

BREED IDENTIFICATION AND DIGITAL REGISTRY OF CATTLE

March 2018 - September 2019

Project Final Report



Breed Identification



Tele consultancy



E Learning





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DISCLAIMER

These are the views and expressions of the author and do not necessarily represent the views of the Netherlands Embassy in Dhaka or the Blue Gold program.

LIST OF ABBREVIATIONS

App	Mobile Application
AI	Artificial Insemination
BGP	Blue Gold Program
BWDB	Bangladesh Water Development Board
B2B	Business to Business
CLW	Community Livestock Worker
CDF	Community Development Facilitator
CRM	Customer Relationship Management
DLS	Department of Livestock Services
FF	Field Facilitator
FMD	Foot and mouth disease
LGI	Local government institutes
mPower	mPower Social Enterprises Ltd.
SMS	Short Messaging Service
UX	User Experience
WMG	Water Management Group

EXECUTIVE SUMMARY

mPower Social Enterprises Ltd. initiated and implemented an innovative pilot to solve a critical problem in the livestock sector of Bangladesh. Under the innovation fund of BGP, the 18 months project titled ‘Breed Identification and Digital Registry of Cattle’ was implemented during the period of March 2018 to September 2019 in 5 polder regions (02, 43/2d, 43/2a, 27 & 25) in 3 Upazilas (Dumuria of Khulna, Satkhira Sadar and Patuakhali Sadar) of southern Bangladesh. A total of 34 WMG have participated in this project. The main objective of the project was to develop a digital tool to identify cattle cross breed and give proper recommendation on proper AI, ultimately develop a digital registry as well as ensuring quality veterinary services. These digital services intended to overcome the critical challenge of lack records and breed identity leading indiscriminate cattle breeding and insufficient veterinary services causing underproductivity.

The Project has worked with livestock farmers through engaging existing community livestock workers, AI Technicians, WMG representatives, LGI’s representatives and DLS officials of the region.

For democratizing information services to livestock farmers, the project has successfully developed digital tools through a number of iterations and field testing. The technical expertise of mPower, BGP and renowned professionals of the livestock industry especially DLS were utilized in the development of the tools. The project has developed digital tools used by community service providers includes-

- Digital registration of cattle and the farmer through an easy to use mobile application named ‘Shurokkha’ (শুরুক্কা)
- Digital cattle health and Artificial Insemination (AI) record keeping
- Digital cattle treatment and advisory services delivery through experienced veterinarians seating remotely
- Digital Identification the breed of a particular cow including the type and percentage of exotic blood present in that cow followed by specific recommendations for appropriate artificial insemination e.g. 50% Holstein-Friesian, 75% Sahiwal, etc.
- Digital Artificial Insemination reporting and performance monitoring Dashboard for managing AI programs
- Capacity development of community livestock service providers through e-Learning modules and videos
- SMS based cattle husbandry alert services

6138 farmers received these services through 52 existing community service providers with very high satisfaction. Strong demand has been observed for tele-veterinary and breed identification services among the farmers, local service providers, DLS, community leaders and other stakeholders of the industry. These digital services have increased the confidence and competence of service providers in delivering livestock treatment and advisory services to the farmers.

Breed Identification service providers AI technicians have found it easy to motivate farmers to take the right type of semen for their cattle. Thus, strong awareness was developed among the farmers on negative and long-term consequences of the wrong type of semen use for AI. However, sometimes AI technicians did not have the recommended type of semen for the appropriate AI.

Although willingness to join Shurokkha tele-veterinary service among community service providers is quite strong, soliciting service with payment is limited to only complicated cases.



For sustainability, the project has piloted an entrepreneurial model of tele-veterinary service and scouted other possible ways of revenue generation involving DLS and livestock input companies. From the lessons learnt, mPower as a social enterprise will continue the legacy of this project and work for improvement, expansion and benefit a greater number of farmers also to self-sustain the technologies involving key stakeholders of the industry.

CONTEXT

“Breed Identification and Digital Registry of Cattle” project initiated to develop a digital recording system of cattle data of smallholder farmers including identification of cattle breeds and tele-veterinary service delivery. The project is funded under Innovation Fund of Blue Gold Program of Dutch Embassy.

Bangladesh livestock sector witnessed tremendous growth in the last few years but this sector is still characterized by relatively low productivity of cattle compared to other countries. Although artificial insemination has been introduced for many years, there is no proper record of improvement in the genetic material of cattle breeds. On the contrary, uninformed breeding has led to genetic erosion and poor heterosis. Thus, in many cases, production has gone below the average of a particular cattle’s maternal & paternal production. In some cases, artificial insemination has led to the progeny having higher exotic genetic makeup (>75%), which increased calf mortality and poor health due to low tolerance to our climatic condition, and it even decreased their lifetime performance. The crux of the problem lies in lack of proper cattle identification and the absence of an animal record system. Importance of both cattle identification and animal record are greatly emphasized in the National Livestock Development Policy 2007. One challenge of animal record keeping is identifying what type and percentage of the exotic breed are present in a particular cow, which leads to inappropriate artificial insemination.

DESCRIPTION OF INNOVATION

To overcome these challenges, the project initiated to develop a low-cost solution for cattle breed identification using ICT, which is useable by field service providers to provide recommendations for appropriate Cattle Artificial Insemination and also to deliver expert veterinarians service to the farmers. Digital services delivery to farmers is done through an easy to use mobile application named ‘Shurokkha’ (শুরোক্ষা) used by community livestock service providers. Using the application, the service providers register farmers as well as their cattle digitally. After the farmers and their cattle are registered, the service providers will deliver a number of services.

Breed Identification Service: Identification of the breed of a particular cow including the type and percentage of exotic blood present in that cow followed by specific recommendations for appropriate artificial insemination e.g. 50% Holstein-Friesian, 75% Sahiwal, etc. The mobile application used by service providers has the functionality which automatically identifies the breed of the target cattle and delivers SMS based recommendation to farmers.

Tele-veterinary service including record keeping: In case of cattle sickness or any management issues, service providers will collect cattle health information including the photograph and send to experienced veterinarian seating remotely. Assigned veterinarian having access to online dashboard views the data, makes direct phone call to the farmer for further query and sends back digital prescription and/or advice to service providers application. At the same time, cattle health and AI records are kept digitally for future use.

OBJECTIVES

Main purpose of the project is to improve the quality of the livestock services adopted by farmers and service providers of the target locations as well as making future guidelines and strategies for sustaining the initiative in the long run.

Key objectives include:

- Farmers benefit from more appropriate cattle insemination through identifying the breed of cattle by AI technician
- Farmers receive professional advisory services from trained veterinarians through community livestock workers
- Veterinarians can deliver more accurate treatment through accessing cattle health records
- The capacity of the Community livestock workers and AI technicians as well as the reach and income of the farmers increase due to joining in Shurokkha and Breed Identification services

WORKING LOCATIONS

Project have worked in 3 Upazilas

Upazila	District	Division
Dumuria	Khulna	Khulna
Satkhira Sadar	Satkhira	Khulna
Patuakhali Sadar	Patuakhali	Barishal

ACTIVITIES

CONTRACT SIGNING

To implement the project, a formal contact between mPower Social Enterprises Ltd. and Blue Gold program was executed on 14 March 2018 at Dhaka.



CENTRAL PROJECT BRIEF SHARING EVENT

To share the project initiatives with DLS and relevant stakeholder's, mPower organized this central project brief sharing event at Amari Dhaka Restaurant, Gulshan, Dhaka on 12th April 2018. Relevant officials of DLS, BWDB, Blue Gold including Mr. Guy Jones, Team Leader and mPower's relevant officials participated in this event. mPower have shared the brief and participants shared their views and suggestions.

STAFF RECRUITMENT

mPower targeted to recruit qualified field staffs from the particular locality having experience of working with livestock farmers as they are the key people for field implementation of the project. With the help of our local colleagues (of other projects of mPower) and regional officials BGP, we have collected CVs of potential candidates. On 9th April 2018, a recruitment test held at mPower office, Dhaka. Dr. Munir, Livestock Expert, BGP and Dr. Lutfor Rahman, Focal Point for BGP from DLS were involved in this

recruitment process. All four of the field staff joined on 3rd May 2018. Three weeks of time was given as few of the selected candidates asked for getting clearance from their previous job.

STAFF ORIENTATION & FIELD POSTING

On 3rd and 4th May 2018, mPower have conducted staff orientation at mPower's office, Dhaka. On 6th May 2018 all of the field staff were posted to their working locations. In the First week they got introduced themselves to Blue Gold regional officials, took their suggestions on which WMGs to select for project implementation, went to the WMGs along respective CDFs of BGP

SELECTION OF WMG

BGP Regional offices have shared an initial list of WMGs. Respective FFs of our project have visited each of the WMG and finalized the list coordinating with respective Polder Coordinators of BGP. During selection, we have focused on the groups that have a greater number of cattle rearing farmers also not too scattered by geographic locations. Although the draft selection was completed on 13th May 2018, after a few revisions, the final selection was completed on 22nd May 2018. Total 34 WMGs were selected for the project implementation which represents 7% of the WMGs of BGP.

Polder No.	District	Upazila	WMGs	Remarks
02	Satkhira	Satkhira Sadar	12	
43/2D	Patuakhali	Patuakhali Sadar	6	
43/2A			4	
27	Khulna	Dumuria	2	
25			10	
TOTAL WMG			34	

Detail list of WMG's is in Annex 1

INCEPTION WORKSHOP

For initiating the project activities in the field, mPower has conducted Regional Inception Workshops in 3 project working locations held on 14th, 16th and 17th May 2018 at Patuakhali, Satkhira and Khulna respectively. In all 3 events, there were participation from DLS, local service providers, community farmers, and representatives from WMG, LGI's BGP representatives,



We have shared the project activities with the stakeholders thus make them understand what the project will do and what they will gain from this project. Parallely, we took their opinion and suggestions on different aspect of the project for better execution.

Region	DLS	WM G	AI	CLW	UP	BGP	Lal Teer	mPower	Others	Total
Satkhira	1	13	1	1	1	9	2	4	2	34
Khulna	2	14	1	2	0	6	2	4	4	35
Patuakhali	3	10	1	1	0	10	2	3	0	30

Table: Participants of Inception Workshop

[Inception report is attached as Annex-2](#)

BASELINE STUDY

DEVELOPMENT OF SURVEY QUESTIONNAIRE

Four different set of questionnaires were designed to capture the insights of farmers, local service providers, veterinarians and representatives of AI service providing companies. After finalization, farmer and service provider's questionnaires were translated to Bengali and converted to digital forms for field survey data collection, which was completed on 10th May 2018.

SURVEY AND INTERVIEW CONDUCTION

Project Field Facilitators were trained on the questionnaire and data collection. And they started final data collection using mPower's digital tool on 21st May 2018. By 11th June 2018, FFs have completed survey of total 456 farmers. And by 22nd June 2018 survey of total 72 service providers were also completed.

Parallely, we also conducted the key informant's interview of veterinarians and representatives of AI companies by 1st Week of July 2018.

STUDY REPORT PREPARATION

After collection, all the data were analyzed and we started working on preparation of Baseline Study Report during the 2nd Week of July 2018.

Baseline Study report is attached as Annex 3

WMG ORIENTATION

As of our work plan all the selected 34 WMG's were formally oriented on the project starting form 1st July 18 and ended on 22nd July 2018. This local event was conducted with the key member of each of the WMG including local elites. Project FFs including respective CDFs of BGP facilitated the events. In all the events, participants praised the initiatives and committed their support.



SELECTION OF LOCAL SERVICE PROVIDERS

For selection of service providers project FFs have prepared an initial list of existing service providers also taken opinion of respective CDFs of Blue Gold and WMG members. Out of those, we have filtered and finally selected a total of 52 for service delivery. Out of these service providers, 29 are CLW. The selection was done based on the selection criteria mentioned below:

- Literate: At least completed standard five of Bangladeshi Education
- Received some form of training and have experience of working as service provider in that particular locality
- Special emphasis on existing CLW developed by BGP
- Well known to the community as a livestock service provider
- Have smart phone or willing to purchase one
- Willing and enthusiastic to participate in the project with a positive intention

Sl. No.	District	Selected Service Provider		
		CLW	AI Technicians	Total
1	Satkhira	10	8	18
2	Khulna	8	8	16
3	Patuakhali	14	4	18
Total		32	20	52

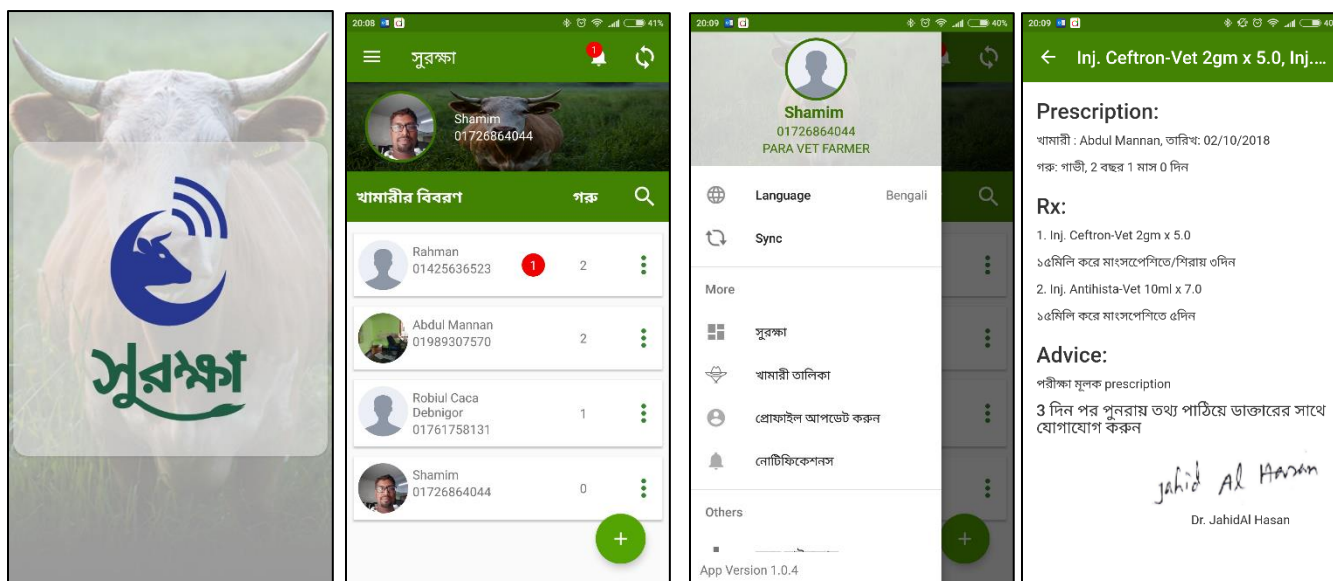
BREED IDENTIFICATION ALGORITHM DEVELOPMENT

Dr. Forhad Hossain, an experienced veterinarian having the expertise of cattle breed identification and who has been working with cattle farmers for the last 30 years, has worked as the technical consultant for design and development of the algorithm. Firstly, we conducted a comprehensive desk research for the selection of main physical traits which differs among breeds, identification of most commonly available types of cross breeds of cow, and most commonly used bull (breed types). Then we reached out to farms which maintain cattle records to find ideal cow for each of the breed types and took images. mPower's IT technical team developed the algorithm based on the guidance from consultant and mPower's livestock experts. Followed by 2 rounds of field-testing, further iterations were done before field launching. We also tested the application on pedigree know cattle of Nahar Dairy for understanding the accuracy among various type of users.

Detailed Breed Identification Algorithm report is attached as Annex-4

CUSTOMIZATION OF SHUROKKHA TELE-CONSULTATION APPLICATION

We have customized Shurokkha tele-veterinary service delivery mobile app for making it user friendly to the Community Livestock Workers, AI Technicians and the Farmers. During the development phase, we

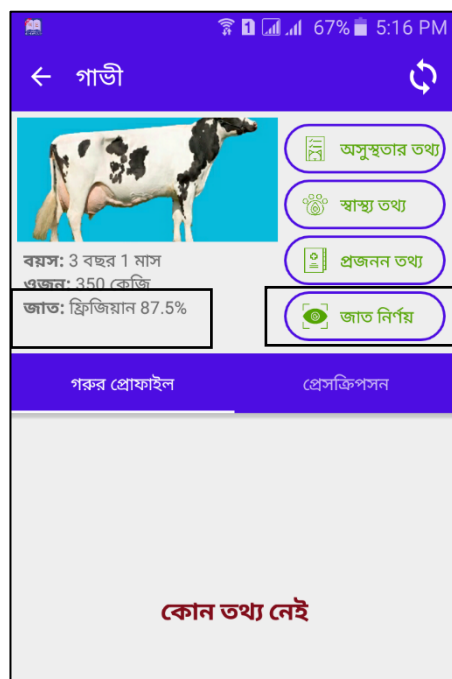


have worked elaborately on UX designing. After 2 iterations, we have released the version for field implementation.

INTEGRATED APP: SHOROKKHA AND BREED IDENTIFICATION

As the users of both Shurokkha and Breed Identification services are the same group of service providers, we have integrated both “Shurokkha” and “Breed Identification” in one mobile application. So that, service providers can use both Shurokkha and Breed Identification services from a single app and SMS based recommendation on appropriate AI can be sent to farmers. This enables farmers to have the record of breed record of their cattle and make a choice to select suitable semen from AI Technician for AI of their cattle.

The application is uploaded in [Google Play Store](#). Users just have to update the Shurokkha application from ‘Google Play Store’ for obtaining integrated services and getting updates.



USERS TRAINING OF SERVICE PROVIDERS ON SHUROKKHA MOBILE APPLICATION

Selected service providers were given training on use of the mobile application. During the training, all the service providers have installed the Shurokkha mobile application on their handset. Training sessions had class-room based approach as well as field practice. Training roll-out plan was shared with the participants. Relevant officials of Blue Gold Zonal Offices have participated in respective training events. Dr. Munir Ahmed, Livestock Expert of Blue Gold was present in the training program at Patuakhali and discussed some important issue and suggested for better service delivery in the field.



Two rounds of training were organized during the project. First round of the training was conducted in September 2019 and second round was conducted in November 2019. A total of 52 service providers were trained in 3 districts. During the second round, we have followed more field oriented approach and given hands-on training following the experience of first round which proved to be more effective.

SERVICE DELIVERY TO FARMERS

During this project period, a total of 6138 farmers have received different services from mPower.

FARMER REGISTRATION

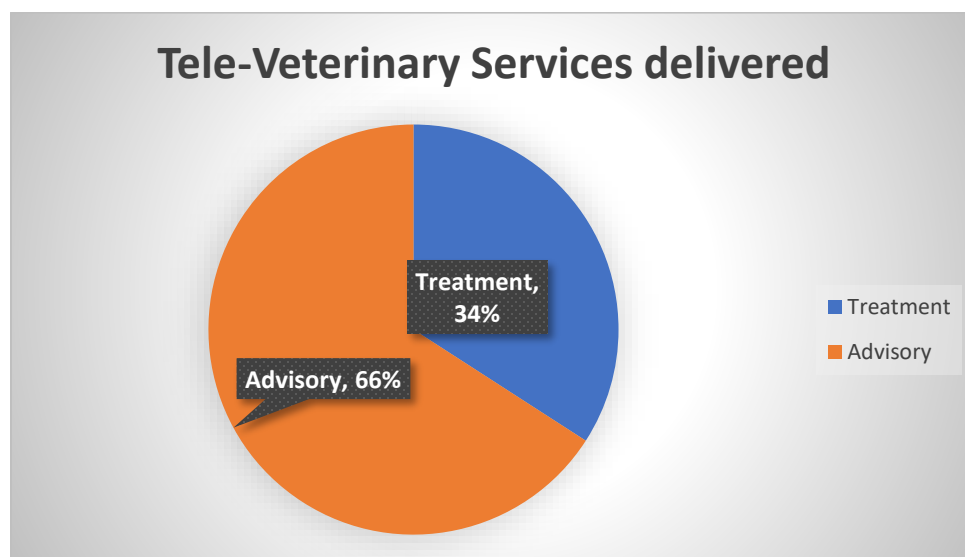
Trained service providers have registered each of the farmers for service delivery. During registration, service providers have distributed Farmer's ID card to the farmers. The registration card was designed by mPower which had the option to write down farmers name and mobile phone number. A poly bag was also given along the card so that farmers can better preserve it.



SHUROKKHA TELE-VETERINARY SERVICE DELIVERY

Trained and registered service providers captured field problems of the farmers' cattle and sent to our veterinarians located in mPower's Dhaka office through using 'Shurokkha' mobile application. After reviewing the received data on web, the veterinarian made phone calls to the respective service provider as well as the farmer for better understanding of the problem of the cattle. Then the veterinarian generated digital prescription and/or advice to the service provider as application notification along with a shorter version of the prescription as SMS to the farmers.

A total of 4417 tele-veterinary services were delivered during the tenure of the project. Out of which 1507 were sickness cases and rest 2910 were advisory cases.



BREED IDENTIFICATION SERVICE DELIVERY

Our service providers have delivered 1001 breed identification services to our registered farmers during the tenure of this project. Most of these services were delivered by our subscribed AI technicians during the time of AI. Following the recommendation of the application, the AI Technicians did the AI.

SMS BASED ADVISORY SERVICES

We sent seasonal SMS to alert our farmers regarding FMD. When the rainy season ends, there is high possibility of FMD outbreak. So, we have given all of our farmers and service providers SMS to vaccinate their cattle against FMD to keep their animal healthy. Total 4705 farmers have received this SMS based alert



SERVICE REVIEW MEETING WITH SERVICE PROVIDERS

We have organized quarterly service review workshops to understand the service quality and capture users' feedback. A total of 12 such workshops were organized and conducted with the service providers in all three working districts. In all service review workshops, we found lively participation where service providers discussed their expectations and shared feedback. They expressed their high satisfaction for service quality and effective treatment given by the Veterinary Experts of mPower. They were also satisfied with the early morning and holiday service of "Shurokha" along with regular service. They said that the service charge is a bit high and issue with fluctuating internet connectivity in remote locations. Some other software user interface related issues came up during these workshops which we have addressed accordingly.



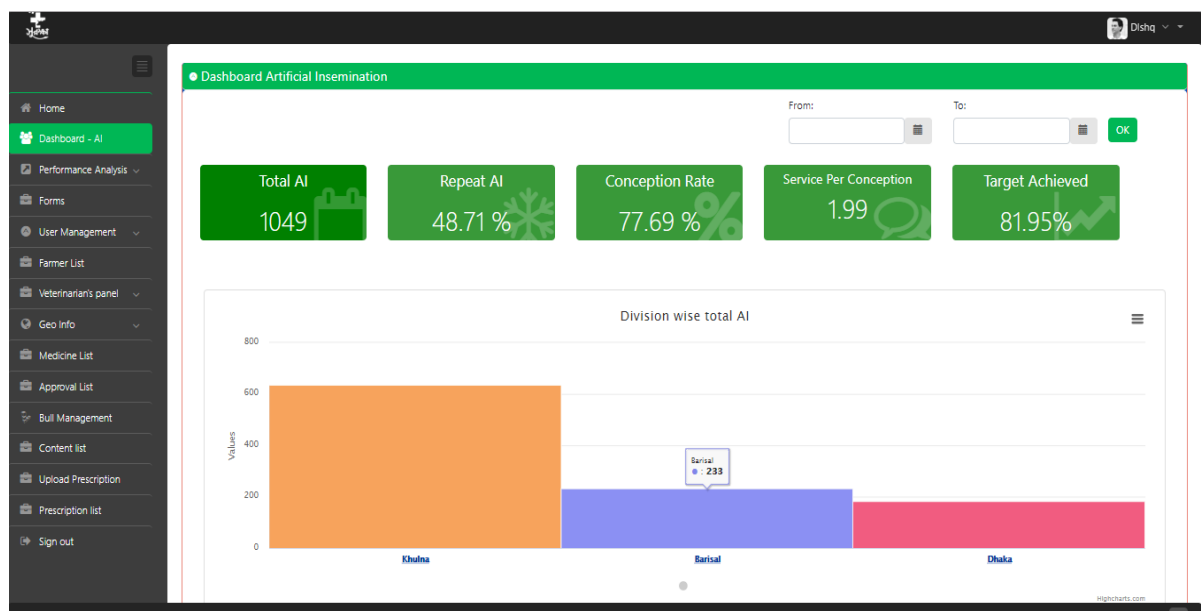
COMMERCIAL RELEASE OF SHUROKKHA TELE-SERVICE DELIVERY

We have launched Shurokkha Tele-Veterinary Service commercially at April 2019 at all three districts. Unlike non-commercial model, here service providers had to pay fee for receiving veterinarian's service through Shurokkha. Different rates of service fees have been implemented in different areas and in different months as well. The most interesting finding was the significant drop in number of cases sent after commercial launch. We have followed two different modalities for commercial Shurokkha services to test out which price point will be suitable. In the 1st month (April'2019) we set 20 TK. as fee for each online call both at Satkhira and Patuakhali, which was increased to 35 TK in May and at Dumuria, Khulna the fee remained unchanged @BDT 50. After 3 months of operation, we analyzed the findings and prepared 'Commercial Viability Report' which reflects the lessons learned on commercial viability.

[Shurokkha Commercial Viability report is in Annex-5](#)

ARTIFICIAL INSEMINATION DASHBOARD DEVELOPMENT

'Artificial Insemination Dashboard' is a web interface usable by the officials of organizations which are engaged in farmer level Cattle Artificial Insemination service delivery and have their affiliated AI Technicians and Bulls/Semen. mPower's development team developed this web interface. For this we have gathered requirements from both field and head office level officials of both private Cattle Semen Supplying Company (Lal Teer), autonomous organization Rural Development Academy (RDA) and relevant officials of Department of Livestock Services (DLS)



[AI Dashboard report is in Annex-6](#)

MIDTERM REVIEW WORKSHOP

Midterm review workshop was organized at Patuakhali on 28th April 2019. Relevant stakeholders have participated in the workshop includes BGP responsible officials (both central and regional), farmers, WMG leaders, service providers, DLS officials. From the workshop, we got some useful and actionable feedback and suggestions and we worked on incorporating those. A detailed workshop report gives detail on those, which is already shared and finalized.



[Midterm review workshop report is in Annex-7](#)

BENEFICIARY/FARMERS ENGAGEMENT ACTIVITIES-

FARMERS AWARENESS COURTYARD MEETINGS

The purpose of the courtyard meetings is to raise the farmer's awareness regarding Breed identification and



veterinary service. Each courtyard meetings arranged locally with the help of WMG committee members and concern CDF of Blue Gold project. 20-25 members were generally present in each courtyard meeting. The FF invited the service providers in the courtyard meeting and by which the service providers got a chance to explore themselves in a wider market. A total of 102 such meetings were conducted during the tenure of the project.

PROMOTIONAL HOUSEHOLD VISITS

It was one of the routine promotional activities of our FFs. They visited the farmers households to inquire about their livestock and challenges and showed them how to get engaged with Shurokkha services and what are the benefits. We developed a HH visit form for the FFs, which they filled up using our digital data collection tool during their visit.

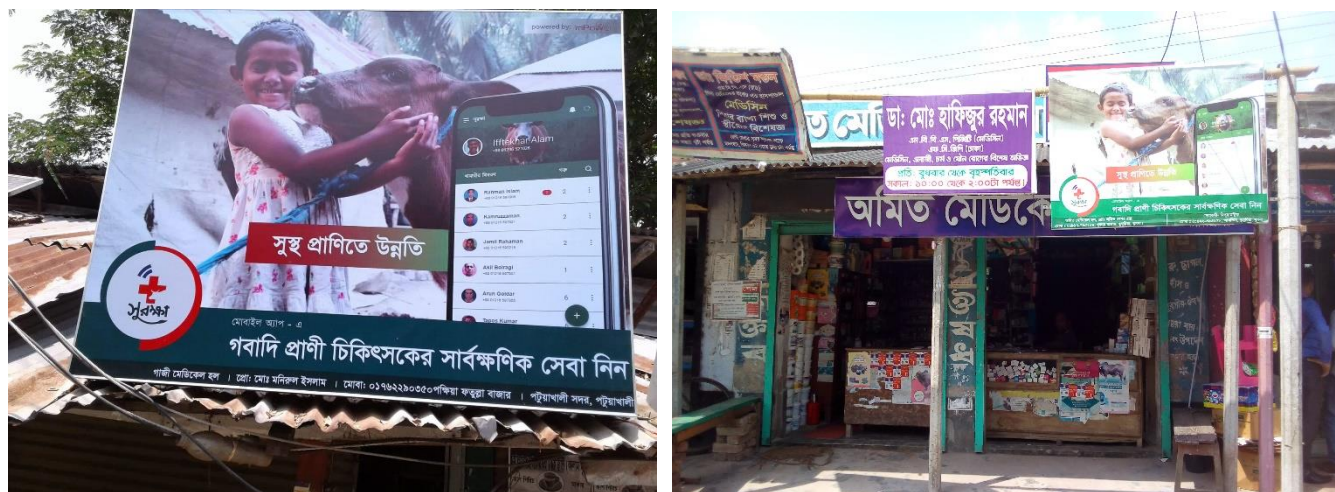
DEVELOPMENT AND DISTRIBUTION OF COMMUNICATION MATERIALS

For widely spreading project services, mPower's communication team have developed a number of communication materials, which were distributed among the service providers who stuck these in locations like farmer's house, nearest market, Vet Pharmacy etc. so that the farmer can communicate with the service provider.



INSTALLATION OF BILLBOARD

One of the highlighted promotional materials we developed and installed was billboards/signboards for veterinary pharmacy shops. With concern of the CLW/AI technicians we installed the Signboard where their name, concern vet pharmacy name and communication number were also mentioned at the bottom. A total of 14 such signboards were installed in local veterinary pharmacy shops within our working locations.



ORGANIZING CATTLE VACCINATION AND DEWORMING CAMPS

According to community demand, we organized total 10 (Ten) vaccination and 3 (Three) deworming camps. Respective service providers executed the deworming as well as the vaccination. In these regards, we got amiable assistance from respective officials of Department of Livestock Service (DLS) and BGP zonal team. A total of 1105 cattle were vaccinated and 385 cattle were dewormed with broad spectrum anthelmintic medicine through these organized camps. Farmers, community elites have highly appreciated these initiatives and suggested to continue this initiative



PROMOTIONAL VIDEO DEVELOPMENT & DISSEMINATION

To publicize Shurokkha and Breed Identification, 2 separate videos were developed. mPower's communication team has developed the scripts for both the video with the help of our livestock team. We have shared both the scripts with BGP responsible officials. In consultation with BGP responsible officials we planned and completed the shooting of both the videos. For the videos we also took interviews of BGP officials as well as DLS local officials and specially Dr. Hiresh Ranjan Bhowmik, Director General of DLS. For finalization, we incorporated all the feedbacks of BGP responsible officials. Finally, we have added subtitle to both the videos. Both the videos contain farmers and service providers experience and views of mPower, BGP and DLS.

Videos were disseminated through our FFs and Service providers.

Final video outputs are in below link

Shurokkha

https://drive.google.com/file/d/16BT_ECBNbcko-PEK1bv4IAb06RRytkts/view?usp=sharing

Breed Identification

<https://drive.google.com/file/d/1fhWRBIXPYINvvc-tYbjWItDMWpIMLqqq/view?usp=sharing>

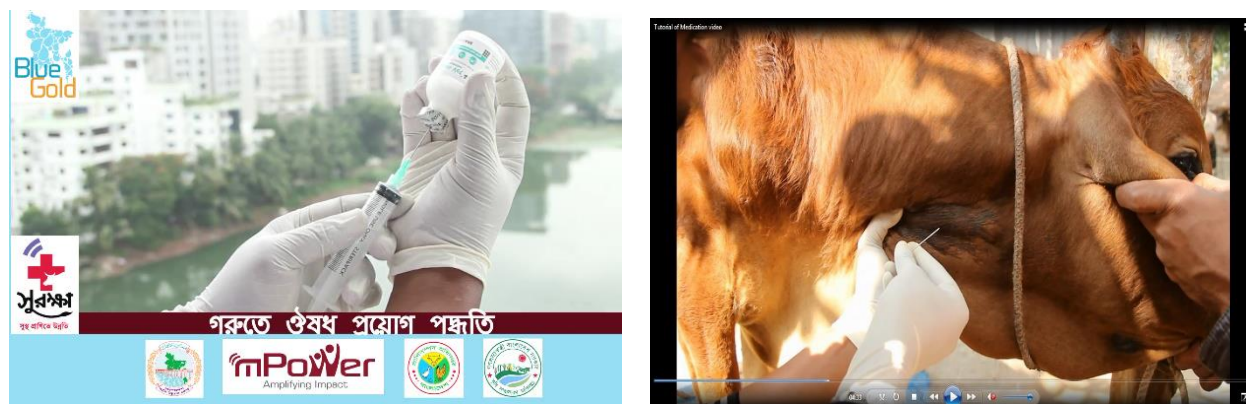
PROMOTIONAL VIDEO DISSEMINATION THROUGH LOCAL CABLE OPERATORS

“Shurokkha” promotional videos (short version: 2 minutes) were aired on the local cable TV channel of Satkhira. Besides this, promotional videos show at the community level was organized in the implementing districts.



E-LEARNING VIDEO ON ‘CATTLE MEDICATION’ DEVELOPMENT AND DISSEMINATION

E-learning video on right method of cattle medication was developed targeting service providers so that they do not make mistakes in applying medicine to cattle and disseminated among the service providers. This video illustrates the correct ways of medication which are common for the service providers. At the start of the video, we have incorporated interview of Dr. Forhad Hossain, Deputy Director, Chattogram, DLS on importance of right methods of cattle medication to make it widely acceptable. The video was shared with all of our service providers.



Final E-learning video on Cattle Medication is in below link

<https://drive.google.com/file/d/1-g24PZLwQvasQH-BzsbGzaVviqq6FtiG/view?usp=sharing>

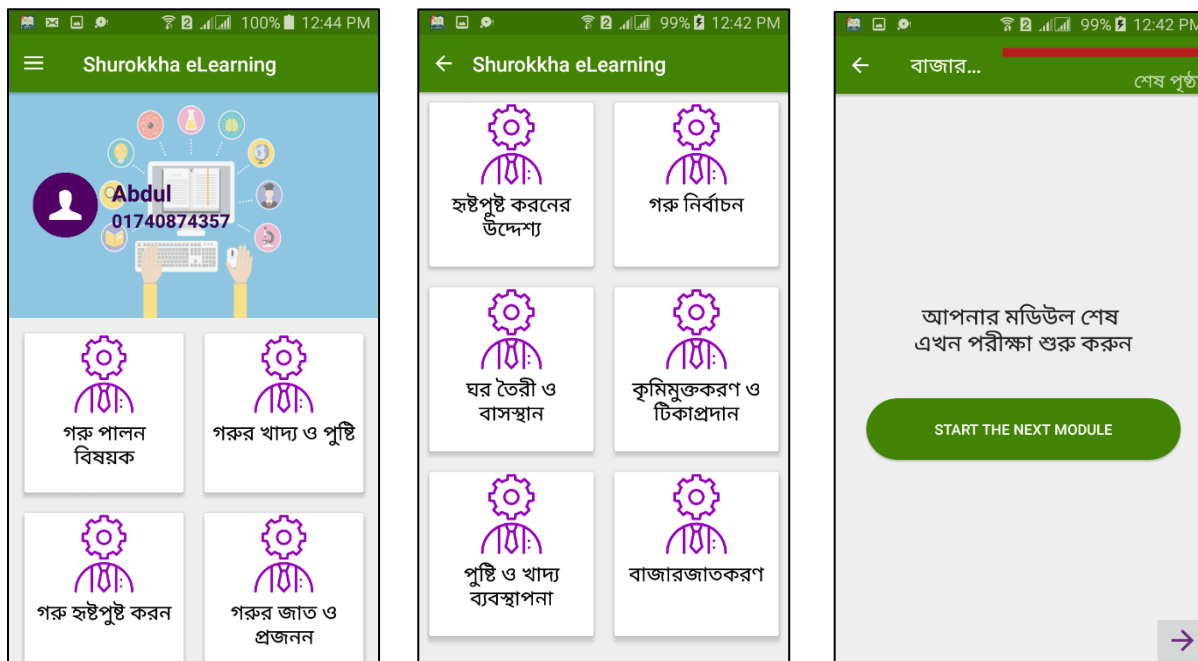
E-LEARNING MODULES DEVELOPMENT

E-learning modules were developed and released among the service providers at all three districts. In the e-learning app, there are 6 modules and each module consists of 04 to 09 chapter. After completion of each chapter, there are some quizzes on that specific module for the users so that they can check their competence. This also makes the e-Learning journey interactive.

All the service providers were given the application through a web link. The link is shareable through facebook messenger. Now the existing service providers can share the application by sharing the link or through data sharing software's like 'SHAREit'. Also they can take support from mPower by calling to our service delivery call center number [+8801709394488](tel:+8801709394488).

For getting the application user have to follow the below link

<https://drive.google.com/file/d/1yCTQlpopuwtMi7fZDhMumsfcsngSO16S/view?usp=sharing>



FIELD VISIT BY BGP AND DLS OFFICIALS

During the tenure of the project, a number of officials of BGP include Dr. Munir Ahmed, Livestock Expert; Mr. Tanvir Islam, Joint Manager, IF; Ms. Judith Bruijne, IF Manager; Mr. Guy Jones, Team Leader had visited project activities. During the visit, they observed our field activities and also spoke to the respective service providers, farmers and Field Facilitator. The Zonal officials of BGP had also visited our project activities. Specially to mention Dr. Munir Ahmed who periodically went to all of the project locations and gave his constructive feedbacks for better implementation.

Dr. Md. Lutfor Rahman, Focal Point of BGP from DLS also had visited our project few times. He was satisfied by having the positive response from the service providers and the farmers regarding Shurokha and breed identification services. He was very happy to see the field activities and expressed to extend his support for the project. He also said that this type of innovative solutions is really needed for our farmers.



Fig: Field visit by BGP and DLS officials

LESSON LEARNING WORKSHOP

REGIONAL EVENTS

There were three regional level experience sharing workshops on “Breed Identification and Digital Registry of Cattle” held at Satkhira Sadar, Dumuria of Khulna and Patuakhali Sadar on August 28, 29 and September 01 respectively. On an average, 15 farmers who got either “Shurokkha” tele veterinary service or breed identification service and 2 services providers were present there. In these events, the Farmers and the service providers had shared their experiences and view. The participants expressed their high satisfaction for the “Shurokkha” service quality and breed identification as well. The most positive thing was receiving SMS at their own mobile set. In all the events, zonal representatives of BGP were present including Mr. Bert Brook Huis, (Water Management Expert) and Mr. Guy Jones, Team Leader at Satkhira Sadar and Dumuria, Khulna respectively.



CENTRAL EVENT

mPower organized a central lesson learning workshop to share the project’s achievements and the lessons learnt. The workshop held at KIB seminar hall, Krishi Khamar Sarak, Dhaka on 11th September 2019. All relevant stakeholders from public, private, research and policy makers participated in the event. Top officials from DLS including Director General who was the chief guest joined the event and appreciated the initiative and expressed their keen interest to go forward with further collaboration.



A detail report of the event is in Annex-8

KEY RESULTS

- Successfully developed digital cattle breed identification application implemented in Dumuria of Khulna, Satkhira Sadar and Patuakhali Sadar Upazilas
- 6138 livestock farmers received improved livestock services which includes tele-veterinary, breed identification and AI recommendation and SMS based Advisory services with a very high satisfaction
- Successfully developed AI Dashboard for DLS and AI service providing companies
- 52 community livestock service providers have improved their technical knowledge and competency through digital E-Learning modules and videos
- 34 Water Management Groups of Blue Gold program area were engaged in the project activities

CASE STUDY-1

Name: Sabina Khatun
 Husband Name: Mohabbot Ali Gazi
 Address: Village: Gazipara, Upazila:
 Satkhira Sadar, Dist: Satkhira
 Problem: Pica
 Mobile No.: 01762272765
 Service: Tele-veterinary Service

Sabina Khatun has a 20 months aged calf which has a peculiar problem that she has never seen. The calf usually does not take water rather it very much fond of urine. The calf takes not only its own urine but other cows as well. The Farmer called several local service providers but all her efforts went in vain. One day, The Farmer resentfully decided to sell the calf. And on the same day in the event of Courtyard session at Ghoshkhali Khal Water Management Group, she spoke detailed with Mr. Imdadul Haque Noyon, President of Ghoshkhali Khal WMG, who locally known as a service provider of Blue Gold Project. Mr. Noyon rest assured her and advised her not to sell the calf and informed her to try with “Shurokkha”. After the Courtyard



session, Mr. Noyon went to her house and registered Sabina and her calf as well. Then Mr. Noyon sent the required information and pictures to registered veterinarian through “Shurokkha” mobile apps.

A few minutes after sending the information, the veterinarian called her and asked some relevant questions and then sent a prescription through SMS. Mr. Noyon described her in detail and advised her to continue the advised drugs for one week and after 10-12 days, her calf was cured and started to take water instead of urine. This activity of “Shurokkha” has created great influences in the community.

They were very much grateful to “Shurokkha” mobile apps tele-veterinary services.



CASE STUDY-2

Farmer Name: Sadekur Rahman Babu
 Fathers Name: Abdus Sattar Sardar
 Address: Shalle, Bromhorajpur, Satkhira Sadar
 Mobile No.: 01762272765
 Service: Tele-veterinary Service.

Sadekur rear cattle in his village and he was used to with the local service provider for treatment of his animal. One of his calves was suffering from Myiasis at the naval region and was not improving anymore. He called a local service provider who treats the calf, but the problem was that, during the medication the problem was in control and after that, the problem arose again and by this around 20 days had passed. One day, he was taking Tea at his nearby tea stall and found a sticker of



“Shurokkha” and a mobile number of Daloar Hossain. With curiosity, he called Daloar Hossain. Then the

Daloar Hossain completed the registration of Sadekur and also his calf, listened and observed the problem, sent it through his mobile to Dhaka. In the meantime, Daloar informed Sadekur that by using the “Shurokkha” mobile app one can treat the calf directly from a registered Veterinarian from Dhaka. After Sending a Veterinarian called Daloar and discussed details, The Doctor Also called Sadekur and listen to the details. The Veterinarian sent a prescription to Daloar’s mobile and Sadekur too. Daloar Started treatment as per suggestion by the Veterinarian and found the calf cured after 3 days which never arise again. Sadekur and his family is grateful to both “Shurokkha” and Daloar Hossain.

Sadekur wish that he will continue with the “Shurokkha” service. He is also informing his neighbors of Shalle Paschim Para WMG to have the “Shurokkha” mobile treatment service and keep the animal health.



CASE STUDY-3

Service Provider: Goffar Biswas

Father’s Name: Akhter Biswas

Mobile No.:01914703436

Vill: Bosundia

Upazila: Dumuria

Dist: Khulna

Polder: 29 , Bosundia WMG

Md. Goffer Biswas, was just a local small scale businessman even 2 years back. He had been running a business of Fertilizer and insecticides, but his business was not as good as he wanted. In such a situation, he thought to do something else besides his business at that time. After a discussion with one of his nearest relatives, he got admitted to a local veterinary service provider training center at Dumuria under Khulna District and completed 6 months course and started primary treatment at his surrounding community and found that training sessions and practical fields are in the opposite pole. He had no experience, no skill or even confidence and thought that he did wrong having the LSP training.

One day he heard about “Shurokkha” Mobile apps from another LSP of the same Upazila. Then he communicated with field facilitator of mPower and the FF experimentally included him in the next batch as he was very new.

Having a one-day orientation, he got charged and started the service again. Goffer got familiar that actually, one registered Veterinarian is treating the animal by his “Shurokkha” app. So, by calling Goffar, a farmer would ultimately get a Registered Veterinarian. Goffer was getting positive results using “Shurokkha” and day by day his daily calls were also increased. Nowadays he is getting 2-3 calls a day instead of 2-3 calls per week. On the other hand, his income has also been increased roughly from BDT 1500-2000 to 8000-10000 per month by around only 8 months of service. He got dramatic changes after “Shurokkha” use within a very short time. His popularity is also increasing and by this time he broke the influences of other local Service providers as because, farmers are getting a chance to discuss the diseases and problems, Prescription and advise through SMS etc. from a registered veterinarian.



Goffer realizes that without having “Shurokkha” he might leave the service provider profession. He and his family are really grateful to “Shurokkha”.

CASE STUDY-4

Farmer Name: Jannatara Ferdous
 Mobile No.: 01948930197
 Address: Ranai WMG, Poldar No. 25,
 Khornia, Dumuria, Khulna
 Service: Breed Identification

Jannatara Ferdous has been rearing cattle for years for the financial solvency of her family. She takes care of her cattle of her best. She was familiar with Artificial Insemination and wants to inseminate her cow artificially so that she got her required calf of the required breed as per her to wish, but she had no idea regarding breed identification and its importance on production and reproduction. As a member of Ranai

WMG she attended a courtyard session organized by mPower where M Shamim Khan, a local service provider using “Shurokkha” and also do AI for years in the same area, was also present.

Next time, when Jannatara found her cow in heat, she called Shamim Khan for AI, Shamim Khan came and identified her cow’s breed. By this time Jannatara requested him for AI with a 100% semen of foreign blood, so that she will get a foreign blooded calf. After completing breed identification, a message was sent to Jannatara’s mobile phone where she found that her cow was 40% Frisian and recommended semen % was 75% to 100% semen of Frisian cattle. Jannatara got a bit surprised and asked Shamim Khan to do according to the SMS, she also said that, earlier we thought that 100% semen of foreign blood for any cow is perfect and now she realized that 100% foreign blood is not suitable in our country’s weather. Earlier of this incidence, she even spent more money on getting 100%.



As an aware farmer Jannatara realized that, we should request the AI personnel for AI which must depend on blood % of the cow. Now Jannatara is happy, she also informed her neighbors for suitable AI after identifying the Breed. She also said that suitable semen will produce a suitable calf and by this, both the cow and the calf will remain good. Jannatara is grateful to mPower and Shamim khan for this issue.

CHALLENGES AND MITIGATION

- Cattle DNA testing for Verifying Breed Identification Application:** As part of our Cattle Breed Identification Algorithm's accuracy verification, our plan was to partner with such a Dutch Company to deliver DNA testing service of 120 target cattle on which we will test run our developed algorithm. But no such companies agreed to deliver the service. We reached out to four companies with response from just one. They replied that they are not providing this service as it requires extensive work and they cannot guarantee the accuracy of their results. Ms. Judith, Innovation Fund Manager, Blue Gold program tried her utmost to help us find a suitable company with no success. Then we tried to engage with research organizations like Wageningen University. We did skype call with Professor Dr. Roel Veerkamp of Wageningen University & Research. He has done some research projects to identify native Dutch Breeds using SNP genotyping. He is willing to work with us but it will again be a research type project for him. His research will be very expensive and not affordable within the scope of the project.

We will overcome this challenge by incorporating **Second tier verification** of the algorithm generated results by livestock experts and revision of the algorithm based on the results of verification. During implementation of field trials, we will collect image of each of the target cattle. Veterinary experts, both mPower's in house as well as external consultant will give his judgment by observing the target cattle's phenotypic characteristics. There will be 2 rounds of such expert verification. In each round, there will be 150 samples. Algorithm generated and expert verified results will be compared to see the comparative difference in accuracy. This will be done for 300 cattle in the field

- Mixed reaction within DLS officials:** District Livestock Officer of Satkhira was a bit skeptical on AI Technicians of DLS using the system. He said these AI Technicians are busy in field activities. So, he just cannot ask them to do this. This needs to come through proper process i.e. official order from DLS HQ. We have already discussed the matter with Dr. Lutfor Rahman, DLS Focal Point for Blue Gold Program. Our plan is to take this to DLS HQ and get a written consent from them.
- Fluctuation in internet connectivity:** In remote locations is quite frequent which was more than our anticipation. So, we have incorporated offline features in the application as much as possible
- Farmers perception regarding payment of services was mixed:** Some of the BGP farmers were in a position that they should not pay as they are BGP participants. So, our FFs had informed them with the help of CDFs that these livestock service have to be taken with payment as the service providers are not paid. And also to make the service sustainable in the long run

LESSONS LEARNED

- Strong demand of Tele-veterinary service from both farmers and local service providers as well as the community leaders
- Increased Confidence of Service Providers in delivering livestock treatment and advisory services to farmers
- Through Breed Identification service AI Technician's finds it easy to motivate farmers take right type of semen for their cattle
- Through the use of Breed Identification strong awareness developed on negative and long-term consequences of wrong type of semen use for AI
- There are locality wise variations of cattle phenotypic characteristics of cattle when there are mix of breeds like Jersey, which sometimes does not give appropriate Breed identification
- Easy acceptance of Breed Identification and AI recommendation by most of the farmers. In most of the cases we found farmers were not aware of the importance of appropriate AI. However, with a simple orientation, the farmers understood and accepted the recommendation
- After getting the AI recommendation through Breed Identification module of the application, AI Technicians do not always have recommended type of semen which hinders appropriate service delivery
- Not all the farmers are understanding the benefits of record keeping. They are more interested in getting service
- Willingness to join Shurokkha tele-veterinary service among community service providers is quite strong, in number of cases we found service providers joining Shurokkha services by purchasing new smartphone
- Willingness to pay for tele-veterinary service among service providers is limited to only complex and complicated cases
- Service providers do not like the SMS based prescription directly sent to farmers as they think farmers might not call them again for same type of treatment
- Tele-veterinary service is required 24/7 for emergency and critical cases where some emergency suggestions needs to be provided over phone rather wait for digital prescription

SUSTAINABILITY

For sustaining the services in the existing working locations with BGP farmers, mPower is continuing all of our developed services. For continuation we have already got some investment from Islamic Development Bank's 'Transformers Fund'.

As a social enterprise, mPower will continue and add additional market force driven solutions targeting service providers and commercial entities. We have already started working on customization for commercial livestock pharmaceutical and feed companies. We are also working on development of additional services like CRM which will attract a greater number of service providers. Parallely, we are working to spread the services to other locations. For sustainability, we need to have a big reach of service providers as well as farmers

COORDINATION WITH ARTIFICIAL INSEMINATION SECTION DLS

With the assistance from BGP technical team, we have already initiated to go forward with AI division of DLS with AI Dashboard. We have had a meeting with AI section of DLS, all the participants have appreciated the initiative and expressed their need for such system. They have also suggested that in their next technical meeting they will invite us to have more detailed discussion on what type of addition or incorporation will be required to make the system appropriate and usable for DLS. This gives us strong feel that DLS will uptake it.

STRATEGIC PLAN

We have planned to move away from just single source (i.e. service delivery revenue from farmers) of revenue to sustain our livestock initiatives. We have already learnt the lesson that this is not practical to come to a breakeven with just service revenue from farmers. Instead we will diversify the sources of revenue which includes-

- In add advertisements
- Business intelligence dashboard for veterinary pharma and feed companies
- Shurokkha technology platform subscription to livestock feed and pharma companies
- Service delivery revenue from farmers – farmers will directly take services from Shurokkha
- Service delivery revenue from service providers

We have initiated to increase our reach of service providers as well as farmers. Also have developed value added services like CRM where service providers will be able to schedule their visits to farmers households with reminders for timely service delivery keep the track of their services delivered to farmers including credit history as well as updated news feed, quizzes etc. These will keep the service providers will stick to our apps. Already we have developed a version of such system and launched it to around 100 service providers. Our target is to rapidly expand this integrated application to 1000+ service providers within 2020. This will give us a significant data on service providers service delivery pattern, use of medicine, prevalence or outbreak of animal diseases, farmer's & livestock distribution pattern, productive stage of animals etc. These data are very valuable to commercial livestock feed and pharma companies for understanding their position in the market as well as making critical decisions for marketing their products also to livestock research organizations. We have already organized a workshop with leading livestock pharmaceutical companies and research organizations where they expressed their strong need and paid subscription. Also, we will be able to push in-app adds of pharma and feed companies' products to the service providers also to farmers through promotional SMS.

Besides Shurokkha service delivery model will be replicated among livestock pharmaceutical companies. We have already in discussion with some of the pharmaceutical companies who showed interest to replicate this through their CSO, employed veterinarians who will deliver tele-veterinary service to their field MRs and affiliated service providers. mPower will be the technology service providers and companies will subscribe to the services. By 2020 we plan to subscribe 5 companies subscribe.

With this holistic approach involving commercial entities we expect to be in operational breakeven in two to three years' time.

RECOMMENDATIONS

Shurokkha service delivery fee: Service fee of BDT 50 to 100 does not seem practical for the service providers to pay us. For continuation of the service fee have to be very minimal @BDT 20 per service

Increasing service providers number by adding other threads of services: Commercially sustaining Shurokkha tele-veterinary service on its own is not possible unless there are other threads of serviced catered to CLW's. One such service can be Client Relationship Management (CRM) tool for CLW's using which they can manage their professional activities more effectively and earn more. That kind of platform will attract input companies to promote their products in the platform and that will give us an additional source of income for sustaining Shurokkha which will become part of the overall service package.

B2B Partnership: The other option is opting for a B2B model whereby private companies e.g. pharma companies will use the platform of Shurokkha for a subscription fee and use the service as a part of their farmers' loyalty program

Breed Identification

- **Advocacy with DLS:** Strong advocacy with DLS is required for up taking Breed Identification and AI Dashboard which is already initiated and we are already in discussion to take this forward with AI section of DLS
- **Partnering with AI Companies:** Partnering with AI companies is another key aspect to take this forward. During lesson learning workshop we have found strong intention from private sector representatives, especially from Mr. Arabinda Kumar Saha of ACI Animal Genetics Ltd.
- **Continuous Improvement of Breed Identification:** By incorporating breeds like Jersey, Brahma as now a days these breeds are getting popular

ANNEXES

<u>Annex-1: Selected WMG list</u>
https://drive.google.com/file/d/1FRq_CBiNLztk-4YBAaKm7eDaK6HktaRW/view?usp=sharing
<u>Annex-2: Inception workshop report</u>
https://drive.google.com/file/d/1QV2d3G34Wa1zLrFI8axveueTYz9gTDKP/view?usp=sharing
<u>Annex-3: Baseline Study Report</u>
https://drive.google.com/file/d/1ub20YlhOpKRS1pH8niWPnJfDxp5sdL2d/view?usp=sharing
<u>Annex-4: Breed Identification Algorithm Report</u>
https://drive.google.com/file/d/1BrNG0aUdD5PDSodkaeSYfMFVXiJmQc6D/view?usp=sharing
<u>Annex-5: AI Dashboard Report</u>
https://drive.google.com/file/d/1lrM9Ww_nnoC-s6UGSz4lOaWWV2rOJoXG/view?usp=sharing
<u>Annex-6: Shurokkha Commercial Viability Report</u>
https://drive.google.com/file/d/10AgBSpEhi2JtrYi0NQGYPPhwoo_JVq_W/view?usp=sharing
<u>Annex-7: Midterm Review Workshop Report</u>
https://drive.google.com/file/d/1jRH7Uiy5ZBGbyffSMGSQPsIZDf7r5uj/view?usp=sharing
<u>Annex-8: Lesson Learning Workshop Report</u>
https://drive.google.com/file/d/1Dqt3TKUEFG39VltwINKbLKVLzLLY3dJK/view?usp=sharing

mPower Social Enterprises Ltd.

Nur Empori | Level #10 | H#77 | B#M | R#11 | Banani | Dhaka-1213 | Bangladesh
T: +88 02 9844440 | Web: www.mpower-social.com