THE TRANSITION BENEFIT

FROM CASH TO MOBILE FINANCIAL SERVICES IN THE APONJON INITIATIVE, BANGLADESH

A Comparison between Cash and Mobile Payments

This report was prepared by Dnet (a not-for-profit Social Impact Enterprise, www.dnet.org.bd) based on a pilot to deploy a mobile financial management system to send incentive payments to Aponjon (an mHealth service) agents in Bangladesh. It was funded by USAID's mSTAR project (Associate Award AID-OAA-A-12-00073), managed by FHI 360.

June 2015



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LIST OF ACRONYMS

BOI	Benefit on Investment
DBBL	Dutch Bangla Bank Limited
MAMA	Mobile Alliance for Maternal Action
MFS	Mobile Financial Services
mHealth	Mobile Health
mSTAR	Mobile Solutions Technical Assistance and Research Program
PMRS	Project Monitoring and Reporting System
SPSS	Statistical Package for the Social Sciences
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This assessment was conducted to systematically understand the benefit of transitioning from cash to mobile financial services (MFS), under an mHealth initiative for expectant and new mothers (branded as *Aponjon*), which is run by Dnet in Bangladesh. The transition was made with an expectation of efficiency gains in *Aponjon*'s incentive payment system to *Aponjon* agents at the community level, which are provided to them for customer acquisitions that they make. The benefits identified included savings in time and cost, as well as a reduction in risk from incentive payments made from the head office to *Aponjon* agents. Analyzing the improvement in knowledge and usage of mobile financial services by *Aponjon* agents was integral part of the assessment.

A payment management web platform, a training manual on MFS, and partnerships with MFS providers were the key ingredients of the transition. Both quantitative and qualitative approaches, methods and instruments were applied to capture the data. Data was captured firstly on cash practices—the pre-transition stage—and on mobile financial practices—the post-transition stage. The benefit on investment (BOI) methodology, five-point Likert scale and ten-point score card were applied to illustrate the assessment results [see Annex for details].

The transition from cash to MFS is estimated to have saved a total of 41,333 work-hours (just under 20 full-time employees)

The incentive transaction included both supply side (head office, district, and sub-district representatives), and demand side (*Aponjon* agents) engagement. With cash, payments were delivered from the head office to *Aponjon* agents, via the intermediary tiers (district and sub-district representatives). After transition to MFS, the intermediary tiers were abolished from the transaction cycle. This transition saved a total 22 workdays to deliver payments to *Aponjon* agents, taking only 8 workdays to process instead of the 30 workdays required with cash.

The total annual volume of paid incentive was BDT 5.5 million (approximately US$70,500). The transition from cash to MFS is estimated to have saved a total of 41,333 work-hours (just under 20 full-time employees) at both the supply and demand side over the annual volume of transaction made. For each BDT 100 transaction, it is measured that the effort saved was 91.61% on the supply side and 67.02% on the demand side. The total benefit was measured at BDT 4.75 million (approximately US$60,900) for the total volume of transactions made in a year. The total investment required to transition to MFS from cash during the year was around BDT 2.64 million (approximately US$33,845), reflecting **a savings of BDT 2.11 million (approximately US$27,000)**. Therefore, the monetary benefit (BOI) was 1.80 times higher than the investment made in one year.

With cash, 12% of participants at the supply side cited that moderate risk was associated with transactions, which was mainly due to anxiety over cash loss. The remaining 88% of participants

said there was no risk associated with cash. With MFS, no risk was cited by any of the participants. Only 2% of *Aponjon* agents identified some level of cash loss risk with cash payments, a figure that increased to 9% with MFS, as *Aponjon* agents perceived that there was a risk associated with receiving fake notes from MFS agents and loss of money due to entering the wrong code. It is worth emphasizing that this was only a perceived risk, as none of them had yet to experience either of these issues.

At the post-transition stage, a 23% knowledge gain among [agents] was observed as a result of the training provided.

More than 1,000 *Aponjon* agents received training on use of MFS through this initiative. They had some degree of existing prior knowledge on MFS (5.8 in 10), due to its gradual popularity and countrywide promotion by MFS providers. At the post-transition stage, a 23% knowledge gain among them was observed as a result of the training provided. Before the program's transition to mobile payments, the level of MFS use among *Aponjon* agents was 3.24 in 10, which was improved to 3.48 in 10 as a result of this initiative.

Buying mobile airtime was the most popular way that people spent the incentives in their MFS accounts. This was more popular than cashing out because the incentive payments tend to be fairly small. It is possible that their MFS usage could be further enhanced by increasing the money flow into their MFS accounts from external sources (e.g. payment of salary, TA/DA, etc. from their affiliated institutions). *Aponjon* agents identified the convenience of receiving money in their personal MFS account and the confidentiality of their accounts as the main advantages of MFS, and maintenance of their PIN and higher service charges as the main disadvantages.

CHAPTER 1: INTRODUCTION

1.1 Background

Aponjon is the world's largest mHealth service. It aims to reduce maternal and child mortality in Bangladesh, and was launched in 2011 by Dnet under the auspices of MAMA with the catalytic support of USAID and Johnson & Johnson. *Aponjon* deploys a number of field forces (agents), who work for local partner institutions, across the country to increase the number of subscriptions to the mHealth service. *Aponjon* agents receive incentives based on the number of customer acquisitions they make. *Aponjon* previously paid incentives to agents primarily in cash. The use of MFS to pay *Aponjon* agents was very minimal before the transition made to move from cash to MFS. Although the majority of *Aponjon* agents were familiar with the cash payment process, only 22 percent were accustomed to using MFS before the transition.[1]

Mobile financial services have become gradually more popular in Bangladesh. As of March 2015, the total number of registered MFS account holders reached 25.25 million, with a reported 533,485 MFS agents serving them across the country.[2] Studying the popularity of MFS in Bangladesh and its potential for increased efficiency, Dnet initiated a pilot to deploy a mobile financial management system to send incentive payments to *Aponjon* agents. These efforts were supported through a fixed-obligation grant from April 2014 to March 2015 that Dnet received from the mSTAR project, which is being implemented by FHI 360 with funding from USAID/Bangladesh and USAID/Washington. The main purpose of this grant was to enable Dnet to systematically understand the benefits of transitioning their incentive payments from cash to MFS.

1.2 Theory of change

Prior to the transition from cash to MFS, the underlying assumption was that making incentive payments to *Aponjon* agents in cash involved less efficiency and high risk. Therefore, it was thought that transitioning to MFS might improve efficiency and reduce risk in making these payments. In order to test this assumption, Dnet focused on four key activities under the grant from mSTAR: i) the development of an incentive payment management application; ii) building partnerships with MFS providers to facilitate incentive payments to *Aponjon* agents nationwide; iii) developing a manual on the many ways that MFS can be used; and iv) providing training to *Aponjon* agents to enable them to use MFS for receiving incentives, as well as in their daily lives. The expected results included increased savings in time and cost, reduced risk from financial transactions both at the head office and *Aponjon* agent level, and improved *Aponjon* agent knowledge on MFS. As a result of this, it was also expected that use of MFS by *Aponjon* agents in their personal and household activities might be increased. The logic model of this initiative is presented in the following diagram:

[1] https://www.microlinks.org/sites/default/files/resource/files/InsightsPaymentPractices_Dnet_09082014.pdf
[2] http://www.bangladesh-bank.org/fnansys/paymentsys/mobilefin.php

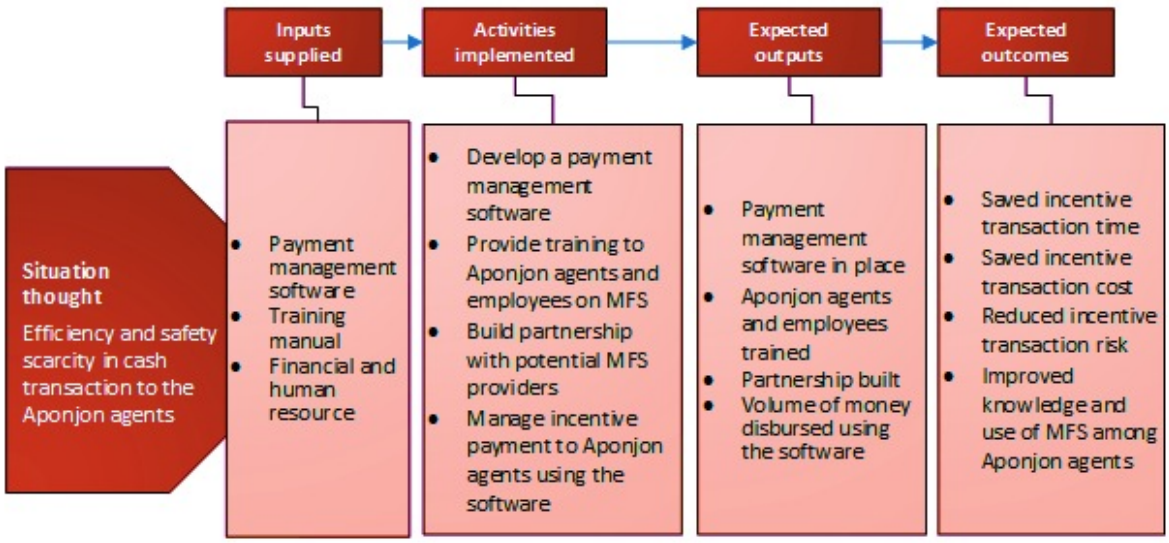

Figure 1: Logic model

1.3 Activities undertaken to support the transition to MFS

During the pilot phase, a web-based platform for payment management, Payble, was developed.[3] A partnership was established with the country's two largest MFS providers, DBBL Mobile Banking and bKash.

The Payble platform enabled Dnet's head office employees to process, verify, and issue individual's payment orders to MFS providers without visiting them physically. After placing a payment order and subsequent verification via Payble, the MFS providers sent the funds to the *Aponjon* agents' MFS accounts. The MFS provider then sent the individual transaction details to Dnet as evidence of each payment.

Figure 2: A snapshot of the web-based payment management software, Payble

[3] Payble is available online at www.payble.net. USAID implementing partners interested in using the platform can request an account free of charge from Dnet.

The Payble platform was useful for processing transactions, monitoring, and generating payment reports. However, Payble is unable to generate customer acquisition reports and cumulate payments at the individual level. For that, Dnet has to use a separate PMRS (Project Monitoring and Reporting System) software. The PMRS generated report is then uploaded to Payble for payment processing to individual *Aponjon* agents.

A manual in Bangla was also developed for *Aponjon* agents on how to use their MFS accounts.[4] In addition, training was provided to more than 1,000 *Aponjon* agents on ten features of MFS, including: cashing out from an MFS agent, paying utility bills, receiving remittances, purchasing airtime top-up, and shopping. MFS accounts were also opened for individual *Aponjon* agents during the training.

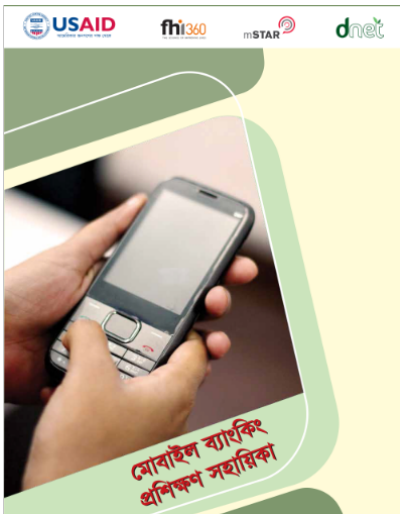

Figure 3: Snapshot of MFS use manual (in Bangla)

1.4 About the assessment

The broader objective of this assessment was to identify the benefit gained through the transition from cash to mobile payments. The specific objectives are interrelated with the expected outcomes as listed below:

Expected outcome areas	Specific objectives
Saved time	a) Measuring the time saved due to transition from cash to mobile payments;
Saved cost	b) Measuring the cost saved due to transition from cash to mobile payments;
Reduced risk	c) Analyzing the risk reduced due to transition from cash to mobile payments;
Improved knowledge and use	d) Illustrating the changes made in knowledge and use of MFS among *Aponjon* agents.

1.5 Assessment participants

There were four types of participants engaged at the pre-transition stage (i.e. cash). They were *Aponjon* agents, field focals at sub-district and district levels, and employees at the head office. Two types of participants were involved at post-transition stage (i.e. MFS). They were the *Aponjon* agents and employees at the head office. The association of participants with *Aponjon* program and their role in incentive payments are stated in Table 1.

[4] https://www.microlinks.org/library/training-manual-using-mobile-money-bangladesh

Table 1: Participants of the assessment

Assessment participants	Association with *Aponjon* program	Role in cash payments	Role in mobile payments
Aponjon agents in the community	Engaged with customer acquisition for *Aponjon* at the community level.	End receiver of incentive payments for customer acquisitions.	End receiver of incentive payments for customer acquisitions.
Field focals at sub-district level	Employees of outreach partner that supervise *Aponjon* agents for enhancing customer growth.	Intermediate channel for handing over payments to respective *Aponjon* agents.	No role.
Field focal at district level	Employees of outreach partner that supervise the sub-district focals.	Intermediate channel for handing over payments to respective sub-district focals.	No role.
Employees at head office	Employees at Dnet head office engaged with implementation and transaction management.	Payment processing and disbursement to field focals at district level.	Payment processing and disbursement to *Aponjon* agents via MFS providers.

CHAPTER 2: ASSESSMENT FINDINGS

2.1 Payment processing and disbursement workdays

When making payments using cash, monthly incentives were made from the head office to *Aponjon* agents via two local tiers, located at outreach partner institutions at the district and sub-district level. After the switch to MFS, intermediary tiers no longer had a role in paying incentives, as *Aponjon* agents received their monthly incentives directly to their personal MFS account from the head office.

A total of 30 workdays was required across the different tiers to disburse the incentive amounts to *Aponjon* agents each time using cash, including 20 workdays during which the money was in transit at the sub-tier level after being disbursed from the head office account. **After switching to MFS, disbursement time was reduced substantially to just eight workdays, resulting in *Aponjon* agents receiving their incentives 22 days earlier than they had been with cash.** In addition to completely cutting out the involvement of sub-tier staff, head office staff also saved two workdays processing and disbursing payments, as a result of the transition to and integration of the new payment management software.

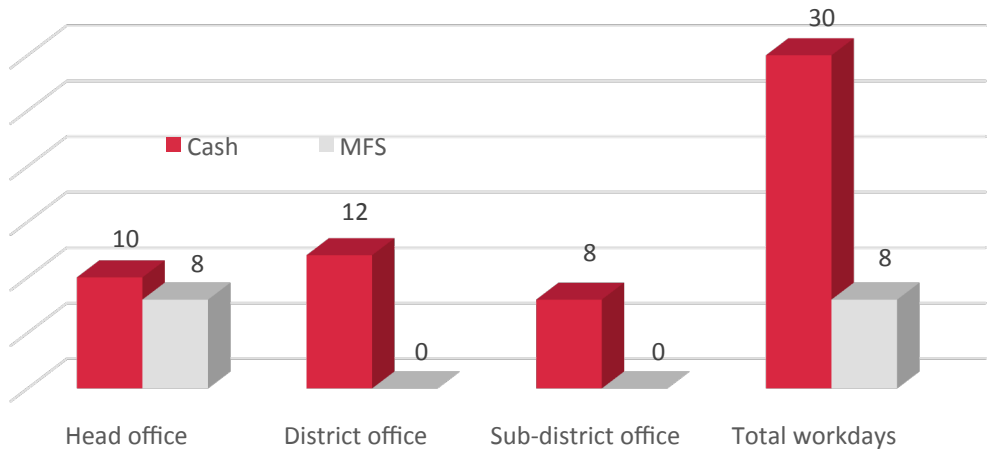

Figure 4: Workdays occupied at different tiers for each payment to Aponjon agents

2.2 Time benefit for incentive transactions

2.2.1 Time benefit on the supply side

Incentive disbursements from the head office to *Aponjon* agents can be classified into three types of time groupings: 'process lead time', 'travel time', and 'disbursement/transfer time', all of which occur at different transaction tiers. The average size of monthly payments to *Aponjon* agents was around BDT 200. The time spent for each transaction is presented here in two different units: 'time spent per agent transaction' and 'time spent for each BDT 100 transaction'.

When incentives were paid using cash, a total of 25.0 minutes was spent disbursing them to each *Aponjon* agent, which worked out to 17.4 minutes for each BDT 100 transaction. Using MFS, the time spent was reduced to 2.31 minutes for each agent and 1.46 minutes for each BDT 100 transaction. **This is equivalent to around a 90% time savings (15.94 minutes) at**

supply side for each BDT 100 payment as a result of the transition from cash to MFS. The travel and process lead times were also substantially reduced because of this transition.

Table 2: Time savings at supply side for incentive transfers to Aponjon agents

Time savings for payment transaction		Cash	Mobile Financial Services (MFS)	Time reduced (in min)	Time reduced (in %)
Time spent (in minute) per agent transaction	Process lead time	8.3	2.07		
	Travel time	14.3	0.10		
	Disbursement time	2.4	0.14		
	Total time	**25.0**	**2.31**	**22.69**	**-90.76**
Time spent (in minute) per BDT 100 transaction	Process lead time	6.1	1.30		
	Travel time	9.7	0.03		
	Disbursement time	1.6	0.12		
	Total time	**17.4**	**1.46**	**15.94**	**-91.61**

2.2.2 Time benefit on the demand side (*Aponjon* Agents)

As previously mentioned, *Aponjon* agents receive incentive payments for each customer acquisition they make. When they received that payment in cash, it took on average 85.2 minutes to collect their incentive payment from the sub-district tier each time, which amounts to 43.4 minutes for each BDT 100 collected. **After the switch to MFS, *Aponjon* agents experienced on average 67% savings in the time needed to collect their payment.** As *Aponjon* agents needed to visit the sub-district tier to collect their payments in cash, the travel time for receiving payment via MFS was also considerably reduced, due to the fact that most *Aponjon* agents live closer to an MFS agent (average distance 1.1 km) than the sub-district tier (average distance 8.9 km), and also because they can cash out whenever they want.

Table 3: Time savings at the demand side for incentive collection

Time savings for payment transaction		Cash	Mobile Financial Services (MFS)	Time reduced (in min)	Time reduced (in %)
Time spent (in minute) per agent transaction	Process lead time	Not applicable	Not applicable		
	Travel time	76.1	20.6		
	Payment collection	9.1	7.4		
	Total time	**85.2**	**27.9**	**57.28**	**-67.02**
Time spent (in minute) per BDT 100 transaction	Process lead time	Not applicable	Not applicable		
	Travel time	38.8	10.5		
	Payment collection	4.6	3.8		
	Total time	**43.4**	**14.2**	**29.15**	**-67.02**

2.2.3 Time savings over the transaction made in a year

The volume of payments made to *Aponjon* agents in a year was around BDT 5.5 million (approximately US$70,000). **As a result of the transition to MFS, an annual savings of 41,333 work-hours was realized** between both the supply (35%) and demand side (65%) for all of the transactions.[5] Based on a 260 day/year work schedule, this savings **is the equivalent of just under 20 full-time equivalent employees in a year**. It is possible that this benefit would be even higher with higher annual transaction volumes.

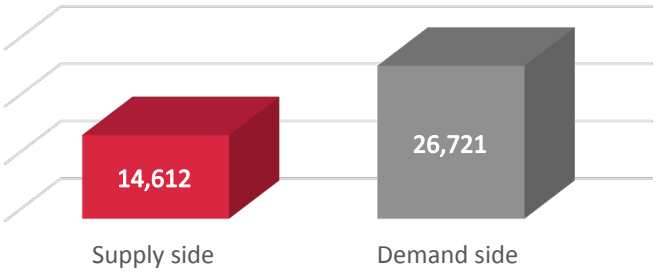

Figure 5: Volume of time (work-hours) saved in a year over the total transactions made

2.3 Cost savings and monetary benefit

2.3.1 Cost savings on the supply side

The cost of transactions from the head office to *Aponjon* agents was stratified into three categories, which includes 'time value', 'direct cost', and 'office cost'. Full definitions of each cost category can be found in the Annex. The cost of transactions was computed and is presented here in two different units, e.g. 'cost per agent transaction' and 'cost per BDT 100 transaction'.

With cash, the total estimated disbursement cost was BDT 87.6 for a single transaction to each *Aponjon* agent, and BDT 62.1 for each BDT 100 transaction. Using MFS, the cost of payment to each agent was BDT 14.84 and BDT 9.30 for each BDT 100 transaction. **This means that as a result of the transition from cash to MFS there was an 85% reduction in the cost per unit transaction on the supply side.** The cost was reduced to a large extent across all cost categories, although the largest reduction was observed on 'time value', due to the reduction of personnel time for payment management at the supply side.

Table 4: Cost savings at the supply side for incentive transactions to Aponjon agents

Cost savings for payment transaction		Cash	Mobile Financial Services (MFS)	Cost reduced (in BDT)	Cost reduced (in %)
Cost (in BDT) per agent transaction	Time value	58.7	8.96		
	Direct cost	20.2	3.85		
	Office cost	8.7	2.02		
	Total cost	**87.6**	**14.84**	**72.76**	**-83.1**
Cost (in BDT) per BDT 100 transaction	Time value	41.8	5.70		
	Direct cost	14.2	2.26		
	Office cost	6.2	1.34		
	Total cost	**62.1**	**9.30**	**52.80**	**-85.0**

[5] Calculation is based on each BDT 100 transaction

2.3.2 Cost savings on the demand side (*Aponjon* Agents)

'Time value' and 'direct cost' were the main cost items for incentive collection by *Aponjon* agents. For cash, the direct cost mainly includes travel costs, whereas with MFS, service fees for transactions were a new cost item.

With cash, the cost for receiving an incentive was BDT 92.9 for each agent and BDT 48.8 for each BDT 100 payment. To put that into perspective, it means that on average it cost *Aponjon* agents just under half of the average incentive size (BDT 200) simply to collect their monthly payment in cash. **This cost was reduced by around 68% due to the transition from cash to MFS.** *Aponjon* agents saved BDT 63.17 for each collection they made, which amounted to BDT 33.63 in savings for each BDT 100 collected. Travelling to collect the incentive is still the highest cost item for *Aponjon* agents for both cash and MFS.

Table 5: Cost savings at demand side for collection of incentive

Time benefit for payment transaction		Cash	Mobile Financial Services (MFS)	Cost reduced (in BDT)	Cost reduced (in %)
Cost (in BDT) per agent transaction	Time value	24.2	12.3		
	Direct cost	68.7	17.5		
	Office cost	Not applicable	Not applicable		
	Total cost	**92.9**	**29.7**	**63.17**	**-68.0**
Cost (in BDT) per Taka 100 transaction	Time value	12.7	6.3		
	Direct cost	36.1	8.9		
	Office cost	Not applicable	Not applicable		
	Total cost	**48.8**	**15.2**	**33.63**	**-68.9**

2.3.3 Monetary benefit over the investment required to transition to MFS

The estimated annual total benefit was BDT 4.75 million (approximately US$60,900) for a total of BDT 5.5 million (approximately US$70,500) transactions made to *Aponjon* agents. The benefit on the supply side was higher (BDT 2.9 million, 61%) than the demand side (BDT 1.85 million, 39%). The total investment to transition to MFS was BDT 2.64 million (approximately US$33,800), reflecting a savings of BDT 2.11 million (approximately US$27,000). **Therefore, the estimated benefit was 1.80 times higher than the total investment made in one year.**[6] Since the initial cost to transition has already been incurred, this benefit will likely be higher in the future, particularly if payment volumes increase over time.

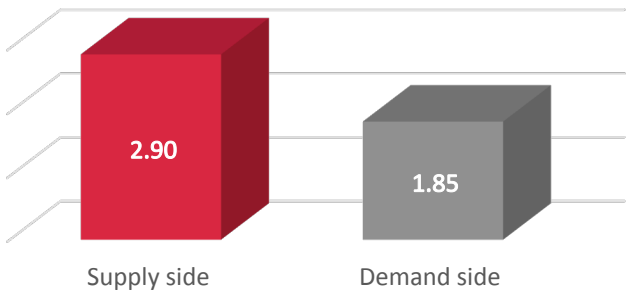

Figure 6: Volume of benefit (in million BDT) in a year

[6] This excludes BDT 1.10 million spent to conduct all assessment activities as required under the mSTAR grant.

2.4 Risk of cash and mobile financial service transactions

Aponjon agents and head office employees shared the same perceptions and experience regarding the associated risk of cash and mobile financial services. Most of the head office employees (88%) stated that there was no associated risk with cash, because most of the time they carried an account payee only cheque to the bank in Dhaka to disburse incentives to respective district representatives. Only 12% of employees cited that there is a moderate risk associated with cash due to having cash loss anxiety when carrying higher volumes to transfer. **For MFS, there was no risk cited by head office employees, because all of the transaction orders were placed to MFS providers centrally using the payment management software, and therefore there was no cash handling by employees.**

As for *Aponjon* agents, 98% of them cited no risk with cash since they were receiving money directly from their known sub-district representative in an office environment. Moreover, the monthly incentive amounts are very low, so they faced no risk carrying the cash. **They perceived MFS at a higher level of risk than cash, with 7% citing low risk and 2% citing moderate risk.** With MFS, they have to collect cash from MFS agents, who they generally do not have a close relationship with, therefore some people felt that there is a chance of receiving fake notes. Some people also expressed fear that their money might be lost due to inputting the wrong numbers or PIN code. It should be noted though that none of the participants actually experienced such incidents.

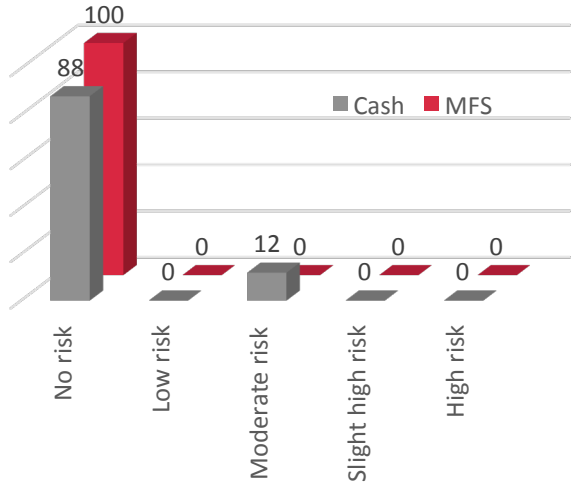

Figure 7: Perceived risk associated with transactions at the head office level

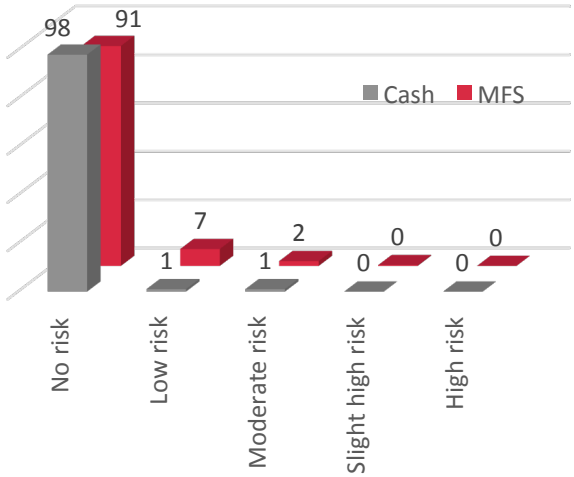

Figure 8: Perceived risk associated with transactions at the Aponjon agent level

2.5 Knowledge and usage of mobile financial services

The knowledge and use of mobile financial services (MFS) among *Aponjon* agents was measured using a ten point score card based on selected ten features. Equal points were assigned to each of ten features, which were as follows: account opening, cash-out from local MFS agents, paying utility bills, receiving remittances, purchasing airtime top-up, shopping, money transfer, money deposit, receiving payment, and checking balance. Before the transition, *Aponjon* agents scored on average 5.8 out of 10. Television and fellow colleagues were the key sources of information about MFS for all participants. As part of the transition, *Aponjon* agents received a training on MFS. They were then assessed again on their knowledge 4-5 months after the training. During that assessment, **the *Aponjon* agents scored an average of 7.14 out of 10, which is a 23.1% improvement in knowledge over the course of this pilot.**

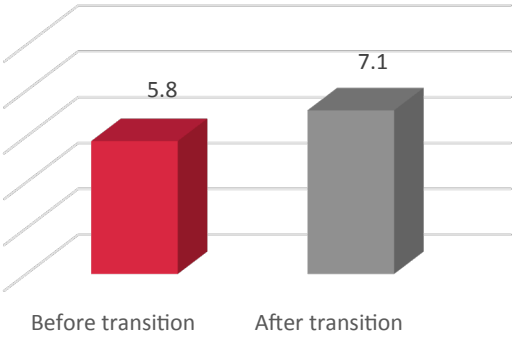

Figure 9: Changes in knowledge on MFS among Aponjon agents [out of 10]

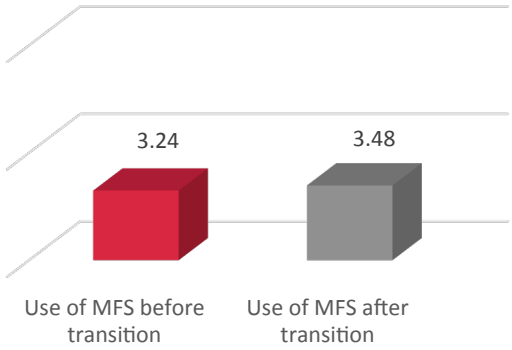

Figure 10: Changes in use of MFS by Aponjon agents [out of 10]

Before transition, *Aponjon* agents scored on average 3.24 out of 10 for MFS usage. This means that *Aponjon* agents on average had some experience using MFS over the past three months. At the end of the pilot, the average score was 3.48 out of 10. The difference (7.3%) between the two scores reflects only minor changes in use of MFS. Unfortunately, this question only captured changes in the types of services used over the past three months, and not the frequency of usage.

Nakita-1 (alias name), a resident of Dhaka's urban slum, has been a health worker since 2008. She has been associated with Aponjon since 2013. She was receiving Aponjon incentives in cash for the number of customers she serves. She began using MFS in 2014 as part of the transition away from cash for Aponjon payments. Now, using her mobile wallet, she receives Aponjon incentives and even occasional foreign remittances from her relatives living in Dubai. Buying mobile airtime and cashing out are her most common MFS activities, but she also sends money and airtime gifts to her relatives on certain occasions. She is happy and comfortable using her mobile wallet.

The highest use of MFS was observed for buying mobile airtime, receiving payments and cashing out. Receiving international remittances and sending money transfers to other accounts occurred in rare cases. The amount of money flowing into their MFS accounts was observed to be very minimal. This is because even though they were receiving their incentives via MFS, most of the institutions where they work still pay salary and allowances in cash. In general, *Aponjon* agents did not appear to be depositing their own cash into their MFS account. Part of the reason why their use of their MFS accounts was limited to the few transaction types listed above was the limited opportunities

to use other services. For example, since *Aponjon* agents mainly live in rentals in urban areas, they have to pay their utilities to their landlords, instead of being able to use MFS to pay the utility providers directly.

2.6 Advantages and disadvantages of mobile financial services

The advantages and disadvantages of MFS were explored through interviews and FGDs with *Aponjon* agents. On a whole, they stated that MFS is a convenient way to receive money and transfer money on demand to anyone, it keeps transactions confidential, it is easy to buy mobile airtime, and it helps them to save money and time. They noted that it can also be used to offer mobile airtime as a gift to their relatives on different occasions.

Aponjon agents also noted some challenges with using MFS, including the need for extra attention when managing their PIN number, higher service charges (mainly cited by bKash users), and inadequate privacy at MFS agent points. In some cases, unknown youth would gather unsolicited in front of MFS agent points, which some women noted made them feel intimidated. As a result, some of the respondents felt that MFS agents need to provide a safer environment and increased privacy for women, especially when people are cashing out.

Nakita-2 (alias name), an Aponjon agent shared her experience on MFS: "It saves me time, it is convenient for money transactions, and it keeps my financial information secret. Paying school fees locally via MFS could be useful for me. I faced cash-out difficulties with MFS due to a shortage of money at the local MFS agent point, which should be addressed."

CHAPTER 3: CONCLUSION

This assessment presents the benefit from transition from cash to mobile financial services for making incentive payments to *Aponjon* (mHealth service) agents in Bangladesh. The transition delivered substantial savings in the number of workdays needed for payment disbursement, and in the cost of transactions through the entire transaction cycle from the head office to *Aponjon* agents. The benefit could further be improved by increasing annual volumes of transaction. In addition, benefits are anticipated to be higher in subsequent years as there is no longer a need for further capital investment. In addition, the creation of a bridging system between the *Aponjon* PMRS and Payble could further increase the monetary benefit from this transition.

With the transition to MFS, cash loss anxiety on the supply side was eliminated. New perceptions of risk, however, arose on the demand side. These were related to maintenance of the MFS account PIN, and the safety and privacy of MFS agent points. MFS providers paying closer attention to making their agent points friendly and safe, especially for women users, could address this perception. Unnecessary gathering of youths at agent points could be discouraged and reduced. Also, MFS agent cash flow shortages need to be addressed. A more detailed assessment on perceptions of MFS transaction service charges might also be useful to address concerns about high costs.

During the pilot period, *Aponjon* agents' knowledge on MFS improved slightly, although there were only minor changes in how they were using MFS at the start and end of the pilot. A self-paced, interactive module with demonstrations of the different MFS features could be more useful for knowledge retention among *Aponjon* agents. The availability of locally relevant mobile financial services (e.g. payment of school fees) might also enhance usage. *Aponjon*-affiliated organizations should also introduce the use of MFS for all types of payments that they make to *Aponjon* agents in order to increase cash flow into their accounts.

ANNEX: ASSESSMENT METHODOLOGY

Assessment duration

The assessment was conducted in two stages to capture data on incentive payments to *Aponjon* agents from the head office. The duration of first stage was June to August 2014, where data was collected exclusively on incentive payments made using cash.

The second stage was conducted from December 2014 to January 2015, after the transition stage from cash to MFS. Data collected at this stage was focused exclusively on MFS usage. Prior to this stage, *Aponjon* agents were trained on using MFS, partnerships were built with two MFS providers, and the Payble payment management software was introduced.

Assessment approaches, methods and instruments

The approaches, methods, and instruments that were applied to conduct the assessment during both stages (cash and MFS) are stated in Table 6.

Table 6: Assessment techniques applied

	Cash	Mobile financial services
Approaches followed	Quantitative and qualitative approaches were followed to conduct this assessment.	Quantitative and qualitative approaches were followed to conduct this assessment.
Methods applied	A clustered (by geographic location) random sampling technique was applied to interview 64 *Aponjon* agents[7], six district focals, and 12 sub-district focals. Interviews and discussions were conducted with three employees at the head office to capture the payment history. Monthly payment-related documents at the head office were reviewed for data triangulation. A total of 85 persons were interviewed.	A stratified (by MFS provider) random sampling technique was applied to interview 65 *Aponjon* agents[4]. Persons were selected from the list who had at least 4 months experience with MFS after the training was provided. Three employees at the head office were interviewed to capture information on payment records and history. A total of 68 persons were interviewed. Monthly payment documents at the head office were reviewed and two focus group discussions were conducted with *Aponjon* agents for triangulation of both quantitative and qualitative data.
Instruments used	Four sets of structured questionnaires, with a mix of closed and open ended questions were used for the interviews with each category of participants. A payment data recording template was provided to head office employees.	A structured questionnaire with a mix of closed and open ended questions was used for the interviews with *Aponjon* agents. A transaction data recording template was provided to head office employees for capturing monthly transaction records.

Data collection, verification and analysis

Aponjon agents and field focals at the district and sub-district level were interviewed over the phone. Each of the interviews ranged from 15 to 20 minutes. Employees at the head office were interviewed face-to-face. Orientation was provided to researchers on methodologies and interview strategies before the field assessment. Questionnaire piloting was completed and the

[7] The sample size fulfill 90.0% level of confidence and 10% margin of error, using http://www.raosoft.com/samplesize.html

questionnaire was modified further before starting the final interviews. Data quality was also verified by reviewing audio recordings with participants.

Collected data was entered into a simple spreadsheet and SPSS software for processing and in-depth analysis. The risk involved for both cash and MFS was measured using a five point Likert scale[8], where 1 denotes 'no risk' and 5 denotes 'very high risk'. *Aponjon* agents' knowledge and use of MFS was assessed using a ten-point scorecard. One point was considered for each feature of MFS. A set of mathematical equations was applied, in line with the benefit on investment (BOI) methodology, to estimate the time and cost savings over the incentive paid to *Aponjon* agents.[9] The explanation of time savings and cost savings variables used in data analysis are given in Table 7.

Table 7: Definition of time and cost variables

A. Time employed for cash and mobile payments	
Process lead time	The actual time (in minutes), which was spent by assessment participants at supply side for processing of a certain volume of incentive to be paid to *Aponjon* agents.
Travel time	The actual time (in minutes), which was spent by participants for round-trip travel for disbursement and collection of money.
Payment disbursement and collection time	The time (in minutes), which was spent by participants at the office or MFS agent to disburse and/or collect incentives.
B. Cost engaged for cash and mobile payments	
Time value	The time cost (in BDT, for each minute) of assessment participants to disburse and/or collect the incentive. Individuals' monthly salary, benefits, and monthly work hours were considered for this calculation.
Direct cost	The travel cost (in BDT) for payment disbursement and/or collection, and service fees paid for cash and MFS over the volume of transaction made.
Office cost	This cost (in BDT) includes per person office accommodation and administrative cost over each unit of time spent for the incentive payment.

Reducing bias and ethical considerations

Associates of this assessment were trained to conduct the interviews with an open mind, remain non-judgmental, and be respectful of participants regardless of the responses given in order to reduce bias to the extent possible. Overlapping and double counting of data was avoided during data analysis.

We ensured that participants understood the purpose of the assessment, the process of data collection, and data protection matters prior to receiving their consent to participate. Deliberate measures were taken to guarantee that participants were not exposed to risk. Total anonymity across all stages of the assessment was maintained and access to raw data was restricted to assessment associates and authors only and stored confidentially.

[8] McLeod, S.A. (2008). Likert Scale, retrieved on 25 May 2014 from http://www.simplypsychology.org/likert-scale.html
[9] Raihan, A., Billah M.M. and Uddin, M.F. (2009). Benefit on Investment: An Answer to Why Should Invest for Public Access to ICTs. In Zhong Yixin (ed), Proceedings of World Congress on ICT for Development (10-12 September 2009), China Science and Technology Press, Beijing: 305-313.