 percentage points (significant at the 1% level) more likely to know about MFS through intervention posters when the agent award scheme is rolled-out. One possible reason for this may be that widowed and destitute women are more reliant on agents for accessing payments, checking balances or seeking help. Hence, it could be that they are more likely to see the posters in the agent shops. In this case as well, unfortunately, we do not have the relevant data to test for this but it could be an interesting focus for future research.

Gender

Now, we look at heterogeneity effects based on gender. Women may face greater mobility constraints, lower digital literacy and lack confidence in using the mobile money technology (Demirgüç-Kunt et al., 2022). As a result, they maybe more reliant visually engaging, locally tailored information campaigns that address knowledge gaps. Additionally, they may also be reliant on trusted intermediaries – such as mobile money agents – that can overcome trust deficient when engaging with such digital tools.

We modify equation 1 to include a dummy variable for heterogeneity (whether beneficiary is a female) to interact with each treatment. As seen in [Table A10](#), in columns (1) and (2), we find that female beneficiaries who received T1 are about 5 percentage points more likely to trust mobile money accounts, 3 percentage points more likely to be aware of MFS through friends and family. However, these are statistically insignificant.

When the agent award scheme is rolled out (T2), female beneficiaries are 5 percentage points less likely to trust mobile money, and 4 percentage points less likely to have any savings, as seen in columns (1) and (5). However, these effects are statistically insignificant. We also observe that for most of our outcomes, the coefficients are negative when T2 is provided but again these are statistically insignificant and of small magnitude.

Similarly, when the two interventions are combined (T3), we find that female beneficiaries are about

3 percentage points less likely to trust mobile money accounts, about 5 percentage points less likely to be aware of MFS through friends and family and 4 percentage points less likely to be aware of MFS through posters, as seen in columns (1) to (3) respectively. However, these coefficients are statistically insignificant. We also observe that female beneficiaries receiving T3 are about 5 percentage points less likely to have any savings. But again, the point estimates are statistically insignificant, as seen in column (5). Similarly, as seen in column (4), we observe about 2 percentage point increase in female beneficiaries keeping balances in their mobile money when T3 is provided, but it is statistically insignificant.

Literacy

Finally, we look at heterogeneity in impacts on outcomes related to trust, awareness, usage and savings with respect to literacy. Literacy influences an individual’s ability to understand and engage with digital tools, such as mobile money accounts (Breza et al., 2020). Literate beneficiaries may benefit from informational campaigns as they can read and absorb materials whereas those with lower levels of literacy may benefit more from agent support or demonstrations.

We modify equation 1 to include a dummy variable for heterogeneity (whether beneficiary can read and write) to interact with each treatment. In Table A11, we see that literate beneficiaries receiving T1 are 3 percentage points more likely to trust mobile money accounts but about 6 percentage points less likely to be aware of MFS through friends and family, as seen in columns (1) and (2). However, these effects are statistically insignificant. We also find in column (5) and column (6) respectively, that literate beneficiaries receiving T1 are about 8 percentage points more likely to have any savings and about 3 percentage points more likely to save in formal sources. However, these effects are also statistically insignificant.

When the agent award scheme is rolled out (T2), literate beneficiaries are about 4 percentage points more likely to trust mobile money accounts but are about 5 percentage points less likely to be aware of MFS through friends and family, as seen in columns (1) and (2) respectively. These beneficiaries are also less likely to have balance in their mobile money accounts however, they are more likely to have savings at the extensive margin, as seen in column (5). Additionally, they are also likely to save via mobile money and in formal sources, as seen in columns (6) and (7), respectively. However, all of these coefficients are statistically insignificant.

When the two interventions are combined (T3), we find that literate beneficiaries are about 6 percentage points less likely to trust mobile money accounts as seen in column (1). They are also less likely to be aware of MFS through posters as seen in column (3). For outcomes related to savings, we find that literate beneficiaries are about 4 percentage points more likely to save at the extensive margin, as seen in column (5). We also observe increases in savings via mobile money and in formal sources, as seen in column (6) and (7) respectively. However, these coefficients are also statistically insignificant.

2.11 Experimenter Demand Effects

It is unlikely that experimenter demand effects explain the treatment impacts observed in this study. While all three interventions were salient to participants, only the information campaign (T1) and the combined intervention (T3) targeted G2P beneficiaries directly, while the agent award scheme (T2) was provided at the agent level. We also observe sizeable effects in T2, compared to those in T1 and T3, on outcomes related to awareness and savings. These effects are unlikely to be driven by experimenter demand, as beneficiaries in T2 were not given any direct information and were therefore less exposed to the study's goals. This makes them less likely to report answers that align with perceived expectations.

Moreover, although the main outcomes are self-reported, the survey instruments asked detailed questions about mobile money usage that require recall of specific behaviours, such as performing transactions, confirming transactions, having a balance, or using the account for non-G2P purposes. These questions prompt respondents to recall and report recent and specific actions rather than general attitudes or perceptions. For example, to answer them, respondents must remember navigating the mobile money interface, the type of transactions conducted, who it was with, the purpose, and often the steps involved. These behaviours are therefore harder to misreport, as they do not carry an obvious socially desirable response and are not necessarily associated with what participants believe the study is aiming to promote.

Similarly, if participants were responding in ways they believed would please the research team, we would expect to see consistent positive effects across outcomes, such as savings via mobile money. However, we find no impact on savings via mobile money or using mobile money accounts for non-G2P purposes, but we do find significant improvements in the general savings behaviour of beneficiaries. We also observe detectable effects for remittances sent. The act of sending money requires having additional funds as well as a recipient, making it difficult for respondents to fabricate. This is especially true when follow-up questions have been asked about the timing, amount, mode, and recipient of the transfer. As remittances involve actual transactions between individuals, they are harder to misreport than general attitudes, and therefore less likely to be driven by experimenter demand effects.

2.12 Cost-effectiveness of the Interventions

The cost of providing the information campaigns (T1) was about USD 8.75 per G2P beneficiary. This included costs related to designing/recording of the two videos, designing of the calendars, designing of the A2 posters, tablet cost to show the two videos, printing costs as well as research assistant, supervisor and field officer costs. For the agent award scheme (T2), the cost was USD 4.17 per mobile money agent. This includes the cost of the crest, printing costs of posters as well as research assistant, supervisor and field officer costs. Finally, adding the two intervention costs gives us USD 15.21, which is the cost of providing both the information campaigns and agent award scheme (T3). A detailed breakdown of the

cost is shown in [Table A12](#) in the Appendix.

We compute a cost-benefit analysis by calculating the cost per percentage point increase in savings at the extensive margin. This is done by dividing the cost of the intervention by the observed percentage point increase in this outcome. In [Table 2.5](#), our analysis shows that G2P beneficiaries in T1 are 7 percentage points more likely to save at the extensive margin (significant at the 5% level), relative to a baseline mean of 7%. This means that T1 nearly doubled the likelihood of saving. This implies a cost of USD 1.25 per percentage point increase in savings. We also observe an increase in formal savings by 4.3 percentage points among G2P beneficiaries in T2, relative to a baseline mean of 5%. This implies a cost of USD 0.97 per percentage point.

To contextualise these figures, we compare them to Lee et al. (2021), who implemented a short-training to introduce mobile money in rural Bangladesh. Their intervention led to a 44 percentage point increase in savings (from a baseline of 48%) at a cost of USD 7.71 per participant. This translates to a cost of USD 0.18 per percentage point increase.⁹

While the intervention studied by Lee et al. (2021) had a lower cost per percentage point change in the mean savings rate, it is worth noting that our intervention focused on a more economically marginalised group, as indicated by their substantially lower savings rate at baseline (5% -7%) in our sample compared to 48%. Moreover, Lee et al. (2021) focused on households receiving remittances from migrant members working in Dhaka, who are likely to be more financially active. These baseline differences may help to explain the variation in the observed cost-effectiveness highlighting the value of targeting hard-to-reach populations.

2.13 Discussion of Potential Mechanisms

This study evaluates interventions aimed at increasing mobile money usage at the intensive margin among recently digitised G2P beneficiaries. The mechanisms through which these treatments were expected to operate differ in design and target, and our findings offer some evidence on their respective channels.

The information campaign (T1) was designed to improve beneficiaries' knowledge and awareness of mobile money services through posters, calendars and short videos. These materials provided tailored information with the intent to overcome informational and trust barriers that disproportionately affect women, the elderly and those with limited mobility.

As presented in [Table 2.3](#), we see that about 10% of beneficiaries reported receiving the intervention materials, despite the intervention reaching 95% of the sample by design. However, our findings suggest that T1 increased usage at the intensive margin. Specifically, as seen in [Table 2.4](#), we find that G2P beneficiaries in T1 are more likely to have a balance in their mobile money accounts and perform the

9. Both our study and Lee et al. (2021) were implemented in Bangladesh, with costs initially reported in Bangladeshi Taka. To maintain comparability, the cost figures for the Lee et al. (2021) were adjusted to 2022 prices expressed in USD)

basic transactions independently. Hence, even when beneficiaries do not actively remember receiving materials, the design of T1 which is visually accessible and easy to revisit may have enabled a form of learning and confidence-building that ultimately led to greater engagement with mobile money accounts. These effects are consistent with the learning-by-doing mechanism in Breza et al. (2020).

In addition to increased usage, we find that T1 also affected other financial behaviours. As shown in Table 2.5, beneficiaries in T1 are more likely to send remittances and to report savings at the extensive margin, including savings held in formal sources. These effects suggest that improved awareness and engagement with mobile money accounts may have enabled beneficiaries to explore a broader set of financial services beyond just receiving their G2P payments. These results are consistent with Lee et al. (2021) and Breza et al. (2020). However, we do not see the same for savings kept in mobile money accounts. One possible reason for that could be that it takes some time to position mobile money, especially among late-adopters, as a saving source in the presence of formal sources, such as banks and microfinance institutions (Batista and Vicente, 2020a).

Our results corroborate with other studies that have also found no overall impact of remittances received in the presence of mobile money (Breza et al., 2020; Aker et al., 2016; Wieser et al., 2019). G2P beneficiaries in our sample have high bargaining power over the use of G2P payments (almost 90%, at endline, have control over the spending of payments). This may indicate that while beneficiaries did not receive remittances, it might be that other members of the household – perhaps who are younger or well-versed with the technology, maybe in charge of receiving these remittances from the migrants. Unfortunately, we do not have the data to test for this.

The agent award scheme (T2) was designed to increase the prosocial motivation of mobile money agents by recognising and rewarding good customer service. We do not observe effects of T2 on most key outcomes of interest, including trust, usage, savings and remittances. This suggests that prosocial motivation, induced by agent award alone, appears insufficient to shift beneficiary behaviour or perceptions of trust in our sample. By contrast, when combined with T1, we observe a statistically significant increase in trust. This is consistent with the idea that improved service delivery and information provision reinforce one another.

Interestingly, we find evidence that T2 increased awareness of mobile money through social networks, such as friends and family – as seen in column (1) in Table 2.3. This could mean that the agents were motivated to deliver improved customer service. Hence, they engaged more with customers, including G2P beneficiaries which may have prompted further discussions about mobile money within beneficiaries' social networks. This is broadly in line with N. Ashraf et al. (2014) who show that non-monetary incentives can motivate agents to exert greater effort in engaging customers and promoting services.

In Table 2.4, we find that for outcomes (2) and (3), T1 is more effective than T3. Firstly, T1 provided simple, beneficiary-focused messaging designed to improve awareness, knowledge, and confidence in using

mobile money. In contrast, T3 includes the same informational content as T1 with the addition of the agent award scheme, which may have changed the way beneficiaries engaged with mobile money services.

One explanation is that the agent award scheme, interacted with the information campaign, altered agent and beneficiary behaviour in ways that affected these outcomes. Agents in T3 areas may have become more proactive in encouraging transactions. This could have led to increased cash-out behaviour. For example, beneficiaries withdrawing their funds soon after receiving them, rather than maintaining a balance in their account. This may help explain the lower effectiveness of T3 compared to T1 on outcome (2).

Similarly, for outcome (3), it is possible that the type or frequency of transactions encouraged by agents in T3 did not lead to meaningful engagement or sustained usage, as agents may have focused on promoting quick or one-off transactions such as immediate cash-outs that earn them commissions – rather than encouraging beneficiaries to explore a broader set of mobile money functions or build habits around regular use.

In this sense, the agent award scheme in T3 may have substituted for rather than complemented the motivation and understanding that T1 sought to achieve. However, we are unable to formally test for these hypotheses as the relevant data are not available.

2.14 Conclusion

Mobile money services are presently available in 96% of developing countries where less than two-thirds of the population do not have access to an account at a formal financial institution (Pasti, 2019). While there has been an increase in all types of digital payments, the MFS business model stands out for its remarkable growth. Subsequently, the rise in the number of mobile money providers indicates a shift in consumer behaviour toward digital payments (Alliance, 2016). This contactless platform enables users to make payments, withdraw cash, make deposits, purchase airtime, transfer remittances, and earn interest on savings.

Users can also take advantage of various offers and discounts through reasonable charge rates that they can avail via their “mobile wallets”. Furthermore, users benefit from an extensive network of mobile money agents, through which they can easily access the formal banking system without the need to physically visit them. Cash transfer payments from the government to individuals (G2P) currently extend to approximately 35 million beneficiaries in Bangladesh. Digitising Government-to-Person payments empowers poor and vulnerable populations to select their preferred mobile money providers for receiving transfers. This increased choice gives beneficiaries greater control over their finances and allows them to access their funds immediately through mobile wallets, thereby enhancing their engagement with the technology. Moreover, prolonged use of mobile money accounts leads to positive spillover effects

on financial competition and inclusion. It provides the nudge to use these accounts for other types of transactions – empowering the beneficiaries to make well-informed financial choices.

Personal attributes of beneficiaries, however, such as limited digital literacy, lack of awareness and knowledge regarding mobile money, lack of capacity to read and write SMS, and confidence can present serious constraints to greater uptake of Mobile Financial Services. This is revealed in our data: despite a decade of MFS providers' existence in the market, only about 15% of the G2P beneficiaries are aware of mobile money through existing sources of information. However, a significant portion (59%) of them have visited a mobile money agent in the last three months. At baseline, our data also reveals low knowledge resulting in low usage and greater dependence on mobile money agents to complete, even the most basic, financial transactions.

We conduct an experiment to understand whether information provision regarding mobile money accounts improves financial inclusion and can incentives, given to financial intermediaries, improve customer services in the use of mobile money accounts. We distribute information campaigns, such as posters, videos, and calendars, and design a non-monetary agent award scheme in study regions.

We find compelling evidence on learning, usage, trust, and on other economic outcomes, such as increases in savings and remittances. We also find evidence of beneficiaries engaging and interacting with the mobile money technology, performing account-related transactions. However, we only observe these effects among G2P beneficiaries who received the information campaigns (T1). The large, positive, and significant effect on self-reported savings and remittances six months after the intervention also points to the efficiency gains that can be achieved with such technology.

The information campaign required delivery directly to beneficiaries' homes enabling them to retain printed materials and refer to them at moments of engagement with mobile money. Similarly, the agent award scheme was implemented through in-person engagement with mobile money agents. While these delivery models required upfront costs which is borne by the implementing partners, they are suitable for scalability.

A promising approach would be to work with Aspire to Innovate (a2i), the government department leading digital transformation across both the public and private sectors. A2i is increasingly focusing on raising public awareness about digital G2P payments and encouraging the use of mobile money services. Although our interventions have not yet been scaled, they could be integrated into a2i's existing programs by adapting and reusing the materials. This would also allow costs to be shared and help reduce the additional cost of reaching each new beneficiary.

With approximately 4.7 million recently digitised G2P beneficiaries in Bangladesh, the findings from this study offer a basis for national scale-up. Beyond Bangladesh, the insights from this study could also inform similar efforts in other developing countries. For example, 55% of adults in lower-middle-income countries 39% in low-income countries receive GP2 payments in accounts (Demirguc-Kunt et al.,

2018). This suggests that a large population of marginalised groups could be reached through similar interventions aimed at improving engagement with their accounts.

Chapter 3

What Drives Agent Motivation in the Delivery of Mobile Money Services?

3.1 Introduction

One of the central roles of organisations and governments is to coordinate the delivery of public goods that offer significant societal benefits surpassing any individual or private gains (Besley and Ghatak, 2006; Banerjee et al., 2007; Ostrom and Ostrom, 2019). Understanding the motivation of individuals to dedicate time and effort to public service delivery is imperative in designing incentive mechanisms that align with the individual’s interests and the objective of the organisation they are affiliated with (N. Ashraf et al., 2014). Monetary incentives are unlikely to provide sufficient incentives if the beneficiaries of these services are unable to pay at the point of delivery. For example, studies focusing on the effect of monetary incentives on teachers’ performance have produced mixed results (Fryer, 2013; Lavy, 2002).

In many social situations and economic transactions, individuals’ behaviour and effort are influenced not only by material gains but also by the internalisation of good conduct. When individuals internalise such conduct, it can lead to positive utility, motivating them to engage in tasks that benefit others outside their immediate interests (Bénabou and Tirole, 2006; Cassar and Meier, 2018). Some studies have shown that non-monetary incentives can be effective in improving agent effort and service delivery, potentially by leveraging the pro-social motivation of agents (Gneezy and Rustichini, 2000; N. Ashraf et al., 2014; Lacetera et al., 2011; Ariely et al., 2009). As a result, in recent times, the formulation of ideal incentive agreements has been the focal point of extensive theoretical and empirical research (Ashraf and Bandiera, 2018; N. Ashraf et al., 2014)

Whether and to what extent these prosocial incentives are aligned with the implementing organisations that engage employees in terms of whether they target the poor is scant. Much less attention has been paid to incentives in organisations, such as mobile money operators, which hire local agents to perform prosocial tasks - such as delivering mobile money services to the poor and marginalised. Although the agent is not a direct or contractual employee of the mobile money operator, the agent is incentivised through commissions to perform well and is expected to deliver the ethos of the organisation. However, a concern with this delivery model is that the provision of monetary incentives is limited, beyond the commissions earned, as it is difficult to observe the behaviour or effort of these agents particularly when we are thinking of delivering services to the poor and marginalised.

In this paper, we address the following research question: “Under what conditions are prosocial incentives given to mobile agents effective in improving digital financial access within their communities?”. We answer this question using the experimental setting described in the Chapter 2 titled, “Improving information and customer service to expand mobile money access to the poorest government payment beneficiaries”. In that context constraints on digital financial access for marginalised groups are twofold: a lack of awareness, knowledge, and usage of mobile money, and mobile money agents play a key role in alleviating these and through this helping individuals adopt the mobile money services. The interventions relax both constraints by offering recently digitised Government-to-Person (G2P) beneficiaries a bundle

of information campaigns and a non-monetary agent award scheme that recognises local mobile money agents for good customer service. Local mobile money agents are identified using two methods: (a) identifying agents across the study zones using the agent locator website of the mobile money operators, and (b) receiving a list of mobile money agents from the government, and (c) asking respondents during the baseline survey to mention mobile money agents they visit regularly.¹ The mobile money agents are informed about a nationwide competition that will be assessed through customer feedback captured through surveys. The mobile money agents who scored the highest in the competition received a crest titled, “Best Agent in Customer Service”, that can be displayed in their shops.

Overall, we find the interventions to be effective among the most marginalised by improving awareness trust and usage of mobile money services. However, we do not find the agent award treatment, on its own, to be effective in changing the behaviours of our study participants. While we do not find impacts on average, it could still mask heterogeneity in rural/urban regions.

To explore potential variation in impacts across rural/urban regions, we conducted a heterogeneity analysis by interacting the treatment indicator for the agent award scheme (T2) with a rural dummy (equal to 1 for rural areas and 0 for urban). Although the resulting point estimates are not statistically significant, the coefficients for several key outcomes — such as mobile money usage, performing transactions, and sending money via mobile money — are positive. While not definitive, these patterns motivated us to take a closer look at why the intervention might be working differently in rural versus urban regions.

So, what drives this type of difference in the treatment effects? The literature suggests that it could be due to the level of competition between rural and urban agents (GSMA, 2024; McKay and Kaffenberger, 2013; Unnikrishnan et al., 2019; Demirgüç-Kunt et al., 2015) or due to the presence of social capital (Putnam, 1993; Fafchamps and Minten, 2002; Lin, 2002; Gandhi and Marsh, 2003). We explore this heterogeneity by creating two variables to measure agent competition and social capital. For the agent competition, we create a continuous variable that measures the number of households per mobile money agent. We call this variable, “Agent Competition”. For social capital, we create a dummy variable that measures whether Upazilas - the sub-districts in our study - have above the median number of local NGO participation. We call this variable, “NGO participation”.

It is argued that the extent of social capital within a community helps to explain why people in some regions tend to be trusting and cooperative in pursuing shared objectives while those in other regions may not be as trusting or cooperative (Putnam, 1993). The motivation behind many discussions about pursuing shared objectives harmoniously is to explore whether social capital can be developed through external organisations, such as local NGOs (Larance, 2001). Hartmann et al. (2019) argue

1. Note that we do not collaborate with mobile money operators, who are working with the government to disburse the G2P payments, as this might result in biases towards certain areas and mobile money agents that are deemed as “better agents” in the delivery of mobile money services

that the network effects of NGOs contributed to innovative behaviour and greater social capital among smallholder farmers in Peru. Gandhi and Marsh (2003).

Social capital is seen as a resource found in social connections (Putnam, 1993; Lin, 2002). Such relationship-based social capital has been seen to have important effects on rural households, such as in the diffusion of new technologies (Munasib and Jordan, 2011) and as an important way for rural families to exchange knowledge. (Kadushin, 2012). The presence of social capital exposes these agents to social incentives, where their actions are influenced by the presence and identities of others in their community. As a result, because these local agents are embedded in the social fabric of their communities, their behaviour is shaped by the social motivations they experience while serving them (Bandiera et al., 2023). Hence, this local delivery model has been utilised in programs related to agriculture (Bandiera et al., 2023), in the delivery of health services (Olken et al., 2014) and in offering credit (Maitra et al., 2022).

We understand that identifying relevant proxies for agent competition and, in particular, measuring social capital is challenging. However, we are motivated to understand whether there is masked heterogeneity that we can plausibly capture. Our heterogeneity analysis with the agent competition reveals that, although statistically insignificant, we observe that the agent award treatment reduces awareness and trust regarding mobile money among G2P beneficiaries when agent competition is higher. In the case of local NGO participation, our results are very different. Specifically, we find a large, positive, and statistically significant effect of the treatment on awareness, trust, usage, and savings behaviour among G2P beneficiaries when NGO participation increases. We explore the robustness of these results by employing an instrumental variable analysis using the distances of the first and second branch of the oldest microcredit NGO in Bangladesh, Grameen Bank. Although our results support our heterogeneous findings, we cannot entirely rule out endogeneity.

3.2 Related Literature

Bénabou and Tirole (2006) provide a theoretical model for how prosocial behaviour is driven by a combination of intrinsic, extrinsic and reputational concerns. A central feature of the model is that offering extrinsic awards, such as monetary payments or material gifts, may undermine prosocial motivation. This is because extrinsic awards make it harder for observers to distinguish whether an individual acted out of altruism or for personal gain. This could weaken reputational benefits of helping and may actually discourage participation. Public recognition can enhance prosocial behaviour by increasing the reputational returns to generous actions, especially for individuals who value social presence. Other theoretical contributions have highlighted the importance of status awards, such as titles, ranks or recognition and how they can be used to motivate agents to exert effort, especially when agents care about their relative

position and recognition is visible to others (Moldovanu et al., 2007).

Besley and Ghatak (2008) present a theoretical model for understanding how status awards can complement or substitute for monetary incentives, especially in settings where effort is hard to observe and financial incentives are limited. In their model, status awards motivate people by giving them a special rank or title that sets them apart from others. These awards are valuable because not everyone receives them (i.e., it is scarce), and they allow individuals to be publicly recognised for their good performance. In this way, status awards can strengthen prosocial motivation by publicly rewarding good behaviour without crowding out intrinsic motivation often observed with monetary incentives. This complements Frey (2007) argument that awards are especially valuable when tasks are hard to define in advance or monitor performance afterwards.² Unlike monetary incentives, awards are less likely to undermine intrinsic motivation; instead, they can help preserve it by offering recognition and appreciation.

Furthermore, Ariely et al. (2009) provide evidence on how intrinsic, extrinsic and image can have separate effects on prosocial behaviour. In a lab experiment, Ariely et al. (2009) used a real-effort task called “Click for Charity” to examine how image concerns influence prosocial behaviour under different conditions. Participants were randomly selected to conditions where their effort, and the resulting donation, was visible to others or kept private. Another randomly selected group of participants could earn money for themselves in addition to the donations. Finally, participants were also randomly assigned to support one of two charities—one generally perceived as socially “good” and the other “bad.” The results show that people put in more effort when donations were visible to others, particularly when the donations supported the socially “good” charity. This is due to the fact that public visibility (i.e., how many clicks they were making for the charity) increased participants’ concern for how they would be perceived by others, thereby strengthening image-driven motivation. However, when monetary compensations were added, effort increased only in private set-up, suggesting that extrinsic rewards can crowd-out image-driven motivation in public. The results are also robust when expanded to a field study, suggesting that people use prosocial behaviour to signal to others that they are good or socially responsible.

Charness et al. (2010) also conducted a real-effort laboratory experiment to investigate how status and competitive preferences affect individual behaviour in the absence of monetary incentives.³ Participants were paid a fixed wage and could choose how much effort to exert on a decoding task. In one of the treatments, participants were informed about their rank in a small group and could earn symbolic status symbols like a gold medal or donkey hat based on their performance. In the other treatments, participants could spend money to either boost their own score (which they call the redemption treatment) or reduce others’ scores (which they call the sabotage treatment). Note, that these differences in treatment do

2. Tasks such as those in academia, the arts, the military, and in volunteering or humanitarian work—are examples where performance is often hard to measure or specify in advance

3. Competitive preferences refer to an individual’s tendency to care not just about their own individual performance or outcomes, but also about how they compare to others

not affect their total or final earnings. The study finds that individuals are motivated by both intrinsic reasons (i.e., still chose to exert effort even when pay is fixed) and status concerns (i.e., working when rankings are visible). Some of the participants were even willing to sacrifice earnings to improve or protect their relative position. The feedback on status (i.e., how they were performing relative to others) helped sustain effort over time while environments that allowed sabotage led to lower performance. These results indicate that symbolic recognition and social comparisons can serve as powerful incentives, particularly among competitive individuals.

Ball et al. (2001) study the effect of social status through a laboratory experimental market. In this experiment, participants were assigned the role of buyers and sellers. They traded through a double auction, where both sides could make and accept offers. Before participants could start trading, participants were visibly assigned high status by receiving a gold star but with two variations. In one group, this status was given based on the outcome of a quiz. In another group, this status was given by drawing a name at random – making the assignment of status completely transparent. In both cases, the gold stars had no real meaning or effect on the trading rules but they were visible to others in the markets (i.e., to other participants). The results of the experiment showed that high status participants earned more than low status ones (i.e., those who did not receive the gold stars), *ceteris paribus*. When high status participants were sellers, they received higher prices; when they were buyers, they paid lower prices. Interestingly, these effects were much weaker when the gold stars were not visible, suggesting that what matters is being seen as high status and not the status itself.⁴

Kosfeld and Neckermann (2011) provide empirical evidence from a field experiment showing that public recognition – delivered through symbolic, status-based or image-driven incentives – increases performance. In this study, participants performed a data entry task for a non-profit organisation, receiving a fixed wage for participation. In the treatment group, in addition to the base wage, a symbolic award in the form of a personalised congratulatory card signed by the organisation's leadership was offered to top performers. This design isolates the effect of non-monetary incentives that is offered on top of a fixed monetary incentive. The results show that the symbolic award significantly increased performance: participants in the award group completed approximately 12% more work (measured as the number of completed questionnaires entered per minute), and achieved 9% higher accuracy and speed, compared to the control group.

While Kosfeld and Neckermann (2011) show that symbolic awards can increase effort in a simple task where output is easy to measure, many real-world settings involve agents doing a mix of tasks that involve speaking with clients, explaining services, and building trust which are harder to monitor and evaluate. N. Ashraf et al. (2014) study such a setting by recruiting local agents (hairdressers and

4. In another experiment, the authors conducted a variation where high status was revealed only privately to the participant, that is through a certificate. Other participants in this group were unaware that someone had received a certificate

barbers) to promote HIV prevention and sell condoms in their communities in Zambia. The study finds that symbolic recognition, offered through a public star-based award, led to higher effort and better sales performance than financial incentives. This effect was strongest among agents who were more prosocially motivated at baseline, suggesting that recognition-based incentives work particularly well when agents are driven by the desire to help others.⁵

While the studies above show that symbolic awards can motivate effort in settings, such as controlled lab tasks or public service delivery, there is limited evidence on their effectiveness in market-based settings, such as in the context of mobile money agents. This study contributes to the literature by examining whether symbolic, non-monetary incentives can motivate mobile money agents who already operate under performance-based monetary incentives and serve a mix of clients. In this context, agent effort is difficult to observe, especially when it involves serving economically marginalised clients such as G2P beneficiaries, in addition to competing pressures, such as prioritising high-value customers or managing their own retail businesses. Furthermore, the intervention (agent award scheme) is implemented by an external party, making it distinct from in-firm or in-NGO or gift-exchanges in the workplace (Markham et al., 2002; N. Ashraf et al., 2014; Kosfeld and Neckermann, 2011; Kube et al., 2012). More broadly, the study also offers suggestive evidence on when and where symbolic awards may be most effective, using a heterogeneity analysis across rural and urban regions to explore how context shapes their motivational value.

3.3 Context

Historically, formal financial institutions have neglected the economically marginalised because their low account balances and small transaction sizes generate insufficient revenue for banks (Mas, 2010). Moreover, due to the rural poor residing in inherently sparsely populated and remote areas, these regions lack the necessary scale to render the provision of conventional financial services economically viable (Davidson and Leishman, 2012). Thus, formal financial institutions have found it impractical to profitably serve the poor in developing economies (Kendall et al., 2011).

Arguably, traditional companies face challenges when trying to provide products and services to poor customers (Rangan et al., 2011). This is in part due to the fact that the retail landscape is dominated by small-scale independent retailers and entrepreneurs. For instance, there are about 4.5 million mom-and-pop shops.⁶ (also informally known as “mudir dokan”) in the neighborhoods of Bangladesh that account for 98% of the retail economy.⁷

Leveraging this retail landscape coupled with the increased growth of cellular networks in the devel-

5. For a more detailed review of this paper, please see Section 2.2 of Chapter 2

6. In India, 90% of retail sales occur at 12 million small, independent stores called kirana shops, pushcarts, and street vendors (Kohli and Bhagwati, 2011)

7. <https://thefinancialexpress.com.bd/education/british-hc-greets-24-bangladeshi-commonwealth-scholars>

opening world in the past decade has made it possible for the economically marginalised to access “mobile money” (Balasubramanian, 2018). In developing economies, retail outlets often serve as community hubs, fostering social interactions among neighbourhood residents (Sim, 2000). A central feature of this is the neighbourhood retailer’s strong social ties facilitate the development of trust and relationships (Lenartowicz and Balasubramanian, 2009). There are approximately 2.9 million active agents worldwide (Davidson and Leishman, 2012), distributed across various locations such as markets, street corners, stores, bus stops, and more.

A central feature of these delivery agents is their social networks through which they operate within their communities. A consequence of this is that since these local agents are integrated within the social structure of the communities they come from, their behaviour can then be moulded by the social motivations they encounter while serving their communities (Bandiera et al., 2023)

The mobile money market in Bangladesh quickly identified the advantage of a well-organised agent network, such as these retail shops, through which mobile money services can be introduced, delivered, and expanded. As a result, between December 2015 and October 2020, the number of mobile money agents increased by 83% while the customer base increased by 203%.⁸

Mobile money operators rely significantly on agents, whose roles as service providers extend beyond cash-in-cash-out (CICO) transactions. These agents are also in a position to raise awareness and educate customers - especially those at the BOP and unfamiliar with the concept of mobile money. Moreover, their credibility and quality of customer service can play a pivotal role in establishing trust among both existing and new customers⁹.

In addition to fostering trust, agents also serve as an initial point of contact for newly registered users of mobile money, potentially influencing their perception and use of the service. For example, if agents are solely interested in registering new customers in return for the flat fee they will earn, they may induce customers to perform a very small transaction right after sign-up (Davidson and Leishman, 2012). And so, without educating the customers about the services available and the fee structure of mobile money, the system risks retaining dormant customers who may never use the service again.

There are several other actions the agent can perform that can deter customer service among these G2P beneficiaries. For example: i) prioritising educated, affluent customers who come to perform more advanced transactions; ii) not displaying or informing users of promotional materials offered by mobile money operators; iii) operating only during peak hours of business; iv) restricting transparency of fee structure and v) conducting over-the-counter (OTC) transactions. Alternatively, what constitutes good customer service and the effort exerted by agents is often hard for organisations to observe when designing incentive schemes and, especially when need is hard to observe (Bandiera et al., 2023).

These agents are not employees of mobile money operators. They invest their capital to handle and

8. See Bangladesh Bank statistics at <https://www.bb.org.bd/fnansys/paymentsys/mfsdata.php>

9. According to the Global Findex 2021 report, 23% unbanked adults cited distrust in the financial systems

facilitate transactions in return for commissions earned via customer deposits and withdrawals - in effect - they receive monetary incentives for their delivery of mobile money services. Only providing such monetary incentives hides the plethora of non-monetary motivations that are linked to others, such as altruism and a warm glow that can be harnessed among locals to help their community.

3.4 Research Design

This study is part of a project that investigates the effects of providing information on MFS to G2P payment beneficiaries in Bangladesh (Chapter 2). The project evaluates two interventions: the provision of information regarding mobile money and the roll-out of a nationwide mobile money agent competition. 3000 G2P beneficiaries across 100 clusters were randomly selected for the experiment. Following a cluster randomisation design, each treatment arm consists of 25 clusters receiving three interventions.¹⁰ The interventions are conducted across all 8 administrative divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, Mymensingh and Sylhet.¹¹

3.4.1 Description of the Intervention: Agent Award

A non-monetary agent award scheme was rolled out across 25 unions in Bangladesh. With the help of the implementation partner, an agent-identifying protocol was developed. Mobile money agents, to be offered the intervention, were selected from three sources. Firstly, the Department of Social Services (DSS) in Bangladesh, provided a list of mobile money agents operating across all unions in Bangladesh. Secondly, mobile money agents were identified and located in all unions through the mobile money operator's website using the agent-locator search option. Thirdly, at baseline, beneficiaries in study unions were asked to provide information on the mobile money agents they visit frequently. Using these sources, 2622 mobile money agents were given the intervention.

Surveyors approached each mobile money agent with a script, written by the researchers, that provided detailed information regarding the award scheme. The script highlighted the seminal role of agents in the delivery of mobile money services - especially among low-income, vulnerable, and poor populations, such as G2P beneficiaries. Additionally, the agents were informed about the importance of good customer service and ways to offer quality services to all customers of mobile money. Such services included displaying promotional offers, operating beyond busy hours, fee and transaction transparency, and providing awareness, knowledge, and assistance in the use of mobile money.

It was highlighted to the agents that they had been selected amongst the pool of mobile money

10. The selected beneficiaries comprise beneficiaries receiving the Old Age Allowance (OAA), Disability Allowance (DAA), and Widowed and Destitute Women Allowance (WAA). The 100 unions comprise 50 unions/clusters classified as urban or peri-urban, and 50 unions/clusters classified as rural. For a more detailed explanation of the sampling technique, experimental design, and description of the intervention (T1: Poster + Video + Calendar and T3: Poster + Video + Calendar + Agent Award Scheme), please refer to my first chapter

11. For more details regarding this project, please visit <https://www.socialscicenter.org/trials/8164>

agents across Bangladesh. The mobile money agent is then offered to participate in the award scheme that recognises good customer service. It is revealed to the agents that the competition will run for four months (i.e.; the period of intervention) and then a random sample of mobile money users will be interviewed regarding the customer service they receive from mobile money agents nearby. The agents' performance will be measured across four dimensions, such as charging of correct cash-out charge, whether the agent was available, the agent satisfaction score, whether the agent displayed promotional offers, and whether the agent was fee compliant. These dimensions were not specifically revealed to the agents. Once a winner is selected, the mobile money agent will receive a crest with the title, "Best Agent in Customer Service" in that union.

3.5 Data

The data used in the analysis are taken from the following sources:

- (1) 2010 Community-level data from Bangladesh Household Income and Expenditure Survey (HIES):

The HIES 2010 is a nationally representative household survey that consists of 612 Primary Sampling Units (PSUs) and a total of 12,240 households. A PSU is defined as two or more adjacent enumeration areas (EA) used in the Population and Housing Census in 2001. Among selected PSUs, 392 are rural PSUs and 220 are urban PSUs. Rural and Urban PSUs are also referred to as rural mouzas and urban mohallas, respectively. From each PSU, 20 households were surveyed, giving us 7840 rural households and 4400 urban households. The data was collected in one year, between February 2010 and January 2011. To supplement the household-level questionnaire, the HIES 2010 also included a community-level questionnaire that covers 352 mouzas.¹² The questionnaire is administered in the presence of a group of respondents from the selected mouzas. The group participants are representatives from households that were also selected for the household-level questionnaire. The community-level questionnaire includes a section that asks about the existence and types of NGO programmes in the surveyed rural mouzas/communities. This information allowed us to capture the number of local NGOs (Grameen Bank, BRAC, and ASA) that were present in each of the surveyed mouzas. We further aggregated this variable at the sub-district level (Upazila level).

12. Mouza, in Bangladesh, is a type of administrative district, corresponding to a specific land area within which there may be one or more settlements

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- (2) Beneficiary-Level Data from G2P Project: The RCT study was conducted with Government-to-Payment (G2P) beneficiaries across all eight administrative divisions, including 45 districts and 85 sub-districts, in Bangladesh. At baseline, we reached 3075 G2P beneficiaries while at the endline we were able to reach 2833 beneficiaries. For this chapter, we restrict our sample beneficiaries in treatment arm 2 and the control group, giving us 1417 observations for the analysis. The survey questionnaires enabled us to capture information on awareness, trust, and usage regarding Mobile Financial Services (MFS) and the savings behaviour of the G2P beneficiaries.¹³ Since the G2P project and HIES 2010 are nationally representative, we found a match of 61 sub-districts present in both datasets.
- (3) 2011 Bangladesh Population Census Report: Using the report, we extracted information on union-level statistics, such as the number of households in each union. In this report, we could not find information on the number of households in one of the unions in the “Mymensingh Upazila”.¹⁴
- (4) Mobile Money Operator (bKash) Website: Using the agent locator option in the bKash website, we extracted data on the number of mobile money agents operating in each of the unions across Bangladesh.¹⁵

13. A detailed description of the project, with information on the study design, data, methodology, and results are presented in Chapter 2 of this thesis

14. A union is considered to be the smallest administrative unit in Bangladesh. Unions can be further subdivided into mouzas.

15. While we provided the intervention to another MFS provider, NAGAD agents, in the project, we do not use NAGAD’s website to collect the number of NAGAD mobile money agents. This is because, in Bangladesh, mobile money agents are not exclusive to a specific mobile money operator. And so, including both NAGAD and bKash could lead to over-counting and issues of upward bias. For more information, please see <https://www.bb.org.bd/fnansys/paymentsys/mfsdata.php>

Table 3.1: Variable Definitions and Data Sources

Variable	Definition	Data Source
Panel A: Variables Created to Capture Rural/Urban Differences		
Local NGO Participation	Dummy variable that takes the value of 1 if an Upazila has above the median number of local NGOs and 0 if an Upazila has equal to or below the median number of local NGOs.	HIES 2010
Agent Competition	Continuous variable created by dividing the number of households present in each union and the number of mobile money agents in each union.	2011 Bangladesh Population Census Report + bKash Agent Locator Website
Panel B: Outcomes of Interest		
Beneficiary is aware of MFS	Dummy variable that takes the value of 1 if a respondent has heard or seen information about mobile money or mobile money agent from sources such as television, social media, friends/family, posters at MFS shop, or posters received at home in the past 3 months; 0 otherwise.	G2P Project Survey
Beneficiary is aware of MFS shop	Dummy variable that takes the value of 1 if a respondent can correctly identify an MFS shop through agent confirmation, MFS posters in shops, calendars, or videos; 0 otherwise.	G2P Project Survey
Wise to Leave Money in MMO	Dummy variable that takes the value of 1 if a respondent thinks it is wise to leave money in a mobile money account (MMO); 0 otherwise.	G2P Project Survey
Uses MMO for other purposes	Dummy variable that takes the value of 1 if a respondent uses their mobile money account (MMO) for purposes other than cashing-out G2P payments; 0 otherwise.	G2P Project Survey
Can Perform Transactions	Dummy variable that takes the value of 1 if the respondent can independently perform actions such as sending money, checking balance, or navigating the MMO menu; 0 otherwise.	G2P Project Survey
Has Sent Money Using Mobile Money Account	Dummy variable that takes the value of 1 if the respondent has sent money through their own mobile money account (MMO); 0 otherwise.	G2P Project Survey
Saves in Formal Sources	Dummy variable that takes the value of 1 if the respondent saves in formal sources such as a bank account, micro-credit account, post-office account, or local ROSCA; 0 otherwise.	G2P Project Survey
Saves in Informal Sources	Dummy variable that takes the value of 1 if the respondent saves in informal sources such as a claypot or keeps money at home or with others; 0 otherwise.	G2P Project Survey

Using (1), we can capture people’s participation in NGOs in each of the surveyed mouzas. To create our variable of interest, NGO participation, we start by calculating the number of local NGOs that mouzas are part of and aggregate that at the Upazila level. An Upazila is defined as an administrative division in Bangladesh functioning as a sub-unit of a district. We identified 76 Upazilas that match to those surveyed in the G2P study. We merge this Upazila-level NGO data with (2) which gives us a total of 933 observations for the analysis. We use (3) to extract the number of mobile money agents operating in the unions that have been selected for the G2P project. Additionally, we use (4) to extract the number of households that are present in the unions that have been selected for the G2P project. By combining these two datasets, we can create our agent competition variable. Given that we do not have information on one of the unions in the “Mymensingh Upazila”, we do not have information on agent competition for this. Hence, this gives us a total of 1390 observations. In [Table 3.1](#) above, we provide the details on how the variables and measures of outcome have been constructed and their relevant sources.

3.6 Conceptual Framework

For many G2P recipients, mobile money agents are the main point for using mobile money services. Beyond cash withdrawals, agents help beneficiaries access their accounts, resolve issues related Personal Identification Numbers (PINs), and navigate mobile money services. Agents also play an informational role by guiding beneficiaries on how to identify MFS shops, troubleshoot failed transactions, and understand the benefits of formal savings or maintaining a balance in their mobile money accounts. Hence, the quality of agent service affects beneficiaries’ ability to engage with mobile money services effectively.

The agent award scheme was designed to evaluate the effect of a non-monetary reward on the performance of these mobile money agents. In this chapter, we examine how the agent award scheme may affect agent behaviour through a combination of intrinsic motivation, social recognition and profit-maximising incentives.

We hypothesise that the strength of these channels and therefore the effectiveness of the award scheme may differ between rural and urban areas due to differences in agent competition and social capital. We complement our discussion with a diagram, as seen in [Figure 3.1](#)

3.6.1 Potential Mechanisms

We outline the channels through which the agent award scheme may influence behaviour, however our data does not allow us to directly these mechanisms.

Intrinsic motivation: symbolic wards may increase agents’ intrinsic motivation by reinforcing their sense of pride, competence and identity. By receiving the recognition for good customer service can validate agents’ effort and encourage them to provide improved service delivery. This sense personal

satisfaction maybe particularly important in contexts where agents feel part of a close-knit community and where serving customers well contributes to maintaining valued social relationships.

Social recognition: in settings where community ties are strong, symbolic recognition may enhance an agent's social status and reputation within the community. The visibility of the award, such as the crest, serves as a public signal of trustworthiness which motivates agents to preserve or improve their reputation.

Profit maximisation: although the award is non-monetary, agents may still view improved customer service as a strategy to increase profits. For example, higher service quality may help attract new customers and retain existing ones, leading to increased volumes of transactions and commissions. Thus, non-monetary recognition may indirectly contribute to agents' financial performance.

Ideally baseline and endline questions could include targeted measures to capture each channels. For example, intrinsic motivation could be measured through questions on agents' pride in their work, satisfaction from helping others, or perceived role within the society. Similarly, social recognition could be measured through agents' concern for reputation, desire for community approval, or sensitivity to public recognition. Finally, profit motivation might be captured through agents' expectations of increased customer flow, transaction volumes, or earnings tied to improved service delivery. Which such data are unavailable in this study, future research could advance our understanding by collecting data on them directly.

3.6.2 Explaining rural-urban differences: the role of agent competition and social capital

The effect of the agent award scheme may vary between rural and urban areas due to differences in market structure (e.g agent competition) and social context (e.g social capital).

Agent Competition: In urban areas, agent density tends to be higher creating more intense competition.¹⁶ In such settings, agents may already face strong incentives to deliver good customer service to retain customers. For example, through the transaction-based commissions they receive from MFS companies. This may limit agent's effort for the symbolic awards to influence behaviour. By contrast, in rural areas, where competition is typically lower, the symbolic awards may have a greater effect by providing the additional motivation for service improvement. Therefore, it could be that the interaction between the agent award scheme and agent competition is negative in urban areas (i.e., the rewards for customer service decreases as competition increases). This argument is consistent with incentive theory, and empirically tested, proposed by Lazear (2000) which suggests that when competition already provides strong performance incentives (for example, commissions earned through high-value transactions),

16. Agent density tends to be higher in urban areas. See GSMA (2022): "Agent distribution networks remain relatively low in many rural areas in low-and-middle-income countries" and "with an increase in agent footprint, particularly in urban areas."

the marginal effect of additional incentives maybe smaller.

Social Capital: In rural areas, there maybe stronger social networks and community cohesion, which can increase the reputational value of symbolic awards. In rural areas, people often rely on each other for informal support, such as help with financial emergencies, childcare, shocks or navigating government services. In these settings, being seen as trustworthy and helpful can strengthen one’s status within the community making prosocial behaviour more valuable. By winning the competition and displaying the crest in the shop, the agents may exert more effort to enhance their reputation. This argument is consistent with theoretical and empirical evidence showing that social recognition incentives operate more strongly in contexts, such as rural villages, where information about behaviour spreads easily through dense social networks (Breza and Chandrasekhar, [2019](#)).

The strength of social capital may also be influenced by the presence of NGOs, which help build trust, foster cooperation, and support the formation of local networks over time. NGO participation may therefore serve as a proxy for higher levels of social capital in the community (Usmani et al., [2024](#); Fitzpatrick et al., [2023](#)). Therefore, it could be that the interaction between the agent award scheme and social capital is positive in rural areas (i.e., the rewards for customer service increase as social capital increases).

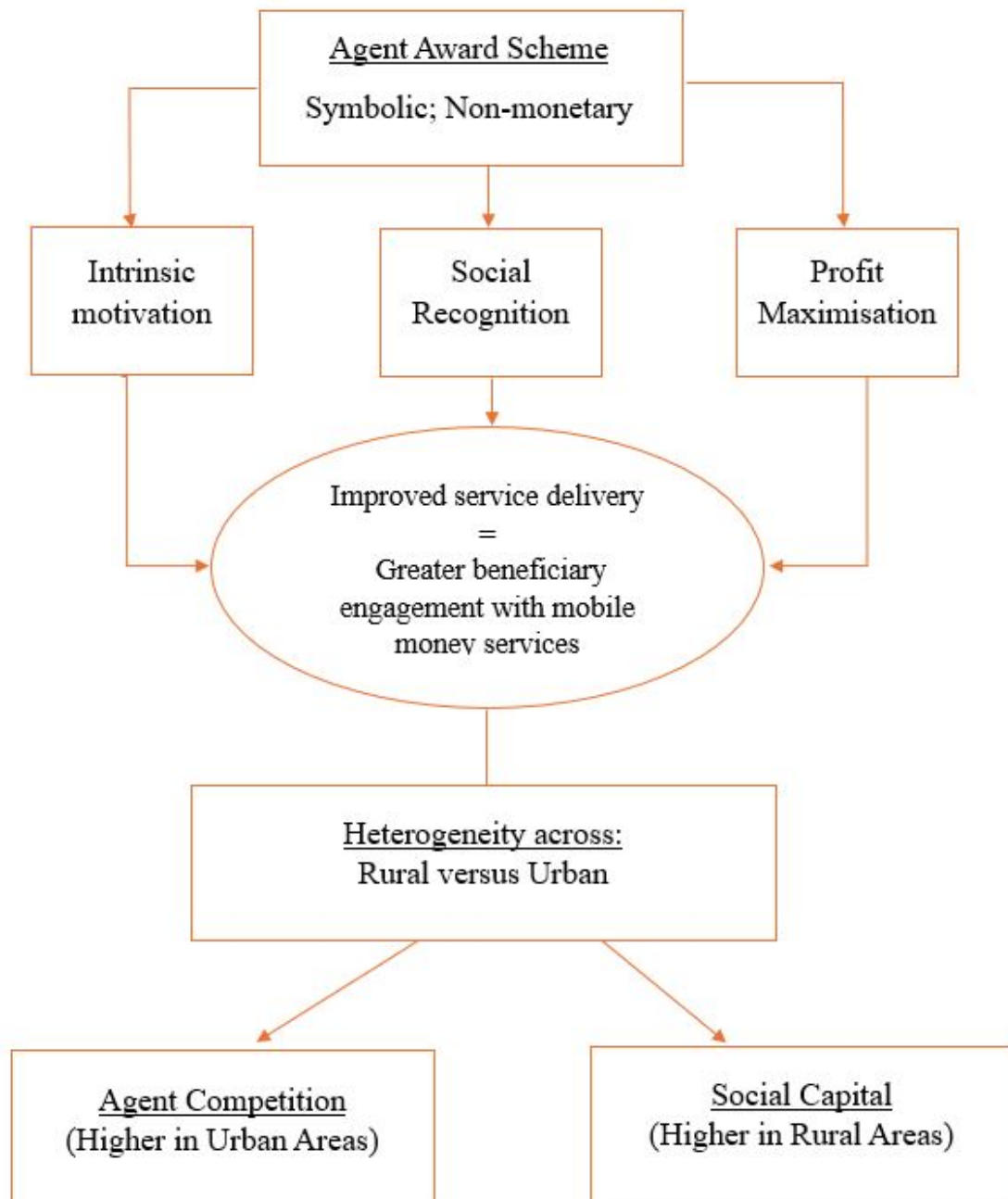


Figure 3.1: Conceptual Framework Explained

3.7 Empirical Strategy

3.7.1 Rural-Urban Differences

To evaluate the effect of the rural-urban differences on the outcome variables, we estimate an intent-to-treat (ITT) specification using an Analysis of Covariance (ANCOVA) where we interact a rural/urban dummy with the treatment variables in a full sample regression:

$$Y_{iu,t+1} = \beta_0 + R_{u,t} + \beta_1 T_{2u} + \beta_2 T_{2u} \times R_{u,t} + Y_{iu,t} + \beta_4 X_{iu,t} + \epsilon_{iu,t+1} \quad (3.1)$$

Where: Y_{ui} is the outcome for individual i in rural union or urban ward u , $R_{u,t}$, is a dummy variable for rural/urban status, T_{2u} is the treatment arm status in union/ward u .

The model includes interaction terms where, T_{2u} is interacted with $R_{u,t}$ (i.e., $T_{2u} \times R_{u,t}$), allowing the effect of each treatment to vary based on the value of $R_{u,t}$.

The variable Y_{iu} is the baseline value of the outcome of interest (when measured at baseline, otherwise excluded), $X_{iu,t}$ is a vector of baseline controls including any unbalanced variable at baseline. Finally, $\epsilon_{iu,t+1}$ is the error term, clustered at the union/ward level.

Periods t and $t + 1$ refer to the baseline and endline, respectively. The control variables included in the regression are strata dummies for urban or peri-urban and rural areas, age, gender, and literacy level of the beneficiary, household size, and allowance type (OAA, DAA, or WAA).¹⁷

17. These correspond to the three different allowance types offered to G2P beneficiaries: Old Age Allowance (OAA), Disability Allowance (DAA) and Widowed and Destitute Woman Allowance

3.7.2 Agent Competition and NGO participation

Now, we turn to understand whether there is heterogeneity along the dimensions of agent competition and the presence of local NGOs. To evaluate the effect of agent competition and the presence of local NGOs on the outcomes of interest, we estimate equation (2) with the interaction terms as follows:

$$Y_{iu,t+1} = \beta_0 + \lambda_{u,t} + \beta_1 T_{2u} + \beta_2 T_{2u} \times \lambda_{u,t} + \beta_3 Y_{iu,t} + \beta_4 X_{iu,t} + \epsilon_{iu,t+1} \quad (3.2)$$

Where: Y_{ui} is the outcome for individual i in rural union or urban ward u , $\lambda_{u,t}$, is a dummy variable that takes either the variable that captures agent competition or the variable that captures above median number of NGO presence. T_{2u} is the treatment arm status in union/ward u . The model includes interaction terms where T_{2u} is interacted with $\lambda_{u,t}$ - which is $T_{2u} \times \lambda_{u,t}$.

The variable Y_{iu} is the baseline value of the outcome of interest (when measured at baseline, otherwise excluded), $X_{iu,t}$ is a vector of baseline controls including any unbalanced variable at baseline. Finally, $\epsilon_{iu,t+1}$ is the error term, clustered at the union/ward level.

Periods t and $t + 1$ refer to the baseline and endline, respectively. The control variables included in the regression are strata dummies for urban or peri-urban and rural areas, age, gender, and literacy level of the beneficiary, household size, and allowance type (OAA, DAA, or WAA).

3.7.3 Robustness Check

In this section, we discuss the potential endogeneity of the agent competition and the NGO participation variables. The concern we face is that the heterogeneous treatment effect might be biased because of the endogeneity of these variables.

We understand that the overall effect of the agent competition and the above median NGO participation variable affecting our outcomes of interest could be present in both the control and the treatment arms. Although we account for this by including the agent competition variable and the above median NGO participation variable on its own in the regressions, endogeneity may still be a concern.

For agent competition, measurement error could mask the impact if the level of competition is inaccurately recorded. Reverse causality could also be a concern, as the agent award scheme might attract more agents to the regions, making competition a consequence of the agent award scheme rather than an independent factor. Similarly, the above median NGO participation variable may also face potential endogeneity issues due to measurement error, which could misrepresent the involvement of NGOs.

Finally, omitted variable bias may also be relevant for both agent competition and NGO participation, as factors like local development, infrastructure, or government support influence might affect the outcomes, hence biasing the interaction effect.

One possible way to resolve the endogeneity issue is to use an Instrumental Variable (IV) approach

by exploring relevant instruments for agent competition and NGO participation. For this paper, we explore instruments related to NGO participation and acknowledge the lack of instruments for the agent competition variable. However, we leave this as an opportunity for future research.

3.7.4 Choice and Rational of Instruments

We use two instruments for social capital as measured through NGO participation. Firstly, we identified the Upazila (sub-district) where Grameen Bank opened its first branch. The first branch started in the Hathazari Upazila in 1976 and is located in the District of Chittagong. Then we take the distance between the Hathazari Upazila and the Upazilas in our sample. Secondly, we also identified the Upazila where Grameen Bank opened its second branch. The second branch started in the Tangail Sadar Upazila in 1979 and is located in the District of Tangail. Similarly, we take the distance between the Tangail Sadar Upazila and the Upazilas in our sample.¹⁸

To calculate the distances between the Upazilas, we collected the longitudes and the latitudes from Google Maps and coded them into STATA. The `geo(dist)` command in STATA enables us to calculate the distances in kilometers (Picard, 2019). We also interact the two instruments with the agent award treatment variable. Our specification also includes squared terms to capture a non-linear relationship between distance and NGO participation.

In our choice of instruments, the exclusion restriction is that the distances affect the outcome variables through their effect on NGO participation. We argue that the exclusion restriction is plausibly satisfied in the following ways. Firstly, Mohammad Yunus conducted the initial experiments with microcredit in the locality of the University of Chittagong where he was based in the 1970s. (Yunus, 2003). The choice of the first branch of Grameen in Hathazari Upazila, less than 10 kilometers from the University of Chittagong, was plausibly determined by the location of the early experiments with microcredit. At the same time, there was very little prevalence of local NGOs in Bangladesh in the 1970s. Specifically, local NGOs started emerging during the late 1980s and early 1990s (Zohir, 2004). Therefore, the locations where Grameen bank branches were set up earlier have had longer exposure to NGOs and their participation.

The microcredit market in Bangladesh is saturated today (Charitonenko et al., 2004) and arguably, this also applies to the NGO market more generally. Therefore, the locations of the initial Grameen Bank branches are unlikely to determine the placement of microcredit institutions/NGOs in present times. However, longer exposure to NGOs may lead to higher participation.

Moreover, a concern with the instruments is that, if microcredit organisations like Grameen Bank engage MFS providers by driving MFS awareness in the communities in which they operate. This concern

18. In finding the location of the first and second branch of Grameen Bank, we referred to the “Banking to the Poor Yunus, 2003. We further confirmed this through a website here. [here](#). To find the specific Upazila in Tangail for the second branch, we located via Google Maps all the available Grameen Bank branches. We confirmed with the local branch managers that the Grameen Bank in Tangail Sadar Upazila is indeed the second branch

is alleviated as in this context, Grameen Bank do not engage with MFS providers in Bangladesh.¹⁹. Another potential way this concern is alleviated is that our sample of G2P beneficiaries, in this context, represents an older population (average age of 57 years) who are less likely to demand microcredit (Hoque, 2014; Ashrafi, 2011; Basher, 2007)

3.8 Results

3.8.1 Rural/Urban Differences

In Table 3.2, we present the heterogeneous treatment effects by rural/urban regions for the treatment arm where the agent award scheme (T2) was given compared to the control arm. We report the heterogeneous treatment effects for all the treatment arms in Table A13 in the Appendix. In column (1), the agent award scheme on its own is seen to reduce awareness of MFS by 1 percentage point, although, it is not statistically significant. However, the coefficient on the interaction term between the agent award scheme and the rural dummy indicates that the effect of the agent award scheme on the likelihood that a beneficiary is aware of MFS is about 2 percentage points higher in rural areas compared to urban areas. However, the point estimates are not statistically significant.

In column (2), we see that while the agent award scheme on its own increases the likelihood of beneficiaries, by about 6 percentage points, to identify the MFS point, while the coefficient on the interaction with the rural dummy is negative. However, these are statistically insignificant. In column (3), we find that the agent award scheme on its own reduces beneficiaries' trust in MFS by 5 percentage points. When the agent award scheme is interacted with the rural dummy, we still find the coefficient to be negative but it is much smaller in magnitude. However, these effects are statistically insignificant.

In column (4), we observe a decrease in beneficiaries' usage of MFS (by 4 percentage points), but this is statistically insignificant. For the interaction term, we find the effect to turn positive (increases by 7 percentage points), but it is also statistically insignificant. In column (5), we observe a decrease in the likelihood of beneficiaries' using mobile money for other purposes, however the interaction effect is positive (increases by 7 percentage points). However, both of these effects are statistically insignificant.

In column (6), we also observe a similar pattern, with a slight decrease in beneficiaries being able to confirm transactions related to MFS (by 1.7 percentage points), however, the coefficient on the interacted terms is positive, indicating an increase of about 7 percentage points. Again, the effects are statistically insignificant.

Finally, in column (7), we find that the agent award on its increases the likelihood of beneficiaries saving in formal sources by 3 percentage points. But when the agent award scheme is interacted with

19. bKash was the first MFS provider to enter Bangladesh in 2011. We also extensively investigated whether Grameen Bank engages with MFS providers in certain capacities, but we do not find any presence of this, that is publicly available to explore

the rural dummy, we find the coefficient to be negative (decreases by 3 percentage points). Albeit, these effects are statistically insignificant.

In column (8), we observe that the agent award scheme on its own increases the likelihood of beneficiaries' savings via informal sources (by 7 percentage points) and is significant at the 5% level. However, the coefficient on the interaction term indicates the opposite. It suggests that the effect of the agent award scheme on informal savings is negative in rural regions compared to urban regions. However, these effects are not statistically significant.

Table 3.2: Heterogeneous Treatment Effects on Awareness, Trust, Usage and Savings by Rural Region

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Beneficiary is aware of MFS	Beneficiary is aware of MFS shop	Wise to Leave Money in MMO	Uses MMO for Other Purpose	Can Perform Transactions	Has Sent Money using MMO	Saves in Formal Sources	Saves in Informal Sources
T: Agent Award	-0.0126 (0.0765)	0.0573 (0.0536)	-0.0450 (0.0579)	-0.0367 (0.0396)	-0.0174 (0.0335)	-0.00954 (0.0163)	0.0302 (0.0290)	0.0714** (0.0286)
T: Agent Award x Rural	0.0165 (0.0951)	-0.0732 (0.0826)	-0.0288 (0.0823)	0.0741 (0.0498)	0.0666 (0.0463)	0.0326 (0.0229)	-0.0229 (0.0337)	-0.0289 (0.0406)
R^2	0.018	0.034	0.025	0.061	0.153	0.018	0.096	0.016
Baseline Mean	0.420	0.515	0.608	0.090	0.097	0.018	0.055	0.031
Observations	1417	1417	1417	1417	1417	1417	1417	1417

Notes: The table reports intent-to-treat. T2 is the treatment arm where the agent award scheme was given. Rural is a dummy variable that captures rural/urban differences. Baseline controls include the age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, baseline value of the outcome (where measured, but otherwise excluded), unbalanced variables at baseline, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

3.8.2 Agent Competition

Now, we turn to understand whether the effects we observe between rural and urban samples are driven by heterogeneity along the dimensions of agent competition. In Table 3.3, we present the intent-to-treat estimates of the agent award treatment and the interaction between the treatment and agent competition. The agent competition variable is logged so that the coefficient for agent competition is easily interpreted; this decision has no substantive effect on the results.

In column (1), we find that while the agent award scheme on its own increases beneficiary awareness by 26 percentage points, when it is interacted with the agent competition variable, the coefficient is negative and much smaller in magnitude. It suggests that as agent competition increases the effect of the agent award scheme on MFS awareness decreases. Specifically, the effect is estimated to be about 5 percentage points lower in areas with higher agent competition. In column (2), we also observe a similar pattern, where the agent award scheme on its own increases beneficiaries' awareness of MFS points by 23 percentage points. However, the interaction term shows that the effect is about 4 percentage points lower in areas with higher agent competition. Albeit, these effects in both columns (1) and (2) are statistically insignificant.

We also observe a similar pattern in column (3), where we find that while the agent award scheme on its own increases trust in MFS by about 21 percentage points, we find the effect to become negative when the agent award scheme is interacted with the agent competition variable. These effects are also statistically insignificant. In column (4), we find that the agent award on its own reduces using mobile money accounts for other purposes by about 16 percentage points. However, the interaction term is positive and indicates an increase of 3 percentage points in areas with higher agent competition. However, these effects are also not statistically significant.

In columns (5) and (6), we capture beneficiaries' usage of MFS or mobile money accounts. We find that the agent award scheme on its own decreases the likelihood (by about 3 percentage points) of beneficiaries performing transactions related to their MFS accounts. Similarly, we find that the agent award scheme on its own also reduces the likelihood of beneficiaries sending money using their mobile money accounts (by 2 percentage points). However, for these variables in columns (5) and (6), the interaction effect is seen to be zero in areas with higher agent competition, respectively. But again, these effects are statistically insignificant.

Finally, for the outcomes that capture savings behaviour of beneficiaries, we find that the agent award scheme increases the likelihood of savings in both formal and informal sources by 4 percentage points and 12 percentage points, respectively. However, the coefficients on the interaction terms are negative for the variables in columns (7) and (8) respectively. Additionally, the point estimates are very small and are also statistically insignificant.

Table 3.3: Heterogeneous Treatment Effects on Awareness, Trust, Usage and Savings by Agent Competition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Beneficiary is aware of MFS	Beneficiary is aware of MFS shop	Wise to Leave Money in MMO	Uses MMO for Other Purpose	Can Perform Transactions	Has Sent Money using MMO	Saves in Formal Sources	Saves in Informal Sources
T: Agent Award	0.261 (0.220)	0.234 (0.213)	0.209 (0.242)	-0.157 (0.182)	-0.0263 (0.127)	-0.0230 (0.0617)	0.0467 (0.124)	0.122 (0.132)
T: Agent Award x Log Agent Competition	-0.0493 (0.0405)	-0.0410 (0.0415)	-0.0498 (0.0447)	0.0303 (0.0324)	0.00822 (0.0236)	0.00579 (0.0117)	-0.00503 (0.0218)	-0.0126 (0.0239)
R^2	0.024	0.034	0.031	0.060	0.148	0.016	0.092	0.018
Baseline Mean	0.420	0.515	0.608	0.090	0.097	0.018	0.055	0.031
Observations	1390	1390	1390	1390	1390	1390	1390	1390

Notes: The table reports intent-to-treat estimates. T: Agent Award Scheme is the arm where the agent award intervention was rolled out. Baseline controls include the age of the beneficiary, household size, female dummy, allowance type (DAA, OAA, and WAA), and rural/urban dummy, baseline value of the outcome (where measured, but otherwise excluded), unbalanced variables at baseline, and are clustered at the union level. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.8.3 NGO Participation

Now, we examine whether NGO participation is one of the mechanisms through which the agent award treatment affects the outcomes of interest. As mentioned, we define local NGO participation as whether

an Upazila in our sample has above the median number of local NGOs. This is a dummy variable that takes the value of 1 if an Upazila has above the median number of local NGOs and 0, if the Upazila has equal to or below the median number of local NGOs. The median number of NGOs in the sample is 3. We present the results in [Table 3.4](#).

We find strong heterogeneous effects for the agent award treatment by local NGO participation. Beneficiaries in Upazilas (sub-districts) with an above-the-median number of local NGOs experience a significant increase in awareness of MFS and MFS points, as seen in columns (1) and (2), respectively. Specifically, the interacted coefficient in column (1) suggests that in regions with an above the median number of local NGOs, the effect of the agent award scheme on beneficiaries' awareness of MFS is 21 percentage points (significant at the 1% level) higher compared to regions with fewer or equal to the median number of local NGOs. Similarly, in column (2), the coefficient on the interaction term shows that the effect of the agent award scheme on beneficiaries' awareness of MFS points is 30 percentage points (significant at the 1% level) higher compared to regions with fewer or equal to the median number of local NGOs.

In columns (3) and (4), although we do not find a statistically significant effect of the agent award scheme on its own, we do find strong treatment effects by local NGO participation on these two variables that we use to capture trust in MFS and whether MFS is used for other purposes. Specifically, beneficiaries are about 21% percentage points (significant at the 1% level) more likely to think it is wise to leave their money in a mobile money account and about 30% percentage points (significant at the 1% level) more likely to use their mobile money accounts for other purposes/services besides just cashing-out their allowance.

Next, we examine the variables that capture beneficiaries' usage of MFS. In columns (5) and (6), we find that while the agent award scheme does not do much to affect usage of MFS, we do find strong effects for the agent award treatment when it is interacted with local NGO participation. Specifically, beneficiaries are 18 percentage points more likely (significant at the 1% level) to independently use the send-money feature on their mobile money accounts, and about 16 percentage points more likely (significant at the 1% level) to perform the basic transactions related to mobile money accounts.

Finally, we turn to the outcomes of interest that capture the savings behaviour of the beneficiaries. We capture these effects in columns (7) and (8). We find that when the agent award scheme is provided on its own, the point estimates in column (7) is zero and statistically insignificant. We also find that in column (8), the agent award on its increases savings via informal sources by 8 percentage points (significant at the 5% level).

However, when we look at the coefficients on the interacted terms for these two variables (formal savings and informal savings, respectively), we find that beneficiaries are about 4 percentage points more likely to save through formal sources, but this effect is statistically insignificant. Additionally,

Table 3.4: Heterogeneous Treatment Effects on Awareness, Trust, Usage, and Savings by Local NGO Participation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Beneficiary is aware of MFS	Beneficiary is aware of MFS shop	Wise to Leave Money in MMO	Uses MMO for Other Purpose	Has Sent Money using MMO	Can Perform Transactions	Saves in Formal Sources	Saves in Informal Sources
T: Agent Award	-0.0597 (0.0622)	-0.00381 (0.0575)	-0.0653 (0.0561)	-0.00898 (0.0391)	-0.00912 (0.0172)	-0.0131 (0.0267)	0.000804 (0.0276)	0.0700** (0.0263)
T: Agent Award x NGO Above Median	0.209*** (0.0718)	0.300*** (0.0924)	0.207*** (0.0628)	0.295*** (0.0516)	0.182*** (0.0198)	0.156*** (0.0526)	0.0305 (0.0354)	-0.0921** (0.0381)
R^2	0.026	0.042	0.061	0.078	0.030	0.159	0.101	0.030
Baseline Mean	0.420	0.515	0.608	0.090	0.018	0.097	0.055	0.031
Observations	933	933	933	933	933	933	933	933

Notes: The table reports intent-to-treat estimates. T: Agent Award Scheme is the arm where the agent award intervention was given. Baseline controls include the age of the beneficiary, household size, female dummy, allowance type (DAA, OAA, and WAA), and rural/urban dummy, baseline value of the outcome (where measured, but otherwise excluded), unbalanced variables at baseline, and are clustered at the union level. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.0$

when we look at the interaction effects (for informal savings), we find the coefficient is negative. This indicates that in Upazilas with an above the median number of local NGOs, beneficiaries are about 9 percentage points (significant at the 5% level) less likely to save in informal sources compared to Upazilas with fewer or equal to the median number of local NGOs.

3.8.4 First Stage Results

We report the results from the first-stage regressions in [Table 3.5](#). In Column (1), greater distance from GBTH is negatively associated with local NGO participation (significant at the 10% level), while the squared term is positive and significant, suggesting a non-linear (convex) relationship. A similar non-linear relationship is observed with respect to TSTH, where the squared term is negative and significant (at the 5% level). Importantly, several interaction terms between distance and treatment are significant, including Distance TSTH $\times$ T: Agent Award (negative and significant at the 1% level), and its squared term (positive and significant), indicating that treatment Upazilas located farther from TSTH are systematically less likely to have high NGO presence. In column (2), we focus on the interaction term between Agent Award Scheme and NGO participation. The distance to TSTH branch and its squared term are both strongly significant (at the 1% level) - indicating a non-linear relationship. Additionally, interaction terms between treatment and both distance measures (GBTH and TSTH) are all significant at the 1% level. Finally, the F-statistic for the instruments are 26.59 and 98.90, which exceeds the threshold mentioned by [Stock and Yogo \(2002\)](#) in detecting weak instruments in the first-stage regressions.

3.8.5 Second Stage Results

We present the second stage results in [Table 3.6](#). The outcomes we focus on are related to beneficiaries' awareness, trust, usage of MFS, and savings behaviour.

The positive coefficient for the interaction term, as seen in column (1), indicates that in areas with a higher presence of NGOs, the agent award scheme increases beneficiaries' awareness of MFS by 7 percentage points, although it is statistically insignificant. Similarly, beneficiaries' awareness of MFS points, as seen in column (2), also increases by about 40 percentage points, but it is not statistically significant.

As seen in column (3), we also observe an increase by 7 percentage points in the likelihood of beneficiaries thinking that it is wise to leave money in mobile money accounts. However, this is statistically insignificant. We also find beneficiaries engaging with their mobile money, apart from just cashing out their G2P allowances as seen in column (4). Specifically, beneficiaries are about 78 percentage points (significant at the 1% level) more likely to use their mobile money accounts for other purposes. Although statistically insignificant, as seen in column (5), we also find beneficiaries learning to use MFS independently and engaging in sophisticated transactions, such as sending money using their mobile money accounts. We also find an increase among beneficiaries, as seen in column (6), to perform transactions by about 40 percentage points and is significant at the 1% level.

Finally, turning to our variables that capture beneficiaries' savings behaviour in formal and informal sources, as seen in columns (7) and (8) respectively. We find that beneficiaries are 23 percentage points more likely to keep their savings in formal sources, though this is not statistically significant. Notably, the negative coefficient for savings kept in informal sources is quite large. Specifically, beneficiaries are about 27 percentage points more likely to reduce their savings in informal sources (significant at the 10% level). These findings highlight the crucial role that NGO presence plays in shifting savings behaviour from informal to formal financial channels when combined with an agent award scheme.

3.9 Discussion and Conclusion

We find no detectable effect of the agent competition on the agent award scheme as seen in [Table 3.3](#). However, this could be due to the problem that the agent competition is endogenous and that the OLS estimates may mask heterogeneity. This could have been resolved with the help of an instrument for the agent competition. We acknowledge this limitation but welcome it as an opportunity to investigate this for our context, mobile money agents in Bangladesh, in future research. Separately, we observe large, robust, and statistically significant effects of the agent award treatment when there is higher local NGO participation (as seen in [Table 3.4](#)). However, these effects could be biased due to endogeneity issues in NGO participation. Hence, as a robustness check, we use an instrument variable analysis to attempt to account for endogeneity. We find the IV estimates to be large and significant for some of the outcomes of interest, as seen in [Table 3.6](#) when we account for endogeneity.

We also understand that another plausible way to account for endogeneity could be to add controls

that capture the presence of micro-credit institutions, Upazila-level infrastructures, and other development economic indicators. However, unfortunately, we are unable to access these variables in the HIES 2010 Community-Level dataset during the write-up of this chapter.²⁰

We conduct a field experiment to provide evidence on the effectiveness of a non-monetary award scheme among mobile money agents operating in the MFS sector. We find that rural agents who are offered the agent award treatment (“a titled crest” in this setting) exert more effort than urban agents. We investigate heterogeneity along the dimensions of agent competition and social capital. We do not find a detectable effect of the agent competition on the agent award scheme. However, we find that when there are higher levels of social capital, as proxied by the NGO participation, it increases the effectiveness of the agent award scheme.

In many developing countries, Mobile Financial Services, offer an opportunity for financial inclusion for the poor and marginalised (Demirgüç-Kunt et al., 2022). We designed the agent award scheme to reward mobile money agents for providing good customer service to G2P beneficiaries. However, the success of such schemes can vary significantly depending on local dynamics. One such element that may influence the efficacy of these interventions is the participation of communities in local NGOs - which are known to play a pivotal role in fostering social capital - such as through community engagement and trust-building. Our results, although with limitations, may point to important policy implications for strategies to improve digital financial access to marginalised populations in developing countries. As such, interventions that rely on agent incentives, such as the agent award scheme, can be designed more effectively when coupled with robust local social capital infrastructure provided by NGOs.

20. The author has been in contact with Bangladesh Bureau of Statistics to provide access to the other datasets with which we may be able to control for regional development indicators. However, we are yet to hear back from them on this

Table 3.5: First-Stage Results

	(1)	(2)
	NGO Participation	T: Agent Award x NGO Participation
Distance GBTH	-0.00103* (0.000805)	0.0000508 (0.000362)
(Distance GBTH) ²	0.00000257* (0.00000142)	-0.000000589 (0.000000637)
Distance TSTH	0.000451 (0.000748)	-0.00229*** (0.000337)
(Distance TSTH) ²	-0.00000697** (0.00000299)	0.00000907*** (0.00000135)
Distance GBTH x T: Agent Award	-0.00127 (0.00104)	-0.00251*** (0.000470)
(Distance GBTH) ² x T: Agent Award	0.00000262 (0.00000178)	0.00000597*** (0.000000801)
Distance TSTH x T: Agent Award	-0.00296*** (0.000869)	0.000441 (0.000391)
(Distance TSTH) ² x T: Agent Award	0.0000131*** (0.00000306)	-0.00000483*** (0.00000138)
Constant	0.0271** (0.128)	0.0303 (0.0576)
F-statistic	26.59	98.90
Observations	933	933

Notes: The table reports the first-stage estimates. The instruments are: GBTH is the distance between the first branch of Grameen Bank, Hathazari Upazila, and the Upazilas in our sample; Distance TSTH is the distance between the second branch of Grameen Bank, Tangail Sadar Upazila, and the Upazilas in our sample). Agent Award Scheme is the arm where the agent award intervention was given. NGO participation is captured by above median NGO participation that is a dummy variable equal to 1 if the Upazila has an above-median number of NGOs and 0 if the Upazila has an equal to or below median number of NGOs. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p< 0.01.

Table 3.6: IV Estimates on Awareness, Trust, Usage and Savings: Local NGO Participation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Beneficiary is aware of MFS	Beneficiary is aware of MFS point	Wise to Leave Money in MMO	Uses MMO for Other Purpose	Has Sent Money using MMO	Can Perform Transactions	Saves in Formal Sources	Saves in Informal Sources
NGO Above Median	-0.0549 (0.216)	0.0864 (0.216)	0.530* (0.219)	-0.441** (0.156)	-0.164 (0.154)	-0.0741 (0.103)	-0.0829 (0.162)	0.0274 (0.128)
T: Agent Award x NGO Above Median	0.0683 (0.247)	0.392 (0.249)	0.0662 (0.245)	0.776*** (0.189)	0.275 (0.183)	0.349*** (0.136)	0.230 (0.185)	-0.263* (0.142)
R^2	0.0217	0.0335	0.0028	0.0023	0.1151	0.0122	0.0194	0.0215
Baseline Mean	0.420	0.515	0.608	0.090	0.018	0.097	0.055	0.031
Observations	933	933	933	933	1834	933	933	933

Notes: The table reports the Two-Stage Least Square (2SLS) estimates. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T: Agent Award Scheme is the arm where the agent award intervention was rolled out. Baseline controls include the age of the beneficiary, household size, female dummy, allowance type (DAA, OAA, and WAA), and rural/urban dummy, and are clustered at the union level. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Chapter 4

Empowering Poor Urban Women through Digital Financial Services: Does Wage Payment via Mobile Money translate into Economic Empowerment?

4.1 Introduction

Financial consumer products, such as Digital Financial Services (DFS), are often seen as drivers of financial inclusion and economic empowerment among poor women in developing markets (Suri and Jack, 2016). DFS, offered through Mobile Financial Services (MFS) or mobile money accounts, provides women with a secure and convenient way to access formal financial channels for savings and credit. By safeguarding their money from external family demands and reducing time spent on tasks like depositing or withdrawing cash, DFS can help to alleviate constraints to savings often caused by temptation, lack of self-control, or social pressure. Relatedly, the time saved increases their availability of time for employment and greater earnings potential. By digitising payments, MFS can improve women's financial autonomy through greater privacy and control over earnings (Duflo, 2012; Aker et al., 2016; Field et al., 2021; Riley, 2024).

Despite the rapid growth in and benefits of account ownership across low- and middle-income economies, there remains a gender gap in the use of mobile money accounts (Demirguc-Kunt et al., 2018; Demirgüç-Kunt et al., 2022). Globally, women are 32% more likely to have an inactive mobile money account than men (Demirgüç-Kunt et al., 2022). In emerging markets - Bangladesh, India, Indonesia, Nigeria, and Pakistan - women are also less likely to be aware of and use mobile money services than men (Reynolds et al., 2023). In Bangladesh, one of the fastest-growing mobile money markets, only 17% of women had sent a digital payment compared to 43% of men between 2016 and 2017 (Lee et al., 2022).

Although DFS holds a lot of promise in increasing women's economic empowerment, women may also face higher constraints in accessing the technology in the first place. For instance, women often lack the necessary financial identification documents to open mobile money accounts (Shrader, 2015; Scharwatt and Minischetti, 2014), have limited financial independence and autonomy (Riley, 2024; Field et al., 2021), and possess lower levels of financial literacy (Demirguc-Kunt et al., 2018). Additionally, women tend to adopt technology at slower rates (Lee et al., 2021), are less likely to be aware of the range of value-added services of mobile money (GSMA, 2023), and may experience a loss of trust in DFS if financial service providers, such as mobile money agents, fail to protect consumers adequately (GSMA, 2023). Differences in economic opportunities may also contribute to the gender gaps in using mobile money accounts. For example, Onyia and Tagg (2011), argue that women may have lower demand for mobile money services as they are less likely to have regular income from employment. On top of this, household burdens and childcare responsibilities may also leave women with less time to engage with mobile money. These factors may further restrict women's access to mobile money agents to learn about mobile money, set up an account, or perform transactions (Reynolds et al., 2023).

One way we can overcome these constraints is by providing women with contextually relevant and relatable digital financial literacy or DFS training that goes beyond just receiving digital payment. For example, providing guidance on using financial management tools, such as savings and budgeting with

mobile money accounts would empower them to use their accounts more effectively. Training can also help with building trust and preventing of fraud in the use of mobile money accounts. The lack of confidence in using the accounts may encourage women to hand over their account details, such as their Personal Identification Number (PIN), to others. DFS training can enhance their financial security by educating them on fraud prevention, including recognising common scams, safeguarding their PINs, and verifying transactions.

Providing information, via DFS training, on the different types of MFS providers and the types of services they provide could enable women to compare different types of transaction fees and help them bypass cash-out fees. By incorporating guidance on collaborative planning and decision-making DFS training can empower women to navigate household financial dynamics more effectively, potentially leading to more sustainable behavioural changes and improved financial outcomes for the whole family.

During our focus group discussions with women employed in the domestic work sector, they expressed a clear need for tailored training on mobile money services. They highlighted the importance of understanding the various features of mobile money accounts, learning how to use them more effectively, and recognising how this knowledge can enhance their economic opportunities. They further added that such training can boost their confidence and trust in these services. This feedback highlights an unmet demand for a better understanding of mobile money services through digital financial services (DFS) training.

This paper examines the impact of DFS training on low-income urban women employed as domestic workers on a gig platform called HelloTask in Bangladesh. To do this, we used a randomised control trial involving 563 women who were assigned to one of two treatment arms. The first arm (T1) provides DFS training and an offer to switch to bKash for wage payments - an MFS provider that offers an expanded range of services compared to the existing MFS provider that HelloTask uses for wage payments. We refer to this as the HelloTask payment platform (henceforth, HPP).¹ The second arm (T2) only offers the DFS training and women continue to receive their wages using the HPP. A control arm did not receive any training and continued to receive their wages using the HPP.

This research design allows us to examine two research questions: (1) How does training on the use of DFS, such as mobile money accounts, affect employment decisions and the economic empowerment of female domestic workers? and (2) How does providing an option to choose an alternative wage payment method, in addition to DFS training, impact their financial decisions?

12 months after the DFS training, women in T1 showed substantial improvements across key outcomes: there was a 7% increase in knowledge regarding mobile money accounts, a 14% increase in formal savings, a 6% increase in savings held in personal mobile money accounts, and a 23% higher likelihood of sending remittances when compared to the baseline mean. Moreover, these women reported working

1. We do not reveal the name of the MFS provider that HelloTask currently uses for wage disbursement to avoid comparisons between different service providers based on the study findings.

an additional 3 hours at HelloTask and earning approximately 1.5 times more in wages compared to the control group.

For women who only received the DFS training (T2), we observe an increase of about 29% in formal savings compared to the baseline mean. For labour market outcomes, we find women earning 28% less in wages from HelloTask compared to women in T1 (BDT 302.9 $\rightarrow$ BDT 219.1). However, they offset this decrease by earning about three times more in wages from work outside the HelloTask platform compared to women in T1 (BDT 951 $\rightarrow$ BDT 302.9). Furthermore, this increase in wages is about five times the wages (BDT 203.9 $\rightarrow$ BDT 951.5) earned by women in the control group.

Although we do not observe detectable effects on outcomes related to pressure and transfers between married women and their spouses at baseline, we note a finding for women in T2: these women are more likely to give money to their husbands, resulting in a negative net transfer of BDT 950.6, which corresponds to the additional amount they earn from work outside the HelloTask platform.

These findings suggest that addressing women’s unmet need for training on mobile money accounts — the medium through which they receive their wages — can alleviate constraints that limit their use of mobile money services. By providing this training, women can more effectively utilise mobile money services beyond simply cashing out wages. In return, it affects her agency in a way that has implications on her knowledge, savings, and labour market outcomes. Furthermore, the findings of this paper speak to a broader economics literature on technology adoption and thus leave an avenue for further discussion on the consequences of technology adoption.²

4.2 Related Literature

The causal effects of mobile money have been pivotal in enhancing economic opportunities for women. For instance, in the case of public transfers, Aker et al. (2016) find that female-headed households in Niger receiving payments in mobile money accounts (Zap group) used their transfers to improve diet diversity of the household. They find that mobile money transfers enable women to save time by travelling shorter distance to agent points to withdraw their transfers as compared to collecting cash. This time savings enabled women to engage in productive activities, including cultivating marginal cash crops typically grown by women. The study also provides suggestive evidence that mobile money transfers improved women’s decision-making power - particularly as digital transfers enabled women to conceal the arrival of the transfer and giving them greater discretion over spending. While mobile money delivered the transfers, it did not alter how they engaged with mobile money that could result in improving financial inclusion or generate longer-term benefits. For example, almost all women in the Zap group withdrew the entire transfer at one go and did not use mobile money beyond the last transfers they received.

2. For a brief review of this literature please see Rogers (1983) and Feder et al. (1985)

Field et al. (2022) argue that women with fewer financial resources, less mobile and less education incur high cost of acquiring information and have limited visibility into their account activity. For example, the study finds that providing information about account balances, through voice notification calls, on existing bank accounts opened by the government of India to send the G2P payments, helped to reduce information frictions and improve trust in banking system among economically marginalised women. The delivery of timely information that was easily understood by women with limited literacy allowed for improved timing of withdrawals reducing repeated, uncertain, non-transactional visits which are costly in time and effort. The intervention also reduced dependence on kiosk agents for account balance information. Women were 7-8 percentage points less likely to get information the kiosk and 16 percentage points more likely to say they used the voice notification call instead. At baseline, women had reported significant dissatisfaction and distrust in agents. However, intervention has no impact on average account balances, or other measures of account use and the treatment effects dissipate immediately after the voice notification service was no longer active.

In another study, Riley (2024) finds that female borrowers in Uganda who received loans in mobile money accounts helped them resist the pressure to share and reduce temptation spending. Given the loan deposited in the mobile money account is digital and protected, it is less likely to be demanded or observed by others, thereby increasing business capital and profits for women's micro-enterprises. The use of mobile money accounts, however, remained limited and was mostly to access the loan. Despite the account being labelled for business, it was not used for taking payments or as a savings tool. Moreover, the average balance in the first week after receiving the loan was 25% of the loan value and by the end of the month it was 12% of the loan. In the other treatment group, where women were only given the mobile money account while loan was disbursed by cash made no effort to engage with these accounts and continued to prefer cash due to procrastination and small costs of depositing the loan personally into the accounts. Moreover, at the end of the study, initial difference in usage disappeared after about 6-8 months meaning women withdrew funds and did not keep using the account for other purposes. Although defaulting the loan into the account protected funds passively, engagement with the account for savings, business transactions or remittances demand additional behavioural nudges to be reinforced over time.

While some studies have predominantly examined broader effects of mobile money on financial inclusion and economic activity (Jack and Suri, 2014; Batista and Vicente, 2023; Lee et al., 2021) through mechanism such as reduction in transactions leading to high inflows of remittances that enable poor households to reduce their vulnerability to shocks and episodes of hunger. Few, however, have investigated how targeted interventions affect gender-specific economic outcomes, with the exception of the study by Field et al. (2021). In this study, Field et al. (2021) find that providing women employed in a public works programme in India with their own bank accounts, along with training on how to use

them, and depositing their earnings into these accounts (rather than into accounts controlled by male household members), led to increased labour supply and greater economic empowerment. The training, coupled with direct deposit of wages, strengthened the ability and confidence of women in using their bank accounts – reinforcing their control over their earnings and leading to improved participation in the labour market.³

We contribute to the literature by evaluating the effects of combining financial literacy training with training on the use of mobile money accounts. To the best of our knowledge, this is a design that has not been evaluated in the existing literature. Moreover, studies discussed above (Aker et al., 2016; Riley, 2024; Field et al., 2021) targeted interventions that largely focus on facilitating access a specific financial channel (e.g. mobile money account, payroll account, or bank kiosk) that may induce the use of accounts by default (e.g. when a transfer or a loan arrives) but not necessarily proactively (e.g. using accounts to save). Our research builds upon these studies to understand and test interventions that have the potential to improve use of mobile money accounts at the intensive margin and its potential effect on women’s labour force participation. Another key contribution of this study is that it focuses on low-income urban women working as domestic workers in developing countries – an economically significant but under-studied group. This sets our study apart from the broader literature which has largely concentrated on rural populations, formal-sector workers, and microfinance clients (Lee et al., 2021; Breza et al., 2020; Field et al., 2021; Field et al., 2022; Riley, 2024).

4.3 Context

4.3.1 Female Domestic Workers in Bangladesh

Dhaka city is a rapidly urbanising mega-city that accommodates more than 18.2 million people (Hossain and Wadood, 2020) of whom 33% are slum dwellers. Dhaka city, in spite of deficiencies in infrastructures and the provision of government social services, remains the core for economic activity and expectation of better-wage earning opportunities. Consequently, the scope of urban domestic work attracts a significant portion of female populations from rural areas to urban slums in Dhaka city (Khalil and Kabir, 2014).⁴

Domestic workers comprise a significant portion of paid employment in Bangladesh. Given its flexibility and low entry barriers, domestic work is seen as the most accessible form of informal employment in Dhaka, particularly among women with limited or no formal education and training (Ghosh, 2021). Of the estimated 10.5 million domestic workers in Bangladesh, 90% are women (Bailur et al., 2019). These women either work as part-time or live-in domestic workers without any formal employment contract,

3. The training was group-based, conducted after account opening and included: how to deposit and withdraw at the banking kiosk, the uses of account (for e.g. saving, receiving benefit transfers), why banks kiosk deposits are safe, and the time and cost savings of using the bank kiosks

4. According to a [UNDP report](#) published in 2019, slum dwellers account for more than 33% of the population in Dhaka city

working an average of 10.2 hours a day, with 85% or more earning less than BDT 5000 or USD 64 per month (Bangladesh Institute of Labour Studies (BILS) and Oxfam, 2015). For context, women employed in the ready-made garments sector earn 17 times more than women in the domestic sector (Bangladesh Institute of Labour Studies (BILS), 2021)

Although they are connected to the cash economy through their wage earnings, very few have access to formal financial services or a bank account. Over 90% own or have access to a personal phone (A. Ashraf et al., 2019), however, lack of proper documentation (such as National Identity Cards, Birth Certificates, and Passport Photos), irregular payment streams, and unfamiliarity with the services available restrict their use of mobile money accounts. A study by Shrader (2015) involving bKash, reported that many women cannot open mobile money accounts since they do not have the necessary government identity documents. These domestic workers are excluded from the coverage of legal frameworks and standard minimum wage requirements. Domestic work tends to be undervalued and poorly regulated with substandard working conditions. Moreover, the lack of formal employment contracts, issues of non-payment and irregular payments, and no fixed minimum wage structure or social protection schemes increase their vulnerability and reduce their bargaining power in the societies they belong to (Ghosh, 2021).

4.3.2 HelloTask: Digitising the Domestic Worker Sector in Bangladesh

HelloTask is an organisation that operates a mobile application that matches female domestic workers to work opportunities across major slum areas in Dhaka city. To work for HelloTask, domestic workers are registered with an MFS provider that HelloTask works with for making payments to domestic workers which we refer to as the 'HelloTask Payment Platform' (or HPP). For an overview of the HelloTask platform, please refer to Figure 4.1.⁵

Users of the HelloTask service can download the application and request a trained domestic worker available to work in the next two hours. Users of the application can tailor their service preferences and opt for either full-time or part-time flexibility. At the check-out, the application displays the approximate wait time and the amount to be paid. On the domestic worker's end, a call is administered to her via an Interactive Voice Response (IVR) system, developed by HelloTask called "Computer APA", relaying the user's service request, location, and payment that she will get once the work has been completed. Once the domestic worker accepts an order, the user pays using a mobile money account to HelloTask. Subsequently, when the order is completed, the domestic worker is transferred the money into her HPP.⁶

HelloTask, as a start-up, aims to digitise, up-skill, and formalise the domestic work sector in Bangladesh. Domestic workers at HelloTask are likely to earn 42% more in wages than the minimum wage than work-

5. In the figure, we use DW as an acronym for 'Domestic Worker'

6. The term, APA, is short for Any Phone Automation. When it is explained to the domestic workers, the English translation for this is, "Computer Sister".

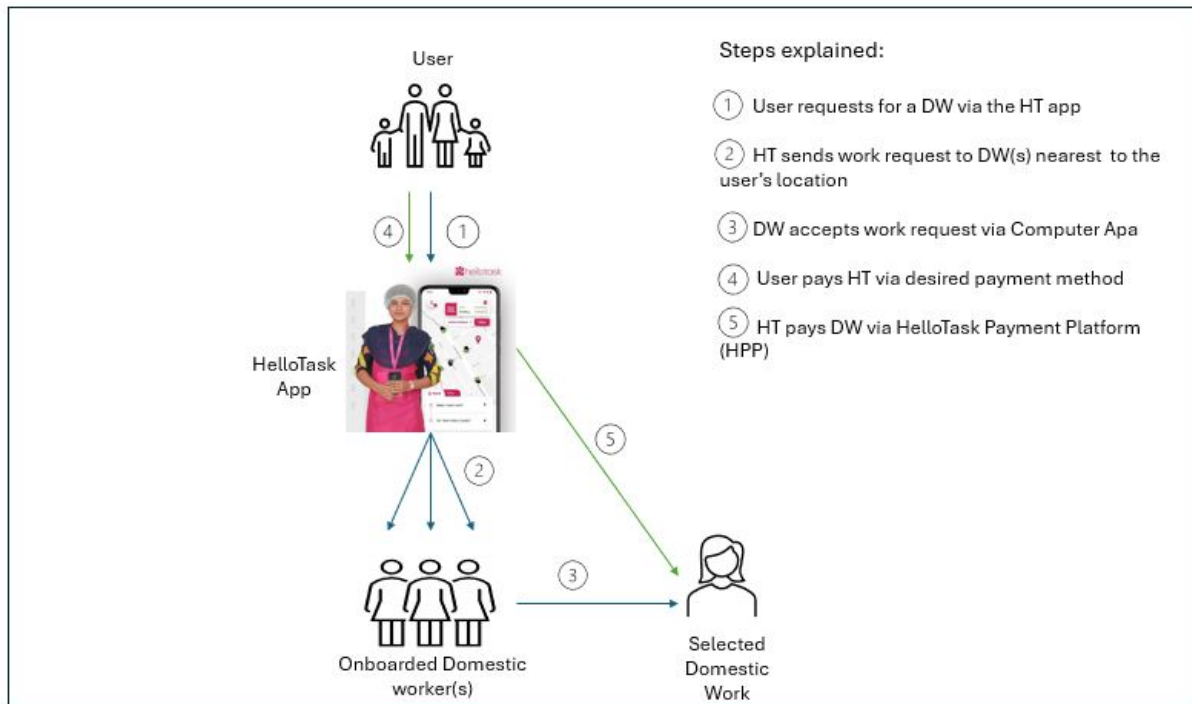


Figure 4.1: HelloTask Explained

ing through informal channels.⁷ HelloTask pays BDT 150 per hour to the domestic worker. Moreover, HelloTask offers two options for users: (a) instant cart and (b) monthly subscription. In (a) the domestic worker works for 2 hours/day for an average payment of BDT 300 to the user. In (b) the domestic worker works at least 2 hours/day for 30 days for an average payment of BDT 3500 to the user. HelloTask offers 85% of the payment collected from users to domestic workers. On average, the domestic worker works for two clients and earns about BDT 7000 per month from HelloTask. HelloTask onboards the domestic workers through a recruiting team directly from the slums across Dhaka city. There are designated HelloTask hubs spread out across five major slum areas: Bashundhara, Dhanmondi-Mohammadpur, Malibag-Khilgaon, Mirpur, and Uttara. The willingness to work as a domestic worker, a valid national ID, and a phone - either a feature phone or a smartphone - are the prerequisites to work on the platform.⁸

4.4 Conceptual Framework

The HERFinance Digital Wages Curriculum is a training programme developed to support low-income workers, in improving financial literacy and building confidence in using digital financial services such as mobile money. Delivered through six modules, the training covers both foundational financial literacy (including budgeting, saving, and planning finances with family) and practical guidance on using mobile money.

7. The figure based on the [Care Economy Knowledge Hub \(2024\)](#) case study on HelloTask

8. The information we provide regarding average hours and wages has been collected from personal communications with the Executive Director of [HelloTask](#). Furthermore, the prices mentioned are for the period between 2020 and 2021

Our study focuses on outcomes related to knowledge, trust, savings, remittances, labour supply and intra-household transfers. The DFS training could affect these through (i) alleviating information frictions and knowledge barriers; (ii) improving trust in the technology, and (iii) increasing control over earnings.

The domestic workers receive their wages in mobile money accounts from HelloTask – that we call HelloTask Payment Platform (HPP). However, despite being paid digitally, workers withdraw their earnings immediately, reflecting limited understanding of how to use mobile money beyond cash-out. The DFS training is designed to address this gap by offering step-by-step instructions on key features of mobile money accounts, including how to check balances, send and receive money, interpret and manage transaction fees, and review transaction history. It also introduces domestic workers to a broader set of mobile money features, such as making payments for services (e.g. utility bills, mobile top-ups) and receiving digital government-to-persons (G2P) payments. Hence, we hypothesise that by alleviating information frictions and knowledge barriers, the training will improve confidence and lead to greater engagement mobile money accounts. This hypothesis is supported by Breza et al. (2020), who find that repeated engagement with mobile payroll accounts enabled garment workers in Bangladesh to learn key account features and perform transactions without assistance.

During the focus group discussions, some women discussed the need to learn how to safeguard the Personal Identification Numbers (PIN) of their mobile money accounts and to understand the transaction fees for different services. This lack of knowledge often leads them to share their PINs with mobile money agents or to accept unclear charges, leaving them vulnerable to being overcharged. This has reduced their sense of security and weakened their trust in using mobile money to store their earnings. The DFS training addresses these concerns by providing guidance on how to keep PINs confidential and avoid excessive charges. For example, by showing participants how to check transaction fees before confirming a payment. Hence, we hypothesise that by learning how to protect PINs and identifying legitimate transaction fees, the DFS training will improve trust in the technology and lead to more regular use. This hypothesis is supported by Breza et al. (2020) who find that as workers with mobile payroll accounts learned to use the technology independently, they were better able to avoid illicit fees and developed greater trust in using the accounts to manage their earnings.

We further hypothesise that DFS training — by addressing knowledge gaps and improving trust — will increase use of mobile money accounts for the purpose of savings and remittances. The training explains the advantages of different saving channels by introducing formal sources available through mobile money and banks, and highlighting why informal methods (such as keeping cash at home or with neighbours) may be unreliable and insecure. It further teaches them how to retain balances, understand saving features (for e.g: how much they need to save to earn a given amount of interest) and monitor deposits over time. This helps to build trust in mobile money accounts and may encourage a shift

towards formal savings. This hypothesis is supported by Breza et al. (2020) who find that receiving wage payments into mobile money accounts increased the likelihood of saving, raised average account balances, and encouraged a shift from informal to formal saving channels.

Similarly, the training familiarises domestic workers with how to send money safely and directly using their own accounts. They are shown how to complete transfers independently, review and compare transactions fees. The training also builds confidence in receiving remittances by showing them how to verify incoming payments and access funds without relying on agents. By improving knowledge and reducing fear of making mistakes, the training helps to build trust in using mobile money for remittances. This is empirically supported by Lee et al. (2021) who show that training on mobile financial services to both rural households and urban migrants in Bangladesh led to a substantial increase in urban-to-rural remittances.

Furthermore, the DFS training focuses on enhancing women’s privacy and confidence in using mobile money accounts, reducing the risk of income being diverted to others in the household. By increasing control over how earnings are accessed and used, the training may affect domestic workers’ labour supply and earnings. This greater control can incentivise women to work longer hours or seek better-paid opportunities including outside the HelloTask platform. This is supported by Field et al. (2021) who finds evidence that offering to open bank accounts and making direct wage deposits into these accounts increased labour supply of women employed in the Indian NREGA scheme, and Lee et al. (2021), that find that female migrants working in garment factories increased their labour supply by 14% relative to the control group after being encouraged to use mobile money accounts.

Lastly, we hypothesise that DFS training may influence intra-household transfers, particularly to spouses, by changing women’s control over and visibility of their earnings. By improving women’s ability to use mobile money securely and independently, the training may enable them to set aside income more privately, supporting personal or child-related savings goals. This greater control over earnings may reduce transfers to their spouses. Alternatively, the use of mobile money introduces greater transparency and traceability in financial transactions, reducing uncertainty around earnings and transfers.

However, this visibility may also expose women’s income flows—particularly any increase in earnings—to other household members, including spouses. As a result, women may face increased pressure to transfer more if their spouse becomes aware of higher or previously concealed earnings. Evidence provided by Riley (2024) showed that female borrowers in Uganda who received loans via mobile money accounts reduced net transfers to their spouses, while Schaner (2017) found that issuing ATM cards to women in Kenya led to lower control over their savings, as the cards made it easier for spouses to access funds.

DFS training + offer of wage payment through bKash

We introduce another intervention that combines DFS training with the offer to receive wages through

a bKash mobile money account - a more functional and widely accepted DFS platform than HPP. We hypothesise that this combined intervention may lead to stronger effects for the outcomes of interest by removing small frictions in switching accounts and leveraging default effects. This is supported by Field et al. (2021) that find direct wage deposits into women’s own bank accounts, combined with training, led to increased female labour supply and agency in rural India—effects that were not observed when only accounts were offered without direct deposit.

Similarly, Riley (2024) demonstrates that women offered mobile disbursement of microfinance loans increased business investment and profits, while those offered accounts without automatic disbursement did not. This was not due to a lack of access or knowledge – most women already had mobile money accounts – but rather because small switching costs and procrastination discouraged uptake since an action was required.

In our context, wage disbursement into bKash shifts the default, allowing domestic workers to bypass the frictions of manual switching and procrastination. When paired with DFS training, this default shift may strengthen women’s financial control, promote more active and independent account use, and may further lead to improvements in savings, remittances, and labour market outcomes.

4.5 Experimental Design

Our study population consists of female domestic workers, employed via HelloTask, who are living in 5 major slums across Dhaka city: Bashundhara, Dhanmondi-Mohammadpur, Malibag-Khilgaon, Mirpur and Uttara. To draw our sample, we obtained a list of 780 domestic workers from HelloTask based on the criteria we provided: (i) the domestic worker was living in one of the 5 major slum areas where the survey would be conducted, and they were actively engaging with HelloTask (i.e. responding to calls from HelloTask and expressing an interest in future work via the platform) at the time of the survey in 2022. HelloTask was the only gig platform for domestic workers in Dhaka at the time of the survey. The 5 slums where the survey was conducted are typical of large slum areas in Dhaka city.

Out of these, 563 domestic workers provided their consent to take part in the study. The study participants were then randomly assigned to one of the three arms, which was stratified by slum area, following a ratio of 3/10 in treatment arms 1 and 2 respectively, and a ratio of 2/5 in control. Therefore, we randomly selected 170 domestic workers in treatment arm 1 (T1), 167 domestic workers in treatment arm 2 (T2), and 226 domestic workers in control arm (C). In Figure 4.2, we provide an illustration of the research design and the timeline of the research activities.

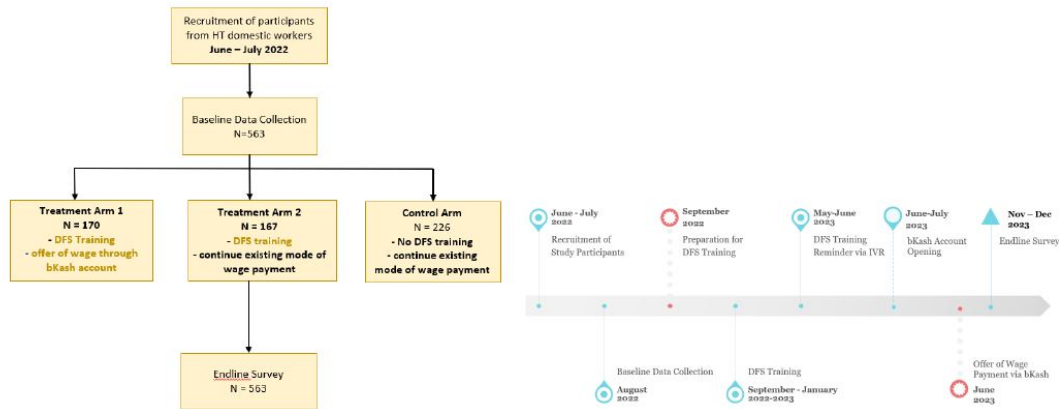


Figure 4.2: Research Design and Timeline

4.5.1 Intervention: HERFinance Digital Wages Curriculum

The DFS training modules were adapted from the HERFinance Digital Wages Curriculum developed by the HERFinance Digital Wages Program. There are 6 training modules: (1) Introduction to Mobile Financial Services, (2) Using Mobile Financial Services, (3) Financial Planning and Managing Money, (4) Budgeting, (5) Savings, and (6) Talking About Finances With Family.⁹

We invited female domestic workers working at HelloTask to attend a two-day training in September 2022. Modules 1 through 3 were completed on Day 1 and Modules 4 through 6 were completed on Day 2. The original versions of these modules were prepared to facilitate training sessions among ready-made garment factory workers. We worked with our implementation partner, HelloTask, to adapt the modules to the context of female domestic workers in Bangladesh. The modules were further adapted via discussions with the HelloTask Brand Promoters (BP) and from insights gleaned through focus group discussions (FGDs) with the domestic workers. These BPs live and work in slum regions to provide information on and create awareness of employment opportunities at HelloTask.

Primarily, we adapted the modules in the following ways. Firstly, we adapted the modules to include updated information on various MFS providers operating in Bangladesh. The content was updated to reflect current charges and new providers - differentiating between the HPP and the new mode of wage payment we offer to domestic workers in T1 - bKash. We prepared leaflets for use during the training training and to be taken home by the domestic workers. In those hand-outs, we explained the savings rate and transaction charges/fees for the different services offered by MFS providers, such as cash-out charges and send-money charges. Secondly, we adapted the modules on financial management tools to fit the context of female domestic workers. Unlike garment workers, who typically receive regular monthly

9. The program supports employers digitise wage payments for low-income female workers in global supply chains in Bangladesh, Egypt, and Cambodia. Through this program, 64 factories, by December 2019, had adopted digital wages, and more than 100400 workers were being paid via the mobile money account, bKash, or the Dutch Bangla Bank, Rocket, payroll account

incomes, domestic workers usually face irregular incomes from different employers. Hence, the training emphasised strategies for managing variable income, planning for small, frequent savings, budgeting for remittances, and ensuring timely wage payments.

Thirdly, we adapted the role-plays that were used to illustrate examples related to benefits of mobile money, the role of mobile money agents, safety regarding mobile money accounts, power dynamics, and discussions regarding finances with family. For example, most of the setup for the role-plays was in factory environments. In these settings, garment workers are more likely to learn and hear about mobile money services through peers or on-site supervisors (Breza et al., 2020). In contrast, domestic workers tend to operate sporadically across multiple households where information flow is limited. Domestic workers may rely on localised mobile money agents for understanding and trust-building.

Finally, we adapted the role plays by tailoring the financial discussions to reflect the differing income patterns and family dynamics, especially with spouses. For garment workers, the focus was on negotiating long-term savings goals with a steady income. While for domestic workers, the role plays emphasise managing unpredictable earnings and creating flexible budgets that adjust to varying monthly income, ensuring both partners can plan effectively for future financial stability.

The two-day training sessions were conducted in HelloTask hubs (venue-training). These hubs are privately owned/rented by HelloTask to use for their day-to-day business and onboarding activities. The hubs are located inside the slums across Dhaka city and so served our purpose of ensuring familiarity and accessibility when we invited our study participants. Additionally, creche services were available for participants so that they could concentrate during the training sessions. We also compensated for time, transportation and provided lunch and snacks for all participants on both days.

We developed a DFS training calling protocol, where we called and informed a week before the training, each domestic worker in T1 and T2 about the invitation to attend the training. A dedicated team at HelloTask continued to make reminder calls 24 hours before the scheduled training and then again on the day of the training as another gentle reminder. By December 2022 we had provided training to 156 domestic workers. To reach more participants, we worked with HelloTask to initiate door-to-door training. These door-to-door trainings were conducted by the BPs in the domestic workers' home. Following our calling protocol, BPs sent reminder calls to domestic workers about the door-to-door training. On the day of the training, BPs with HelloTask coordinated a location that was convenient for the domestic workers to meet. As in the hubs, the training was provided in homogeneous group sessions, ensuring that all women attending a specific training session and belong to the same treatment arm(s).

By January 2023, we provided training to another 116 domestic workers via door-to-door training, reaching 272 of the 337 domestic workers in T1 and T2. This indicates that 81% of domestic workers in T1 and T2 completed the training. Table A20 in the Appendix, we provide a summary of the DFS training by treatment/control arm.

To continue the DFS training over the period of the study and to reach the participants (71) who did not attend the training, we worked with HelloTask to design “DFS Training Reminders” using Interactive Voice Response (IVR). We prepared consolidated versions of the 6 training modules. To test participants’ knowledge and understanding of the modules, we also prepared a “DFS Quiz” with two multiple choice questions (MCQ) for each module. The calls were administered to all the 337 participants in T1 and T2 between May 2023 to September 2023.

During this period in June 2023, in line with our research design, we offered participants in T1 the offer of wage payment via the new mode of payment - bKash. The rationale for offering participants in T1 the option to switch to bKash for future wage payments is that bKash has: broader services compared to other MFS providers; a larger agent network; and access to help regarding accounts. These differences between services across different MFS providers is shown in Table 4.1.

If participants opted to be paid via the new mode of payment (bKash), we asked for the number associated with that mobile money account and recorded it. 27% in T1 (among those contacted 110/170), opted to switch to wage payments via bKash.¹⁰

10. If they did not have bKash, we offered guidance on how to open it and a follow-up call to ensure that these accounts were opened and then recorded the number associated with these accounts.

Table 4.1: Summary of Services Offered by Different MFS Providers in Bangladesh

	HPP	bKash	Other MFS Providers
Panel A: Types of Basic Services			
Send Money	Yes	Yes	Yes
Receive Money	Yes	Yes	Yes
Cash-Out	Yes	Yes	Yes
Mobile Recharge	Yes	Yes	No
Add/Deposit Money	Yes	Yes	Yes
Panel B: Types of Advanced Services			
Merchant Payment	Yes	Yes	No
Pay Bill	Yes	Yes	No
EMI Payment	Yes	No	No
Savings	Yes	Yes	No
Loan	No	Yes	No
Request Money	No	Yes	No
Receive Remittance	Yes	Yes	Yes
Microfinance	No	Yes	No
MMA to Bank	Yes	Yes	No
MMA to Card	Yes	Yes	No
Education Fee	No	Yes	No
Donation	Yes	Yes	No
Insurance	No	Yes	No
Student Account	No	Yes	No
Deposit Plus Scheme (DPS)	No	Yes	No
Panel C: Available Help Regarding Account			
Live Chat	No	Yes	No
Help Line	Yes	Yes	Yes
E-Appointment	No	Yes	No
Panel D: Savings Rate Ranges (BDT)			
0 – 4,999.99	0%	0%	NA
5,000.00 - 50,000.99	1.50%	0.50%	NA
50,000 – 99,999.99	2.50%	-	NA
50,001.00 - 150,000.99	-	1.00%	NA
100,000 – 199,999.99	3.50%	-	NA
150,001.00 - 250,000.99	-	2.00%	NA
200,000 and above*	7.50%	-	NA
250,000.99 +	-	3.00%	NA
Panel E: Fees for BDT 1000			
Send Money (Agent)	BDT 5	BDT 5	BDT 10
Send Money (App)	BDT 5	BDT 5	NA
Cash-Out (Agent)	BDT 15	BDT 18.5	BDT 18.50
Cash-Out (App)	12.5	BDT 18.5	NA
Panel F: Agent Network			
Number of mobile money agents	272,000+	240,000+	264,000+

Notes: The table presents the differences between different types of MFS providers in Bangladesh in 2020. Under “Other MFS Providers”, this includes ROCKET and U-PAY. All amounts shown in Bangladeshi Taka (BDT). The information presented here has been taken from each MFS provider’s website in 2022.

4.6 Data

For the analysis, we use three data sources. Firstly, a baseline survey was conducted between July 2022 and August 2022. Secondly, approximately one week after the baseline survey, focus groups were held with a sample of 30 women from three different HelloTask service zones (Bashundhara, Dhanmondi-Mohammadpur and Malibag-Khilgaon) . The purpose of these focus groups was to understand the women’s needs and gather feedback to tailor the training modules for better relevance and effectiveness in the local context. Additionally, these discussions provided qualitative insights into their use of mobile money, the impact of wage payments via mobile money on their daily lives, the difficulties encountered with mobile money accounts, and the potential benefits of training on using these accounts. Thirdly, an endline survey was conducted between November 2023 and January 2024. This is approximately 12 months after the women received DFS training. HelloTask and the survey team maintained an up-to-date contact information of the study participants. In both periods, the data collection was conducted face-to-face via female enumerators.

4.6.1 Summary Statistics and Balance Checks

In Table 4.2, we provide the summary statistics on the study participants. The typical female domestic worker in our sample is in her mid-thirties and lives with her husband and one child in a nuclear family. About 35% of the households are female-headed. More than 65% of the women are married. About 44% of these women have completed primary education (i.e. completed class 1 to class 5) and less than 20% have completed secondary education level (i.e. completed class 6 to class 12). About 17% of these women were the primary earner in the household. The weekly per capita consumption is BDT 224.

To understand the prevalence of DFS, we asked various questions related to awareness, usage and knowledge regarding mobile money. We find that about 83% of women in our sample have used a mobile money account at some point in their lives. Although the majority of these women are familiar with the basic services available through a mobile money account (such deposits, withdrawals, send money), their usage of these services remains low. Firstly, despite high awareness regarding mobile money, less than 5% have ever deposited money into their mobile money account. Secondly, while half of these women have performed a send money transaction, 22% reported that someone else performed this transaction on their behalf; and 27% reported that a mobile money agent performed the send money transaction on their behalf. More than one-third of these women have sent and/or received remittances in the last 6 months to/from those living outside of the household. Among them, more than one-third used a mobile money account to send money while less than one-third used a mobile money account to receive money. The low usage of mobile money accounts to receive money appears to be related to limited knowledge: at baseline, 31% were aware that they can receive their wages from HelloTask on their mobile money

Table 4.2: Summary Statistics

	Mean	SD	Min	Max	Count
A. Individual Characteristics					
Age	34.77	8.08	15	80	563
Respondent is married	0.68	0.47	0	1	563
Age at marriage	15.18	2.68	10	26	563
Relationship to household head: household head	0.35	0.48	0	1	563
Relationship to household head: spouse	0.60	0.49	0	1	563
Completed primary education	0.44	0.50	0	1	563
Completed secondary education	0.19	0.39	0	1	563
Has access to personal phone	0.95	0.22	0	1	563
B. Knowledge of Mobile Money					
Ever used mobile money account	0.83	0.37	0	1	563
Has a bKash mobile money account	0.48	0.50	0	1	563
Has others (Nagad/ROCKET) mobile money account	0.63	0.48	0	1	563
Knows basic services of mobile money account: deposit, withdrawal, send money	0.95	0.22	0	1	563
Knows can receive wages from HelloTask on mobile money account	0.31	0.46	0	1	563
Knows can receive wages from other employers/sources on mobile money account	0.06	0.24	0	1	563
Knows can save money in mobile money account	0.05	0.21	0	1	563
C. Usage of Mobile Money					
Deposits money in mobile money account	0.03	0.18	0	1	563
Sends money using mobile money account	0.55	0.50	0	1	563
Someone else performs the send money transaction for the respondent	0.22	0.41	0	1	563
Mobile money agent performs the send money transaction for the respondent	0.27	0.44	0	1	563
D. Remittance Received and Sent					
Received remittance in the last 6 months	0.39	0.49	0	1	563
Log of remittance received in the last 6 months	0.86	1.08	0	2	563
Received remittance using mobile money account	0.23	0.42	0	1	563
Sent remittance in the last 6 months	0.48	0.50	0	1	563
Log of remittance sent in the last 6 months	1.07	1.13	0	3	563
Sent remittance using mobile money account	0.34	0.47	0	1	563
E. Savings					
Has any savings in the last 12 months	0.70	0.46	0	1	563
Log of monthly savings from all sources: informal, formal, mobile money, others	0.82	0.81	0	2	563
Has any savings in formal sources	0.42	0.49	0	1	563
Has any savings in informal sources	0.13	0.33	0	1	563
Has any savings in mobile money account	0.01	0.09	0	1	563
F. Household Characteristics					
Age of the household head	40.16	11.05	0	90	563
Household size	3.58	1.57	0	13	563
Number of children in the household	1.52	1.18	0	7	563
Domestic worker is the primary earner in the household	0.17	0.37	0	1	563
Weekly per capita consumption (BDT)	224.22	260.22	6	3750	563

accounts but fewer than 10% knew that they could receive transfers from other sources. More than two-thirds of the women have reported having any savings in the last 12 months. Approximately 42% of them are regularly saved with formal sources, such as banks. About 13% saved using informal methods, like keeping money under the mattress, in a cupboard, or various spots around the house, including clay pots. Fewer than 1% reported saving in a mobile money account. Women reported that the major reason they do not save in mobile money accounts is the need to immediately cash out money from their accounts. This is indicative that these women, at baseline, viewed mobile money accounts as an intermediary step to accessing cash rather than a device to store money for future use and/or to earn interest.

We also report the baseline summary statistics by treatment/control arms in the Appendix. Table A18 shows that differences in the mean values across arms are statistically insignificant for most of the baseline characteristics. Table A19 shows the normalised differences across the mean values for the same variables. All pairs are below the threshold of 0.30 recommended by Imbens and Rubin (2015) as an indicator for good balance.

4.6.2 Attrition

We achieved a baseline sample of 563 domestic workers, exceeding the figure of 500 that we had proposed in our research proposal. Our original power calculations assumed an attrition rate of 7% from our original baseline sample of 500, i.e. an endline sample of 465. At the endline, we have been able to reach 464 of the 563 domestic workers that we surveyed at baseline. This was primarily due to the migration of domestic workers away from Dhaka. The survey team attempted to contact these domestic workers who had migrated using their mobile phone numbers obtained at baseline but 62 of them (11% of the original sample) were still unreachable at the conclusion of the survey. A further 37 (6.6% of the original sample) declined to be interviewed at the endline. This gives us an attrition rate of 18%.

The attrition rate is slightly higher in our context than those reported in other studies, such as in Riley (2018) for female microfinance clients in Uganda; in Field et al. (2021) among women receiving public sector wages in rural India; in Field et al. (2022) among female government-person-payment (G2P) beneficiaries in India; and in Breza et al. (2020) among ready-garments workers in Bangladesh. However, what would be of concern is whether attrition is different across treatment/control arms. Table A21 in the Appendix, we can see that for the treatment/control arms, the endline completion rate is similar. Moreover, we conducted balance checks across the treatment/control arms based on the baseline characteristics with the endline data and found no significant imbalance across the arms, as seen in Table A22. We observe a slight imbalance in the F-test for joint orthogonality, significant at the 10% level for the variable, “has any savings in the last 12 months”. Nonetheless, Table A23 shows the normalised differences across the mean values in the same variables. All pairs are below the threshold of 0.30

recommended by Imbens and Rubin, 2015 as an indicator for good balance. And so, we have conducted the analysis with 464 observations.¹¹

4.7 Empirical Strategy

To measure intervention impacts, we estimate intent-to-treat (ITT) effects using an Analysis of Covariance (ANCOVA) specification of the form, as suggested by McKenzie (2012):

$$Y_{i,t+1} = \beta_0 + \beta_1 T_{1i} + \beta_2 T_{2i} + \beta_3 \gamma_{i,t} + \beta_4 X_{i,t} + \epsilon_{i,t+1} \quad (4.1)$$

where Y_i is the outcome variable for individual i ; T_{1i} and T_{2i} are an indicator variable for assignment to the treatment groups, $\gamma_{i,t}$ is the baseline value of the outcome of interest (when measured at baseline, otherwise excluded), $X_{i,t}$ is a vector of baseline controls: strata dummies for the 5 slum areas in Dhaka city, baseline individual and household characteristics, demographic variables, any unbalanced covariate at baseline. ϵ_i is the error term and periods t and $t + 1$ refer to the baseline and endline, respectively. The coefficient of interests are β_1 and β_2 which estimates the intent-to-treat effect. Additionally, for every outcome, a t-test was conducted to determine whether each treatment had a significant effect (null hypotheses: $\beta_1 = 0$, $\beta_2 = 0$) as well as whether the treatment interventions are different from each other (null hypothesis: $\beta_1 = \beta_2$).

4.8 Results

In this section, we discuss the main findings of the ITT estimates using the survey data. We report the results for outcome variables related to knowledge, usage, personal savings, remittances sent and received, labour supply, and transfers sent and received between women married at baseline and the spouse.

4.8.1 Impact of Training on DFS Knowledge

To understand whether the domestic workers in T1 and T2 retained the key learning outcomes from the training, we introduced a series of 6 questions to the endline questionnaire that captures knowledge regarding mobile money from each of the 6 modules from the HERFinance Digital Wages Curriculum. We would like to emphasise that, except for Questions 1 and 5, all other questions may have more than one correct or desirable behavioural outcome. We define these variables as the number of correct/desirable behavioural responses. We define the questions that were asked below:

11. Given the lack of data on female domestic workers in Bangladesh [Bangladesh Institute of Labour Studies \(BILS\)](#) and [Oxfam](#), 2015), we are unable to provide a comparison of attrition rates among the population of domestic workers

-
- (1) Question 1 (Module 1): When you open a mobile money account, is the account registered with your SIM or with your mobile phone? *Correct answer: SIM.* We call this variable, Cor_Q1.
 - (2) Question 2 (Module 2): If in the instance you forget your PIN, what would you do? *Correct answers: Follow the instructions on the mobile money menu to create a new PIN and/or call the helpline to change the PIN.* We call this variable, Num_Q2.
 - (3) Question 3 (Module 3): How often do you use your mobile money account to track or manage your expenses and budget? *Desirable behavioural outcomes: regularly and/or occasionally.* We call this variable, Num_Q3.
 - (4) Question 4 (Module 4): Can you tell me what are some of the effective methods for families to save money? *Correct Answer: using mobile money for savings and acquiring interest, opening a deposit plus scheme (DPS) account, saving during periods with fewer expenses, and/or exploring additional income sources, like starting a small business or taking side jobs.* We group the first two answers as methods that are formal and the last two as informal methods. We call this variable, Num_Q4.
 - (5) Question 5 (Module 5): Now, suppose if someone saves BDT 1500 in the mobile money account for one year, and at the end of the year, she has BDT 2000. What is the total interest this person earned for the year? *Correct answer: BDT 500.* We call this variable, Cor_Q5.
 - (6) Question 6 (Module 6): What is/are the demonstrations of positive power when talking about finances with spouse/family members? *Desirable behavioural outcomes: (i) using effective communication and negotiation, (ii) achieving each other's financial goals, and/or respecting each other's financial opinions and (iii) hiding information from the other party. These responses would enable us to capture what domestic workers believe are demonstrations of positive power.* For our analysis, we use these responses as outcome variables to understand whether the intervention affected their understanding of power. We call this variable, Num_Q6.

In Table 4.3, columns (1) through (6) present the estimated effects of the interventions. We find that women in T1 are 5 percentage points while women in T2 are about 2 percentage points more likely to answer Q1_Cor correctly, compared to the control group. These effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.368). For the variable, Num_Q2, we find that women in T1 are about 5 percentage points and women in T2 are about 1 percentage points more likely to report the desired behavioural outcome than those in the control group. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.638).

For the variable, Num_Q3, We find that women in T1 and T2 are more likely to report the desired behavioural outcome than those in the control group. However, they are not statistically significant and we also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.288). For the variable, Num_Q4, that captures the savings behaviour of women, we find that women in T1 are more likely to respond with answers related to formal savings, specifically by about 12 percentage points, compared to the control group. For women in T2, we find that they are 3 percentage points less likely to respond with answers related to formal savings, relative to the control group. Although the estimated effects are statistically insignificant, we can reject the null that the two treatment effects are equal (p-value 0.085). For the variable, Cor_Q5, even though the estimated effects are statistically insignificant, the magnitude of the effect that we see in T1 and T2 is small. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.563) Finally, for the variable Num_Q6, our estimates show that women in T1 are 6 percentage points more likely to respond to a positive understanding of power, relative to the control group. For women in T2, we find a very small magnitude of the intervention. However, these effects are also statistically insignificant and we also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.576)

Now, we turn our attention to the variable in column (7) which captures the total number of correct answers that the domestic worker gives from Questions 1 through 6. Pooling the responses in column (7), on average, domestic workers in the control group were able to answer an average of 4.4 out of the 6 questions correctly. The estimated effect of T1 is an increase in the likelihood of answering an additional question correctly by 30%, significant at the 5% level. For T2, although we obtain a positive point estimate, it is only 10% of the magnitude of T1 and the is statistically insignificant. This is associated with approximately a 6.78% increase in the average number of correct answers compared to the control group mean of 4.424. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.231)

Table 4.3: Testing knowledge of DFS training

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Cor_Q1	Num_Q2	Num_Q3	Num_Q4	Cor_Q5	Num_Q6	# of Correct Answers
T1: DFS Training + bKash offer	0.0552 (0.0383)	0.0482 (0.0419)	0.0169 (0.0488)	0.120 (0.0782)	0.00856 (0.0139)	0.0641 (0.0712)	0.304** (0.139)
T2: DFS Training	0.0160 (0.0389)	0.00534 (0.0425)	0.0367 (0.0495)	-0.0314 (0.0794)	0.0193 (0.0141)	0.00815 (0.0723)	0.0349 (0.141)
R^2	0.100	0.081	0.119	0.051	0.042	0.073	0.121
Endline Mean	0.86	0.17	0.276	1.797	.985	1.384	4.487
Endline Mean Control	0.837	.163	.272	1.771	.978	1.380	4.424
Test: T1 = T2	0.368	0.638	0.288	0.0850	0.563	0.576	0.231
Observations	464	464	464	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the domestic worker has any child below the age of 5 years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.8.2 Impact on Knowledge Regarding Mobile Money Accounts

The DFS training introduced the domestic workers to a range of services available in a mobile money account. Table 4.4 shows the impact of the interventions on the type and number of transactions related to mobile money accounts that domestic workers can name. At baseline, we see very low levels of familiarity with these types of transactions. In column (1), we see a positive point estimate of both T1 and T2 on the number of basic transaction types that the domestic worker can name, but it is statistically insignificant for both groups. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.540). In column (2), we find that women in T1 are about 2 percentage points less likely to name the number of advanced transactions while women in T2 are 6 percentage points more likely to name the number of advanced transactions, compared to the control group. Although these point estimates are statistically insignificant, we can reject the equality between the two groups (p-value 0.057).

Table 4.4: Impact on Knowledge Regarding Mobile Money Account

	(1)	(2)
	# of basic transactions DW can name	# of advanced transactions DW can name
T1: DFS Training + bKash offer	0.136 (0.0855)	-0.0170 (0.0397)
T2: DFS Training	0.0873 (0.0869)	0.0635 (0.0402)
R^2	0.093	0.136
Baseline Mean	1.297	0.129
Endline Mean Control	1.179	0.141
Test: T1 = T2	0.540	0.0571
Observations	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the Domestic Worker has any child below the age of 5 years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Mobile Money transactions are grouped into basic and advanced transactions. Basic transactions include: deposit, send money, withdrawals, receiving money from friends, relatives and family. Advanced transactions include: saving in MMA, flexiload via MMA, merchant pay, others (such as paying utility bills, receiving education/social safety stipend from the govt). Dependent variable in (1) is the number of basic transactions the respondent can name. Dependent variable in (2) is the number of advanced transactions the respondent can name. DW stands for Domestic Worker. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.8.3 Impact on Trust

To evaluate domestic workers' trust in mobile money account (MMA) for saving, respondents were asked if they would be comfortable keeping BDT 1000 and BDT 5000 for 30 days in their mobile money accounts, respectively. The sum of BDT 1000 constitutes 14% of their mean monthly income (BDT 7375).

This amount is equivalent to the earnings from at least three hours of work under the flexible package at HelloTask. Similarly, BDT 5000 represents 68% of their average monthly income and corresponds to the minimum amount of wages domestic workers receive when employed on the monthly package at HelloTask. Finally, we also capture whether the treatments affected their reasons for not trusting mobile money accounts as a saving method. In Table 4.5, we report the results for these outcomes in columns (1) (2), and (3).

Table 4.5: Trust in Mobile Money Account

	(1)	(2)	(3)
	Comfortable keep BDT 1000 in MMA for 30 days	Comfortable keep BDT 5000 in MMA for 30 days	Avoids saving in MMA due to lack of trust
T1: DFS Training + bKash offer	0.0382 (0.0514)	0.0441 (0.0451)	0.000344 (0.0255)
T2: DFS Training	0.0478 (0.0521)	0.00428 (0.0459)	-0.000259 (0.0256)
R^2	0.064	0.102	0.066
Baseline Mean	.041	.067	.05
Endline Control Mean	0.266	0.201	0.0500
Test: T1 = T2	0.700	0.146	0.387
Observations	464	464	440

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the DW has any child below the age of 5 years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Mobile Money transactions are grouped into basic and advanced transactions. Dependent variable in (1) is a binary indicator for whether the respondent is comfortable keeping BDT 1000 in her mobile money account. Dependent variable in (2) is a binary indicator for whether the respondent is comfortable in keeping BDT 5000 in her mobile money account. Dependent variable in (3) is a binary indicator that captures the reasons for which the respondent avoids saving in MMA. MMA stands for Mobile Money Account. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

We find a positive, but statistically insignificant, effect of T1 and T2 for the outcome in column (1). Specifically, we find that women in T1 and T2 are about 4-5 percentage points more likely to feel comfortable leaving BDT 1000 in mobile money accounts (MMA) for 30 days. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.700). In column (2), we find that women in T1 are 4 percentage points more likely to feel comfortable leaving BDT 5000 in mobile money accounts. For women in T2, the point estimate is positive but it is zero. These effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.146).

Finally in column (3), although 5% of women reported that the reason they do not save in mobile money accounts is due to lack of trust, we do not find an effect of the interventions on this outcome. These effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.387).

4.8.4 Impact on Personal Savings

At baseline, about 71% of the sample had kept money aside in the form of savings in the previous 12 months. Domestic workers are also seen to save across various methods: 43% save via formal sources, 13% save via informal sources, and less than 1% save via mobile money accounts. In Table 4.6, we

Table 4.6: Impact on Personal Savings

	(1)	(2)	(3)	(4)
	Has any savings	Saves via formal sources	Saves via informal sources	Saves via MMA
T1: DFS Training + bKash offer	0.0455 (0.0556)	0.0966* (0.0538)	0.0140 (0.0482)	0.0437* (0.0246)
T2: DFS Training	0.0672 (0.0562)	0.124** (0.0543)	0.0197 (0.0492)	0.0358 (0.0249)
R^2	0.058	0.085	0.071	0.098
Baseline Mean	.705	.429	.127	.009
Endline Mean Control	0.560	0.304	0.228	0.0270
Test: T1 = T2	0.539	0.273	0.891	0.813
Observations	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the DW has any child below the age of 5years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in (1) is a binary variable indicating whether respondent had any money kept aside in the form of savings in the last one year. Dependent variable in (2) is a binary indicator for whether respondent stored/saved money in formal sources, such as bank accounts, microfinance institutions, micro-credit accounts and local post officer account, for more than a day in the past 12 months. Dependent variable in (3) is a binary variable indicating whether respondent stored/saved money in informal sources, such as at home (under the mattress, in the cupboard, or other places in the household, claypot, for more than a day in the past one year. Dependent variable in (4) is a binary indicator for whether respondent stored/saved money in a mobile money account for more than a day in the past one year. MMA stands for Mobile Money Account. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

examine the effect of the treatments on personal savings held by domestic workers. The result in column (1) reveals that for women in T1 and T2 are about 5-7 percentage points more likely to save at the extensive margin, compared to the control group. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.539).

In column (2), we find that domestic workers in T1 are about 10 percentage points more likely to save in formal sources, significant at the 10% level. For domestic workers in T2, the likelihood increases by 12.4 percentage points, significant at the 5% level. These effects are an increase of 23% and 28% compared to the baseline mean, respectively. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.273). In column (3), we find that women in T1 and T2 are 1-2 percentage points more likely to save in informal sources, however, these effects are statistically insignificant. We cannot reject the null that the treatment effects are equal between the two groups (p-value 0.891).

Finally, in column (4), we find that women in T1 are 4.3 percentage points more likely to save via

mobile money accounts (significant at 10% level) in comparison to the women in the control group. This effect alone represents a substantial increase, given only at baseline about 1% had ever saved in an mobile money account. Although we do not find any detectable effect for women in T2, we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.813).

Our results are consistent with Dizon et al. (2020) which find increased savings when the mobile money account is linked to a savings goal or designated savings account, respectively. In both instances, people were offered extra monetary benefits to use these accounts. Our results do, however, conflict with Riley (2024) who found no evidence of increased savings despite offering financial incentives to women who received micro-credit loans in mobile money accounts.

4.8.5 Impact on Remittances Sent

Turning our attention to remittances, in Table 4.7, we show the results on remittances sent by the domestic worker. About half of the women sent remittances in the last 6 months at baseline.

As seen in column (1), women in T1 are about 11 percentage points more likely to send remittances (significant at 10% level). This represents a 23% increase compared to the baseline mean. However, women in T2 are 4 percentage points less likely to send remittances, although statistically insignificant. We can also reject the null that the two treatment effects are equal (p-value 0.005).

We also find an increase in the amount of remittances sent at the intensive margin, as seen in column (2). This effect is also statistically significant at the 10% level for T1. Similarly, we can reject the null that the two treatment effects are equal (p-value 0.005). Perhaps, offering women information and training about different types of mobile money accounts, coupled with the opportunity to exercise their preference over their savings reduces their likelihood of sending remittances.¹²

In columns (3), (4), and (5), we analyse the effects of the treatments on the methods of sending remittances: hand delivery, mobile money accounts, and other methods. In column (3), we find that women in T1 are 4 percentage points and women in T2 are about 3 percentage points more likely to send remittances by hand. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 1.000). In column (4), we find that women in T1 are 5 percentage points more likely to send remittances using mobile money accounts (MMA) while women in T2 are 5 percentage points less likely, compared to the control group. These effects are statistically insignificant but we can reject the null that the treatment effects are equal between the two groups (p-value 0.0197). In column (5), we find that women are about 1 percentage point more likely to send remittances using other different methods but women in T2 are about 2.3 percentage points less likely to use these methods, compared to the control group. However, these effects are statistically insignificant and we can reject the null that the treatment effects are equal between the

12. Although mobile money accounts reduce the cost of sending remittances, leading to increases in transfers, it also reduces the relative cost of private savings Breza et al. (2020)

two groups (p-value 0.090).

Finally, in columns (6) and (7), we report effects on outcomes that capture learning, i.e., whether women were learning to use their accounts and without the help of mobile money agents, respectively. At baseline, only about 3% sent remittances using their own mobile money accounts. In column (6), we find that women in T1 are about 3 percentage points more likely to send remittances using their own accounts while women in T1 are about 1 percentage point less likely, compared to the control group. These effects are not statistically significant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.125).

About 30% women in the sample use mobile money agents to initiate send-money transactions at baseline.¹³ In column (7), although women in T2 are 4 percentage points less likely to use agent-initiated transactions, and women in T1 are 3 percentage points more likely to use them relative to the control group. These effects are statistically insignificant but we can reject the null that the treatment effects are equal (p-value 0.0079).

Table 4.7: Impact on Remittances Sent

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sent remit	Sent remit: IHS Amount	Sent remit using hand delivery	Sent remit using MMA	Sent remit using other	Sent remit using own MMA	Sent remit using agent MMA
T1: DFS Training + bKash offer	0.109* (0.0543)	1.021* (0.461)	0.0410 (0.0245)	0.0516 (0.0510)	0.00633 (0.0212)	0.0286 (0.0210)	0.0295 (0.0492)
T2: DFS Training	-0.0400 (0.0550)	-0.270 (0.468)	0.0347 (0.0248)	-0.0527 (0.0516)	-0.0236 (0.0215)	-0.00788 (0.0212)	-0.0407 (0.0498)
R^2	0.094	0.101	0.062	0.107	0.061	0.088	0.097
Baseline Mean	.478	4.08	.121	.341	.017	.039	.300
Endline Control Mean	0.380	3.168	0.0270	0.310	0.0430	0.0330	0.272
Test: T1 = T2	0.00497	0.00591	1.000	0.0197	0.0909	0.125	0.0799
Observations	464	464	464	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the Domestic Worker has any child below the age of 5 years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in (1) captures whether respondent sent any remittances in the last 6 months. Dependent variable in (2) captures the IHS amount of remittances sent in the last 6 months. Dependent variable in (3) captures whether respondent sent remittances using hand delivery in the last 6 months. Dependent variable in (4) captures whether respondent sent any remittances using MMA in the last 6 months. Dependent variable in (5) captures whether respondent sent any remittances using other ways, such as hand delivery through friends and family, and/or direct deposit into bank account, in the last 6 months. Dependent variable in (6) captures whether respondent sent any remittances using her own MMA. Dependent variable in (7) captures whether respondent sent remittances using agent's MMA. MMA stands for Mobile Money Account. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

13. These transactions are called over-the-counter (OTC) transactions and are illegal

4.8.6 Impact on Remittances Received

In Table 4.8, we report the treatment effects on remittances received. At baseline, about 38% of the sample received remittances from outside the household in the last 6 months. We find that women in T1 and T2 are about 5 percentage points and 3 percentage points more likely to receive remittances, compared to the control group. However, these effects are not statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.689). On the intensive margin, as seen in column (2), we find a similar pattern between T1 and T2. However, these effects are also statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.649).

In columns (3), (4), and (5), we analyse the effects of the treatments on the methods of receiving remittances: hand delivery, mobile money accounts, and other methods. We find that women in T1 and T2 are about 1-5 percentage points more likely to receive remittances using hand delivery as seen in column (3). However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.184). In column (4), we find that women in T1 are 3 percentage points more likely to receive remittances using mobile money account while women in T2 are about 4 percentage points are less likely, compared to the control group. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.125). In column (5), we observe a very small change in magnitude for women in T2 but the point estimates are zero for women in T1. However, these are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.563).

In columns (6) and (7), we focus on how women use mobile money accounts to receive remittances. We find that women in T1 are about 6 percentage points more likely to use their own mobile money accounts to receive remittances while women in T2 are about 1 percentage point less likely, compared to the control group, as seen in column (6). In column (7), we find that women in T1 and T2 are 3 percentage points and 2 percentage points less likely to receive their remittances using an agent's mobile money account, respectively. However, these are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.129).

4.8.7 Impact on Hours Worked

Now, we turn to results that capture the effects of the intervention on the labour supply of female domestic workers. In Table 4.9, presents the treatment effects on hours worked by the domestic worker in the last 30 days. In column (1), we capture whether the domestic worker was available to work in the last 30 days. We find that women in T1 and T2 are about 2 percentage points more likely to be available to work in the last 30 days. However, the effects are statistically insignificant. In column (2), we capture the total hours worked at HelloTask in the last 30 days. We find women in T1 to work 3.4

Table 4.8: Impact on Remittances Received

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Received remit	Received remit: IHS Amount	Received remit using hand delivery	Received remit using MMA	Received remit using other	Received remit using own MMA	Received remit using agent MMA
T1: DFS Training + bKash offer	0.0530 (0.0500)	0.600 (0.435)	0.0144 (0.0281)	0.0335 (0.0445)	0.00273 (0.0107)	0.0573 (0.0392)	-0.0302 (0.0228)
T2: DFS Training	0.0269 (0.0508)	0.333 (0.442)	0.0525 (0.0285)	-0.0370 (0.0452)	0.0105 (0.0108)	-0.00533 (0.0399)	-0.0218 (0.0232)
R^2	0.042	0.047	0.038	0.044	0.018	0.060	0.023
Baseline Mean	.381	3.147	.138	.235	.009	.166	.069
Endline Control Mean	0.239	1.979	0.0430	0.190	0.00500	0.130	0.0540
Test: T1 = T2	0.689	0.649	0.184	0.125	0.563	0.129	0.736
Observations	464	464	464	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the Domestic Worker has any child below the age of 5 years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in (1) captures whether respondent received any remittances in the last 6 months. Dependent variable in (2) captures the IHS amount of remittances received in the last 6 months. Dependent variable in (3) captures whether respondent received remittances using hand delivery in the last 6 months. Dependent variable in (4) captures whether respondent received any remittances using MMA in the last 6 months. Dependent variable in (5) captures whether respondent received any remittances using other ways, such as hand delivery through friends and family, and/or direct deposit into bank account, in the last 6 months. Dependent variable in (6) captures whether respondent received any remittances using her own MMA. Dependent variable in (7) captures whether respondent received remittances using agent's MMA. MMA stands for Mobile Money Account. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

hours more (significant at the 5% level), relative to the control group. This effect is about 110% of the baseline mean.

For women in T2, this translates to an increase of 68%, albeit statistically insignificant. Moreover, we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.572). In column (3), we find that women in T1 and T2 are seen to work 8-9 more hours outside of HelloTask, compared to the control group. However, these effects are statistically insignificant. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.196). Similarly, in column (4), we find that women in T1 work about 13 hours more and women in T2 work about 9 hours more, compared to the control group. Albeit, these effects are statistically insignificant and we also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.187).

4.8.8 Impact on Wages Earned

Table 4.10, reports the treatment effects on wages earned by domestic workers. Column (1) shows that women in T1 earned about BDT 303 more compared to the control group, significant at the 5% level.

Table 4.9: Hours Worked in the Last 30 Days

	(1)	(2)	(3)	(4)
	Available to work in the last 30 days	Total Hours worked at HT last 30 days	Total Hours worked outside HT last 30 days	Total Hours worked (from all activities) last 30 days
T1: DFS Training + bKash offer	0.0238 (0.0483)	3.428** (1.482)	9.853 (10.21)	12.66 (10.15)
T2: DFS Training	0.0179 (0.0491)	2.097 (1.506)	8.145 (10.37)	8.680 (10.30)
R^2	0.137	0.109	0.275	0.293
Baseline Mean	.787	3.071	80.398	87.187
Endline Mean Control	0.728	0.0650	84.93	87.78
Test: T1 = T2	0.505	0.572	0.196	0.187
Observations	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the DW has any child below the age of 5years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in column (1) is binary. Dependent variable in (2) are total hours worked by the respondent at HelloTask. Dependent variable in (3) are total hours worked by the respondent as a domestic worker outside of HelloTask. Dependent variable in (4) is the total hours worked by the respondent from all activities. This includes work at HelloTask, work as domestic worker outside of HelloTask, work as garments workers, and including other formal and informal work. MMA stands for Mobile Money Account and HT stands for HelloTask. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.10: Wages Earned in the Last 30 Days

	(1)	(2)	(3)	(4)
	Total Wages earned at HT last 30 days	Total Wages earned outside HT last 30 days	Total Wages earned (from all activities) last 30 days	Total MMA Wages earned last 30 days
T1: DFS Training + bKash offer	302.9** (123.7)	428.0 (513.5)	892.9 (566.1)	305.4* (163.5)
T2: DFS Training	219.1* (125.8)	951.5* (521.0)	596.6 (574.4)	147.6 (166.0)
R^2	0.072	0.346	0.221	0.097
Baseline Mean	203.918	4738.612	6299.853	260.916
Endline Mean Control	11.06	4597.0	6259.4	152.4
Test: T1 = T2	0.762	0.762	0.353	0.818
Observations	464	464	464	464

Notes: All regressions are estimated with baseline control variables. Control variables that are not shown in the table include: Age categories of the Domestic Worker, Whether the Domestic Worker has any child below the age of 5years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in (1) are total wages earned by the respondent at HelloTask. Dependent variable in (2) are total wages earned by the respondent as a domestic worker outside of HelloTask. Dependent variable in (3) is the total wages earned by the respondent from all activities. This includes work at HelloTask, work as domestic worker outside of HelloTask, work as garments workers, and including other formal and informal work. Dependent variable in (4) is the total wages earned and payment received via MMA. MMA stands for Mobile Money Account and HT stands for HelloTask. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Relatedly, women in T2, also see an increase in their wages from HelloTask by BDT 219 (significant at the 10% level), compared to the control group. These effects are large, positive, and significant and are equivalent to one extra hour of work at HelloTask. We also cannot reject the equality of the treatment effects between the two groups (p-value 0.762). Column (2) captures the amount of wages earned from domestic work outside of HelloTask. Women in T2 earn BDT 952 more in wages relative to the control group (significant at the 10% level). Though we observe an increase of BDT 428 in wages for women in T1, it is not statistically significant. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.762).

Turning our attention to column (3), pooling all the types of economic activities women engage in, we find large increases in the wages earned by women in both T1 and T2. However, these are statistically insignificant. We also cannot reject the null that the treatment groups are different (p-value 0.353). Finally, in column (4), we find an increase in the wages earned via mobile money account. Specifically, women in T1 earn twice the amount in wages compared to their baseline earnings (significant at 10% level). For women in T2, we find that they earn about half of the wages earned by women in T1, but again these are statistically insignificant. Moreover, we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.818).

4.8.9 Impact on Transfers to Spouse

In Table 4.11, we present the impacts of the interventions on outcomes related to the transfers that women, married at baseline, made to spouses. At baseline, about one-fourth of the sample face pressure in sharing income with their spouse. In column (1), we find that women in T1 are about 1 percentage point more likely to face pressure from the spouse to share income. For women in T2, we find that they are about 2 percentage points less likely to face pressure from spouses to share income. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.972).

In column (2), we find that women in T1 in T2 are about 2 percentage points more likely to receive money from spouses, however, these effects are statistically insignificant. We also cannot reject the null that the treatment effects are equal between the two groups (p-value 0.593). In column (3), although the direction of the coefficient is negative, the point estimate is zero. However, for women in T2, we find that they are 8 percentage points more likely to give money to their spouse. However, these effects are statistically insignificant and we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.185).

Although we see that women in T2 are more likely to receive money from their spouse, they are also more likely to give more money to their spouse, resulting in a negative transfer of BDT 950. Although these estimates are statistically insignificant, it is worth highlighting that this amount corresponds to

the increased earnings women in T2 receive from work outside of HelloTask (see Table 4.10). And we cannot reject the null that the treatment effects are equal between the two groups (p-value 0.561).

Table 4.11: Impact on Transfers to Spouse

	(1)	(2)	(3)	(4)
	DW faces pressure to share income from spouse	DW received money from spouse	DW gave money to spouse	Net Transfer
T1: DFS Training + bKash offer	0.00500 (0.0235)	0.0217 (0.0607)	-0.00989 (0.0575)	141.3 (924.1)
T2: DFS Training	-0.0192 (0.0818)	0.0203 (0.0598)	0.0815 (0.0571)	-950.6 (922.4)
R^2	0.093	0.128	0.060	0.119
Baseline Mean	.237	.453	.327	
Endline Mean Control	0.227	0.645	0.248	4119.9
Test: T1 = T2	0.972	0.593	0.185	0.561
Observations	358	358	358	358

Notes: All regressions are estimated with baseline control variables. These include: Age categories of the Domestic Worker, Whether the Domestic Worker has any child below the age of 5years, Categories indicating the relationship of the Domestic Worker to the Household Head, Categories for Education Level of Domestic Worker, Categories for Education Level of the Household Head, and Categories for HelloTask Service Zones. Dependent variable in (1) is a binary variable indicating whether respondent feels any pressure from her spouse to share her income, captured at endline only. Dependent variable in (2) is a binary indicator for whether respondent received any money from her spouse in the last 30 days. Dependent variable in (3) is a binary variable indicating whether respondent gave any money to her spouse in the last 30 days. Dependent variable in (4) is difference between the money received from the spouse and given by the respondent to her spouse in Bangladeshi Taka, in the last 30 days. Regressions are for all married woman at baseline. DW stands for Dometic Worker. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.9 Discussion

There are two main channels through which our interventions could impact female domestic workers' knowledge regarding mobile money accounts and change their economic behaviour.

4.9.1 Unmet demand for DFS training

Most of the women in our sample have accounts with multiple mobile money account providers. Before the intervention, almost 50% of the sample had bKash accounts, in addition to an account with the HPP. Despite this, we find very low levels of knowledge and usage of these accounts. During the focus group discussions, women mostly referred to the HPP as an intermediary step to cash out their earnings. They mentioned that, although they have heard of the services from spouses or other male members of the household, they would personally not be able to do these transactions on a mobile money account of their own. They expressed a lack of trust in mobile money stemming from frauds that take place when they pass on their PINs to the mobile money agents. And that it would have been beneficial for them if there were opportunities for women to learn about mobile money accounts and how they can use them to improve economic opportunities. To assess the efficacy of the DFS training program, a series of questions were asked to domestic workers during the endline survey. These questions were designed to gauge the extent to which the domestic workers had achieved specific learning outcomes drawn from the six HERFinance modules. Our results indicate that women who received the DFS training and the offer of wage payment via bKash took advantage of this learning experience and, in return, improved their understanding of mobile money. Although the point estimate for women in T2 is positive and insignificant, we cannot reject the equality of the treatment effects between the two groups.

4.9.2 Saving constrained

Another reason the DFS training could have an effect is if the women were saving-constrained. Initially, it might seem unrealistic to expect women to save through mobile money accounts, given the extremely low savings they held in mobile money accounts at baseline (less than 1%). A reason for this could be that one must learn about saving in mobile money accounts, and build trust and confidence that the money is as safe as it is in a bank or other formal sources. This difference in knowledge is observed for the women in the control group, where even after 12 months less than 3% saved in mobile money accounts.

Module 4 of the HERFinance introduces women to the importance of and need to save in formal sources, such as banks and mobile money accounts, enabling them to earn interest on balances. The training may have taught and given them the confidence in saving via formal sources for women in T1 and T2. Moreover, digital wage payments may have had a larger impact when considering the learning

effects. For many, it may have never occurred to save through a mobile money account before, or at least, to begin saving this way. Perhaps women in T1 had started to perceive mobile money accounts as a new avenue to save with real interest rates that were once only available through banks. The training may have taught and given them the confidence to save via formal sources, including mobile money accounts.

For women in T1, the training coupled with the offer to receive wage payments via bKash accounts may have also helped them overcome any reservations about the safety of the money that they earn through HelloTask. This is corroborated by the increase in hours worked and wages earned by women in T1 through HelloTask, which they subsequently chose to retain in their mobile money accounts. But for women in T2, it perhaps just reaffirmed the benefits of saving in general.

A question that remains is why we do not see the same effects for women in T2 even though they also received the DFS training. Unlike women in T1, those in T2 did not have access to bKash, which could have provided more immediate financial tools and options. The absence of this resource may have limited their ability to act on the knowledge gained from the DFS training.

For women in T1, the additional offer of bKash allowed them an opportunity to exercise their choices which was not the case for women in T2. However, that did not mean women in T2 did not take advantage of the DFS training. However, this does not imply that women in T2 did not benefit from the DFS training. In fact, the DFS training may have enabled them to learn about savings and enhance their earnings from both HelloTask and other sources. This is evident in the case of savings in formal sources, where women in T2 increased their savings by 12 percentage points. This represents a sizeable increase of 41% compared to the endline mean in the control group.

4.10 Cost Effectiveness of the Intervention

To assess the cost effectiveness of the intervention, we calculate the internal rate of return (IRR). IRR helps us to calculate the return on the initial cost of the intervention based on the income or cash flow it generates. The cost of delivering the two-day DFS training in the venues was BDT 1290 per domestic worker. This includes venue rental, training materials, participant travel allowance and compensation, and administrative costs for project officers and supervisors. Relatedly, delivering the DFS training via door-to-door costs BDT 747 per domestic worker. We show a breakdown of all our cost in Table [A24](#) followed by the IRR and payback period calculations in Table [A25](#) in the Appendix.

Our results in Table [4.9](#) show that the intervention increased the average number of hours worked at HelloTask by 3.428 hours (T1), compared to a baseline of 3.07 hours in a month. As mentioned in Section 4.3.2, HelloTask pays BDT 150 per hour to domestic workers, and so domestic workers in T1 earn an additional BDT 450 per month compared to the control group. Assuming that this effect on earning an additional BDT 450 per month is sustained for a year (i.e., the time between the baseline

and the endline survey), the total return per participant is BDT 5400 (BDT 450 x 12 months).

Using these cash flows, we can estimate the monthly IRR which stands at 36.6%. This means that every month, we are getting BDT 36.60 as a return for every BDT 100 spent. We can also calculate the payback period meaning we are able to recover the initial cost of BDT 1290 within 2.5 months. Additionally, delivering the DFS training via door-to-door us an even higher IRR (60%) with a payback period of within 1.5 months.

While the IRR estimates presented in this chapter suggest strong financial returns, we are unfortunately unable to benchmark them directly against other studies, as the intervention has not yet been scaled and comparable IRR estimates in similar contexts are lacking. However, preliminary conversations with BSR and RISE, who originally developed and implemented the DFS training for garment workers, indicated that returns on investment were also very high in that setting.¹⁴ This was largely due to the ability to deliver training sessions directly within factory premises, in close collaboration with garment factories and the mobile financial services provider, bKash.¹⁵ Future research would greatly benefit from systematic IRR comparisons across different delivery models and sectors to further inform cost-effective scaling strategies.

4.11 Conclusion

This paper shows that offering context-based training on the use of DFS, such as mobile money accounts, leads to significant changes in knowledge and usage. Women in T1 are about 7% more likely to see improvements in knowledge from the DFS training. These women save 23% more in formal sources, accounting for 14% of their total savings. They also report saving 6% of their total savings in mobile money accounts, a significant increase considering less than 1% reported using these accounts for savings at baseline. We also find that formal accounts when used correctly, increase the sending of remittances both at the extensive and intensive margins. Women are seen to increase their hours and earnings at HelloTask and find it beneficial to receive their wages via mobile money accounts. For women in T2, they save 17% of their savings in formal sources and earn 20% more in wages, compared to baseline, from work outside the HelloTask platform.

Our study suggests that gig platforms, like HelloTask, that are increasingly working with women in the informal sector should consider offering tailored training in addition to their standard onboarding programs. These incremental changes can equip women with the knowledge and skill set that improve their outside options. For mobile money providers, this study lends insights into the state of awareness and usage among a neglected but economically active population that makes up 90% of the women from

14. It is also worth mentioning both BSR and RISE were generous in their support to me by offering free of cost Training on Trainers (TOT) to HelloTask to familiarise them with the materials. This also included discussions of what was effective in providing the training to workers in the garments factories. Hence, TOT costs do not appear in my cost calculations

15. For an overview of the HERfinance Digital Wages curriculum and its impact on workers in Bangladesh's ready-made garments industry, see, please see [here](#) and [here](#)

the informal sector in Bangladesh since 2010 (Raihan and Bidisha, 2018).

The HERFinance Digital Wages Curriculum was originally developed for garments workers in developing countries. In 2020, the training was delivered to 100,000 garments workers in Bangladesh, half of whom were women. However, these training modules are not entirely relevant to the context of female domestic workers as the modules portrayed examples relevant for women employed in the ready-made garments sector.¹⁶ We adapted the original versions to include current information on mobile money services and the transaction fees, interest rates and other newly added services. We also adapted the roleplays, budgeting/saving templates, and examples of mobile money to make it relevant so that they fit with needs of the domestic workers.

For our pilot study, we delivered the customised DFS training to about 337 domestic workers employed at HelloTask. Our intervention has not been scaled yet, however, the findings presented in this chapter can provide a strong basis for broader implementation. Particularly, the intervention has the potential to be extended to HelloTask's growing pool of 16000 domestic workers, and more broadly to the estimated 10 million female domestic workers in Bangladesh (Bailur et al., 2019) - many of whom continue to be financially excluded. More broadly, the adaptations made to the DFS training, such as using relatable examples and role plays tailored to domestic workers, can be scaled up and adapted for similar contexts. These materials offer a useful foundation for reaching over 13 million urban domestic workers in other developing countries such as India and Pakistan, where digital financial inclusion remains limited but highly relevant.¹⁷

Finally, one remaining challenge that may constrain scale-up is the lack of documentation. During focus group discussions, women reported that entering incorrect PIN combinations led to account inactivity and eventually caused their accounts to be locked. To unblock these accounts, users are required to re-register using their national identity documents, which many women are unable to retrieve. This constraint is also seen to affect other low-income groups, such as ready-made garment workers, who often rely on identification and guarantees provided by their employers to open accounts (Breza et al., 2020).

16. Women employed in the ready-made garments sector in Bangladesh tend to be younger, more educated or still pursuing education, have greater bargaining power, and are less likely to marry at an early age (Heath and Mobarak, 2015)

17. For a review of domestic workers in India, please see [here](#), and for Pakistan, see [here](#).

Chapter 5

Conclusion

This dissertation consists of three chapters that address key topics in development economics. Chapter 2 focuses on how both demand-side interventions, such as providing improved information on mobile money, and supply-side interventions, such as improving the prosocial motivations of mobile money agents, can expand mobile money access. Chapter 3 focuses on understanding the effectiveness of a non-monetary award scheme through the lens of agent competition and social capital. Chapter 4 focuses on how meeting unmet demand for DFS training has the potential to improve labour market opportunities and economic empowerment of women employed in the informal economy. The findings and discussions in each of the chapter open up new avenues for future research.

The findings of Chapter 2 suggest that providing information campaigns paired with non-monetary encouragement for mobile money agents increased awareness of and trust in mobile money. A combination of the two interventions also increased the likelihood of sending remittances and savings via formal sources. We also find that the treatment effects on awareness are highest when the information campaign is provided on its own. Moreover, the information campaign on its own is also seen to increase the likelihood of sending remittances and savings at the extensive margin. Moreover, it is seen to increase the likelihood of keeping higher balances and learning to perform basic transactions related to mobile money accounts. While we find detectable effects of the award scheme on awareness and the likelihood of savings in formal sources, we observe no change in behaviour from running the award scheme on its own.

The findings of Chapter 3 explore agent motivation in the delivery of mobile money services. We look for masked heterogeneity in the performance of mobile money agents when the agent award scheme is provided. Particularly, heterogeneity by region reveals that the effectiveness of the agent award scheme in improving awareness of mobile money is higher among rural regions. However, the effectiveness of the agent award scheme in improving trust in mobile money is lower among urban regions. We view these differences through the lens of agent competition and social capital. We capture agent competition by

looking at the households per agent ratio. For social capital, we measure the participation of people in non-governmental organisations (NGOs) in Bangladesh, such as Grameen Bank, BRAC and ASA. We find that the agent award scheme improves outcomes related to awareness, trust, usage and savings behaviour in regions with the above-median participation of NGOs. Although we do not find detectable effects of heterogeneous treatment effects by agent competition, we cannot rule out that this is not one of the mechanisms. Some conclusions from Chapter 2 require further investigation. The first is the endogeneity issue of the heterogeneous treatment effects of agent competition and NGO participation. The second is the weak instrument concern of the interaction terms agent award scheme and NGO participation. Thirdly, region-level economic indicators should be included to account for endogeneity in the NGO participation variable. Finally, there is lack of an instrument for the agent competition variable. Hence, these should be the focus of future work.

The findings of Chapter 4 explore how providing DFS training to low-income women employed in the informal sector impacts outcomes related to knowledge of mobile money, personal savings and remittances sent. Female domestic workers who received the DFS training and the offer of bKash are more likely to retain knowledge from the training and have higher savings stored in formal sources, including savings kept in mobile money accounts. Women in this treatment arm are also more likely to send remittances both at the extensive and intensive margin. They are also likely to work and earn more at HelloTask. Interestingly, they are also more likely to receive higher wages in mobile money accounts. For female domestic workers who just received the DFS training, we do not find a detectable effect on knowledge from the DFS training. However, we do observe a sizeable increase in the likelihood of savings via formal sources in comparison to those who also received the offer of bKash. Women in this treatment arm also earn higher wages through working at HelloTask, but they earn a sizeable amount of wages through domestic work outside of HelloTask.

The MFS sector in Bangladesh has grown significantly in the past decade mainly due to the proliferation of digitising wages for 1.9 million ready-made garment workers in urban Dhaka, half of whom are women (Baur-Yazbeck and Roest, 2019). During Covid-19, the government digitised the disbursement of social safety payments to 8.8 million beneficiaries across the country. Bangladesh is one of the fastest-growing economies (World Bank, 2023). Enabling financial independence is a critical step to financial inclusion and a driver to eradicate poverty. Mobile money can play a significant role in enabling financial inclusion among the economically marginalised.

The findings of this dissertation have important policy implications. First, it will provide policy-makers, like a2i and the Ministry of Social Welfare in Bangladesh, with information about the state of awareness and usage of mobile money accounts to assess the impact of this shift into digitised payments on the social safety net programs of the government. Secondly, it will also provide insight into the

effectiveness of programs and outreach strategies that can be scaled to address awareness gaps for the financial inclusion of these vulnerable populations. Thirdly, this research will contribute to global efforts to provide G2P payments quickly and effectively and it may serve as an example for other policymakers in other countries looking for evidence-based strategies to digitise G2P payments.

Furthermore, the evidence we provide on the effects of DFS training on casual and informal workers will be directly relevant to the estimated 90% of the women from the informal sector in Bangladesh (Raihan and Bidisha, 2018). Women working through the HelloTask platform can earn 42% more times more than the national minimum average.¹ HelloTask plans to onboard a further 20,000 domestic workers into their platform over the next five years through various collaborations. One challenge that they face is the lack of National Identification Document (NID), among these women. This further makes it difficult for HelloTask to register them for mobile money accounts.

Our work with HelloTask coupled with on-the-field experience with female domestic work has allowed us to relay the constraints faced by women in accessing and using mobile money to bKash. This partnership has enabled HelloTask to get access to a payment platform offered by bKash that allows HelloTask to register female domestic workers with bKash through their HelloTask ID cards. So even in the absence of NIDs, HelloTask can register interest women into the platform and provide them access to bKash accounts. Separately, the findings and insights may lead to further gender-sensitive innovations in digital financial services and wage digitisation that benefit other poor women in Bangladesh who engage in some manner with the market economy but have little access to traditional bank-based consumer financial products and have to negotiate their choices within a strongly patriarchal setting.

1. The figure based on the [Care Economy Knowledge Hub \(2024\)](#) case study on HelloTask

Appendix

Appendix

Chapter 2 Appendix

Table A1: Baseline Balance Check: Mean and Standard Errors Across Treatment/Control Arms

	Control		T1: Poster + Video + Calendar		T2: Agent Award		T3: Poster + Video + Calendar + Agent Award	
Variable	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE
Beneficiary Age	769 [25]	57.449 [0.613]	772 [25]	56.649 [0.451]	777 [25]	56.680 [0.526]	757 [25]	57.367 [0.550]
Beneficiary can read and write	769 [25]	0.234 [0.027]	772 [25]	0.218 [0.015]	777 [25]	0.225 [0.016]	757 [25]	0.266 [0.020]
Beneficiary is a female	769 [25]	0.631 [0.018]	772 [25]	0.584 [0.014]	777 [25]	0.616 [0.016]	757 [25]	0.602 [0.017]
Household Size	769 [25]	3.952 [0.119]	772 [25]	4.000 [0.105]	777 [25]	3.869 [0.137]	757 [25]	3.975 [0.121]
Household experienced shock, in past 3 months	769 [25]	0.397 [0.025]	772 [25]	0.389 [0.027]	777 [25]	0.390 [0.023]	757 [25]	0.391 [0.027]
Whether beneficiary received any remittances, in past 3 months	769 [25]	0.081 [0.013]	772 [25]	0.082 [0.014]	777 [25]	0.094 [0.015]	757 [25]	0.131 [0.019]
Total Remittances Received (IHS)	769 [25]	0.704 [0.110]	772 [25]	0.702 [0.116]	777 [25]	0.804 [0.135]	757 [25]	1.122 [0.168]
Whether beneficiary sent any remittances, in past 3 months	769 [25]	0.013 [0.003]	772 [25]	0.025 [0.007]	777 [25]	0.017 [0.004]	757 [25]	0.030 [0.006]
Total Remittances Sent (IHS)	769 [25]	0.108 [0.027]	772 [25]	0.193 [0.053]	777 [25]	0.131 [0.033]	757 [25]	0.242 [0.046]
Whether beneficiary sent/received remittances using mobile money account	769 [25]	0.072 [0.010]	772 [25]	0.078 [0.014]	777 [25]	0.071 [0.013]	757 [25]	0.110 [0.018]
Whether beneficiary has any savings	769 [25]	0.079 [0.008]	772 [25]	0.075 [0.010]	777 [25]	0.053 [0.007]	757 [25]	0.070 [0.011]
Total Savings (IHS)	769 [25]	0.747 [0.075]	772 [25]	0.711 [0.089]	777 [25]	0.521 [0.072]	757 [25]	0.680 [0.106]
Whether beneficiary is aware of Mobile Financial Services (all sources)	769 [25]	0.424 [0.032]	772 [25]	0.386 [0.039]	777 [25]	0.441 [0.037]	757 [25]	0.436 [0.041]
Whether beneficiary met an MFS agent in the past 3 months	769 [25]	0.580 [0.021]	772 [25]	0.567 [0.025]	777 [25]	0.598 [0.027]	757 [25]	0.614 [0.021]
Whether beneficiary has balance in mobile money account	769 [25]	0.049 [0.008]	772 [25]	0.035 [0.007]	777 [25]	0.037 [0.006]	757 [25]	0.040 [0.008]
Whether beneficiary thinks it is wise to leave money in the mobile money account	769 [25]	0.622 [0.020]	772 [25]	0.578 [0.023]	777 [25]	0.580 [0.018]	757 [25]	0.633 [0.028]
Whether the beneficiary paid any fee to the agent to withdraw allowance	769 [25]	0.195 [0.022]	772 [25]	0.158 [0.023]	777 [25]	0.148 [0.024]	757 [25]	0.136 [0.020]
Whether beneficiary spent his/her own allowance	769 [25]	0.899 [0.011]	772 [25]	0.934 [0.007]	777 [25]	0.923 [0.007]	757 [25]	0.898 [0.010]

Notes: The table presents the mean and standard errors at baseline. Control is the arm that received no intervention. T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A2: Baseline Balance Check: Normalised Differences and F-Test for Joint Orthogonality

Variable	Normalized difference (1)-(2)	Normalized difference (1)-(3)	Normalized difference (1)-(4)	Normalized difference (2)-(3)	Normalized difference (2)-(4)	Normalized difference (3)-(4)	F-test for joint orthogonality
Beneficiary Age	0.043	0.041	0.004	-0.002	-0.038	-0.036	0.667
Beneficiary can read and write	0.039	0.021	-0.073	-0.018	-0.112	-0.094	1.327
Beneficiary is a female	0.095	0.029	0.058	-0.066	-0.037	0.029	1.570
Household Size	-0.020	0.037	-0.010	0.057	0.011	-0.048	0.208
Household experienced shock, in past 3 months	0.016	0.014	0.011	-0.003	-0.005	-0.002	0.020
Whether beneficiary received any remittances, in past 3 months	-0.004	-0.047	-0.163	-0.044	-0.160	-0.117	1.851
Total Remittances Received (IHS)	0.001	-0.041	-0.156	-0.041	-0.157	-0.116	1.752
Whether beneficiary sent any remittances, in past 3 months	-0.085	-0.031	-0.119	0.055	-0.035	-0.090	2.644*
Total Remittances Sent (IHS)	-0.078	-0.024	-0.113	0.055	-0.037	-0.091	2.512*
Whether beneficiary sent/received remittances using mobile money account	-0.024	0.003	-0.133	0.026	-0.110	-0.136	1.264
Whether beneficiary has any savings	0.016	0.107	0.035	0.091	0.020	-0.072	2.388*
Total Savings (IHS)	0.014	0.094	0.026	0.080	0.012	-0.067	1.847
Whether beneficiary is aware of Mobile Financial Services (all sources)	0.077	-0.035	-0.024	-0.113	-0.101	0.011	0.428
Whether beneficiary met an MFS agent in the past 3 months	0.026	-0.038	-0.070	-0.063	-0.095	-0.032	0.837
Whether beneficiary has balance in mobile money account	0.072	0.059	0.047	-0.013	-0.025	-0.012	0.741
Whether beneficiary thinks it is wise to leave money in the mobile money account	0.089	0.084	-0.023	-0.006	-0.113	-0.107	1.606
Whether the beneficiary paid any fee to the agent to withdraw allowance	0.097	0.125	0.159	0.028	0.062	0.034	1.420
Whether beneficiary spent his/her own allowance	-0.128	-0.085	0.001	0.043	0.129	0.086	2.141*
Whether beneficiary can perform at least one transaction related to MFS without assistance	-0.039	-0.050	-0.019	-0.011	0.020	0.031	0.399

Notes: The table presents the normalised differences and F-test for joint orthogonality at baseline. (1) is the control arm. (2) is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. Group (3) is the arm where the agent award intervention was provided. (4) is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars, and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A3: Attrition

	N			
	C	T1	T2	T3
Baseline	769	772	777	757
Endline	701	718	715	699
Completion Rate	91.2%	93.0%	92.0%	92.3%

Notes: This table presents the attrition rates by treatment/control arms. N is the number of respondents that were surveyed in each arm. C is the control arm. T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T3 is the arm where the agent award intervention was given. T4 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was given.

Table A4: Endline Balance Check: Mean and Standard Errors Across Treatment/Control Arms

Variable	Control		T1: Poster + Video + Calendar		T2: Agent Award		T3: Poster + Video + Calendar + Agent Award	
	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE
Beneficiary Age	701 [25]	57.227 [0.695]	718 [25]	56.421 [0.435]	715 [25]	56.320 [0.584]	699 [25]	57.007 [0.586]
Beneficiary can read and write	701 [25]	0.243 [0.027]	718 [25]	0.221 [0.015]	715 [25]	0.235 [0.016]	699 [25]	0.260 [0.021]
Beneficiary is a female	701 [25]	0.305 [0.021]	718 [25]	0.269 [0.016]	715 [25]	0.291 [0.014]	699 [25]	0.258 [0.016]
Household Size	701 [25]	3.960 [0.121]	718 [25]	3.974 [0.113]	715 [25]	3.848 [0.138]	699 [25]	3.984 [0.120]
Household experienced shock, in past 3 months	701 [25]	0.408 [0.024]	718 [25]	0.396 [0.027]	715 [25]	0.403 [0.023]	699 [25]	0.389 [0.027]
Whether beneficiary received any remittances, in past 3 months	701 [25]	0.078 [0.013]	718 [25]	0.082 [0.015]	715 [25]	0.098 [0.017]	699 [25]	0.136 [0.021]
Total Remittances Received (IHS)	701 [25]	1.275 [0.094]	718 [25]	1.284 [0.101]	715 [25]	1.400 [0.126]	699 [25]	1.674 [0.154]
Whether beneficiary sent any remittances, in past 3 months	701 [25]	0.011 [0.003]	718 [25]	0.025 [0.006]	715 [25]	0.018 [0.005]	699 [25]	0.029 [0.007]
Total Remittances Sent (IHS)	701 [25]	0.772 [0.023]	718 [25]	0.856 [0.042]	715 [25]	0.811 [0.030]	699 [25]	0.883 [0.044]
Whether beneficiary sent/received remittances using mobile money account	701 [25]	0.113 [0.013]	718 [25]	0.106 [0.013]	715 [25]	0.097 [0.015]	699 [25]	0.112 [0.012]
Whether beneficiary has any savings	701 [25]	0.081 [0.009]	718 [25]	0.079 [0.010]	715 [25]	0.052 [0.007]	699 [25]	0.076 [0.012]
Total Savings (IHS)	701 [25]	1.344 [0.071]	718 [25]	1.331 [0.080]	715 [25]	1.133 [0.068]	699 [25]	1.325 [0.099]
Whether beneficiary is aware of Mobile Financial Services (all sources)	701 [25]	0.424 [0.032]	718 [25]	0.386 [0.040]	715 [25]	0.439 [0.037]	699 [25]	0.433 [0.041]
Whether beneficiary has balance in mobile money account	701 [25]	0.050 [0.009]	718 [25]	0.038 [0.007]	715 [25]	0.036 [0.007]	699 [25]	0.040 [0.009]
Whether beneficiary thinks it is wise to leave money in the mobile money account	701 [25]	0.628 [0.023]	718 [25]	0.575 [0.022]	715 [25]	0.587 [0.018]	699 [25]	0.641 [0.026]
Whether beneficiary met an MFS agent in the past 3 months	701 [25]	0.589 [0.021]	718 [25]	0.560 [0.024]	715 [25]	0.599 [0.026]	699 [25]	0.621 [0.022]
Whether the beneficiary paid any fee to the agent to withdraw allowance	701 [25]	0.200 [0.022]	718 [25]	0.157 [0.024]	715 [25]	0.145 [0.024]	699 [25]	0.133 [0.020]
Whether beneficiary spent his/her own allowance	701 [25]	0.897 [0.013]	718 [25]	0.930 [0.014]	715 [25]	0.926 [0.009]	699 [25]	0.898 [0.016]
Whether beneficiary can perform at least one transaction related to MFS without assistance	701 [25]	0.188 [0.026]	718 [25]	0.240 [0.034]	715 [25]	0.248 [0.025]	699 [25]	0.230 [0.036]

Notes: This table presents the mean and standard errors at endline. Control is the control arm that did not receive any intervention. T1 is the treatment arm where beneficiaries were shown the two videos, and given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, and desk calendars, and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A5: Endline Balance Check: Normalised Differences and F-Test for Joint Orthogonality

Variable	Normalized difference (1)-(2)	Normalized difference (1)-(3)	Normalized difference (1)-(4)	Normalized difference (2)-(3)	Normalized difference (2)-(4)	Normalized difference (3)-(4)	F-test for joint orthogonality
Beneficiary Age	0.043	0.049	0.012	0.005	-0.031	-0.037	0.569
Beneficiary can read and write	0.050	0.018	-0.041	-0.032	-0.091	-0.059	0.789
Beneficiary is a female	0.081	0.031	0.106	-0.049	0.026	0.075	1.588
Household Size	-0.006	0.050	-0.011	0.055	-0.005	-0.062	0.235
Household experienced shock, in past 3 months	0.025	0.011	0.039	-0.015	0.013	0.028	0.105
Whether beneficiary received any remittances, in past 3 months	-0.014	-0.069	-0.186	-0.055	-0.173	-0.118	2.052
Total Remittances Received (IHS)	-0.004	-0.059	-0.174	-0.055	-0.171	-0.116	1.939
Whether beneficiary sent any remittances, in past 3 months	-0.102	-0.056	-0.123	0.047	-0.022	-0.069	2.532*
Total Remittances Sent (IHS)	-0.093	-0.047	-0.116	0.047	-0.026	-0.072	2.272*
Whether beneficiary sent/received remittances using mobile money account	0.022	0.053	0.004	0.031	-0.018	-0.049	0.282
Whether beneficiary has any savings	0.007	0.119	0.020	0.112	0.013	-0.099	2.948**
Total Savings (IHS)	0.006	0.102	0.008	0.096	0.003	-0.092	2.079
Whether beneficiary is aware of Mobile Financial Services (all sources)	0.077	-0.031	-0.020	-0.108	-0.097	0.011	0.381
Whether beneficiary has balance in mobile money account	0.060	0.067	0.048	0.007	-0.013	-0.019	0.599
Whether beneficiary thinks it is wise to leave money in the mobile money account	0.107	0.082	-0.027	-0.025	-0.135	-0.110	1.921
Whether beneficiary met an MFS agent in the past 3 months	0.059	-0.019	-0.065	-0.078	-0.124	-0.046	1.249
Whether the beneficiary paid any fee to the agent to withdraw allowance	0.111	0.144	0.179	0.033	0.069	0.036	1.892
Whether beneficiary spent his/her own allowance	-0.118	-0.101	-0.004	0.017	0.114	0.097	1.909
Whether beneficiary can perform at least one transaction related to MFS without assistance	-0.072	-0.083	-0.060	-0.010	0.012	0.023	1.018

Notes: The table presents the normalized differences and F-test for joint orthogonality at endline. (1) is the control arm. (2) is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. Group (3) is the arm where the agent award intervention was provided. (4) is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars, and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A6: Transaction Type

	(1)	(2)
	Sent Money using MMO Person-to-person	Deposited Money in MMO Agent-to-person
T1: Poster + Video + Calendar	0.00361 (0.0115)	0.00135 (0.00824)
T2: Agent Award	0.00893 (0.0114)	-0.00657 (0.00778)
T3: Poster + Video + Calendar + Agent Award	-0.00395 (0.0100)	-0.00522 (0.00816)
R2	0.018	0.020
Baseline Mean	.026	.016
Observations	2833	2833

Notes: The table reports intent-to-treat. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Baseline controls include age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

Table A7: Treatment Effects: Awareness, Trust, Usage and Savings, by beneficiary type: Disability Allowance (Interaction Specification)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wise to Leave Money in MMO	Beneficiary aware of MFS from friends & Family	Beneficiary aware of MFS through Intervention Sources	Has Balance in MMO	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	0.0680 (0.0470)	0.0274 (0.0508)	0.0649*** (0.0194)	0.0174 (0.0111)	0.0610* (0.0309)	-0.00716 (0.00517)	0.0351** (0.0160)
T1 $\times$ DAA	-0.0843 (0.0697)	-0.0721 (0.0817)	0.0494 (0.0440)	0.0413 (0.0446)	0.0246 (0.0459)	0.000467 (0.00956)	0.0310 (0.0316)
T2: Agent Award	-0.0179 (0.0459)	0.102** (0.0495)	0.0124 (0.0110)	0.00134 (0.00705)	0.0183 (0.0275)	-0.00724 (0.00517)	0.0438** (0.0167)
T2 $\times$ DAA	-0.0287 (0.0774)	-0.0748 (0.0861)	-0.0272* (0.0161)	0.00249 (0.0375)	0.0229 (0.0413)	0.0218* (0.0126)	-0.00225 (0.0326)
T3: Poster + Video + Calendar + Agent Award	0.0884** (0.0438)	0.0249 (0.0506)	0.0599* (0.0323)	0.0167* (0.00902)	-0.0104 (0.0263)	-0.00113 (0.00699)	0.0114 (0.0172)
T3 $\times$ DAA	0.0206 (0.0639)	0.0652 (0.0967)	0.0274 (0.0550)	0.0120 (0.0408)	0.0318 (0.0379)	0.00364 (0.0141)	0.0503** (0.0251)
Constant	0.629*** (0.0507)	0.338*** (0.0580)	0.00389 (0.0202)	0.0336 (0.0235)	0.124*** (0.0432)	0.0310*** (0.0116)	-0.00291 (0.0230)
R^2	0.027	0.024	0.039	0.088	0.037	0.016	0.065
Baseline Mean	.607	.311	.008	.041	.072	.003	.049
Observations	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat estimates. Disability Allowance (WA) is a dummy variable that is equal to 1 if the G2P beneficiary receives DA and 0, if otherwise. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Treatment Effects: Awareness, Trust, Usage and Savings, by beneficiary type: Old Age Allowance (Interaction Specification)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wise to Leave Money in MMO	Beneficiary aware of MFS from friends & Family	Beneficiary aware of MFS through Intervention Sources	Has Balance in MMO	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	0.0356 (0.0528)	-0.0312 (0.0575)	0.101*** (0.0265)	0.0378 (0.0247)	0.0993*** (0.0305)	-0.00701 (0.00661)	0.0465** (0.0205)
T1 $\times$ OAA	0.00935 (0.0845)	0.104 (0.102)	-0.0586* (0.0342)	-0.0221 (0.0304)	-0.0879* (0.0457)	0.0000184 (0.00925)	-0.00453 (0.0285)
T2: Agent Award	-0.0632 (0.0510)	0.0547 (0.0594)	0.00585 (0.00882)	0.00169 (0.0204)	0.0553** (0.0252)	0.00557 (0.00851)	0.0477*** (0.0165)
T2 $\times$ OAA	0.108 (0.0836)	0.0694 (0.110)	-0.00808 (0.0161)	-0.00362 (0.0222)	-0.0864** (0.0426)	-0.0165 (0.0102)	-0.0169 (0.0190)
T3: Poster + Video + Calendar + Agent Award	0.0917* (0.0518)	0.0213 (0.0634)	0.0761*** (0.0243)	0.0231 (0.0212)	0.0191 (0.0278)	-0.000475 (0.00785)	0.0331 (0.0201)
T3 $\times$ OAA	0.0116 (0.0769)	0.0814 (0.113)	-0.0211 (0.0381)	-0.0103 (0.0246)	-0.0530 (0.0454)	0.00211 (0.0144)	-0.0167 (0.0202)
Constant	0.614*** (0.0526)	0.247*** (0.0538)	0.0167 (0.0175)	0.134*** (0.0266)	0.125*** (0.0328)	0.0316*** (0.00871)	0.0385* (0.0214)
R^2	0.027	0.019	0.037	0.073	0.039	0.015	0.062
Baseline Mean	.607	.311	.008	.041	.072	.003	.049
Observations	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat estimates. Old Age Allowance (OAA) is a dummy variable that is equal to 1 if the G2P beneficiary receives OAA and 0, if otherwise. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: Treatment Effects: Awareness, Trust, Usage and Savings, by beneficiary type: Widow Allowance (Interaction Specification)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wise to Leave Money in MMO	Beneficiary aware of MFS from friends & Family	Beneficiary aware of MFS through Intervention Sources	Has Balance in MMO	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	0.0144 (0.0525)	0.0139 (0.0496)	0.0790*** (0.0238)	0.0379* (0.0219)	0.0484* (0.0285)	-0.00702 (0.00725)	0.0540*** (0.0182)
T1 × WA	0.0756 (0.0818)	-0.0370 (0.0986)	0.00963 (0.0405)	-0.0167 (0.0260)	0.0672 (0.0427)	-0.0000115 (0.00913)	-0.0254 (0.0315)
T2: Agent Award	-0.000239 (0.0450)	0.0767 (0.0471)	-0.00922 (0.00931)	0.000174 (0.0200)	0.00457 (0.0267)	0.00180 (0.00791)	0.0355** (0.0169)
T2 × WA	-0.0813 (0.0706)	-0.000653 (0.0975)	0.0373*** (0.0141)	0.00549 (0.0234)	0.0674 (0.0406)	-0.00510 (0.0100)	0.0211 (0.0336)
T3: Poster + Video + Calendar + Agent Award	0.107** (0.0469)	0.0959* (0.0525)	0.0714*** (0.0249)	0.0226 (0.0208)	-0.00622 (0.0281)	0.00196 (0.00860)	0.0400** (0.0159)
T3 × WA	-0.0344 (0.0752)	-0.151 (0.109)	-0.00539 (0.0315)	-0.000485 (0.0263)	0.0245 (0.0414)	-0.00540 (0.0113)	-0.0335 (0.0255)
Constant	0.601*** (0.0487)	0.218*** (0.0524)	0.0263 (0.0166)	0.125*** (0.0268)	0.156*** (0.0347)	0.0317*** (0.00946)	0.0342* (0.0201)
R^2	0.028	0.020	0.035	0.075	0.039	0.015	0.062
Baseline Mean	.607	.311	.008	.041	.072	.003	.049
Observations	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat estimates. Disability Allowance (WA) is a dummy variable that is equal to 1 if the G2P beneficiary receives DA and 0, if otherwise. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table A10: Treatment Effects: Awareness, Trust, Usage and Savings, by Gender (Interaction Specification)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wise to Leave Money in MMO	Beneficiary aware of MFS from friends & Family	Beneficiary aware of MFS through Intervention Sources	Has Balance in MMO	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	0.0138 (0.0560)	-0.0105 (0.0539)	0.0908*** (0.0248)	0.0353 (0.0307)	0.0831** (0.0342)	-0.00499 (0.00884)	0.0423* (0.0219)
T1 × Female	0.0436 (0.0546)	0.0236 (0.0641)	-0.0146 (0.0298)	-0.00659 (0.0322)	-0.0210 (0.0412)	-0.00307 (0.0110)	0.00557 (0.0274)
T2: Agent Award	0.00363 (0.0492)	0.0854 (0.0548)	-0.00214 (0.00989)	-0.00970 (0.0281)	0.0529* (0.0315)	0.00664 (0.0114)	0.0502** (0.0237)
T2 × Female	-0.0492 (0.0559)	-0.0134 (0.0694)	0.00845 (0.0104)	0.0189 (0.0291)	-0.0425 (0.0392)	-0.0104 (0.0137)	-0.0119 (0.0314)
T3: Poster + Video + Calendar + Agent Award	0.114** (0.0472)	0.0799 (0.0621)	0.0934*** (0.0255)	0.0111 (0.0290)	0.0315 (0.0339)	0.00622 (0.0113)	0.0398* (0.0220)
T3 × Female	-0.0292 (0.0574)	-0.0527 (0.0751)	-0.0403 (0.0269)	0.0157 (0.0321)	-0.0496 (0.0426)	-0.00979 (0.0138)	-0.0193 (0.0306)
Constant	0.597*** (0.0498)	0.230*** (0.0533)	0.0142 (0.0151)	0.128*** (0.0302)	0.123*** (0.0350)	0.0287*** (0.00996)	0.0320 (0.0221)
R^2	0.027	0.021	0.037	0.088	0.038	0.015	0.064
Baseline Mean	.607	.311	.008	.041	.072	.002	.049
Observations	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat estimates. The variable, Female, takes the value of 1 if beneficiaries are females and takes the value of 0 if otherwise. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A11: Treatment Effects: Awareness, Trust, Usage and Savings, by Literacy (Interaction Specification)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wise to Leave Money in MMO	Beneficiary aware of MFS from friends & Family	Beneficiary aware of MFS through Intervention Sources	Has Balance in MMO	Has Any Savings	Saves in MMO	Saves in Formal Sources
T1: Poster + Video + Calendar	0.0318 (0.0467)	0.0186 (0.0438)	0.0848*** (0.0181)	0.0363** (0.0167)	0.0497* (0.0281)	-0.00764 (0.00623)	0.0384** (0.0188)
T1 $\times$ Literate	0.0300 (0.0519)	-0.0592 (0.0540)	-0.00911 (0.0284)	-0.0144 (0.0346)	0.0760 (0.0552)	0.00300 (0.0131)	0.0262 (0.0349)
T2: Agent Award	-0.0375 (0.0459)	0.0887** (0.0422)	0.0103 (0.00918)	0.0108 (0.0138)	0.0166 (0.0276)	-0.00354 (0.00620)	0.0380** (0.0154)
T2 $\times$ Literate	0.0402 (0.0572)	-0.0460 (0.0541)	-0.0264 (0.0183)	-0.0320 (0.0281)	0.0366 (0.0527)	0.0143 (0.0164)	0.0176 (0.0263)
T3: Poster + Video + Calendar + Agent Award	0.113** (0.0448)	0.0485 (0.0467)	0.0757*** (0.0234)	0.0185 (0.0133)	-0.00826 (0.0262)	-0.00280 (0.00726)	0.0219 (0.0176)
T3 $\times$ Literate	-0.0550 (0.0552)	-0.00534 (0.0629)	-0.0228 (0.0190)	0.00919 (0.0336)	0.0346 (0.0479)	0.0113 (0.0164)	0.0222 (0.0285)
Constant	0.583*** (0.0480)	0.223*** (0.0453)	0.0122 (0.0161)	0.111*** (0.0218)	0.152*** (0.0322)	0.0312*** (0.00854)	0.0415** (0.0188)
R^2	0.024	0.021	0.035	0.087	0.038	0.015	0.064
Baseline Mean	.607	.311	.008	.041	.072	.003	.049
Observations	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat for beneficiaries who are literate (i.e., they can read and write). The variable, Literate, takes the value of 1 if beneficiaries can read and write and takes the value of 0 if beneficiaries cannot read and/or write. All regressions are estimated with baseline controls and the baseline value of the outcome (where measured, but otherwise excluded). T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was rolled-out. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was rolled-out. Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Cost of Intervention

Item	T1: Information Campaign	T2: Agent Award	T3: T1 + T2
Designing and recording of videos	300	–	300
Designing of calendars	100	–	100
Designing of A2 posters	50	50	100
Tablet cost to show videos to beneficiaries	180	–	180
Personalised Crest	–	150	150
Material cost (printed A2 posters + calendars given to beneficiaries and agents)	60	60	120
Supervisor and RA time for administration	180	150	330
Field Officers Salary + Transportation	200	100	300
Total (Bangladesh Taka)	1070	510	1580
Total (US Dollars)	8.75	4.17	12.92

Notes: The table presents the cost of delivering the interventions under each treatment arm. The cost figures are in Bangladeshi Taka (BDT), converted to US Dollars using an exchange rate of USD 1 = BDT 122.14. ‘–’ indicates items not applicable for the treatment arm.

Chapter 3 Appendix

Table A13: Treatment Effects: Awareness, Usage, and Savings of Mobile Financial Services

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Beneficiary is aware of MFS	Beneficiary is aware of MFS point	Wise to Leave Money in MMO	Uses MMO for Other Purpose	Can Perform Transactions	Has Sent Money using MMO	Saves in Formal Sources	Saves in Informal Sources
T1	0.0729 (0.0787)	0.0660 (0.0563)	0.0202 (0.0480)	0.00650 (0.0320)	0.0325 (0.0279)	-0.00171 (0.0144)	0.0424* (0.0243)	0.0243 (0.0307)
T1 x Rural	-0.0240 (0.102)	-0.0611 (0.0811)	0.0452 (0.0886)	0.00451 (0.0468)	0.00397 (0.0407)	0.00820 (0.0231)	0.00613 (0.0297)	0.0131 (0.0444)
T2	-0.0295 (0.0661)	0.0472 (0.0507)	-0.0854* (0.0456)	0.0171 (0.0277)	0.00237 (0.0254)	0.0152 (0.0179)	0.0205 (0.0209)	-0.0361 (0.0236)
T2 x Rural	0.201** (0.0947)	-0.0405 (0.0768)	0.119 (0.0788)	-0.00472 (0.0437)	-0.000491 (0.0397)	-0.0145 (0.0227)	0.0415 (0.0259)	0.0483 (0.0343)
T3	0.0830 (0.0790)	0.00821 (0.0556)	0.0647 (0.0559)	0.0438 (0.0341)	0.0509* (0.0289)	0.00771 (0.0156)	0.0142 (0.0280)	-0.0457* (0.0259)
T3 x Rural	-0.0344 (0.0980)	0.0156 (0.0799)	0.0740 (0.0829)	-0.0706 (0.0446)	-0.0644 (0.0415)	-0.0241 (0.0197)	0.0255 (0.0314)	0.0416 (0.0357)
R^2	0.021	0.018	0.028	0.062	0.152	0.020	0.067	0.013
Baseline Mean	0.429	0.508	0.607	0.104	0.097	0.026	0.049	0.034
Observations	2833	2833	2833	2833	2833	2833	2833	2833

Notes: The table reports intent-to-treat. T1 is the treatment arm where beneficiaries were shown the two videos, and given the posters and the desk calendars. T2 is the treatment arm where the agent award scheme was given. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was given. Baseline controls include the age of the beneficiary, household size, female dummy, allowance type (DAA, OAA and WAA), rural/urban dummy, baseline value of the outcome (where measured, but otherwise excluded), unbalanced variables at baseline, and is clustered at the union level. Robust standard errors in parentheses * $p < 0.10$ ** $p < 0.05$ *** $p < 0.0$

Baseline Balance Checks between Treatment/Controls Arms

Here, we present balance checks between treatment/control arms at baseline. We do this by splitting the sample into rural and urban regions. In [Table A14](#), we present the mean and standard errors between treatment/control arms for the rural regions. In [Table A15](#), we present the normalised differences and the F-test for joint orthogonality between treatment/control arms for the rural regions. Similarly, in [Table A16](#), we present the mean and standard errors between treatment/control arms for the urban regions. In [Table A17](#), we present the normalised differences and the F-test for joint orthogonality between treatment/control arms for the urban regions.

Overall, we have good balance between the rural and urban regions, specifically when we look at the normalised differences between the means of the treatment/control arms are all weakly smaller in absolute terms than 0.30, and so, can be considered well-balanced variables (Imbens, 2015). However, We do observe an imbalance, under the F-test for joint orthogonality, for two variables for the rural regions: whether the beneficiary paid any feed to the agent to withdraw allowance and whether the beneficiary spent his/her own allowance. Similarly, we also find an imbalance, under the F-test for joint orthogonality, for two variables: whether beneficiary can read and write and whether beneficiary is a female.

To account for these imbalances, we include these variables as controls in our regression models. We also test whether there are differences in the estimates when these imbalanced variables are not included in the model versus when they are not included, and we find that our estimates remain consistent and robust. This is reassuring meaning that these sub-sample estimates are not being driven by imbalances.

Table A14: Baseline Balance Check: Mean and Standard Errors Across Treatment/Control Arms for Rural Sample

Variable	Control		T1: Poster + Video + Calendar		T2: Agent Award		T3: Poster + Video + Calendar + Agent Award	
	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE
Beneficiary Age	339 [11]	56.997 [0.777]	375 [12]	57.008 [0.699]	435 [14]	57.131 [0.694]	396 [13]	57.141 [0.932]
Beneficiary can read and write	339 [11]	0.224 [0.044]	375 [12]	0.237 [0.018]	435 [14]	0.202 [0.021]	396 [13]	0.232 [0.027]
Beneficiary is a female	339 [11]	0.298 [0.032]	375 [12]	0.275 [0.022]	435 [14]	0.276 [0.020]	396 [13]	0.263 [0.021]
Household Size	339 [11]	4.000 [0.186]	375 [12]	3.837 [0.160]	435 [14]	4.159 [0.167]	396 [13]	3.879 [0.182]
Household experienced shock, in past 3 months	339 [11]	0.428 [0.045]	375 [12]	0.432 [0.045]	435 [14]	0.389 [0.022]	396 [13]	0.394 [0.041]
Whether beneficiary received any remittances, in past 3 months	339 [11]	0.086 [0.018]	375 [12]	0.088 [0.018]	435 [14]	0.094 [0.023]	396 [13]	0.149 [0.030]
Total Remittances Received (IHS)	339 [11]	1.327 [0.130]	375 [12]	1.350 [0.124]	435 [14]	1.383 [0.164]	396 [13]	1.755 [0.225]
Whether beneficiary sent any remittances, in past 3 months	339 [11]	0.012 [0.005]	375 [12]	0.024 [0.008]	435 [14]	0.016 [0.006]	396 [13]	0.025 [0.007]
Total Remittances Sent (IHS)	339 [11]	0.774 [0.034]	375 [12]	0.856 [0.059]	435 [14]	0.797 [0.035]	396 [13]	0.862 [0.043]
Whether beneficiary has any savings	339 [11]	0.074 [0.016]	375 [12]	0.077 [0.014]	435 [14]	0.046 [0.010]	396 [13]	0.053 [0.016]
Total Savings (IHS)	339 [11]	1.292 [0.113]	375 [12]	1.324 [0.104]	435 [14]	1.088 [0.087]	396 [13]	1.125 [0.131]
Whether beneficiary is aware of Mobile Financial Services (all sources)	339 [11]	0.428 [0.057]	375 [12]	0.373 [0.062]	435 [14]	0.457 [0.049]	396 [13]	0.513 [0.055]
Whether beneficiary has balance in mobile money account	339 [11]	0.053 [0.010]	375 [12]	0.024 [0.010]	435 [14]	0.030 [0.008]	396 [13]	0.033 [0.011]
Whether beneficiary thinks it is wise to leave money in the mobile money account	339 [11]	0.602 [0.022]	375 [12]	0.555 [0.030]	435 [14]	0.559 [0.023]	396 [13]	0.611 [0.041]
Whether beneficiary met an MFS agent in the past 3 months	339 [11]	0.590 [0.029]	375 [12]	0.587 [0.038]	435 [14]	0.641 [0.034]	396 [13]	0.601 [0.034]
Whether the beneficiary paid any fee to the agent to withdraw allowance	339 [11]	0.224 [0.028]	375 [12]	0.184 [0.030]	435 [14]	0.143 [0.020]	396 [13]	0.136 [0.022]
Whether beneficiary thinks they could manage money better with MFS	339 [11]	0.436 [0.048]	375 [12]	0.373 [0.045]	435 [14]	0.409 [0.045]	396 [13]	0.434 [0.049]

Notes: The table presents the mean and standard errors at baseline for rural sample. Control is the arm that received no intervention. T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A15: Normalised Differences and F-test for Joint Orthogonality for Rural Sample

Variable	Normalised difference (1)-(2)	Normalised difference (1)-(3)	Normalised difference (1)-(4)	Normalised difference (2)-(3)	Normalised difference (2)-(4)	Normalised difference (3)-(4)	F-test for joint orthogonality
Beneficiary Age	-0.001	-0.007	-0.008	-0.007	-0.007	-0.001	0.011
Beneficiary can read and write	-0.031	0.054	-0.019	0.085	0.012	-0.073	0.596
Beneficiary is a female	0.051	0.049	0.079	-0.003	0.027	0.030	0.315
Household Size	0.072	-0.070	0.055	-0.140	-0.018	0.124	0.793
Household experienced shock, in past 3 months	-0.009	0.080	0.069	0.088	0.077	-0.011	0.425
Whether beneficiary received any remittances, in past 3 months	-0.009	-0.030	-0.195	-0.022	-0.188	-0.168	1.279
Total Remittances Received (IHS)	-0.011	-0.026	-0.179	-0.015	-0.169	-0.156	1.051
Whether beneficiary sent any remittances, in past 3 months	-0.091	-0.036	-0.098	0.057	-0.008	-0.065	1.228
Total Remittances Sent (IHS)	-0.089	-0.028	-0.094	0.064	-0.005	-0.069	1.191
Whether beneficiary has any savings	-0.014	0.119	0.085	0.131	0.099	-0.033	1.624
Total Savings (IHS)	-0.014	0.103	0.084	0.117	0.098	-0.020	1.439
Whether beneficiary is aware of Mobile Financial Services (all sources)	0.111	-0.060	-0.170	-0.170	-0.280	-0.110	1.060
Whether beneficiary has balance in mobile money account	0.152	0.118	0.101	-0.036	-0.053	-0.017	1.759
Whether beneficiary thinks it is wise to leave money in the mobile money account	0.095	0.087	-0.019	-0.008	-0.114	-0.106	1.114
Whether beneficiary met an MFS agent in the past 3 months	0.007	-0.106	-0.022	-0.112	-0.029	0.083	0.591
Whether the beneficiary paid any fee to the agent to withdraw allowance	0.100	0.213	0.230	0.113	0.130	0.018	2.218*
Whether beneficiary spent his/her own allowance	-0.233	-0.144	-0.080	0.091	0.153	0.063	3.063**
Whether beneficiary can perform at least one transaction related to MFS without assistance	-0.108	-0.113	-0.056	-0.006	0.053	0.059	1.899

Notes: The table presents the normalised differences and F-test for joint orthogonality at baseline for the rural sample. (1) is the control arm. (2) is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. Group (3) is the arm where the agent award intervention was provided. (4) is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars, and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A16: Baseline Balance Check: Mean and Standard Errors Across Treatment/Control Arms for Urban Sample

	Control		T1: Poster + Video + Calendar		T2: Agent Award		T3: Poster + Video + Calendar + Agent Award	
Variable	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE
Beneficiary Age	430 [14]	57.805 [0.921]	397 [13]	56.310 [0.589]	342 [11]	56.105 [0.815]	361 [12]	57.615 [0.574]
Beneficiary can read and write	430 [14]	0.242 [0.035]	397 [13]	0.199 [0.024]	342 [11]	0.254 [0.024]	361 [12]	0.302 [0.027]
Beneficiary is a female	430 [14]	0.314 [0.021]	397 [13]	0.254 [0.022]	342 [11]	0.310 [0.019]	361 [12]	0.266 [0.024]
Household Size	430 [14]	3.914 [0.159]	397 [13]	4.154 [0.130]	342 [11]	3.500 [0.173]	361 [12]	4.080 [0.160]
Household experienced shock, in past 3 months	430 [14]	0.372 [0.026]	397 [13]	0.348 [0.030]	342 [11]	0.392 [0.044]	361 [12]	0.388 [0.036]
Whether beneficiary received any remittances, in past 3 months	430 [14]	0.077 [0.019]	397 [13]	0.076 [0.022]	342 [11]	0.094 [0.021]	361 [12]	0.111 [0.023]
Total Remittances Received (IHS)	430 [14]	1.253 [0.134]	397 [13]	1.219 [0.151]	342 [11]	1.348 [0.163]	361 [12]	1.502 [0.166]
Whether beneficiary sent any remittances, in past 3 months	430 [14]	0.014 [0.005]	397 [13]	0.025 [0.011]	342 [11]	0.018 [0.007]	361 [12]	0.036 [0.010]
Total Remittances Sent (IHS)	430 [14]	0.789 [0.031]	397 [13]	0.849 [0.068]	342 [11]	0.807 [0.045]	361 [12]	0.927 [0.065]
Whether beneficiary has any savings	430 [14]	0.084 [0.009]	397 [13]	0.073 [0.014]	342 [11]	0.061 [0.010]	361 [12]	0.089 [0.012]
Total Savings (IHS)	430 [14]	1.360 [0.075]	397 [13]	1.279 [0.113]	342 [11]	1.208 [0.090]	361 [12]	1.443 [0.113]
Whether beneficiary is aware of Mobile Financial Services (all sources)	430 [14]	0.421 [0.038]	397 [13]	0.398 [0.050]	342 [11]	0.421 [0.057]	361 [12]	0.352 [0.054]
Whether beneficiary has balance in mobile money account	430 [14]	0.047 [0.012]	397 [13]	0.045 [0.009]	342 [11]	0.047 [0.010]	361 [12]	0.047 [0.013]
Whether beneficiary thinks it is wise to leave money in the mobile money account	430 [14]	0.637 [0.032]	397 [13]	0.599 [0.035]	342 [11]	0.608 [0.027]	361 [12]	0.657 [0.036]
Whether beneficiary met an MFS agent in the past 3 months	430 [14]	0.572 [0.031]	397 [13]	0.549 [0.034]	342 [11]	0.544 [0.039]	361 [12]	0.629 [0.025]
Whether the beneficiary paid any fee to the agent to withdraw allowance	430 [14]	0.172 [0.020]	397 [13]	0.139 [0.023]	342 [11]	0.131 [0.019]	361 [12]	0.171 [0.024]

Notes: The table presents the mean and standard errors at baseline for urban sample. Control is the arm that received no intervention. T1 is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. T2 is the arm where the agent award intervention was provided. T3 is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A17: Normalised Differences Between Groups and F-test for Joint Orthogonality for Urban Sample

Variable	Normalized difference (1)-(2)	Normalized difference (1)-(3)	Normalized difference (1)-(4)	Normalized difference (2)-(3)	Normalized difference (2)-(4)	Normalized difference (3)-(4)	F-test for joint orthogonality
Beneficiary Age	0.078	0.090	0.010	0.011	-0.068	-0.080	1.581
Beneficiary can read and write	0.103	-0.029	-0.135	-0.133	-0.238	-0.106	2.907**
Beneficiary is a female	0.132	0.009	0.106	-0.124	-0.026	0.097	2.141
Household Size	-0.099	0.184	-0.071	0.288	0.031	-0.268	3.551**
Household experienced shock, in past 3 months	0.051	-0.041	-0.032	-0.092	-0.083	0.008	0.373
Whether beneficiary received any remittances, in past 3 months	0.004	-0.061	-0.118	-0.065	-0.122	-0.057	0.615
Total Remittances Received (IHS)	0.018	-0.047	-0.117	-0.065	-0.135	-0.070	0.688
Whether beneficiary sent any remittances, in past 3 months	-0.082	-0.029	-0.144	0.052	-0.063	-0.114	1.509
Total Remittances Sent (IHS)	-0.066	-0.021	-0.134	0.044	-0.070	-0.111	1.380
Whether beneficiary has any savings	0.040	0.085	-0.018	0.046	-0.057	-0.103	1.354
Total Savings (IHS)	0.037	0.070	-0.036	0.034	-0.072	-0.104	1.125
Whether beneficiary is aware of Mobile Financial Services	0.047	-0.000	0.142	-0.047	0.095	0.142	0.442
Whether beneficiary has balance in mobile money account	0.006	-0.001	-0.003	-0.007	-0.008	-0.001	0.006
Whether beneficiary thinks it is wise to leave money in the mobile money account	0.078	0.060	-0.040	-0.018	-0.118	-0.100	0.638
Whether beneficiary met an MFS agent in the past 3 months	0.046	0.057	-0.116	0.011	-0.162	-0.172	1.935
Whether the beneficiary paid any fee to the agent to withdraw allowance	0.107	0.046	0.100	-0.061	-0.007	0.055	0.317
Whether beneficiary spent his/her own allowance	-0.037	-0.034	0.075	0.003	0.112	0.108	0.803
Whether beneficiary can perform at least one transaction related to MFS without assistance	-0.035	-0.074	-0.085	-0.039	-0.051	-0.013	0.505

Notes: The table presents the normalised differences and F-test for joint orthogonality at baseline for the urban sample. (1) is the control arm. (2) is the treatment arm where beneficiaries were shown the two videos, given the posters and the desk calendars. Group (3) is the arm where the agent award intervention was provided. (4) is the treatment arm where beneficiaries were shown the two videos, given the posters, desk calendars, and the agent award was provided. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Chapter 4 Appendix

Table A18: Baseline Balance Check: Mean and Standard Errors by Arm

Variable	N	(1) Control Mean/SE	N	(2) T1 Mean/SE	N	(3) T2 Mean/SE	t-test Difference (1)-(2)	t-test Difference (1)-(3)	t-test Difference (2)-(3)
Age	226	34.181 [0.556]	170	34.641 [0.604]	167	35.605 [0.603]	-0.460	-1.423*	-0.964
Respondent is married	226	0.677 [0.031]	170	0.676 [0.036]	167	0.683 [0.036]	0.001	-0.006	-0.006
Age at marriage	223	15.170 [0.178]	168	15.161 [0.212]	167	15.210 [0.207]	0.010	-0.039	-0.049
Relationship to household head: household head	226	0.363 [0.032]	170	0.335 [0.036]	167	0.359 [0.037]	0.028	0.004	-0.024
Completed primary education	226	0.442 [0.033]	170	0.441 [0.038]	167	0.425 [0.038]	0.001	0.017	0.016
Completed secondary education	226	0.221 [0.028]	170	0.176 [0.029]	167	0.156 [0.028]	0.045	0.066	0.021
Has access to personal phone	226	0.938 [0.016]	170	0.959 [0.015]	167	0.952 [0.017]	-0.021	-0.014	0.007
Mean monthly income (BDT)	186	7375.652 [287.203]	127	7630.654 [383.644]	124	7604.871 [343.149]	-255.001	-229.219	25.783
Ever used mobile money account	226	0.854 [0.024]	170	0.847 [0.028]	167	0.796 [0.031]	0.007	0.058	0.051
Has a bKash mobile money account	226	0.473 [0.033]	170	0.518 [0.038]	167	0.461 [0.039]	-0.044	0.012	0.057
Has others (Nagad/ROCKET) mobile money account	226	0.659 [0.032]	170	0.576 [0.038]	167	0.647 [0.037]	0.083*	0.013	-0.070
Deposits money in mobile money account	226	0.027 [0.011]	170	0.029 [0.013]	167	0.048 [0.017]	-0.003	-0.021	-0.018
Sends money using mobile money account	226	0.566 [0.033]	170	0.582 [0.038]	167	0.509 [0.039]	-0.016	0.057	0.073
Received remittance in the last 6 months	226	0.429 [0.033]	170	0.365 [0.037]	167	0.353 [0.037]	0.064	0.076	0.011
Sent remittance in the last 6 months	226	0.456 [0.033]	170	0.506 [0.038]	167	0.485 [0.039]	-0.050	-0.029	0.021
Has any savings in the last 12 months	226	0.743 [0.029]	170	0.653 [0.037]	167	0.695 [0.036]	0.090*	0.049	-0.042
Age of the household head	226	40.186 [0.760]	170	39.794 [0.795]	167	40.743 [0.839]	0.392	-0.557	-0.948
Household size	226	3.619 [0.099]	170	3.418 [0.120]	167	3.701 [0.128]	0.202	-0.081	-0.283
Number of children in the household	226	1.575 [0.079]	170	1.406 [0.087]	167	1.587 [0.094]	0.169	-0.012	-0.181
Domestic worker is the primary earner	226	0.142 [0.023]	170	0.200 [0.031]	167	0.174 [0.029]	-0.058	-0.032	0.026
Weekly per capita consumption (BDT)	226	202.949 [9.587]	170	221.702 [17.112]	167	255.565 [29.850]	-18.752	-52.615*	-33.863

Notes: The table presents the mean standard errors and t-tests at baseline. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided and the bKash offer was given. T2 is the treatment arm that received DFS training only. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A19: Baseline Balance Check: Normalised Differences and F-Test for Joint Orthogonality

Variable	Normalized difference (1)-(2)	Normalized difference (1)-(3)	Normalized difference (2)-(3)	F-test for joint orthogonality
Age	-0.056	-0.175	-0.123	1.520
Respondent is married	0.001	-0.012	-0.013	0.009
Age at marriage	0.004	-0.015	-0.018	0.016
Relationship to household head: household head	0.058	0.007	-0.050	0.178
Completed primary education	0.003	0.035	0.032	0.067
Completed secondary education	0.111	0.166	0.056	1.461
Has access to personal phone	-0.093	-0.061	0.033	0.458
Mean monthly income (BDT)	-0.062	-0.059	0.006	0.196
Ever used mobile money account	0.019	0.153	0.132	1.286
Has a bKash mobile money account	-0.088	0.025	0.113	0.609
Has others (Nagad/ROCKET) mobile money account	0.171	0.026	-0.144	1.562
Deposits money in mobile money account	-0.017	-0.115	-0.096	0.740
Sends money using mobile money account	-0.032	0.115	0.147	1.030
Received remittance in the last 6 months	0.131	0.155	0.024	1.426
Sent remittance in the last 6 months	-0.100	-0.059	0.042	0.501
Age of the household head	0.036	-0.050	-0.089	0.320
Household size	0.132	-0.052	-0.176	1.490
Number of children in the household	0.145	-0.010	-0.154	1.297
Domestic worker is the primary earner	-0.157	-0.088	0.067	1.199
Weekly per capita consumption (BDT)	-0.103	-0.191	-0.108	1.981

Notes: The table presents normalised differences and the F-test for joint orthogonality at baseline. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided and the bKash offer was given. T2 is the treatment arm that received DFS training only ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A20: Summary of DFS Training by Treatment/Control Arm

Arm	Hub Training	Door-to-Door Training	No Training
T1: DFS Training + bKash offer	42.3%	35.3%	20.6%
T2: DFS Training	50.3%	33.5%	14.9%
Control	0%	0%	0%

Notes: The table presents a summary of the DFS training up-take. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided and the bKash offer was given. T2 is the treatment arm that received DFS training only.

Table A21: Attrition

	C	T1	T2
Baseline	226	170	167
Endline	180	140	140
Completion Rate	79.6%	82.3%	83.8%

Notes: This table presents the completion rates by treatment/control arms. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided, and the bKash offer was given. T2 is the treatment arm that received DFS training only.

Table A22: Endline Balance Check: Mean and Standard Errors by Arm

Variable	N	(1) Control Mean/SE	N	(2) T1 Mean/SE	N	(3) T2 Mean/SE	t-test Difference (1)-(2)	t-test Difference (1)-(3)	t-test Difference (2)-(3)
Age	184	34.163 [0.556]	140	35.271 [0.666]	140	35.736 [0.659]	-1.108	-1.573	-0.465
Respondent is married	184	0.690 [0.034]	140	0.671 [0.040]	140	0.714 [0.038]	0.019	-0.024	-0.043
Age at marriage	181	15.343 [0.199]	138	15.123 [0.234]	140	15.214 [0.224]	0.220	0.129	-0.091
Relationship to household head: household head	184	0.359 [0.035]	140	0.336 [0.040]	140	0.314 [0.039]	0.023	0.045	0.022
Completed primary education	184	0.457 [0.037]	140	0.407 [0.042]	140	0.450 [0.042]	0.050	0.007	-0.043
Completed secondary education	184	0.223 [0.031]	140	0.171 [0.032]	140	0.157 [0.031]	0.052	0.066	0.014
Has access to personal phone	184	0.946 [0.017]	140	0.957 [0.017]	140	0.950 [0.018]	-0.011	-0.004	0.007
Mean monthly income (BDT)	154	7278.061 [316.185]	107	7574.701 [427.313]	104	7502.923 [371.655]	-296.640	-224.862	71.779
Ever used a mobile money account	184	0.864 [0.025]	140	0.850 [0.030]	140	0.786 [0.035]	0.014	0.078	0.064
Has a bKash mobile money account	184	0.478 [0.037]	140	0.514 [0.042]	140	0.486 [0.042]	-0.036	-0.008	0.028
Has others (Nagad/ROCKET) mobile money account	184	0.641 [0.035]	140	0.586 [0.042]	140	0.650 [0.040]	0.055	-0.009	-0.064
Deposits money in mobile money accounts	184	0.027 [0.012]	140	0.029 [0.014]	140	0.050 [0.018]	-0.002	-0.023	-0.021
Sends money using mobile money account	184	0.560 [0.037]	140	0.600 [0.042]	140	0.507 [0.042]	-0.040	0.053	0.093
Received remittances in the last 6 months	184	0.418 [0.036]	140	0.371 [0.041]	140	0.343 [0.040]	0.047	0.075	0.028
Sent remittances in the last 6 months	184	0.462 [0.037]	140	0.507 [0.042]	140	0.471 [0.042]	-0.045	-0.009	0.036
Has any savings in the last 12 months	184	0.739 [0.032]	140	0.636 [0.041]	140	0.729 [0.038]	0.103**	0.010	-0.093
Age of the household head	184	40.000 [0.763]	140	40.429 [0.883]	140	41.229 [0.929]	-0.429	-1.229	-0.800
Household size	184	3.696 [0.111]	140	3.429 [0.134]	140	3.793 [0.138]	0.267	-0.097	-0.364
Number of children in the household	184	1.625 [0.068]	140	1.414 [0.081]	140	1.643 [0.083]	0.211**	-0.018	-0.229**

Notes: The table presents the mean standard errors and t-tests at endline. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided and the bKash offer was given. T2 is the treatment arm that received DFS training only ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A23: Endline Balance Check: Normalised Differences and F-Test for Joint Orthogonality

Variable	Normalized difference (1)-(2)	Normalized difference (1)-(3)	Normalized difference (2)-(3)	F-test for joint orthogonality
Age	-0.144	-0.205	-0.059	1.800
Respondent is married	0.040	-0.052	-0.093	0.302
Age at marriage	0.081	0.048	-0.034	0.267
Relationship to household head: household head	0.048	0.094	0.046	0.352
Completed primary education	0.099	0.013	-0.086	0.435
Completed secondary education	0.128	0.166	0.038	1.295
Has access to personal phone	-0.053	-0.019	0.034	0.111
Mean monthly income (BDT)	-0.072	-0.058	0.017	0.195
Ever used a mobile money account	0.040	0.209	0.166	1.928
Has a bKash mobile money account	-0.072	-0.015	0.057	0.218
Has others (Nagad/ROCKET) mobile money account	0.114	-0.018	-0.132	0.747
Deposits money in mobile money accounts	-0.008	-0.121	-0.110	0.725
Sends money using mobile money account	-0.081	0.105	0.186	1.230
Received remittances in the last 6 months	0.096	0.155	0.060	1.004
Sent remittances in the last 6 months	-0.090	-0.019	0.071	0.343
Has any savings in the last 12 months	0.224	0.024	-0.199	2.325*
Age of the household head	-0.041	-0.116	-0.075	0.541
Household size	0.173	-0.062	-0.226	2.058
Number of children in the household	0.178	-0.015	-0.190	1.625
Domestic worker is the primary earner	-0.142	-0.009	0.131	0.960
Weekly per capita consumption (BDT)	-0.138	-0.083	0.052	0.723

Notes: The table presents normalised differences and the F-test for joint orthogonality at endline. Control is the arm that received no intervention. T1 is the treatment arm where the DFS training was provided and the bKash offer was given. T2 is the treatment arm that received DFS training only ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A24: Cost of intervention per domestic worker

Item	Door-to-door	Venue
Venue rent	0	240
Banner	0	40
DFS Material Cost	120	120
Travel Allowance	0	300
Participation Payment and Food	500	500
Conveyance for Field Officer & Project Officer	67	50
Food for Field Officer & Project Officer	27	20
Miscellaneous	33	20
Total	747	1290

Notes: The table presents the cost of delivering the DFS DFS training using two modes: door-to-door and venue sessions. The cost figures are in Bangladeshi Taka (BDT)

Table A25: Cash-flow to calculate IRR

Monthly Cash-flow	Door-to-door	Venue
Month 0 (Cost of Investment)	-747	-1200
Month 1	450	450
Month 2	450	450
Month 3	450	450
Month 4	450	450
Month 5	450	450
Month 6	450	450
Month 7	450	450
Month 8	450	450
Month 9	450	450
Month 10	450	450
Month 11	450	450
Month 12	450	450
Internal Rate of Return (IRR)	60%	37%
Payback Period (months)	1.5	2.5

Notes: This table shows the monthly cash inflows following the intervention, used to estimate the internal rate of return (IRR) for the two delivery modes. The initial cost is incurred in Month 0, and the assumed monthly benefit is BDT 450 for twelve months. The internal rate of return (IRR) is calculated by solving the equation:

$$0 = -C_0 + \sum_{t=1}^{12} \frac{R}{(1+r)^t}$$

where C_0 is the initial cost of investment (Month 0), R is the monthly return (assumed constant), r is the monthly IRR, and t is the month index from 1 to 12. The payback period is calculated as C_0/R .

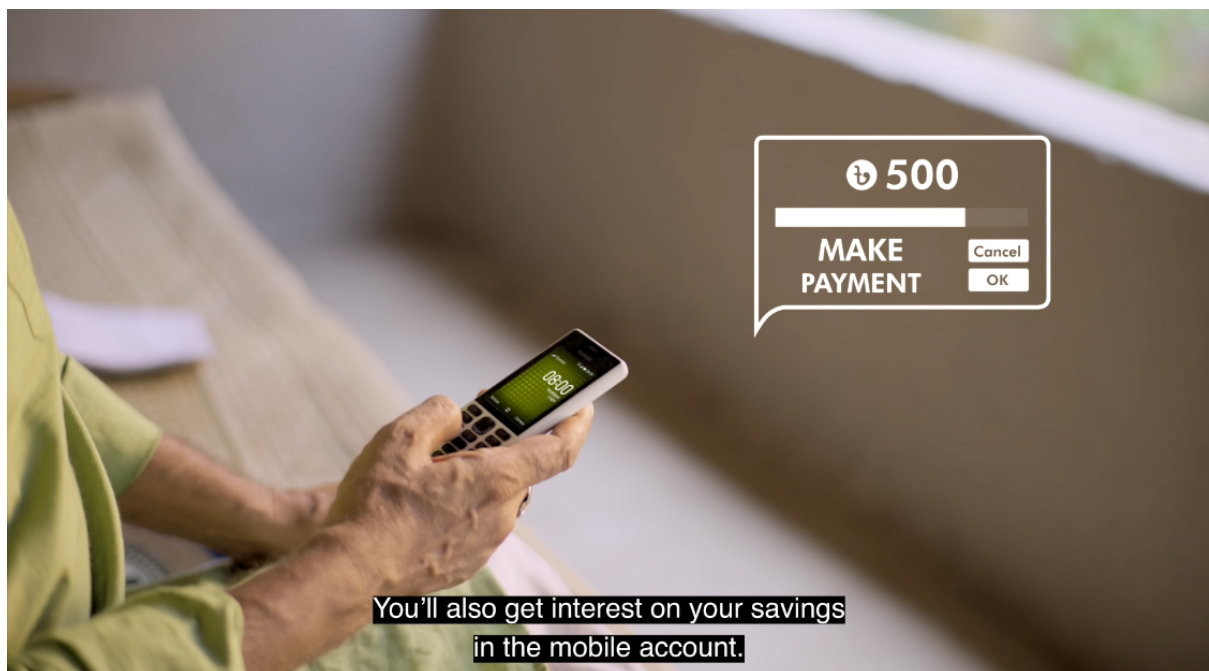


Figure 1: Video 1 Awareness



Figure 2: Video 2 Knowledge



Figure 3: A2 Poster



Figure 4: Calendar Page

July | 2022

আষাঢ়-শ্রাবণ ১৪২৯

SUN	রবি	MON	সোম	TUE	মঙ্গল	WED	বুধ	THU	বৃহঃ	FRI	শুক্র	SAT	শনি
31	১৬									1	১৭	2	১৮
3	১৯	4	২০	5	২১	6	২২	7	২৩	8	২৪	9	২৫
10	২৬	11	২৭	12	২৮	13	২৯	14	৩০	15	৩১	16	১
17	২	18	৩	19	৪	20	৫	21	৬	22	৭	23	৮
24	৯	25	১০	26	১১	27	১২	28	১৩	29	১৪	30	১৫

9-11 July Eid-ul-Adha*

*Subject to Appearance of the Moon

মোবাইল মানি অ্যাকাউন্ট
ব্যবহার করে টাকা পাঠানো
খুবই সহজ...

মোবাইল মানি এজেন্টেরা শুধুমাত্র নির্দিষ্ট
চার্জ ব্যতীত বাড়তি কোনো ফি নেবে না।

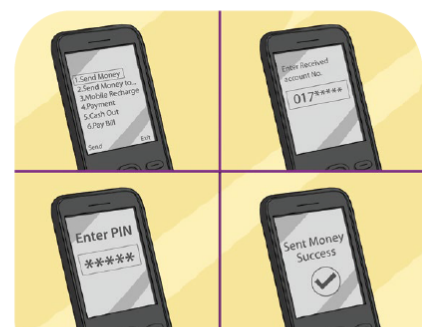


Figure 5: Calendar Page



Figure 6: Crest "Best Customer Satisfaction in Mobile Financial Services" Name [name of agent]
Union [name of union]



Figure 7: Winner with Crest (Agent Name: Anwar Hossain, Union: Pasargati)



Figure 8: Poster inside Agent Shop (1)



Figure 9: Poster inside Agent Shop (2)

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