

# DIGITALIZING RURAL FINANCIAL ECOSYSTEMS



Unlocking Public and Private Finance for the Poor

## JOURNEY AND LEARNINGS FROM DIGITALIZATION OF DAIRY VALUE CHAIN IN NEPAL

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More than

# 1.6 Million

farmers are engaged in the dairy sector contributing to 9 per cent of Nepal's GDP.

With more than 66 per cent of Nepalese dependent on agriculture, the introduction of digital financial services (DFS) offerings in the agriculture sector became essential for not only expanding the ecosystem of DFS but also to ensure progressive growth of access to finance in rural areas.

The UNCDF partnership with Prabhu Management on dairy digitalization is a prime example of an innovative and sustainable solution in the value chain benefiting various stakeholders in rural areas who were previously deprived of accessible financial services. It serves as an excellent model for digitalization of other value chains in the agriculture sector, offering rich insights and learnings for reaching out to small-holder farmers and rural entrepreneurs.

Dairy is one of the main livelihoods for Nepal's farmers. According to the Food and Agriculture Organization (FAO), more than 1.6 million farmers are engaged in the sector contributing to 9 per cent of the national GDP. On average, 92 million liters of milk or approximately 60 per cent of the country's milk is processed through an organized sector and distributed through one of the largest dairy corporations, Dairy Development Corporation, while the rest is processed through private sector dairy companies. The market size of the organized milk supply chain is NPR 26 billion (US\$216 million<sup>1</sup>) and dairy companies in Nepal have invested around NPR 15 billion (US\$124 million) in infrastructure and supply chains.

Dairy cooperatives are the backbone of the sector and are catalysts in the development of the dairy value chain. They play a significant role in the collection and selling of raw milk from the farmers to Dairy Development Corporation and private dairies. There are more than 1,700 dairy cooperatives in the country with a member count ranging from 200 to 2,000 farmers. In terms of employment, an estimated 20,000 individuals are employed in dairy cooperatives across the country. On average, a dairy

<sup>1</sup> Exchange rate: 1 US\$ = NPR 120.5  
(Source: <https://www.xe.com/currencyconverter/convert/2020>). Note: This rate was used throughout the document to provide United States dollar equivalents for Nepalese rupees.



cooperative collects 48,000 liters of milk per year and pays NPR 1.56 million (US\$12,945) per year to farmer members. An average farmer earns NPR 31,238 per year (US\$260) from dairy<sup>2</sup>. This earning has increased for farmers who now sell milk for a total of NPR 52 per liter (US\$0.043/liter)<sup>3</sup> as compared to NPR 32 per liter (US\$0.27/liter) in 2016.

Different dairy farmers, from small-income farmers who own 2 to 3 cows, to mid-income farmers who keep 4 to 6 cows, and high-income farmers who hold 6 to 12 cows, all have benefited through dairy

cooperatives. The small-income farmers sell 8 to 15 liters of milk per day to cooperatives. These small-income farmers earn a regular income through dairy compared to other forms of agriculture that provide windfall income for households.

In 2017, UNCDF conducted [a study to assess the scope for digitalization](#) of the dairy value chain in Nepal considering the challenges related to acceptance of digital financial services in the value chain. The key insights of the research and follow up studies were:



## 1. INSECURE PHYSICAL CASH MOVEMENT FROM BANKS TO COOPERATIVES

Dairy cooperatives received payments for their sale of milk from Dairy Corporations and private dairies to their bank accounts which then required physical transfer of the money received from the bank to the cooperatives' office location to pay the farmers. This increased cost of operation and management for the cooperatives and also posed a huge risk of theft and loss of money. Cooperatives' management of cash was costly and insecure.



## 2. MANUAL RECORD-KEEPING OF MILK COLLECTION DETAILS AND RECONCILIATION OF PAYMENTS

Another critical challenge was the manual record-keeping and reconciliation of payments. It was a tedious and inefficient process to maintain cooperatives' accounts and milk collection details on papers and registers, especially when an entry or payment had to be searched or when payments needed to be calculated every month. At the same time, it opened up the possibility of conflict between the cooperative and farmers in case of any mismatch of data. This becomes even worse if cooperatives' staff tasked with this manual record-keeping have malicious intent.



## 3. POSSIBLE FINANCIAL DISTRESS OF FARMERS IN CASE OF DELAYED PAYMENT

Farmers are dependent on timely payment for the milk from the cooperatives. But the manual nature of the disbursement process can delay payment due to manual problems which possess a significant impact on farmers as they might have to rely on informal credit mechanisms in order to continue their daily maintenances and needs.



## 4. CASH PAYMENTS TO DAIRY FARMERS

Farmers received cash payments, which could deter the saving culture and also increase the likelihood of money being spent on unwanted expenses by the head of the family.



## 5. LACK OF FINANCIAL SERVICES OFFERING TO DAIRY FARMERS

Farmers received direct cash payments from the cooperatives that limited formal financial transactions. This led to farmers not having access to formal financial mechanisms to save their income, access insurance, or loans to gain credit to purchase cattle or other inputs.

<sup>2</sup> UNCDF, 2016, Independent research on dairy value chain digitization in Nepal, <http://www.uncdf.org/article/3901/digitizing-the-dairy-value-chain-in-nepal>

<sup>3</sup> <https://kathmandupost.com/money/2019/09/05/milk-to-cost-rs38-per-packet-from-saturday>



## SOLUTION

Based on the study outcomes, UNCDF co-created a dairy value chain digitalization project in Nepal in partnership with Prabhu Management. Prabhu Management is a digital financial service provider offering mobile wallets and payment portals. It currently has a network of around 16,000 agents with 4,000 from mostly rural credit cooperatives, which provides a well-established distribution infrastructure in rural markets in Nepal.

The project was developed to suit the needs of different dairy cooperatives, merchants, suppliers and clients. The dairy value chain digitalization project was envisioned with the following three critical components:



### DIGITALIZATION OF THE DAIRY PROCESS AND ACCOUNTING

One of the key insights from the research carried out by UNCDF and Prabhu Management teams was that digitalization of payments alone will not lead to process efficiency for dairy cooperatives. It is critical that dairy cooperatives own the project and thus, the initial step was to address the challenges of the dairy cooperative in terms of their record keeping and accounting processes.

To address this critical challenge, with inputs from the UNCDF team, Prabhu Management developed a cloud-based automated dairy ledger for the cooperatives. The milk ledger allowed dairy cooperatives to transform its recording and accounting processes on a digital platform. Using a cloud-based software meant the dairy cooperatives did not have to invest in assets such as servers but only had to pay a minimal fee to use the software. Prabhu Management also offered the cloud-based core banking solution to the cooperatives that have savings and credit activities.



### DIGITALIZATION OF PAYMENTS TO THE FARMERS

The core component of the project was to digitalize the payments to dairy farmers. Prabhu Management and UNCDF innovated on this component by contextualizing it to the market. Once the recording and accounting process was digitalized, Prabhu Management integrated their wallet to a bulk payment portal in the ledger for digitalizing disbursement of payments to farmers in multiple modes.

Prabhu Management offered Prabhu Pay wallet to the farmers. Prabhu Pay is a mobile app-based wallet designed on the learnings gained from interactions with customers. Prabhu Management conducted a range of marketing and awareness building activities to create the buy-in for the wallet and digital payments. The activities included rounds of orientation with farmers as well as other activities like wall painting and FM radio broadcasting. The marketing effort was intense all through the first few weeks of the launch to focus on on-boarding as many farmers as possible.

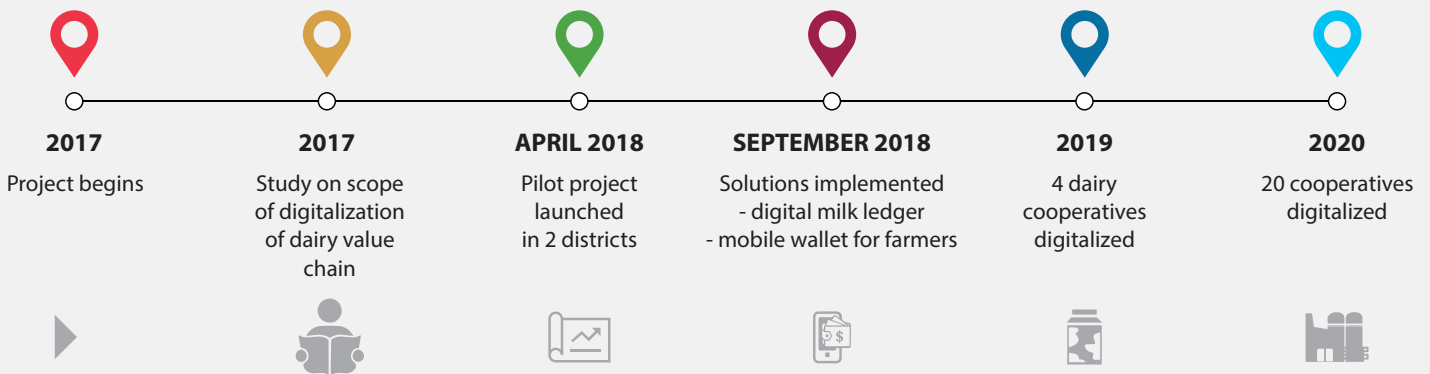


### CREATING THE ENABLING ECO-SYSTEM

Creating an efficient distribution and merchant infrastructure was a critical part of the project from its inception. In the absence of an infrastructure, the usage of the wallet will be limited and of no use to the end customer. Thus, Prabhu Management, with UNCDF support, developed a score card for the selection and on-boarding of agents and merchants. In addition, with digital payments being an innovative solution for the rural market, Prabhu Management invested heavily on orientation and awareness building for the merchants and potential agents in the project's vicinity. These sessions sparked the interest of nearby shops and small business to become Prabhu Pay agents or merchants. After on-boarding them as agents, Prabhu Management provided them with intensive training on the business of digital financial services.



# TIMELINE



## RESULTS AND LEARNINGS



### PRELIMINARY RESULTS

The project pilot was initiated in the Kavre and Bhaktapur districts in September 2018 and the results since then to March 2020 have been promising:



**20**  
cooperatives digitalized



Nearly  
**5,000**  
farmers, on-boarded including around 1000 women farmers on-boarded on Prabhu Pay wallet in the project pilot



**3,396**  
are active users of the wallet



**1,564**  
farmers, including **485 women farmers**, are receiving partial or full payments on the wallet or on their cooperative bank account



**350**  
agent-merchants on-boarded in the project pilot area

**The Prabhu Cooperative Solution manages milk purchases and payment calculations which improve security and reduce costs of cash movement for dairy cooperatives. This saves valuable time and improves transparency.**



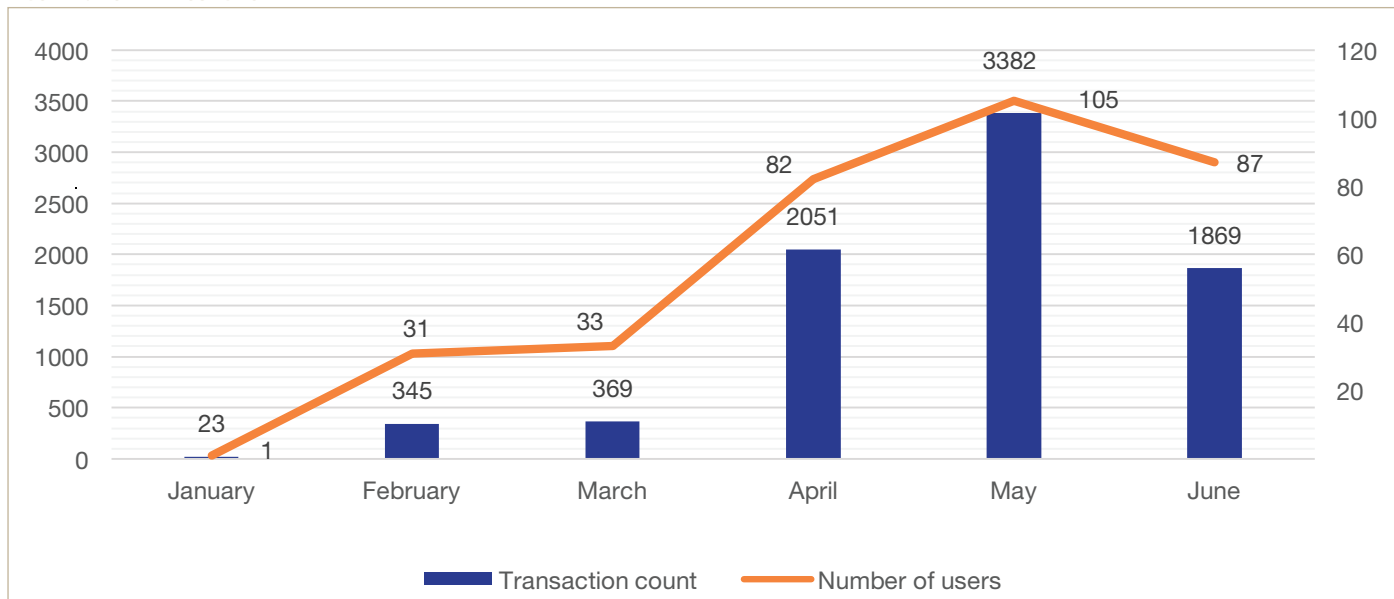
**DEVI PANCHHA KANYA**  
MULTIPURPOSE COOPERATIVE LIMITED

## FINDINGS FROM USER DATA

### Digital wallet proved invaluable to farmers during COVID-19

The use of DFS services spiked to nearly **600** per cent during the COVID-19 lockdown period. The average number of transactions increased from **357** per month to **2,434** transactions. Average number of users per month also increased by **300** per cent. Furthermore, nearly **56** per cent of users used the DFS services for the first time during the lockdown period. This indicates the latent demand and acceptability of financial services in rural areas. In addition, it also validates the importance of grassroot organizations such as cooperatives in providing a vital lifeline to farmers during the pandemic.

FIGURE 1: MONTHLY USAGE OF WALLET



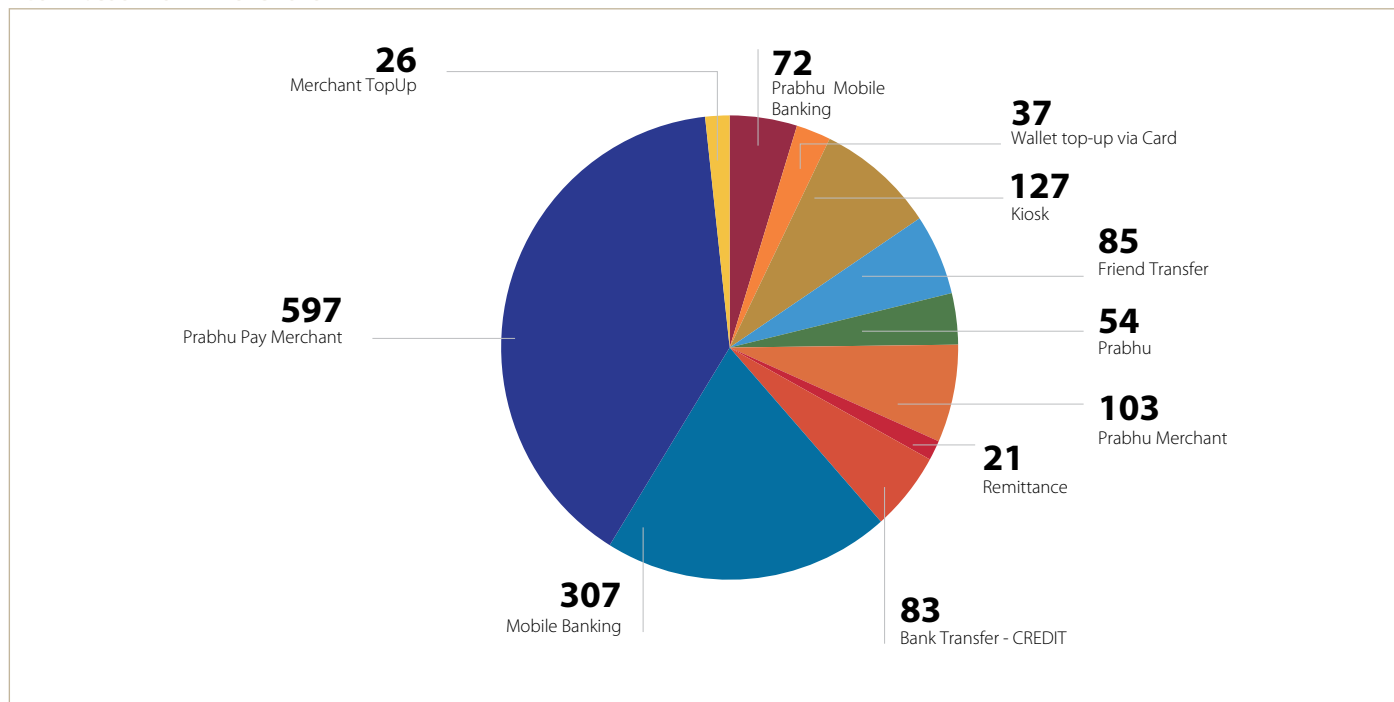
### Agents play a critical role in on-boarding and offering other digital services to farmers

DFS agents such as cooperatives and other community-based organizations have been key in bridging the gap between farmers and formal financial channels. Users' data show that nearly **58** per cent of the cash coming into the wallet is through DFS agent channels. Also, nearly **42** per cent of cash coming into the wallet is from other digital sources such as bank transfers (16 per cent), mobile banking (16 per cent) and remittances (10 per cent). This suggests that due to the financial services offered by these grassroot organizations, farmers were also able to use other digital channels based on their needs. Hence, broadening their financial access.

### Farmers are using digital wallets for additional services

Results show farmers have started to use digital payments for services such as agriculture inputs and insurance payments among others. This demonstrates that there is a possibility and need for expansion of digital services by broadening the ecosystem with relevant merchants and by building awareness for farmers to use the services.

FIGURE 2: COUNT OF TRANSACTIONS



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## Prabhu digital technology is the best and simplest solution for payment related challenges faced by an average dairy farmer and cooperative.



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### LEARNINGS

- It is critical to offer an end to end digital transformation solution for aggregators rather than only digitalizing the payments process. Offering dairy cooperatives an automated ledger system integrated with payment solutions ensure process efficiency at all levels for the cooperatives and farmers. A stand-alone payment digitalization solution may not be pushed by cooperatives as it may not be a priority for them.
- Marketing along with product ambassadors with the right incentive gets newcomers to adopt digital services. Considering the rural market's readiness, the marketing drive should not be limited to product endorsement. Digital services should be broadly endorsed by creating customer awareness and capacity to understand the advantages of using the wallet. Similarly, leveraging early adopters, including the dairy executive board members and management team, as role models is critical to create trust as well as brand recognition amongst farmers.
- Investment on creating an eco-system that includes agents and merchants is important to provide an incentive for farmers to receive digital payments. The eco-system is part of the use case for farmers as it brings services close to them. Without the eco-system, the use case loses its added value. Also, these agents and merchants will act as influencers and provide the necessary customer support within the community.
- It is critical to map the power dynamics in the community to assess who can influence the farmer's decision making related to financial services. This mapping helps developers connect with the right set of individuals who can fast-track the process of convincing farmers and on-boarding them on using the wallet.
- It is essential to offer digital literacy and financial literacy to enhance the capabilities of different stakeholders in the community. Understanding the rural market's readiness is important in designing adequate training and awareness campaigns for dairy farmers.
- It is critical to expand financial service offerings to include other products beyond savings. Other financial services such as insurance and credit services in a wallet can benefit farmers in the long run and motivate them to adopt digital services.
- Integration of Digital Financial Services (DFS) in the existing livelihood systems is a means to enhance financial inclusion at multiple fronts. Integrated DFS creates stacks of transactional and behavioral data that can be leveraged to offer customized products and services including credit, savings and insurance. There should be a long-term vision of DFS intervention beyond payments to drive adoption and continued usage by farmers.
- Generally, smallholder farmers or rural entrepreneurs have multiple sources of income, one as a bridge finance to cater to regular expenses and others as windfall income mainly from crop harvest. Digitalization should start from bridge income to ensure there is regular usage of DFS that allows smallholders to gain confidence and trust in the service.

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## ABOUT UNCDF

The United Nations Capital Development Fund (UNCDF) makes public and private finance work for the poor in the world's 46 least developed countries. With its capital mandate and instruments, UNCDF offers "last mile" finance models that unlock public and private resources, especially at the domestic level, to reduce poverty and support local economic development.

UNCDF financing models work through three channels: inclusive digital economies, connecting individuals, households, and small businesses with financial eco-systems that catalyze participation in the local economy, and provide tools to climb out of poverty and manage financial lives; local development finance, that capacitates localities through fiscal decentralization, innovative municipal finance, and structured project finance to drive local economic expansion and sustainable development; and investment finance, that provides catalytic financial structuring, de-risking, and capital deployment to drive SDG impact and domestic resource mobilization. By strengthening how finance works for poor people at the household, small enterprise, and local infrastructure levels, UNCDF contributes to Sustainable Development Goal-SDG 1 on eradicating poverty and SDG 17 on the means of implementation. By identifying those market segments where innovative financing models can have transformational impact in helping to reach the last mile and address exclusion and inequalities of access, UNCDF contributes to a broad diversity of SDGs.

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