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AMALSAD COOPERATIVE: PROCESS INNOVATION IN COMMODITY TRADING

S.R. Asokan and Harekrishna Misra wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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On June 5, 2017, Dipakkumar Naik, chairman of Amalsad Vibhag Vividh Karyakari Sahakari Khedut Mandali Ltd. (Amalsad Cooperative) was having a meeting with his two senior executives, Ashit Mehta, the secretary, and Sanjay Desai, the superintendent. The two executives had been associated with the cooperative for nearly three decades and were familiar with the innovations introduced by the cooperative. As a member, Naik had a long association with the cooperative. He was aware that the cooperative, over many years, had undertaken innovations in the services provided to member farmers and that the cooperative’s intervention in agricultural commodity marketing had greatly benefited the member farmers. The cooperative had set up a unique grading system that had resulted in farmers getting 15 percent more revenue for their produce, compared to that offered by the traditional channel—the Agricultural Produce Marketing Committee (APMC) governed trading yards called *mandies*. Reductions in waiting times to sell their produce, along with prompt payment, had also helped the farmers. After taking over as chairperson in 2016, Naik was wondering whether the processes followed for agricultural commodity marketing could be improved to further benefit the members. He was also considering other services that could be offered to improve transactions between the organization and its member farmers.

AGRICULTURAL MARKETING IN INDIA

In 2017, the average farm size in India was 2.87 acres. Two-thirds of Indian farmers were considered “marginal” and subsisted on one acre of land (see Exhibit 1). With no dedicated marketing channel, these farmers were facing information asymmetry about demand for their produce and so they were not realizing the same prices as the larger farms. The situation was exploited by the traders, who aggregated the produce—especially perishables like fruits and vegetables—and sold it at higher prices to the processors and wholesalers. The Indian government therefore decided to regulate the trade in agricultural commodities. As agriculture in India was a state subject, the central (federal) government directed the states to enact legislation to make it mandatory that all transactions with regard to agricultural commodities be undertaken only in the government-established market yards known as mandies. The APMC, represented all stakeholders—farmers, government officials, and traders. Only licensed traders, also known as *aarathiyas*, were allowed to buy in the mandies. The farmers’ produce was auctioned under the supervision of the mandi officials, and the traders would bid for these commodities. The traders purchased on behalf of processors and wholesalers, and sometimes purchased produce themselves for speculative purposes. APMC mandies had dominated the agricultural commodity marketing in this way for more than five decades.[[1]](#footnote-1) Multiple handling of the commodities had resulted in a lengthy supply chain from the producer to the consumer (see Exhibit 2). Though farmers’ cooperatives were encouraged to take up agricultural commodity marketing by simple aggregation, or to undertake value-added processing, there were only a handful of success stories such as Amul in milk and Warana in sugar.[[2]](#footnote-2)

With no market challenge, the APMC mandi began to atrophy over time as the traders formed cartels, an oligopsony market system emerged in each mandi, and prices were fixed rather than set through a fair auctioning process. As farmers had no alternative channel to market their commodities, the traders wielded enormous power and dictated the terms of trade. The liberalization of the Indian economy in the 1990s and consequent economic growth saw more investment in value-added processing and organized retail. To transmit the commodities onward, the intermediaries in the supply chain added costs and margins but little value.[[3]](#footnote-3) Inefficiencies in the agricultural commodity supply chain thereby became apparent.

McKinsey, in their 1997, study commissioned by the Confederation of Indian Industry, found as many as seven intermediaries between the farmer and the consumer. The government of India encouraged the state governments to amend their respective agriculture produce marketing acts to create alternative channels of marketing to enable the processors and organized retailers to deal directly with the farmers. It took nearly a decade to complete the market reforms in all the states.[[4]](#footnote-4)

Though it was more than six years since the reforms had been completed, by 2017, the farmers continued to patronize the mandies, despite getting a raw deal. First, the farmers were not getting the regulated price as per the grade and quality of their commodities. Traders bought the commodities with minor variations in quality at a uniform price. They then mixed the good-grade and average-grade produce to get a higher price from the processors, or graded the produce—especially fruits and vegetables—themselves to increase their own returns.[[5]](#footnote-5)

Second, the farmers were never paid in full; they had to make multiple trips to traders to collect the payments, costing them money for travel and adding opportunity costs in terms of lost labour. Further, the farmers were not given interest for the delayed payments. Typically, there were long queues of farmers at the mandi during peak harvest times, and farmers sometimes had to stay overnight to get a turn to sell their produce. [[6]](#footnote-6)

The reason why the farmers continued to go to the mandi when the system was exploitative and the conditions were not favourable seemed to be in the credit–commodity linkages.[[7]](#footnote-7) Farmers had no cash flow between sowing and harvesting of a crop, but in order to carry out various agricultural activities like weeding, fertilizer and pesticide application, and harvesting, they needed working capital. The farmers also needed money to meet their household expenditures. Formal credit institutions like commercial banks, cooperatives, and micro-finance institutions had expanded their operations deep into the rural areas, but they required collateral, paperwork, and so on. Farmers, therefore, relied on informal sources such as the mandi traders to borrow money during the cropping season. They then sold the crop to the trader from whom they had borrowed. Although the farmers were not required to pay interest on the money borrowed, there were hidden costs by way of traders offering lower prices or under-weighing the commodities.[[8]](#footnote-8)

The amendments to the agricultural produce marketing act had enabled some processors—like Pepsi, McCain, Hindustan Unilever, Adani Fresh, and organized retailers like Reliance Fresh[[9]](#footnote-9) and Bigbasket—to deal directly with the farmers, but these initiatives were miniscule compared to the size and volume of the Indian agricultural commodity trade. The federal government had embarked on an ambitious program of connecting all the mandies electronically with software—the Electronic National Agricultural Market (ENAM)—to address the limitations and advantages of the traders in the mandies. In 2017, the initiative was at a nascent stage and, under ENAM, no remedy was proposed to break the credit–commodity linkages.[[10]](#footnote-10)

AMALSAD COOPERATIVE

Amalsad Cooperative was established in 1941, when it undertook several activities for the benefit of the member farmers. The major activities were providing credit for agriculture activities; supplying agricultural inputs; marketing agricultural outputs such as sapota, mango, and paddy rice; and selling consumer goods. The cooperative was also part of the government’s Public Distribution System (PDS) in its areas of operation. Under the PDS scheme, essential commodities were supplied at concessional rates to the under-privileged (or marginal). The cooperative also initiated welfare activities such as providing primary health care to the villagers and awarding scholarships to school children. It also performed soil testing and water analysis to help members increase productivity.

The cooperative served a population of 40,000 in 17 villages within a 6 kilometre (km) radius around Amalsad, a town in the state of Gujarat, India. It had 8,551 members as of March 2017, of which 2,851 were classified as A-class members and the remaining 5,700 were designated B-class members. A-class members took part in all the economic activities of the cooperative such as purchasing inputs, marketing their outputs, taking part in credit and savings schemes, and making purchases from consumer outlets. The B-class members were involved only in the purchase of consumer goods and had savings and deposit accounts. The cooperative had achieved a turnover of ₹501 million[[11]](#footnote-11) during 2016–17 (see Exhibit 3).

The cooperative was governed by a board of 15 members headed by the chairperson. Board members were elected by the primary members. In order to safeguard the interests of the members, 14 board members were elected from the A-class members and one from B-class members. All primary members had equal voting rights regardless of the number of shares they owned or the volume of business they did with the organization. The executive wing was headed by a secretary, who was assisted by a superintendent and a supervisor. The board met once per month, and the general body of all the members met once per year. Major policy decisions needed the approval of the general body.

MAJOR ACTIVITIES OF THE COOPERATIVE

Marketing of Agricultural Produce

Marketing agricultural produce of the member farmers was a major activity of the cooperative. It basically concentrated its efforts on three crops: sapota[[12]](#footnote-12), mango, and paddy rice. The turnover during 2016–17 from this activity was ₹231 million (see Exhibit 3).The cooperative, by pooling the produce of the member farmers, achieved scale and negotiated a better deal with the buyers. The main focus was on sapota, which contributed more than 80 percent of the value and volume transacted by the cooperative (see Exhibit 4), and was sent to the Delhi market. Mangoes and paddy rice supplied by the member farmers were delivered to the pulping and milling units owned by the Valsad-Navsari District Fruits and Vegetables Federation.

Retail Stores

The cooperative operated consumer stores in all 17 villages in the area. Along with groceries, cloth, and stationery, the stores sold fast-moving consumer goods like soap, shampoo, and other toiletries. The PDS also supplied essential commodities to the under-privileged. The cooperative supplied construction materials like steel and cement, and sold firecrackers and kites during festival seasons. The turnover of these stores was ₹230 million during 2016–17(see Exhibit 3). The groceries required for the stores were centrally purchased, and the volume discount was passed on to the members. With regard to fast-moving consumer goods, individual outlets raised demand on the suppliers by raising receipts to consolidate orders and receive bulk discounts. The reconciliation of these transactions between the outlets and the head office was done once per month. The Internet connectivity between the headquarters and the village-level stores eased the process.

Agricultural Inputs

Agricultural inputs such as fertilizers, pesticides, and farm implements were sold by the cooperative, and the facilities were located close to the collection centres in Amalsad and Kacholi. The farmers could take these inputs on the return trip after delivering their crops. A gas station run by the cooperative was located at the collection centre in Amalsad. The tractors owned by the cooperative were rented to the members and others for agricultural and non-agricultural operations such as hauling.

Savings and Credit

The cooperative extended credit for agricultural activities. It had extended credit worth ₹39.8 million during 2016–17. The members maintained savings and deposit accounts. Fifteen per cent of income from the sale of agricultural produce was retained for a year by the cooperative against which nine per cent interest was given. This provided working capital for the organization’s operations and also provided a safety net for the members. All related transactions were done online at the head office through a central server, information was shared through SMS text, and online receipts were generated.

The members were allowed to make purchases from the stores on credit (with no interest for a period of three months), which was adjusted with the account when the money was due for the crop supplied. Agricultural credit was extended at a reasonable rate of interest compared to the commercial banks. Farmers were given advances against their future supply of crop produce to meet any contingencies, for which no interest was charged. The staff of the cooperative was employed from the villages it operated, which also helped it to assess the credit-worthiness of the members. Repayment was sometimes delayed due to crop failure or other contingency, but had not resulted in default.

The income of the cooperative from the various activities during 2016–17 was ₹34.95 million. Consumer outlets contributed ₹13.22 million; interest earning, ₹13.53 million; and commission earned for providing marketing service, ₹6.03 million (see Exhibit 5).

MARKETING OF SAPOTA

Innovation could be in the form of products, processes, and/or services. Innovation could create new dimensions of performance[[13]](#footnote-13)and help organizations to differentiate themselves in the marketplace.[[14]](#footnote-14) The Amalsad Cooperative, by re-engineering the process of agricultural commodity marketing, was successful in getting better returns to its member farmers.

Sapota was a horticultural crop; the economic life of the sapota tree was around 60 years. The fruits were harvested from healthy trees once every three weeks. The fruits were highly perishable, so the marketing window was narrow (that is, only two to three days). Sapota was not amenable to storage in controlled conditions, and holding the crop did not confer any price advantage because the fruits were harvested once in three-week cycles throughout the year. Converting sapota into jams, jellies, and so on was not possible, so the fruits were consumed fresh. All these factors had put the farmers at the mercy of the traders. Further, the information asymmetry about the nature of demand and prices offered at the distant consuming markets was a huge disadvantage to the growers. The farmers were thus constrained to accept whatever price was offered by the traders. Because the traders quoted a single price for the all of their produce, the farmers were not rewarded adequately for producing good-grade or high-quality fruits.

The Amalsad Cooperative decided to address the problems of marketing the sapota of its member farmers. As sapota was a major crop in the area and constituted a significant portion of the farmers’ income, any intervention to get better prices for the crop would contribute greatly to the farmers’ welfare. In 1957, some board members went to the New Delhi terminal market to understand the dynamics of the market. They were aware that the private traders sent the fruits aggregated in the Amalsad area to this market. They convinced a major commission agent and fruit trader to help them in marketing sapota grown by their Amalsad farmers in the Azadpur Market in Delhi—the largest market for fruits and vegetables in Asia. The agent was to get a commission on the value of the fruits traded. By aggregating the fruits of the member farmers, the cooperative was able to achieve scale for hiring trucks and meeting handling expenses. The fruits were sent directly to Delhi, bypassing several intermediaries, which also resulted in better remuneration to the growers. The farmers were getting a higher price compared to the APMC mandi price at Amalsad, but they were still getting a uniform price irrespective of the grade supplied. The management realized that if fruits were graded first and then sent to Delhi, high-quality sapota could fetch better prices. Several experiments were undertaken in this regard as explained below.

In 1995, it was decided in the cooperative’s annual general body meeting to create a system to grade the fruits before they were sent to Delhi. In order to ensure a better grade of fruit from the farmers, they also needed to reward the farmers as per the grades supplied. It was decided to send three grades to Delhi—Extra Class, Big, and Mix. The farmers’ supply was categorized into 36 grades (see Exhibit 6). A sample of 10 kg was drawn from the farmers’ supply and counted to determine the number of fruits in the sample. The base grade was 145 fruits per 10 kg. The lower number of fruits per 10 kg (that is, bigger fruits) were considered higher grade, and for every five fruits higher or lower, the grades changed. For example, 140, 135, 130, and so on, until the count reached 85 fruits per 10 kg, which was considered the best grade. A base rate was fixed for the base grade (145 fruits per 10 kg), and the better grades were rewarded at a uniform rate of ₹1.30 per grade (see Exhibit 6). If the base price was *x* for 145 fruits, *x* + ₹1.30 was given to 140 fruits, *x* + ₹2.60 for 135 fruits, and so on up to 85 fruits, which received *x* + ₹15.60. For the lower grades (that is, for smaller fruits), a penalty of ₹1.00 was levied for each lower grade. For example, if the grade contained 150 fruits, it would fetch a price of *x* − ₹1.00; a grade that contained 155 fruits per 10 kg would fetch *x* − ₹2.00; and so on, until the grade containing 999 fruits per 10 kg, which was penalized ₹23.00 and got a price of *x* − ₹23.00. (Beyond 255 fruits per 10 kg was considered as a single grade.)

Farmers brought in different grades, so a sample of 10 kg was drawn from each farmer’s bag and counted manually to determine the grade. The cooperative approached a local engineering firm to design a grading machine to sort the arrivals into the three grades to be sent to the Delhi market. Though grading was done mechanically, packaging was done manually. The process of sampling and weighing increased the farmers’ wait time from a half hour to one-and-half hours.

The Extra Class grade fetched the maximum price, which in turn was influenced by the bigger fruits in the packaged box. In 2006, the cooperative decided to increase the reward for better grades with higher prices. The rewards were therefore modified: instead of uniformly increasing the rate for every grade, the cooperative decided to introduce higher rewards for higher grades at a progressively increasing rate. Under the new scheme, 145 fruits weighing 10 kg was still considered the base grade. The higher grades (140, 135, 130, and so on) were rewarded at an increasing rate. For example, 140 would get a price of *x* + ₹2.5, 135 would get *x* + ₹5.5, 130 would get *x* + ₹9.0, until 85, which would get the maximum *x* + ₹52.5. The penalty rates were left unchanged.

Meanwhile, an improved sorting and grading machine was installed, and the packaging was automated. The weighing machine was connected to a computer that generated receipts for each farmer containing the information about the quantity, grades, and price. The information was automatically stored in the central server on which the farmer’s account was linked. The farmer was also given a passbook that they could update as and when they wished. With the new grading and sorting machine, the waiting time for the farmer was reduced to just 10 minutes.

A collection centre in Kacholi was opened in the year 2000. This helped to ease the congestion at the Amalsad collection centre and reduced the farmers’ travel time. These two collection centres covered the 17 villages that fell within a radius of 3 km of the centres.

In 2014, the cooperative again modified the reward-and-penalty scheme. The penalty for the lower grades was made at an increasing rate. For the grade of 150 fruits, the penalty was ₹4.0 (that is, the farmer would receive *x* − ₹4.0 instead of *x* – ₹1.0, as they had earlier) and the lowest grade of 999 would get a penalty of ₹93.0 instead of ₹23.0, as in the previous scheme. The rewards were also increased considerably, with the sample of 85 fruits getting *x* + ₹113.0 as compared to *x* + ₹52.5 previously.

The harsher penalty for the lower grades had not affected the supply of sapota to the cooperative because there was no separate distinction made of some farmers supplying good-grade fruit and others supplying bad-grade. The quantity and quality of the crop harvest was largely influenced by the local environment; farmers had only marginal control over the outcome by way of better irrigation and crop management practices. Every farmer would therefore have a mix of both higher and lower grades. As no farmer could take undue advantage of the system, the members perceived the system to be fair, and they continued to patronize the cooperative despite the location of the APMC yard next to the collection centre at Amalsad. The cooperative determined that around 60 per cent of the fruits supplied fell between grades 13 and 23 (see Exhibit 7).

The mix of grades that were taken to Delhi—Extra Class, Big, and Mix—was generally around 68 per cent, 28 per cent, and 4 per cent respectively. The sale proceeds realized from the three grades were distributed across the 36 grades supplied by the farmers. A randomly selected day’s supply to the cooperative, along with the amount received from the Delhi market for the day and the amount distributed to the farmers based on the grade( see Exhibit 8) was considered for the analysis.

On January 2, 2016 (a randomly selected day), farmers supplied 7.62 per cent of fruits that were eligible for reward based on the base grade of 145. For the market, however, 68.00 per cent was considered Extra Class, which meant the market accepted up to grade 23 (195 fruits per 10 kg). Grades between 24 and 33 were considered Big, and the rest were Mix grade. Sales realized in the terminal market in Delhi for the three grades was ₹960,150 (see Exhibit 9).

GRADING AND PAYMENT SYSTEM

By 2017, the cooperative’s two collection centres received the farmers’ produce each day. At the receiving dock, the centre staff withdrew samples of 10 kg from each farmer’s bag (each containing roughly 50 kg of fruit), and counted them manually for grading. After the grades were determined, all the bags were placed on the electronic weighing scale. The weighing scale in each dock was linked to a computer that generated client receipts; systems were connected through a radio-linked virtual private network (VPN) connected to the server at the cooperative headquarters (see Exhibit 10). Each system generated online receipts against receipt of the quantity with a time stamp. It also recorded the quality of the sampled fruits as reported by the staff engaged in sampling.

From this time onwards, process value addition was initiated by the cooperative. As per sampled receipts, the management allotted the grade to which each sample lot belonged, which determined the estimated incentive that the member farmers would get. The staff then emptied the bags on to a cement pit lined with a cushion to prevent damage. From there, the fruits were taken onto a conveyor leading to the sorting and grading machines. The machines were set up to separate the fruits into the three grades for the market. The separated fruits were then fed into cardboard boxes of 20 kg each and labelled with the name of the cooperative as well as the logo of the trader. The boxes moved on a conveyor to be sealed before being placed on another conveyor leading to the waiting truck. The boxes were then stacked in the truck manually.

The day’s collection was dispatched on the same day to the Delhi market 1,200 km away by road. The trucks started to leave around 7:00p.m., and normally took 34 hours to reach Delhi. In the meantime, the cooperative sent an email with the details of the grades, quantity, and truck numbers to the commission agent or trader in the terminal market. The agent thereby had all the information about the consignment a day prior to the arrival. By 4:00 a.m., the trucks reached the Azadpur market in Delhi—the largest fruit and vegetable market in Asia. The entire stock was generally disposed of by 2:00 p.m., and the amount due was credited by the trader to the cooperative’s account. As the entire process was computerized and the information about the amount due to a member was already recorded, the money was credited to the members’ accounts almost immediately, and SMS texts were sent to the mobile phones of the member farmers. Between the supply of sapota at the collection centre and the transfer of money to the farmers’ accounts, payment took around 48 hours.

The cooperative charged 3 per cent for its overheads on the amount realized, after deducting the agent’s commission and the cost of transport. The commission was 4per cent of the value transacted. The trader never purchased the fruit, but since he specialized in sapota and 42 per cent of the supply in the Delhi market passed through him, he could influence the price to some extent, depending on the produce arrivals of other commission agents and traders. The seasonal arrival of other fruits such as mangoes, grapes, and oranges would affect the price realized by sapota. As the commission was based on the value realized, the agents tried to get the maximum price.

At the end of the financial year, the cooperative distributed its profits to the members on the basis of their patronage, which was based on how much business they had done with the cooperative. As per this norm, the farmers who supplied the most quantity and at good grades would receive a higher share in the profits.

RELATIONSHIP WITH THE MEMBERS

As described above, the situation within the APMC mandies compelled the small farmers of the villages around Amalsad to come together to aggregate the demand for inputs and collect the output to achieve scale and in order to get better bargaining power within the market. Unlike investor-owned firms (IOF), where the primary objective was to provide maximum returns to the investor, the cooperative was a user-owned firm (UOF) that provided maximum benefits to its members. In the IOF, the investor did not need to use the product or service provided by the firm in which he or she had invested. In the UOF, the benefits were based on usage, which afforded better prices for the crop output and reasonable prices for the inputs.[[15]](#footnote-15) Therefore, the members had to use the product or service provided by the organization to avail more benefits and ensure the viability of the organization. Further, unlike the IOF, cooperatives (user-owned firms) in India had no secondary market for their shares. Therefore, the Amalsad Cooperative had been doing its best to provide maximum benefits to its members by diversifying into various activities, constantly looking for new opportunities, and investing in technology to improve efficiency.

Most of the farmers were third-generation members of the cooperative. In the current generation, only 15 per cent of members depended solely on farming, and 85 per cent had at least one member of the family engaged in some non-farm activity such as business or service, which had become a major source of household income. However, since they benefited from being part of the cooperative, they continued to patronize it. Although most of the members had accounts in the bank branches closer to their villages, they also maintained savings and deposit accounts and applied for credit with the cooperative.

WAY FORWARD

Desai and Mehta were having a relook at the base grade of 145 fruits per 10 kg. Mehta felt that the base grade could be increased to 160 fruits so that three additional grades would come under the reward scheme, which would increase the revenue for more farmers. Desai agreed because the overall realization from the sale at the terminal market would need only to be distributed to the farmers. Mehta also wanted to increase the limit of the Extra Class, which was 195 fruits now, to 220 fruits. He felt that this would increase the overall realization, and more money could be given to the farmers. Desai was not sure. He was apprehensive that the market might not accept the change in grade, and that any such move would damage the image of the cooperative’s produce, as more grades having smaller fruits would make up the Extra Class grade. The executives were not able to come to a consensus on this proposal.

On the issue of payment, both executives debated the possibility of transferring the proceeds from the members’ accounts immediately to their bank accounts as soon as it was credited. They felt this would increase the convenience of withdrawing at the village itself instead of farmers having to come to Amalsad for the purpose. However, the existing method of maintaining the member accounts helped the cooperative to meet its operational needs, as farmers made staggered withdrawals during the year. Following the June 2017 meeting, the executives submitted their report to Naik.

We gratefully acknowledge the excellent support from the top management of the Amalsad Cooperative in writing this case.

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EXHIBIT 1:SIZE OF AGRICULTURAL HOLDINGS FOR DIFFERENT CATEGORies OF FARMERS 2010–11

|  |  |  |  |
| --- | --- | --- | --- |
| **Category of Holdings** | **Number of Holdings**  **('000 Number)** | **Area**  **('000 hectares)** | **Average Size of Holdings**  **(hectares)** |
| Marginal  (Less than 1 hectare) | 92,826  (67.10) | 35,908  (22.50) | 0.39 |
| Small  (1.0 to 2.0 hectares) | 24,779  (17.90) | 35,244  (22.10) | 1.42 |
| Semi-Medium  (2.0 to 4.0 hectares) | 13,896  (10.00) | 37,705  (23.60) | 2.71 |
| Medium  (4.0 to 10.0 hectares) | 5,875  (4.20) | 33,828  (21.20) | 5.76 |
| Large  (10.0 hectares and above) | 973  (0.70) | 16,907  (10.60) | 17.38 |
| All holdings | 138,348 | 159,592 | 1.15 |

Note: Figures in parentheses indicate the percentage to total.

Source: Government of India, *Agriculture Census, 2010–11: All India Report on Number and Area of Operational Holdings*, Ministry of Agriculture, 2014, accessed April 25, 2018, https://agcensus.nic.in/document/agcensus2010/completereport.pdf.

Exhibit 2: SUPPLY CHAIN (TYPICAL) FOR FRESH FRUITS AND VEGETABLES IN INDIA

Village-Level Aggregator

Farmer

Farmer

Farmer

Farmer

Village-Level Aggregator

Consumer

Consumer

Consumer

Consumer

Retailer

Retailer

Wholesaler

Agricultural Produce Marketing Committee MANDI

Source: Created by the case authors.

Exhibit 3: TURNOVER OF THE COOPERATIVE FROM VARIOUS ACTIVITIES (in ₹ millions)

|  |  |  |  |
| --- | --- | --- | --- |
| Activities | **2014–15** | **2015–16** | **2016–17** |
| Agri Credit | 34.78 | 38.26 | 39.81 |
| Consumer Goods | 207.66 | 217.42 | 230.43 |
| Agri Produce Marketed | 218.22 | 235.35 | 231.02 |
| Total | 460.66 | 491.13 | 501.26 |

Note: ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Amalsad Cooperative.

Exhibit 4: AGRICULTURAL PRODUCE MARKETED

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Commodity** | **2015**–**16** | | **2016**–**17** | | **2015**–**16** | | **2016**–**17** | |
| Quantity in tonnes | Per cent | Quantity in tonnes | Per cent | Value amount (₹ millions) | Per cent | Value amount (₹ millions) | Per cent |
| Sapota | 12,822.00 | 88.23 | 10,713.00 | 82.32 | 201.62 | 85.69 | 185.73 | 80.40 |
| Mango | 969.00 | 6.67 | 1,653.00 | 12.70 | 22.88 | 9.72 | 35.05 | 15.17 |
| Paddy | 738.00 | 5.08 | 646.80 | 4.97 | 10.79 | 4.59 | 10.22 | 4.42 |
| Others | 3.70 | 0.03 | 0.50 | 0.00 | neg |  | neg |  |
| **Total** | 14,532.70 | 100.00 | 13,013.30 | 100.00 | 235.29 | 100.00 | 231.00 | 100.00 |

Note: neg = negligible.; ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Amalsad Cooperative.

Exhibit 5: PROFIT and LOSS ACCOUNT (IN ₹ MILLIONS)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name of the Account | **2012**–**13** | **2013**–**14** | **2014**–**15** | **2015**–**16** | **2016**–**17** |
| **Income** |  |  |  |  |  |
| Consumer Stores | 9.17 | 10.43 | 11.61 | 12.21 | 13.22 |
| Marketing Agricultural Produce | 5.06 | 5.56 | 6.80 | 6.02 | 6.03 |
| Interest Income | 10.23 | 10.66 | 11.68 | 11.83 | 13.53 |
| Other Income | 0.72 | 0.59 | 3.85 | 1.40 | 2.12 |
| Total | 25.26 | 27.27 | 33.97 | 31.56 | 34.95 |
| **Expenses** |  |  |  |  |  |
| Salary | 11.72 | 12.90 | 13.65 | 12.93 | 16.13 |
| Other Overheads | 1.45 | 1.89 | 2.08 | 1.55 | 1.60 |
| Depreciation | 4.16 | 4.65 | 4.74 | 5.81 | 6.16 |
| Profit | 7.92 | 7.79 | 13.49 | 11.26 | 11.03 |
| Total | 25.26 | 27.27 | 33.97 | 31.56 | 34.95 |

Note: ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Amalsad Cooperative.

Exhibit 6: REWARD AND PENALTY BASED ON GRADES FOLLOWED BY THE COOPERATIVE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grades Adopted** | **No. of Fruits per 10 kg Sample** | **Incentives(+) and Penalty (−) on the Basis of Grade Supplied (**₹**)** | | |
| **1995**–**96** | **2006**–**07** | **2014**–**15** |
| 1 | 85 | 15.6 | 52.5 | 113 |
| 2 | 90 | 14.3 | 47.5 | 99 |
| 3 | 95 | 13.0 | 42.5 | 85 |
| 4 | 100 | 11.7 | 37.5 | 72 |
| 5 | 105 | 10.4 | 32.5 | 60 |
| 6 | 110 | 9.1 | 27.5 | 49 |
| 7 | 115 | 7.8 | 22.5 | 39 |
| 8 | 120 | 6.5 | 17.5 | 30 |
| 9 | 125 | 5.2 | 13.0 | 22 |
| 10 | 130 | 3.9 | 9.0 | 15 |
| 11 | 135 | 2.6 | 5.5 | 9 |
| 12 | 140 | 1.3 | 2.5 | 4 |
| 13 (base grade) | 145 | X (base price) | X (base price) | X (base price) |
| 14 | 150 | −1 | −1 | −4 |
| 15 | 155 | −2 | −2 | −8 |
| 16 | 160 | −3 | −3 | −12 |
| 17 | 165 | −4 | −4 | −17 |
| 18 | 170 | −5 | −5 | −22 |
| 19 | 175 | −6 | −6 | −27 |
| 20 | 180 | −7 | −7 | −32 |
| 21 | 185 | −8 | −8 | −37 |
| 22 | 190 | −9 | −9 | −42 |
| 23 | 195 | −10 | −10 | −47 |
| 24 | 200 | −11 | −11 | −52 |
| 25 | 205 | −12 | −12 | −57 |
| 26 | 210 | −13 | −13 | −61 |
| 27 | 215 | −14 | −14 | −65 |
| 28 | 220 | −15 | −15 | −69 |
| 29 | 225 | −16 | −16 | −72 |
| 30 | 230 | −17 | −17 | −75 |
| 31 | 235 | −18 | −18 | −78 |
| 32 | 240 | −19 | −19 | −81 |
| 33 | 245 | −20 | −20 | −84 |
| 34 | 250 | −21 | −21 | −87 |
| 35 | 255 | −22 | −22 | −90 |
| 36 | 999 | −23 | −23 | −93 |

Note: kg= kilograms; ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Amalsad Cooperative.

Exhibit 7: PATTERN OF GRADES AND QUANTITY RECEIVED AT the COLLECTION CENTRE ON

JANUARY 2, 2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grade** | **Number of Fruits**  **(in 10 kg)** | **Quantity of Each Grade Supplied** | **Per cent of Each Grade Supplied** | **Cumulative Weight** | **Cumulative Weight** |
| (kg) | Percentage | (kg) | Percentage |
| 1 | 85 | 0\* | 0 | 0 | 0.00 |
| 2 | 90 | 0\* | 0 | 0 | 0.00 |
| 3 | 95 | 0\* | 0 | 0 | 0.00 |
| 4 | 100 | 0\* | 0 | 0 | 0.00 |
| 5 | 105 | 0\* | 0 | 0 | 0.00 |
| 6 | 110 | 85 | 0.16 | 85 | 0.16 |
| 7 | 115 | 68 | 0.13 | 153 | 0.28 |
| 8 | 120 | 160 | 0.29 | 313 | 0.58 |
| 9 | 125 | 212 | 0.39 | 525 | 0.97 |
| 10 | 130 | 390 | 0.72 | 915 | 1.68 |
| 11 | 135 | 713 | 1.31 | 1,628 | 2.99 |
| 12 | 140 | 956 | 1.76 | 2,584 | 4.75 |
| **13** | **145** | **1,562** | **2.87** | **4,146** | **7.62** |
| 14 | 150 | 2,122 | 3.90 | 6,268 | 11.53 |
| 15 | 155 | 4,216 | 7.75 | 10,484 | 19.28 |
| 16 | 160 | 4,150 | 7.63 | 14,634 | 26.91 |
| 17 | 165 | 2,990 | 5.50 | 17,624 | 32.41 |
| 18 | 170 | 5,122 | 9.42 | 22,746 | 41.82 |
| 19 | 175 | 4,815 | 8.85 | 27,561 | 50.68 |
| 20 | 180 | 3,189 | 5.86 | 30,750 | 56.54 |
| 21 | 185 | 2,052 | 3.77 | 32,802 | 60.31 |
| 22 | 190 | 2,484 | 4.57 | 35,286 | 64.88 |
| **23** | **195** | **1,526** | **2.81** | **36,812** | **67.69** |
| 24 | 200 | 2,623 | 4.82 | 39,435 | 72.51 |
| 25 | 205 | 2,040 | 3.75 | 41,475 | 76.26 |
| 26 | 210 | 1,963 | 3.61 | 43,438 | 79.87 |
| 27 | 215 | 870 | 1.60 | 44,308 | 81.47 |
| **28** | **220** | **2,066** | **2.08** | **46,374** | **85.27** |
| 29 | 225 | 974 | 1.79 | 47,348 | 87.06 |
| 30 | 230 | 2,259 | 4.15 | 49,607 | 91.21 |
| 31 | 235 | 624 | 1.15 | 50,231 | 92.36 |
| 32 | 240 | 962 | 1.77 | 51,193 | 94.13 |
| 33 | 245 | 401 | 0.74 | 51,594 | 94.87 |
| 34 | 250 | 457 | 0.84 | 52,051 | 95.71 |
| 35 | 255 | 926 | 0.89 | 52,977 | 97.41 |
| 36 | 999 | 1,409 | 2.59 | 54,386 | 100.00 |

Notes: \* indicates no supply of the grade on the day; kg = kilograms.

Source: Compiled by the authors from the data given by the Amalsad Cooperative.

Exhibit 8: EXISTING SCENARIO WITH 145 AS the BASE GRADE FOR PAYMENT TO FARMERS FOR THE SUPPLY ON JANUARY 2, 2016

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grade** | **Price for 10 kg (**₹**)** | **Quantity (kg)** | **Amount to be Shared (**₹**)** | **Cumulative Returns on the Basis of Grade (**₹**)** |
| 1 | 325 | 0 | 0 | 0 |
| 2 | 311 | 0 | 0 | 0 |
| 3 | 297 | 0 | 0 | 0 |
| 4 | 284 | 0 | 0 | 0 |
| 5 | 272 | 0 | 0 | 0 |
| 6 | 261 | 85 | 2,219.18 | 2,219.18 |
| 7 | 251 | 68 | 1,707.34 | 3,926.52 |
| 8 | 242 | 160 | 3,873.28 | 7,799.80 |
| 9 | 234 | 212 | 4,962.50 | 12,762.30 |
| 10 | 227 | 390 | 8,856.12 | 21,618.42 |
| 11 | 221 | 713 | 15,763.01 | 37,381.43 |
| 12 | 216 | 956 | 20,657.25 | 58,038.68 |
| **13** | **212** | **1,562** | **33,126.90** | **91,165.58** |
| 14 | 208 | 2,122 | 44,154.58 | 135,320.16 |
| 15 | 204 | 4,216 | 86,040.14 | 221,360.30 |
| 16 | 200 | 4,150 | 83,033.21 | 304,393.51 |
| 17 | 195 | 2,990 | 58,328.93 | 362,722.44 |
| 18 | 190 | 5,122 | 97,358.99 | 460,081.43 |
| 19 | 185 | 4,815 | 89,116.03 | 549,197.46 |
| 20 | 180 | 3,189 | 57,427.52 | 606,624.98 |
| 21 | 175 | 2,052 | 35,926.42 | 642,551.40 |
| 22 | 170 | 2,484 | 42,247.88 | 684,799.28 |
| **23** | **165** | **1,526** | **25,191.21** | **709,990.49** |
| 24 | 160 | 2,623 | 41,988.99 | 751,979.48 |
| 25 | 155 | 2,040 | 31,636.33 | 783,615.81 |
| 26 | 151 | 1,963 | 29,657.01 | 813,272.82 |
| 27 | 147 | 870 | 12,795.96 | 826,068.78 |
| **28** | **143** | **2,066** | **29,560.33** | **855,629.11** |
| 29 | 140 | 974 | 13,643.79 | 869,272.90 |
| 30 | 137 | 2,259 | 30,966.38 | 900,239.28 |
| 31 | 134 | 624 | 8,366.59 | 908,605.87 |
| 32 | 131 | 962 | 12,609.90 | 921,215.77 |
| **33** | **128** | **401** | **5,136.01** | **926,351.78** |
| 34 | 125 | 457 | 5,716.16 | 932,067.94 |
| 35 | 122 | 926 | 11,304.61 | 943,372.55 |
| 36 | 119 | 1,409 | 16,778.38 | 960,150.93 |
| Amount realized from the trader in INR | | | 960,150.93 | 960,150.93 |

Note: kg = kilograms; ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Compiled by the authors from the data given by the Amalsad Cooperative.

Exhibit 9: MARKET GRADES AND AMOUNT REALIZEDON JANUARY2, 2016

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade** | **Quantity (kg)** | **Per cent** | **Amount (**₹**)** |
| Extra Class | 36,983 | 68 | 709,990.50 |
| Big | 15,228 | 28 | 216,361.29 |
| Mix | 2,175 | 4 | 33,799.15 |
| Total | 54,386 | 100 | 960,150.94 |

Note: kg = kilograms; ₹ = INR = Indian rupee; ₹1 = US$0.02 on May 4, 2018.

Source: Compiled by the authors from the data given by the Amalsad Cooperative.

Exhibit 10: VPN OF AMALSAD COOPERATIVE



Source: Amalsad Cooperative

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