A Business Case for Digital Fat Testing Machine

Background to the Bangladesh dairy market

90% of milk produced domestically comes from rural small scale producers but the rural milk market is mostly regulated by local collectors and producers are not paid by individual quality of their milk from formal or informal market. This leads to persistent poor milk production and low transparency in the milk buying process. Chilling plants also operate traditional fat testing system which is also time consuming and results into the low supply of milk to the formal market. CARE identified this gap in the supply chain and intervened by introducing a new technology called the Digital Fat Testing (DFT) machine.

Digital Fat Testing Initiatives (DFT)

DFT Initiative is a joint intervention of CARE and BRAC Dairy to promote fairness and transparency within the dairy market of Bangladesh. In this system the producers bring their batch of milk to a DFT collection point, where the machine automatically calculates the fat content of the milk. The higher the fat content, the higher the price per liter of the milk is paid out to the dairy producer. The machine prints out a receipt that is given to the farmer, who is paid at the end of the week for the cumulative amount of milk that he or she has sold to the milk collector. Fat content rates are clearly displayed at each collection point, and farmers are paid for their individual dairy production. DFT machines yield transparent, fair market prices and incentivize dairy producers to improve their livestock practices.

Objectives of DFT:

- Improve transparency and fairness to the milk collection process
- Increase milk selling income of dairy producer through individual pricing and fairer purchasing systems
- Individual and fair pricing structure would encourage greater uptake of improved cow nutrition and management practices
- Reduce corruption and collusion that occurs between milk collectors and chilling plant milk receivers

How is it transforming the current definition of dairy private sector engagement?

CARE has crafted out a new stakeholder in Bangladesh's dairy sector value chain. Milk collectors are budding entrepreneurs in remote villages who are empowered to increase the milk quantity and quality that is sold at their collection points by providing technical information and best practices to dairy producer customers. Because of the milk collectors' economic and financial stake, the value chain can achieve self-sustainability beyond the duration of donor funding.

Business impact of DFT to BRAC Dairy

The initiative has established 46 milk collection points in the remote community and has created a stable BoP market for BRAC Dairy. Since the startup initiative of DFT collection point the monthly average collection point has increased from 264 liters to 354 liters (33% increase). Similarly, the average dairy fat content increased from 4.14% to 4.31%. Those 46 DFT collection points is contributing in 20% of total milk collection of BRAC in the selected 22 chilling plants. Both higher quantity and quality of milk collected at DFT points benefit BRAC by improving BRAC Dairy's overall milk products.


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- 72 DFT collection points installed
- Total 84 employments created
- Average 4.5 fat% recorded
- 114% increase in DFT milk supply
- 71% increase of collection point manager's income
- DFT contributing 55% of BRAC's total collection

Economical impact of collectors


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DFT machines have positive economic impacts on community in which they are installed. On average, DFT milk collectors' income increased from BDT 12183 to BDT 22294, an increase of 83% over the course of 12 months. This statistic can be attributed to greater volume of milk and higher fat content.

Social impact of DFT in community


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- 66% increase in farmer engagement in DFT collection point
- 75% increase in female smallholder dairy farmers engagement in DFT collection point
- 17000 farmers are now accessing to the DFT collection point

The installation of DFT machines provided economic opportunities to all village members. The number of smallholder dairy producers per DFT point has increased over the past 12 months.

The total number of customers per DFT collection point rose 66%, from 29 to 49. Similarly, the number of female producer per DFT collection point rose 75%, from 23 to 40 customers. Thus, more dairy producers utilizing DFT machines provide both social and business opportunities to BRAC. Thus, DFT machines provide an outlet for increased participation and empowerment of both males and females in all aspects of the dairy value chain. Second, it creates ample opportunities for BRAC Dairy to work with larger milk producer groups that produces high quality milk, evidenced through machine-generated data.

How do digital fat testing machines reduce traditional operational costs?

On average, it takes less time to collect and measure DFT milk shipments at chilling plants relative to non-DFT milk shipments. Surveys conducted with BRAC chilling plants indicate that it takes an additional 4.5 minutes to process non-DFT shipments relative to DFT shipments. BRAC can achieve operational cost savings by implementing DFT machines across all chilling plants within the country.

What are challenges faced by DFT implementation?

The first batch of DFT machine was installed in 2012, the project faced a longer-than-anticipated period of time to install the machine and engage producers to DFT collection points. One challenge was changing their behaviors and patterns of selling milk.

For the last several decades, smallholder farmers in the north and northwest of Bangladesh have been accustomed to selling their milk to informal market processors. CARE was required to convince farmers that they could receive higher economic returns from BRAC through higher fat content and actual weight measurement, as well as communicate the other benefits of DFT points such as transparency. Once farmers make the decision to participate in the DFT process, they also need time to improve their milk quality to be sold to DFT points because of the minimum threshold to participate with DFT machines. Another challenge faced during implementation is empowering milk collectors to run DFT machines as their own businesses. Milk collectors need to be trained to create marketing awareness events to increase number of dairy producer customers, leading them to greater milk volume and ultimately higher income.

Why are DFT machines significant to Bangladesh's dairy sector?

The ultimate goal is to make DFT machines as the standard practice of collecting milk within the Bangladeshi dairy industry. The scaling up of this model is correlated with the expansion of dairy input markets and strong relations with value chain actors and service providers both horizontally and vertically. Increase the number of DFT points within communities and install more DFT processing plants throughout the country. Greater exposure of DFT points to dairy producers results to greater the participation rate and if BRAC dairy collects more quality milk they will be able make more profits out of it. Higher income rates of smallholder farmers are being generated through DFT machines. Thus the livelihoods of those farmers are improving through engaging in one of the largest dairy processor in the market.

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