



INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

**REVIEW OF EXPERIENCES IN COMPUTERISING
AGRICULTURAL CO-OPERATIVES IN ASIA:
PROBLEMS ENCOUNTERED AND LESSONS LEARNED**

M S SRIRAM

**REVIEW OF EXPERIENCES IN COMPUTERISING
AGRICULTURAL CO-OPERATIVES IN ASIA:
PROBLEMS ENCOUNTERED AND LESSONS LEARNED**

**A Report submitted to
The Food and Agriculture Organization
Of the United Nations**

M S SRIRAM

Indian Institute of Management, Ahmedabad

May 2003

CONTENTS

| | |
|--|-----------|
| LIST OF TABLES..... | II |
| LIST OF ABBREVIATIONS..... | III |
| ACKNOWLEDGEMENTS..... | IV |
| EXECUTIVE SUMMARY..... | V |
| PART A..... | 1 |
| INTRODUCTION..... | 1 |
| THE SETTING..... | 1 |
| APPROACH TO THE STUDY..... | 2 |
| ORGANISATION OF THE REPORT..... | 2 |
| PART B..... | 3 |
| CASE STUDY OF AMALSAD MULTIPURPOSE FARMERS' CO-OPERATIVE SOCIETY..... | 3 |
| <i>Introduction</i> | 3 |
| <i>Computerisation of Amalsad: A brief history</i> | 5 |
| <i>Review of Experiences in computerisation</i> | 7 |
| <i>Summary</i> | 18 |
| CASE STUDY OF BANASKANTHA DISTRICT CO-OPERATIVE MILK PRODUCERS' UNION LIMITED..... | 20 |
| <i>Introduction</i> | 20 |
| <i>Computerisation of Banas: A brief history</i> | 21 |
| <i>Review of Experiences in computerisation</i> | 22 |
| <i>Summary</i> | 36 |
| PART C..... | 38 |
| SYNTHESIS..... | 38 |
| REFERENCES:..... | 42 |

LIST OF TABLES

| | |
|--|----|
| Table-1 Important figures pertaining to Amalsad | 3 |
| Table-2: Difference in Reporting Details – pre and post computerisation of Amalsad | 11 |
| Table-3 Amount of member funds with the Amalsad Co-op..... | 15 |
| Table-4: Important figures pertaining to GCMMF and Banas (as on March 31, 2002) | 21 |
| Table-5: Details of the state of computerisation in Banas..... | 23 |
| Table-6: Recent investments made by Banas..... | 30 |

LIST OF ABBREVIATIONS

| | |
|---------|---|
| Amalsad | Amalsad Vibhag Vividh Karyakari Sahakari Khedut Mandali Limited |
| APC | Anand Pattern Co-operative |
| Banas | Banaskantha Co-operative Milk Producers' Union Limited |
| Co-op | Co-operative |
| DCS | Dairy Co-operative Society |
| DCU | Dairy Co-operative Union |
| ERP | Enterprise-wide Resource Planning |
| GCMMF | Gujarat Co-operative Milk Marketing Federation Limited |
| NDDB | National Dairy Development Board |
| SKU | Stock Keeping Units |
| UPS | Uninterrupted Power Supply |

ACKNOWLEDGEMENTS

I am thankful to the following people who willingly participated in the study and helped sharpening the understanding the various dimensions of computerisation of co-operatives in India.

1. Mr. Sangram R Chaudhary, Managing Director, Banaskantha District Milk Producers' Union Limited, Palanpur.
2. Mr. Nirag Prakash Garg, Manager Banas Dairy, Palanpur.
3. Mr. Hemant B Naik, Secretary Amalsad Co-operative Society.
4. Mr. Sanjay Desai of Amalsad Co-operative Society.
5. Mr. John Rouse, Ms. Roxana Bassi, Mr.Drew Birnbaum all of whom contributed to the understanding of the framework.

I would like to acknowledge their insights and inputs that have gone into the study. The usual disclaimers apply.

EXECUTIVE SUMMARY

Computerisation of operations of any organisation throws up great challenges. It is even more challenging in a co-operative because unlike an investor-owned firm, a co-op also has to interface regularly with its owner-users.

The current study was undertaken in the state of Gujarat, India. Gujarat is well known for its vibrant co-op movement not only in the globally acknowledged dairy sector, but also in several other sectors. The study involved looking at the computerisation process in two very successful co-operatives operating in diverse sectors and settings. One co-op was a stand-alone multipurpose co-op having day to day interactions and transactions with the members. The other was a dairy co-op union, a part of a three tiered co-op structure where there was little interface with primary members.

Both the case studies yielded some interesting insights into the way in which co-ops see computerisation. Of the various issues that were expected to be covered in the study, it was clear that computerisation was not seen as a revolutionary intervention in the operations of the co-op, instead it was seen as a natural need for growth. Therefore, the various players in the co-op – be it elected representatives on the board, the user-members or the employees – did not see it as a threat. There were apprehensions on how the technology would affect the functioning amongst a segment of employees, but no fear. Also the general perception that computerisation leads to lay-offs were not well founded and such fears did not exist in the minds of the employees.

It was found that leadership plays an important role in carrying such initiatives through. The other significant consideration that emerged in the process of computerisation was pertaining to costs. Both the co-ops tackled this issue by spreading out costs across a longer period of time, thereby resorting to a strategy of computerising the operations gradually.

It was also found that decision making process in stand-alone co-op was much faster. In competitive environments there was a premium on efficiency. In case of the dairy co-op it was found that the lack of enthusiasm in aggressive computerisation was due to lack of appropriate bench-marks from sister co-ops. It was also found that lack of infrastructure did not deter co-ops from computerising. However co-ops see this as a tool to get operational efficiency rather than as a strategic input. Therefore the fear that "information is power" did not seem to be operating in the minds of the people.

On the whole, there were no barriers for computerisation. The constraints were largely dictated by the enthusiasm levels of the top management. In both the cases we found a clear preference for locally developed software and affordable hardware. This has implications because the availability of hardware and software support in local areas might be problematic initially.

Part A

Introduction

Computerisation of operations of any organisation has been a complex matter, bringing several issues to the fore. Computers and computer equipment is one area where the affordability has been increasing with time and therefore constantly putting the decision-maker in a dilemma - between getting into computerisation at this instance and postponing the decision in the hope of cutting costs. The ones who computerised early have had problems of legacy systems and therefore had to invest much more in building bridge systems to keep parity¹. Given this type of complexity, it is but natural that co-ops would have larger number of attitudinal and socio-cultural issues to grapple with as against the corporate counterparts.

Given that the co-ops work under different contexts – both in terms of internal management systems and in terms of markets, it is interesting to find out how co-ops have taken to computerisation. In this paper we bring out the issues in computerisation based on two co-ops that we studied in the state of Gujarat, India.

The Setting

The state of Gujarat was formed in the year 1960 out of the regions of the bilingual state of Bombay. The state is divided into the regions of Saurashtra, (which formerly had around 200 princely states), Kutchch (which is sparsely populated and poorly endowed with resources), and the regions classified under the North, Central, and South Gujarat (Sriram, Reddy and Agrawal, 1996a). The Amalsad co-operative is located in the southern part of the state and The Banaskantha Milk Producers' Union (Banas) is located in the northern part of the state.

Gujarat has been widely regarded as the bastion of the co-operative movement. The success of the co-ops in Gujarat has been well documented and researched. There have been streams of literature looking at the social formations of these two states which seems to have led to the formation of a strong culture of collective action (see for instance Shah, 1995, 1996). A large body of literature on these strands exists and it is not our intention to do an exhaustive literature review on these lines. However it is important to highlight that the study is set in one of the states where co-ops are most forward looking and have used technology well for long years.

¹ For instance, Desjardins the largest co-op credit union movement in Quebec, Canada was one of the earliest to computerise its operations and therefore had to spend much more to keep pace with competition as the technology shifted from mainframes to desktops to the internet banking era. A reference to this could be found in Sriram (2000).

In contrast one of the most successful agricultural co-ops in India located at Mulukanoor in Andhra Pradesh, has for a long time considering computerisation, but has not made a whole hearted attempt, eventhough, given the complexity of its operations this co-op should have been the first to adopt to technology. While the co-op has been investing in plant, equipment and other assets that provide direct and immediate tangible benefits to the customers, they have not been able to move towards computerisation. Though a detailed investigation was not possible for this study, the prime reasons attributed by the president of the co-op has been mostly to do with language and cultural issues, and also a lurking fear of lay-offs amongst existing staff. We have examined these issues in detail in the Gujarat context and will be discussing it in greater length in other parts of the paper.

Approach to the Study

The co-ops in Gujarat were chosen on a purposive basis – for reasons of easy access and willingness of the organisations to participate in the study. However, it is also well known that Gujarat has one of the most vibrant co-operative movements in the country. The success of the dairy co-ops of Gujarat has been well documented. There are co-ops working in other sectors of the economy as well – as we will see when we discuss the case of the Amalsad co-op. Amalsad brings insights as to what happens in a large single-layer integrated co-op. The reason for choosing a Dairy Co-op Union (DCU) was to draw upon the findings from an earlier study on capital formation in DCUs in Gujarat.

The study was carried out by interacting intensively with various constituents of the co-op to understand the aspects involved in computerisation. While the interaction was in itself unstructured, the choice of people for interaction was done in a structured manner to get a cross section view.

Organisation of the report

The report is organised in three broad parts. In Part A we deal with the introductory aspects. Part B has the specific case studies. In Part C we deal with the learnings from the study, and synthesis.

Part B

Case Study of Amalsad Multipurpose Farmers' Co-operative Society

Introduction

The Amalsad Vibhag Vividh Karyakari Sahakari Khedut Mandali (Amalsad) is located in South Gujarat. The co-op has been in existence for over 60 years, and established in 1941. Unlike Banas (discussed later), this is a stand alone integrated co-op. As of March, 2002 Amalsad had a turnover of Rs.230 million in input supply and output marketing – most of the transactions being with members. In addition it also has extended loans to the extent of Rs.13 million to its farmer members. Amalsad undertakes multiple activities as required by its members. The main activities include disbursement of agricultural credit, supply of agricultural inputs, sale of other inputs such as diesel and petrol, marketing of farmers' output including mango, *chiku*, elephant fruit and banana, sale of consumer goods such as cloth, provisions and medicine and hiring of agricultural implements. Table-1 gives the highlights of the performance of the co-op.

Table-1 Important figures pertaining to Amalsad

| Particulars | Figures as on March 31, 2002 |
|---|-------------------------------------|
| Area of operation | 17 Villages |
| Share capital and reserve funds | Rs.24 million |
| Member Deposits | Rs.10 million |
| Members' produce marketed | Rs. 103 million |
| Inputs and consumer goods sold to members | Rs.125 million |
| Loans given to members | Rs.13 million |

The Amalsad co-op has been consistently performing well and has been very prudent with its business practices. It has been responsive to the needs of the members and has never hesitated to venture into activities that benefit the members, even though the co-op might not have had experience of dealing with those products in the past. (For a good introduction to the society and its activities see Datta, 2002)

Amalsad has been forward looking from its inception and has not hesitated to take risks. The co-op started operations in 1941 by supplying inputs and consumer goods to members. While this activity continues till date, other activities have also been added. For instance, marketing members' produce was started in 1955. Later they also started the financial services – giving loans and accepting deposits. The members have seen the performance of the co-op over a period of time. They are able to repose confidence in the capability of management and staff in

effectively managing any new activity they take up. The hallmark of Amalsad has been in its member-centrality and making itself salient to members (for a detailed description of centrality and salience, see Mishra and Shah, 1992)

Amalsad has an elected board of directors to guide the staff on policy issues. Till recently there were 21 members on the board and a third retired by rotation every year. However, last year the state legislation was changed to reduce the number of members on the board to 15 and these members retire en-masse once in three years and seek re-election. This has had some implications on the reporting and member communications – an aspect we shall discuss later. The chief executive reports to the board. The current chief executive has been with the co-op for more than 23 years, and he has been the chief executive for more than a decade. It is important to put this in perspective because the chief executive commands tremendous respect and credibility and any decision therefore becomes so much simpler to implement in Amalsad.

The major activities of Amalsad are as follows:

- Supply of consumer goods to members – this includes agricultural inputs and other consumer goods. In agricultural inputs, Amalsad sells a range of fertilizers, pesticides, seeds and other inputs. In addition to the regular needs of the members, the co-op also sells seasonal needs such as school books, stationery, kites and firecrackers. The overall motto of the co-op is “if the member needs something, we shall supply it.”
- Output marketing includes procurement of farm produce of the members to be pooled and sold – currently the co-op procures most of the agricultural output produced by its members including paddy, various types of fruit and other products.
- Financial services to the members – this includes offering savings services and providing loans. As of now they have three savings products – fixed deposits, savings deposits and compulsory thrift. While the first two are purely voluntary in nature, the third is checked off at 1% from the payments to be made on output pooled with Amalsad. Amalsad’s interest rates on deposits are higher than the bank rates and therefore it is more attractive for the members to park their money in the co-op. In addition to savings, Amalsad also offers a range of loan products – this includes crop loans with a maturity of one year. These loans could be rolled over by payment of interest for a total period of three years. In addition Amalsad also offers interest free advance against procurement of *chiku*, and interest free loans for a maximum of three months in the grocery store and the cloth shop. The amount of interest free loan that may be taken by a producer is determined by his/her past transactions with the co-op.

In addition to the facilities at Amalsad, it also has an outlet to sell consumer items in each of the seventeen villages in its area of operation.

Computerisation of Amalsad: A brief history

In Amalsad the process of computerisation has been very functional and mostly implemented without too much of a problem. The relationship between the board and the chief executive are informal. There is a contact with the membership almost on a daily basis because of the input supply and grocery store. It is, therefore necessary to look at computerisation from this perspective.

Amalsad was one of the earliest co-ops in the district to look into automation and computerisation. The initiative for using computers in operations came from the chief executive Mr. Hemant Naik. Mr. Naik being in charge of day-to-day operations realized soon that the complexity of operations in input supply, including the number of stock keeping units (SKU) needed some systems if there were to be a flow of information. It was also necessary for having appropriate control systems.

The computerisation process in Amalsad started way back in 1991. The entire initiative was taken up at the behest of Mr. Naik. Since no other co-op in the vicinity had gone in for computerisation, Amalsad had to take the role of an innovator. The chief executive started off by seeking some informal advice on hardware configuration. He was confident that the software could be tailor made if he could get a good programmer. The idea of computerisation was not grandiose, but very functional. The following were the considerations when Amalsad went in for computerisation:

- The activity should be functional and should help them have better quality information
- It should improve the current systems and procedures
- Canned packages would possibly not work because of the complexity of operation of the co-op, therefore the system had to be developed internally
- The interface had to be in the local language. Unlike Banas, where we see that the employees were encouraged to interface with the system in English, in case of Amalsad local language interface was treated as non-negotiable. We shall see the reason for this in greater detail later.
- Computerisation is to be seen as a part of the process of general level of automation and not as a stand-alone project.
- Computerisation was to be done in a time bound and integrated manner.

Given the above factors, the task was expected to be large. Considering that there was nobody in Amalsad who was computer savvy, the chief executive had to depend on external service providers. His added constraint was the work was to be executed in the minimum possible costs.

The hardware systems were bought from the nearby town of Surat. One of Mr.Naik's friends helped out in getting the hardware configuration so that a programmer could start work. A Gujarati interface card was also built into the system so that the programmes that were developed had a local language interface at the user level. It took around one year for the programmer to understand and build a solid system that worked. The operating system used was DOS and the software was built on Foxpro. It took a long time for getting the programme to work – partly because the programmer had to be inducted into the systems and procedures of the co-op and the chief executive had to get an idea as to what to expect from the system. The fact that Amalsad had excellent manual systems helped in designing the software. The logic used in the manual systems in Amalsad were fairly scientific and therefore providing the system specifications were not a problem.

It is also to be noted that Amalsad also took to automation of some of its processes at the same time. They bought some electronic weighing machines for receiving the fruit of the members as well as an automatic grading machine for grading *chikus*. The total outlay on automation was around Rs 1.7 million, while the hardware in the computerisation process cost the co-op around Rs. 0.7 million. The software development was done at a very reasonable price of around Rs. 0.1 million. It is therefore, important to look at computerisation as a part of the automation process than as a stand-alone project.

After 1991, Amalsad has been using the software in most of its divisions. Since computerisation was looked at in an integrated manner, all the divisions were simultaneously computerised and all data-bases were interlinked. In 2003 there was a major upgrade in the software – the co-op shifted from DOS based system to a more modern Windows based system. Even in doing this, the co-op used the services of a programmer from Navsari, a nearby town and paid him to build software that helped them in seamless migration. As of May 2003, various divisions have shifted to the new system and some are in the phase of transition. Having said this, it is important to note that none of the 17 branches where agricultural inputs and groceries are sold have been computerised. It is only recently that one of the branches - where procurement of mangos and *chiku* has been initiated - has gone in for computerisation. Data from the branches comes in physically and is then posted on to the systems at the head office.

Review of Experiences in computerisation

In order to understand the experiences in computerisation of Amalsad, it is important to revisit the context.

- Amalsad is an integrated multipurpose co-op and has been in existence for sixty years. The manual systems are well established.
- Unlike multi-tiered co-operatives (like Banas which we will be discussing later), the intensity of contact with the voting members is very frequent – therefore in addition to democratic systems of election related accountability, the employees are accountable to the members on “ here and now” basis.
- A large number of member transactions are routed through the co-op. The member purchases inputs, sells output and maintains savings in the co-op. Therefore, the co-op has salience in the overall transactional span of the member (Mishra and Shah, 1992). The intensity with which the operations of the co-op being guarded by members is high.

Therefore, computerisation had to be done in a member-centric way. This meant, the members should not perceive this as a white elephant, they should see this as helping them to continue interface with the staff and not something that takes them away from the face-to-face interaction. With these requirements, Amalsad went about tackling the usual problems faced in computerisation of co-ops.

Attitudinal and socio cultural

The organizational structure of Amalsad is that of command and control. The chief executive commands considerable amount of authority and respect. Therefore the battle was more than won as the chief executive took the initiative for computerisation. It is difficult to imagine how this project could have gone about if the initiative came from somebody other than the chief executive. If the idea came from an external consultant or some staff members or even the board – it might have been difficult to implement unless the chief executive was convinced. We have the case of the Mulukanoor co-op in Andhra Pradesh. The suggestion from computerisation came from external consultants and it took a long time for the co-op to accept it even at a conceptual level, though the operations of the co-op are more complex than Amalsad and therefore they would benefit more by computerisation. When the author visited the Mulukanoor co-op in 2000, a good 9 years after Amalsad actually started computerising, the co-op was just experimenting with its earliest computers.

The only other way in which Amalsad could have taken to computerisation was by demonstration of other co-ops in the area. Amalsad constantly monitors the progress of other co-ops in the region and is fiercely competitive. When we say that it is fiercely competitive, we have to realize that each of the co-ops have their own catchment areas and therefore do not compete for the same set of members. However, all the co-ops fiercely compete on performance parameters and member-salience. Therefore if the initiative of being more information savvy was taken by a nearby co-op, Amalsad would have quickly followed. Thankfully in this case Amalsad was the initiator and the others soon followed the example set by Amalsad.

Having decided to computerise, the important issues that the co-op had to tackle was to ensure that the board was convinced and the employees fell in line. The only way to convince the board was to keep costs under control. It was necessary to prove to the board and the employees that due to computerisation life would be simpler, and interface with the members would be better. Therefore one non-negotiable was the local language interface; the other was development of in-house software. The advantage of developing in-house software was that the costs could be spread out over a period of time as the product was being developed and there would be no large one-time payments. This went a long way in making the process gradual and painless. However, the purchase of hardware was also to be done prudently. To start with, the co-op bought systems from the local market. The initial systems were assembled and the co-op did not go in for branded products. It was only later when the price differential between the assembled systems and the branded systems narrowed that the co-op started buying branded machines.

Having decided on the overall strategy, the next task was to implement the project quickly before complacency stepped in. The chief executive gave tight deadlines to the programmer and announced a cut-off date on which the computers would be put into use. For that the formats of the manual system were reviewed and the system appropriately re-designed. Once the programme was ready, it was implemented without much delay. Infact the chief executive insisted that they do away with the manual system the day they introduced the computer – so that there was no fall back and doubts in the minds of the employees. For getting this on, it was not necessary to train all the employees in computers. Only those who were to interface with the computers – at counters and at the back end were trained. Therefore, even to this day, there are only about 15 employees who operate the computers of a total staff of around 85. Of the 15, two employees can also trouble shoot and attend to minor issues.

The other issue that could have haunted the employees was of the fear of losing the job. However, this did not turn out to be significant as Amalsad did not go about computerisation as a

“cost/staff cutting” exercise. Instead it was posited as a mechanism to reduce drudgery and to improve efficiency and thereby profitability. While over a period of the last ten years the staff strength has reduced from 135 to 85, this has been managed through a very smooth process. In the opinion of the chief executive, around 25 jobs would have been reduced due to computerisation/mechanization. This has been managed through natural attrition and retirement. No fresh recruitments are being done. Workers paid on a daily basis have replaced the other 25 people who have left. Thus, the co-op was able to convey to the staff that due to computerisation, they would not lose jobs, their jobs would become less monotonous, and the savings would result in the overall profitability of the co-op which in turn was good for the employees continuing in the organisation. This message has been quite powerful – that “we the continuing employees benefit more by efficiency, and we need not really be worried about the people who would have otherwise got a job in the co-op.” The members on the whole are also happy because it makes their transactions simpler and more transparent.

In addition to the above factors there was also an element of “pride” in the process of computerisation, which is visible even now. The employees were told that Amalsad would be the first to automate and therefore would be much ahead of the other co-ops in the area. It was infact so. After Amalsad computerised in a few years around 8 other co-ops in the area also computerised and followed suit. Not only did they computerise, but they largely sought the advise of Amalsad on the architecture and the same programmer was used to help them out. This provided a leadership role for Amalsad, and pride for the employers and members.

One of the aspects that helped in acceptance of the computerisation process was that the programmer worked on site and constantly consulted the staff. This gave the staff an idea of the progress of the work on a day-to-day basis. Though the programmer was hired from a nearby software consultant, he almost was like a staff member and worked closely with the employees of the co-op. In addition some employees were clearly identified to work closely with the programmer so that the some of the issues there could be internalized.

By the time Amalsad went in for computerisation, the co-operative law had been amended to give a choice for the co-op to go to private chartered accountants for audit than for the departmental audit. They took the auditors into confidence by producing all the data that the auditors wanted and also providing reams of print out of ledger accounts. The auditors over a period of time have got accustomed to the accounts produced out of the computer. Infact even now, some ledgers like the cash book are printed daily and reconciled with physical cash. This is done for purposes of control. Only a few books are printed on an annual basis. The auditor not

only examines the print-outs, but also cross verifies it with the data in the system. One reason that the auditors were happy with computerisation was that the quality and richness of data was high and the turnaround time for providing data on a query was quick.

The attitudinal/cultural challenges in computerisation of Amalsad were:

- The structure is hierarchical. Therefore the buy-in of the chief executive was essential. Since the idea was initiated by the chief-executive, it was simpler. If not, the only other way that the co-op would have gone in for computerisation was by demonstration of a rival co-op.
- The local language interface was absolutely essential and non-negotiable. If that facility was not available the co-op would not have computerised.
- Cost issues were significant. Grandiose plans with large investments would have been killed at the very outset.

The co-op implemented the plan by adopting the following strategies:

- Fix tight deadlines and ensure that there is no room for complacency
- Build in a sense of pride – we are the first to computerise
- Assure that there would be no lay-offs
- Spread out costs over a period of time – custom building of software helps in spreading the costs and involving the staff in the process of development
- Have the specifications clear, be willing to change the manual systems if the process demands

Political

In case of Amalsad, since the idea of computerisation came from the chief executive, this was not a significant issue. The difference in the capability of the chief executive and the other staff is significant, and therefore as long as the proposal does emanate from the chief executive, it is not expected to create too many problems. This does not mean that the chief executive derives extra power from access to information. This information is used in the overall strategy of the co-op and thus benefits the members.

The power relations within the co-op did not change as a result of computerisation, but however it led to some interesting developments, which we discuss in the following paragraphs. The co-op has throughout been very transparent in its operations and its reporting to its members. The process of computerisation helped the co-op in giving out the information to the members in a more organized manner and with greater analysis. This helped in fostering better transactions with the members and was also helpful in better analysis of its own performance. If we do a

comparative analysis of the disclosure in the annual reports in the years 1990-91 and 2002-03, we would be able to highlight the increased transparency in the reporting of the affairs of the co-op – purely due to computerisation. The following table gives some of the aspects that were reported in 1990-91 and 2002-03.

Table-2: Difference in Reporting Details – pre and post computerisation of Amalsad

| 1990-91 | 2002-03 |
|--|--|
| Details of the board of directors, auditors and bankers | Details of the board of directors, auditors and bankers |
| Details of welfare activities taken up by the co-op | Details of welfare activities taken up by the co-op |
| Annual Accounts – with 30 schedules – most of the schedules contain only current figures | Annual Accounts – with 31 schedules - one schedule less for balance sheet – as there were no secured loans, but an extra schedule detailing out the basis of accounting and accounting policies. The contents of the schedules are considerably richer. The schedules contain comparative figures for the past year as well. |
| Comparative progress statement from inception | Comparative progress statement from inception |
| | Segmented income statement on main lines of business – broadly divided into 4 segments in the produce pooling – so that members supplying each product would know how their segment is doing in terms of profitability |
| | Details of volumes traded, average price paid and average price obtained for each significant product in pooling – Mango, <i>chiku</i> , banana and elephant fruit. This data is available from 1991-92 onwards. |

Apart from the reporting requirements, the member database built over the years helped Amalsad to resort to a clean up activity in 2001-02. The co-op during the year decided that it wanted to increase its nominal amount of each share from Rs.10 to Rs.100 per share. This was triggered by the fact that eventhough the co-op was doing a business of nearly Rs.250 million, the share capital was hovering around 0.2 million. While the co-op had built up substantial reserves in the long years, it was still embarrassing whenever the need for borrowing came up, because the share capital base was very low. The co-op decided to increase the member stake during the year and also rationalize the holdings of the members. As a result of this exercise, the share capital of the co-op quadrupled from Rs. 0.2 million to Rs. 0.8 million. However, the more interesting fact during that year is that the membership actually went down from 4300 members to 2300 members. This happened only because of computerisation of the membership database.

A brief background for this is in order. The co-op has in all these years believed in distributing dividends and patronage benefits to the members in cash at their doorstep. This has been the tradition of the co-op ever since inception and this has had a salutary effect in the members being loyal to the co-op and also placing significant amount of voluntary deposits with the co-op because of the confidence that has been built. When the co-op went into computerisation, they decided that they should assign a code number for each of the families that were members in the co-op so that distribution of the money at the year end could be done in one visit. Therefore the computerised database not only had the members' primary information, but also a link with the family and the dwelling unit. When the share-capital was being rationalized, the co-op came up with a formula on the extra amount of money to be paid in depending on the current holding of the members. The extra amounts were to be paid according to 5 different slabs.

As the staff of the co-op went to the families to collect the share amount, they were able to discover that some of the members had died and the co-op did not have information about them. There were some women members who had got married and migrated and some of the younger men members had also migrated in search of employment. By this process the co-op was able to identify all the dormant members of the co-op and was able to either transfer them to the non-voting category members or persuade the family to get the members to withdraw the membership from the co-op. The reason why non-user members could have continued in the co-op as voting members for such a long time is because of the way in which patronage is defined. Patronage in Amalsad is defined as having "regular" transactions with the co-op without assigning any monetary or volumetric value to the regularity. While all "regular" members of the co-op can vote, only those on whose name the land is registered are eligible to contest.

As a result of this exercise, the co-op was able to weed out the non-user members and then get closer to the user-members. Though there was some initial resistance to this, many of the family members relented. This was because if they did not, they had to pay an enhanced amount to retain a membership that they did not use. As a result of this, not only did the capital of the co-op enhance, but also it came closer to the user members. This effect has made the co-op become more central to the members and therefore a heightened accountability is seen.

Economic

The other fall out of computerisation is the potential to track member transactions in several other segments of the business. As of now, member transactions are tracked only in the pooling transactions and not in input supply or grocery stores. Though this could have been done in the past ten years, it was not done because the member database was not integrated across

departments. As Amalsad is shifting to the new windows based software, they have also integrated the member database with the retail operations. As a result there will be benefits to the members.

Members are found to be very happy with the process of computerisation because it has made their transactions with the co-op transparent and efficient. They have not lost anything on the interface with the staff. This is unlike the experience in Desjardins in Canada, where in the process of automation the members expressed that they lost out on the personal touch with the co-op, which was one of the significant reasons why they were associated emotionally with the co-op (Sriram, 2000).

There are other areas where the monitoring of data is going to be stronger with the integration of the member database with various components of the business. Fixing credit limits to members is one of them. As of now the members get an advance for purchase of grocery and cloth on a 3-month interest free basis. However, these two databases were independent. Similarly they also get an advance of 20% of their past years supply of *chiku* as an interest free advance (upto a maximum of Rs.7,000). The new database will enable the co-op to monitor the overall indebtedness of the member. This advance was being given before the computerisation process. But now, it has greatly increased the efficiency in disbursing the advance as the past year's transaction data is readily available thereby making it more user-friendly for the member.

All transactions are being done on independent databases, and are not integrated with the savings accounts of the members. Amalsad has been closing transactions by paying cash after each exchange. With the integration of the databases, it might be possible for the co-op to route all the payments through the savings accounts of the members and thereby reduce multiple transactions and multiple cash payments. This enhances the security of cash dealing and also makes the process more efficient. This might also improve the working capital management of the co-op and reduce overall interest costs.

The co-op does not have specific figures of the reduction in transaction costs as a result of computerisation. In fact no such cost-benefit exercise was carried out in the co-op while getting into computerisation because it was seen as a necessary expenditure. Since the initial costs on computerisation were kept very tight, and the benefits were seen at the transaction level, the co-op was encouraged to continue its work in various phases. The year 2003-04 represents a phase of consolidation. The systems are being upgraded. More powerful software is in place. Even now, Amalsad is not talking of networking its branches and integrating the database. The reason why

the branch transactions are not being computerised is because the management thinks that the staff have enough spare time and therefore there is no significant benefits seen vis-à-vis the costs. In any case even if they are computerised (as they are being done in one branch this year), there is no intention of putting it on-line. Amalsad does not see that getting immediate information is going to make them any significantly more efficient given the costs. Therefore in case of Amalsad, the economics of the computerisation has been seen in pure functional terms. They have ruled out any fancy integration saying that the size and complexity of transactions do not demand "state of the art" technologies.

The computerisation – particularly with the integration of the member database is going to help the co-op in tracking member and non-member transactions. As of now, the patronage benefit is passed on only on pooling activities – that is pooling of agricultural produce. However there is scope for integrating the input supply and grocery patronage into this as well. This would also help the co-op to keep track of transactions for taxation purposes – the profits on member transactions are tax free, while the non-member transactions may be taxed in future.

The computerisation has helped in providing greater information to the management to undertake relevant day to day decisions. This generally improves the profitability and efficiency of the co-op. The information that was not available before, but now available is:

- Both in case of mango and *chiku* the variation in weight of produce accepted (in small lots) and produce dispatched (in large lots) is constantly monitored. Any variation beyond 1% is examined thoroughly. This helps in giving the member the most appropriate price. Computerisation has helped in giving data for such an analysis.
- For all departments, data in variation in sales across years is now available. This has helped in identifying slow-moving goods and better inventory management. It has also helped in monitoring the right size of the package to be stocked – particularly in the grocery section.
- Data on truck-wise dispatch of produce is available, and this could be related to the produce of individual members. This helps in tracking payments more accurately.
- Branch wise details of sales and profit percentages are now available and this helps to make the employees more accountable.

Member Participation

As far as member participation is concerned, the computerisation experience of Amalsad has helped the co-op to increase its interface with members. Members like the efficiency of the automation project and are more satisfied than before. However it has not affected the member-participation in the decision making and governance processes of the co-op. The advantage of

computerisation is that the co-op can produce its accounts much faster and therefore report back the performance to its members earlier. The annual general meeting for the year 2002-03 was for instance held a full month earlier than normal – in the month of May for year ending March, while in the past it was being held in the month of June. While one of the reasons for this was computerisation, the other part was also to do with the change in the composition and election procedure to the board. Earlier a third of the members retired every year by rotation and therefore every year there was an election. Now the law provides for simultaneous retirement of all board members once in three years and therefore there are no elections to be held every year. In an election year, the data to be collected is much more than a normal year as the co-op would have to get a list of members eligible to contest elections. The co-op feels that with the new member database being linked to transactions in all the departments, it should now be possible to get this list out fairly early in the next election year as well.

The process of computerisation has not been used to examine capitalization of the co-op. Members have placed substantial amount of their savings in the co-op. Similarly there are some amounts parked with the members both as interest bearing and interest free loans. Moreover, capitalization has happened through internal accruals over the years. Table 3 gives the amount of member funds with the co-op and the amount of co-op funds locked up with the members.

Table-3 Amount of member funds with the Amalsad Co-op

| Details | Amount in Rs million |
|---|----------------------|
| Share capital | 0.85 |
| Reserves | 29.23 |
| Member deposits (of the total, 60% are fixed and 40% are short term deposits) | 113.35 |
| Loans and advances to members | (13.26) |
| Total member funds (net of advances) | 130.17 |

In Amalsad a major part of the capital has come from members. Of the total liabilities 68% of the funds have come from the members of the co-operative. The other liabilities basically relate to current outstandings, of which some of the outstandings are towards members. In case of Amalsad, this has been the capitalization strategy right from the beginning.

In an earlier study on capital formation in agricultural co-operatives (Agrawal et al, 1994) it was found that there are two strategies to raise member funds – “mutual” strategy and “bank” strategy. It was also found that the “mutual” strategy usually works in areas where there is less competition and contracts could be tied and check-offs could be resorted to for raising capital. In

case of areas where there is intense competition, the “bank” strategy was more likely to work. In the “bank” strategy the co-op deals with its members as pure customers and therefore makes all payments up-front. By virtue of the confidence developed in the transactions with the co-op, the members in turn voluntarily contribute to the capital of the co-op. In case of Amalsad, the strategy was clearly “bank” as there is intense competition for the “best-practices” and for the produce in the area. This also possibly explains why Mulukanoor did not resort to computerisation quickly. The Mulukanoor co-op was identified in the earlier study as the one which existed in area where there was little competition and was seen as following the “mutual” strategy. Therefore there was no competition on best practices from nearby co-ops nor was there a fear of losing patronage for not appearing efficient enough.

Now with the member database getting fully integrated in Amalsad, there could be better usage of information and the co-op might even go to the other end of providing more liberal loans to the members to retain their patronage. The current computerisation has definitely helped in a better interface with the members.

Technological

In terms of the technological issues, there were no significant problems for the co-op. The considerations were:

- The cost should be affordable; it was imperative that locally assembled hardware be bought.
- The software should have a local language interface – this was non-negotiable. Therefore the question of buying canned software did not arise as a choice.
- Telecommunication infrastructure was irrelevant since there was no attempt to connect the branches. Computerisation was seen as increasing efficiency where transaction density was high. Even now, connectivity is not an issue, as off-site networking is not envisaged at all.

In addition to the above, the co-op itself has internet connectivity. This is largely used for remaining in touch with the outside world, to correspond with the buyers in the Delhi market and to get price related information. There is very little of this that has an interface with the members or the branches. The reason why the internet is sparingly used is because of the connection speed and download time. Right now, the internet services in the area are not very reliable and fast. Therefore limited use of the web is being made.

Availability of power is a major constraint in this area. The co-op has an uninterrupted power supply (UPS) system that can work for 4 hours in case of a power failure. In addition, they also

have a generator. By and large the co-op has been able to manage with these back up systems without any major crisis in the past ten years.

The computers within the main office complex are all networked – having a main server and nine nodes. While the database of the entire co-op can be accessed from any terminal, the usual practice is to use only the relevant data base. The different data bases are protected through a hierarchy of passwords and therefore, the though technically it is possible to look at the grocery database from the cloth shop, it is seldom done. Even this networking was done by the local service provider at a minimal cost.

One of the aspects that has not been computerised is the printing of passbooks. The co-op did examine all the possibilities and found that it was too cumbersome to get the passbooks printed. Therefore, the passbooks are manually updated everytime the member comes to the co-op and transacts.

Human Resource Training

The training for use of computers was done on the job. The co-op did not think it was necessary to send its staff for training outside. In fact the training happened in the co-op alongwith the software development. The strategy of the chief executive was to buy in the staff right from the stage of conceptualization and take the fear of computers out of them. None of the staff members have had formal training in computers. It was initially difficult for them to get to use the Gujarati keyboard. Over a period of time, the employees have got used to it.

Currently two employees can also do some bug fixing and minor repairs. For all other servicing requirements the co-op has to approach the service provider in the nearby town of Navsari. Service is immediately available and there have been no major problems till now.

The chief executive believes in pushing the employees on to the job. "That is the best way to learn, just jump into the water and learn swimming, there is no effective alternative," he says. In any case since the employees are expected to use only pop-up screens and most of the programmes are menu driven, there are no problems in getting into the usage of computers right away. The employees have taken to the computers as they have accepted other forms of equipment in the past – be it the calculator or the electronic weighing machine or the mechanical grading machine. The outlook of the employees is more in the functionality of the gadget rather than getting overwhelmed by the architecture. As of now all people at the counters are comfortable with computers. As and when the branches acquire computers, the staff there would be trained at that instance.

The board and the members have only seen the back of the computer and they have not been exposed to any training. The co-op does not think it is necessary for them to understand the operation of a computer, as long as they understand the output produced by the computer.

Implementation

In case of Amalsad the implementation plan was very clear. It was to computerise all operations that involved monotony and where the employees were pressed for time. It was also clear that the information coming out of the computerisation should aid better decision making. In addition, computerisation was seen more as a part of the overall automation of the co-op.

By definition low volume operations like the branch offices did not qualify for computerisation. The progress of computerisation has been gradual. This helps in absorbing shocks that might hit the system. It also helps in spreading out the costs and in buying in the board of directors.

The results of computerisation are very visible in Amalsad. This has helped in all the constituents being generally appreciative of the efforts. The major thinking has to be done about the specifications of the output. Also expectations of output from the computer are to be appropriately modified depending on what is possible. The major issue is that there is no point in holding on to the current formats, if the system cannot produce it, but to look at the content of what the system can produce and modify the formats appropriately.

Amalsad was not only the pioneer in locally developing its systems through computerisation, but they also helped the other co-ops to adopt similar systems thereby creating a market for hardware and software servicing locally.

Summary

Based on the study of Amalsad, we could summarise the process of computerisation in the following points:

- Amalsad is a stand-alone co-op, in a fiercely competitive area. It is also a co-op which has a strong and visionary chief executive. The co-op could have resorted to computerisation either through the initiative of the chief executive or by following one of the competing co-ops. In case of Amalsad, it was the former.
- In stand-alone co-ops the specifications of computerisation could be very particular. In case of Amalsad it was to do it cheap, tailor make it to their needs and build a local language interface. Amalsad did not have benchmarks, they created it for others.

- The computerisation process is seen as a part of the automation process of the co-op. There were other machines bought around the time the computers were installed.
- It is useful to spread the expenses on computerisation over a period of time. This will not hit the bottom line badly and will allow buy-in of the staff and members.
- Since the focus is on localized use, employees just need to be trained on the job.
- Interconnection, networking and Internet is to be seen from a functional point of view. For the size of operations of Amalsad it did not make sense to have an ERP package.
- The fear of layoff does not seem to be well founded. Though new employees were not recruited, all the old employees were retained.
- The members see the benefit of computerisation through more efficient transactions.
- Even a controversial activity of weeding out non-participating members was taken up because of the backing of solid data.
- Computerisation will help in extending patronage benefit calculations to small and frequent transaction operations such as the grocery and cloth store.
- It also helps in filing returns for taxes appropriately when member-transactions are tax exempt and non-member transaction profits are taxed.

On the whole computerisation has been a smooth, easy and painless process for Amalsad. The reason for this is a strong leadership, appropriateness of technology and viewing computerisation from a purely functional point of view.

Case Study of Banaskantha District Co-operative Milk Producers' Union Limited

Introduction

Banaskantha District Co-operative Milk Producers' Union (Banas) was established in 1969. Banas is one of the twelve unions that are affiliated to the Gujarat Co-operative Milk Marketing Federation (GCMMF), which markets milk and milk products under the brand name of "Amul". Banas Union is in the middle of the three tiered Anand Pattern Co-operative (APC) structure. A brief description of APC structure is given below.

The Anand Pattern

The dairy co-ops in Gujarat were pioneers in setting up a successful structure, which incorporated all the functions of value addition to the raw material that was pooled on a co-operative basis. The style of organisation of co-operatives on the lines of Gujarat has been rightly called the *Anand Pattern* - named after the town in which the processing plant of the co-op was set up.

The essential feature of APC is in integrating all the important functions of value addition to raw milk. In achieving this, the co-ops are organised as a three-tier structure. The village level Dairy Co-op Society (DCS) collects or pools milk from the members. Milk so collected from each of these DCSs is supplied to the DCU, which undertakes the task of processing the milk and converting milk into milk products. The DCUs, in turn are members of a state-level federation, which undertakes to market these products to the ultimate consumer through a common brand name. The milk producers are members of the DCS, all the DCSs in a district are in turn members of the DCU, and all the DCUs in a state are members of the federation. Even the control of each of these structures follows the flow - the Chairmen of DCSs are members on the General Body of the DCU who elect the Board of Directors from amongst themselves. Similarly, the Chairmen of the DCUs are members on the General Body of the Federation.

While the co-op in Anand was established in 1946, there were efforts to replicate this model in other parts of Gujarat as well. Banas was one such DCU. It was set up in 1969. In 1973 the third tier, GCMMF with a membership of six DCUs, (including Banas) was established. The Federation was established in order to avoid unnecessary and perhaps unfair competition amongst the DCUs and to give proper direction to the dairy industry in Gujarat. Over the years, more DCUs have joined GCMMF. Currently it has 12 DCUs as its primary members.

Gujarat Co-operative Milk Marketing Federation

While it is important to understand the Banas Union in detail, it is also important to get an idea of the linkages that Banas has with its federation. The problem of computerisation and the issues arising thereof is to be seen in this context.

GCMMF is India's largest food products marketing organisation. Banas is one of the larger DCUs affiliated to GCMMF. GCMMF is a state level apex body of milk co-ops in Gujarat, which aims to provide remunerative returns to the farmers and also serve the interest of consumers by providing quality products, which are good value for money. The important facts pertaining to GCMMF and Banas are given in Table 4.

Table-4: Important figures pertaining to GCMMF and Banas (as on March 31, 2002)

| Details | GCMMF | Banas |
|--|-------------------|-------------------|
| Producer Members | 2.23 million | 0.15 million |
| Number of Dairy Co-operative Societies | 10,852 | 1,208 |
| Milk Handling capacity | 6.7 million ltrs | 1.0 million ltrs |
| Milk collection | 1.67 billion ltrs | 250 million ltrs |
| Average milk collection per day | 4.59 million ltrs | 0.66 million ltrs |
| Milk Drying capacity | 510 Mts per day | 110 Mts per day |
| Cattlefeed manufacturing capacity | 1450 Mts | 300 Mts |
| Total turnover | Rs.23 Billion | Rs.3.7 Billion |

GCMMF sells its products under two brand names, namely AMUL and SAGAR. It has a wide product range consisting of milk, milk powders, butter, cheese, cocoa products, ice cream, and ethnic sweets. It sells these products through an extensive marketing network covering 200,000 outlets in almost every city and town in India. Banas processes milk, handles milk powder, and produces a range of products including butter and ethnic sweets. It has recently started erecting a plant for manufacture of ice creams and long life milk.

Computerisation of Banas: A brief history

The first computer came into the Banas Union as early as 1991. This was a huge machine supplied by the National Dairy Development Board (NDDB), an apex institution for the dairy sector in India. They also supplied software that would help the dairy in maintaining its milk billing and payroll systems. While this level of computerisation continued, there was also some effort to get the DCUs to buy computers at the village level. Up till 1997, the only activities that were

computerised were milk billing and payroll accounting. In 1997, Banas got a fillip to its computerisation programme. They hired a full time professional who was assigned the task of looking into the data processing and computing needs of Banas. Several initiatives were taken from 1997 onwards. First a server with five diskless nodes was bought and the hardware was slowly and gradually increased. Most of the purchases were in twos and threes till about the end of 1999 when a major purchase of around 50 desktop systems were made, a server was acquired and networking and cabling was done to connect up the entire campus of the Banas. As of now Banas has around 175 computers all networked with fibre optics, has its own V-Sat, and has plans on the anvil of launching a portal and also providing internet and other related services to the villages that are being covered by them. However, as we shall see later – these ambitious plans do not necessarily indicate that the internal operations are fully computerised.

Apart from the desktop systems used for data processing, the new dairy plant commissioned a year ago is state of the art and fully computerised. While discussing the process of computerisation we shall not discuss this plant in great detail because – this is seen by the management and employees as a modern plant capable of processing milk in a better way, rather than a plant that is efficient because it uses computer applications. There is a subtle line drawn between “automation” and “computerisation”, and the expansion of Banas falls under the former classification. As we shall discuss later, the mind-set is totally different when it comes to the processing of the primary produce of the members as against processing transactions in the organisation – the former has tangible financial benefits to show, while the latter is more difficult to measure.

Of the DCSs associated with Banas around 50% have desktop computers as of date. The GCMMF, which is the other link in the chain, has computerised most of its operations.

Table 5 gives the state of computerisation in various divisions of the Banas Dairy as of May 2003.

Review of Experiences in computerisation

To understand the experiences in computerisation it is necessary for us to recognise two facts:

- Banas is a part of the federal structure and falls inbetween the federation and the DCS – therefore there would be dynamics attached to being a part of an embedded system
- Banas has been financed by NDDDB, which not only provides financial services but also helps the DCUs in various other ways – therefore some support could be potentially forthcoming.

Table-5: Details of the state of computerisation in Banas

| | Dairy Plant and office | Chilling Centres (5) | Veterinary Service Centre (8) |
|--------------------------|---|--|---|
| Milk Procurement Dock | Two plants – Banas I and II – operations at both the receiving docks are fully computerised. This includes integration with quality testing, weighing and milk accounting systems. | Fully computerised, first pilot was carried out in a chilling centre | |
| Processing Plant | Banas II is a fully automated plant, running on computerised systems | | |
| Accounts | Fully computerised using canned software. But some manual systems are being followed for purposes of audit | Manual systems. Consolidated a/cs are integrated with the computerised a/cs in the plant | Billing is manual to be integrated with the milk billing and accounting system at the plant/office |
| Stores | Fully computerised, but not integrated with accounts. Interface between stores and accounts is through manual systems | Computerised in the chilling centers as well. | Veterinary stores also uses the same software as the main stores. No integration with accounts. |
| Purchase | Integrated with the stores information system, but most of the processes here are manual | | |
| HR | Payroll which is a part of accounts is computerised, other activities do not use computers | | |
| Veterinary visit booking | Computers used extensively in capturing data, allocating doctors for the visit and for generating billing | | Only one of the eight centres computerised and "on-line". Efforts on to get the entire system to be on line |
| Cattle feed plant | Fully computerised – computing facilities used in production planning, purchase and other activities. Potential use for feed formulation depending on dynamic cost data is to be done | Input supply module is also computerised in the chilling centres | |

The first seeds of computerisation were in fact sown by NDDB when they gave Banas a payroll package and the milk accounting package. Banas was quite enthusiastic about getting the package. However, things slowed down considerably and it picked up speed only in 1997. Even now the computerisation process in the co-op is not complete and is being done in small patches. It is not easy to have certain specific set of reasons for the slow nature of evolution of computerisation, but we shall examine it from various angles.

Attitudinal and socio cultural

This is a significant issue in any organisation. It is even more complex in a co-op. At the first level, the reason is to be seen in varying perspectives between the departmental head in charge of computerisation and the chief executive. While the departmental head is usually keen to get things moving, the chief executive is constantly having an overview of the organisation and is trying to balance multiple pulls. The chief executive is naturally in a better position to understand the fall out of speed – it may antagonise senior employees, make a few of them feel powerless and incapable. They would possibly have been the most useful employees in the manual system and lay off or re-deployment is not simple. In an organisation like Banas, which is almost 35 years old, the issue becomes even more complex.

In case of Banas the first challenge was to look at the dock automation system. The co-op had seven receiving bays for milk (one each at the five chilling centres and two at the dairy). The data recording, verification and entry was manual. Before start of the each shift, the Dock Supervisor prepared the truck sheet (A large sheet required to record all the data to be validated later) in three copies for each route and fill the basic details like date, shift, milk quantity, fat content, etc. The record keeping was complex as it had to keep track of weight milk quality – these had to be recorded village society-wise and totalled milk route wise so that a reconciliation could be done for the entire route. The task was to not only automate the system, but also ensure that the computerised system had interface with weighing devices and testing equipment. This removed a whole lot of repetitive and monotonous work. The major task of several workers in the department was to ensure that the small bits add up to the total and are properly reconciled.

Computerising this part of the operation was the most difficult because people were afraid of the new technology. The problems that the staff raised were at three levels:

- Show reluctance to work on the new system
- Make mistakes (deliberate or otherwise) to prove that the system is not friendly enough
- Complain about systems failing

This was overcome by using a multi-pronged strategy. Firstly the testing was done in a small chilling centre – away from the main dairy dock. So any problems raised by the staff were isolated. Once the system was tested and stable, it was then expanded to other parts. Even then there was reluctance in the main plant for the workers to take to this system – possibly due to fear of lay-offs. This was handled by being stern and buying in the procurement manager. Then a series of training programmes and handholding was done to ensure that the staff are comfortable

with the new dispensation. Over and above this, the computer department patiently attended to all calls of systems failure. The calls of systems failure included things like printer not working (the real reason was because it was not switched on). The system halts at scandisk screen etc. However, over a period of time the staff have seen the benefits of computerisation and reduction in drudgery and now are quite capable of handling minor trouble shooting themselves.

The major benefits from the automation were that they could close down the milk accounting department employing 14 people. Their jobs were merged with other departments without increase in manpower. The other benefits were that the data was ready as soon as milk collection is over, and there were significant savings in stationary and labour. The data accuracy also increased many fold.

In looking at the dock automation system the co-op was able to get a feel of the usual problems in computerisation. They were able to eliminate one fear that was latent – that employees would be laid off as a result of automation. The dock automation proved otherwise. So currently in the co-op there is a well accepted view that computerisation does not mean lay off. However, the fear of having to learn something new continues – though people are more willing to experiment with the machines now. Dock Automation also proved that one need not fill up long and complex formats and things like addition and tallying of figures at the end of the day were much more simple and accurate.

The next division to be computerised was the stores. It was much simpler to handle in terms of attitudes because of the sheer complexity of the operations.

Similarly the accounts department took to computerisation fairly well. A reason for this is that the accounts department is usually used to intermediary gadgets like calculators and therefore the fear of machines might be much lesser. However, the accounts department is still not fully on-line. Part of the accounts – particularly at the off-site chilling centers are still maintained manually and later integrated with the main accounts. Of the 13 employees working in the accounts department 8 are very conversant with the accounting package, while the others are still doing work in the manual part of generating vouchers and verifying bills. The major hurdle in computerisation continues to be the statutory auditor. This constraint is listed under attitudinal because auditors are used to verify accounts on vouchers and tick them off in ledgers. They are unable to do a soft-audit and are constantly looking for paper trail. To that extent, external audit continues to be a major hurdle in achieving total computerisation of the co-op accounts. Part of this is because the audit function continues to be in the hands of the department. The accounts

are not audited by chartered accountants – they are still being audited by the special auditor for milk accounts from the “milk audit office”. Unlike Amalsad, which is a stand-alone co-op, Banas has lesser degrees of freedom in getting the private practitioners to audit its accounts.

The problem in computerisation of veterinary services booking was unique. In this department the farmer-members call up the nearest service centre to requisition the services of a veterinarian in case the animal falls sick. Employees of the union take the calls and they have to record several details. The details include name of the farmer, his exact address with landmarks, the symptoms of the ailment, membership number, time of the call and then classification of the call into routine and emergency. This meant that for each call multiple entries would be made in a large register. Given the drudgery of entries, one would expect the least resistance to come from the employees. Most of the typical answers can be codified – for instance the symptoms of the ailment, name of the village etc – which could be a part of a drop down menu that could be chosen by the click of a mouse. But the resistance came not from the idea of using a mouse, but it was to do with the minimal entries that were to be made on the computer. Most of the staff were never used to a language other than Gujarati and now they had to take calls in Gujarati and enter the details on an English keyboard in English language. This was a very significant issue. It was not that a Gujarati interface could not be devised by the systems department, but the amount of keystrokes required to get the name in Gujarati was even more than in English because of the multiplicity of alphabets in that language. This needed constant hand holding by the veterinary doctors and senior staff to aid the employees to get used to listening on phone and at the same time making entries on the computer. Now, that hurdle has been crossed, the staff seems to be happy – they say that they can afford to forget getting a pen to the office!

However, Banas has not been able to achieve the same amount of success with certain other departments – for instance in case of the purchase department it was clear during our interactions that the staff were not even utilising the existing facility that was being provided by the computer. The reasons for this are quite unlike the dock and the veterinary services. Most of the formats used in the purchase department are not very complex. Neither are there long additions and reconciliations to be made as we saw in the dairy dock accounting. The purchase department is quite comfortable with its regular formats of getting tenders, ordering stuff and making comparisons with alternate quotations and sending reminders. While one could see the potential for improving the efficiency of this department, the employees resist new technology unless what is produced as an output from the new technology is an exact replica of the formats being used. The concept of reducing duplication of work does not seem to convince this department and they are holding on to the older systems.

In summary, the attitudinal/cultural issues in computerisation are:

- When the task is monotonous and involves filling up multiple columns and involves addition and reconciliation, computerisation is accepted more readily
- Sometimes language could be a barrier if the task involves entering long text based fields
- When the status-quo is comfortable with simple formats and procedures, the resistance could be more because the people on the ground refuse to see the value addition through computerisation
- There is also resistance when the post-computerisation outputs are in different formats when compared with the status-quo.

Strategies to address these issues that were adopted by Banas:

- Demonstration of the superior nature of the work and outputs
- Reposing confidence in employees by re-deployment of surplus staff rather than lay-off
- Training and hand-holding by senior employees to make the junior employees comfortable in getting over the language barrier
- Isolate departments that are unwilling to co-operate, wait and watch – possibly make them feel guilty in the hope that they would also adopt to the newer technology
- Do not hesitate to use the stick when it comes to the crunch.

Political

In case of Banas, there have been no significant problems at the top level to the extent the computerisation has been implemented. Infact, the process of computerisation in Banas is seen more as a facilitation to better performance and has been used less for information and analysis. To that extent, we could classify the computerisation in Banas at the base level and therefore possibly has not threatened any of the stakeholders. This is evident when we look at what has been computerised, and the process that was adopted for computerisation. In accounts department for instance, instead of developing an in-house package tailor made to fish out relevant information Banas adopted a canned package² meant for mid-sized corporate business. This obviously provides standardised information – some of which might not be relevant to Banas and not tailor made to the peculiar nature of business.

Similarly if we look at the new fully computerised plant – this has not threatened anybody in the short run at all. The new plant runs with a few specialist workers, provides efficient solutions and benefits the members directly – at the same time, it threatens no one, because the old plant and

² The package is called Tally and is quite popular in the small and medium enterprises segment.

the old systems continue parallelly. It might have been a different matter if the old plant was fully replaced with a new plant of a greater capacity.

There are underlying changes happening with some of the external interfaces due to computerisation. One department that seems to be making good use of computerisation is the veterinary service-booking department. This involves assigning doctors to specific routes based on the requests received from members. Because this information is now available in a classified manner, Banas is able to rationalise on the expenses made on transport (provided by an external contractor), reduce the overall distance travelled to the veterinarian and serve more clients. In the process the transport contractors are seeing their incomes shrinking, while the other constituents seem to be happy. But it might be interesting to note that Banas has not gone whole hog in using an algorithm for route scheduling – thereby leaving the scheduling heuristics to visual inspection. This is a bit sub-optimal, but the veterinarians also get to exercise some choice. If they adopt a model that optimises on time and distance – it might take away some of the freedom that the veterinarians enjoy now. That might bring in resistance.

If we were to look at the computerisation potential of Banas we will have to look at it in three phases:

1. Increase in the efficiency of departmental performance
2. Increase the overall efficiency across the co-op by linking the departments and also linking off-site locations to have seamless flow of information
3. Increase the overall efficiency of the co-op system as a whole by also linking all the primary DCSs. That would involve being on-line with nearly 1200 supply points from where the co-op receives milk

As of now, the co-operative has only entered the first phase. There is some delay and hesitancy in moving on to the second phase. Though prima-facie the reason does not appear to be “fear of losing control”, there are complex issues that the management has to grapple with. We shall be discussing these issues in the later parts of the paper. In the opinion of the management of Banas the overall efficiency can be achieved through computerisation, but one has to tread slowly and cautiously to ensure that the equations do not get drastically upset.

In addition to the above, one of the most significant factors that guides decision making processes in a DCU would also be dictated by what the peers are doing. Most of the board members of the DCU would be interacting with other board members – so there is not only constant benchmarking on financial performance, including amount of dividends and patronage

money given, but also on the state of development. For instance due to expansion Banas has not been able to achieve the high bottomlines as its peers in the past two years. The other DCUs are not going in for aggressive computerisation. In such a situation it would be difficult for the professionals to buy in the elected leaders on an aggressive spend on something intangible like computerisation.

Economic

In case of Banas this issue has to be looked at from two specific points of view.

1. What are the immediate and tangible benefits to the co-op?
2. What are the long-term intangibles?

The job of the chief executive is particularly complex when he has to deal with the politically elected board of directors. It is much easier for him to convince incurring of costs associated with milk processing. Therefore it was simple for the chief executive to build a new plant involving a net outflow of Rs. 1 Billion in the past couple of years. That was because the outflow is tangible and can be seen in the form of a huge facility, in terms of increased efficiency of milk handling and quantified in terms of pay-back periods and return on investments.

In case the returns are intangible, the decision becomes so much more difficult. In case of Banas this has become even more difficult because of substantial investment in the physical infrastructure. As a result of the investment of more than Rs.1 Billion in expansion (and around Rs.10 million in the new ice-cream plant) there is pressure on the bottom-line due to substantial costs by way of depreciation and outflows by way of interest costs. The net result is that Banas decided not to pay dividends on share capital (though nominal) to its member DCSs in the past two years. At this juncture, any further investment where the results are not immediately seen are difficult.

Is Banas losing out due to the postponement of investments in computerisation?

The answer to the question is possibly yes. It is evident that the operations of Banas are complex. The efforts at computerisation have been in independent departments and not as an enterprise. Banas has examined the possibility of having an enterprise wide resource planning (ERP) package. However apart from the significant investments that are needed in getting such a package in place is a deterrent. As one employee asks: "how can I convince my board that I am paying Rs.10 million for just a compact disk!?" It is partly economic and partly to do with attitudes. In the process Banas might be losing out on internal system efficiency.

How does Banas continue to compete and operate profitably then?

The answer lies in the fact that there is relatively little competition for Banas. Most of the benchmarking is with other DCUs in the State. Moreover Banas till recently was handling only a few products such as liquid milk, powder and butter and ghee (compared to its peers who handled things like cheese, flavoured milk, ethnic sweets, ice-creams and malted foods). Therefore for the type of operations they could make do with a simple system. However, now that Banas is getting into expansion and putting up some specialised products on its portfolio, it will not be long before there is internal pressure to aggressively look at systems.

The fact that there is reluctance to invest significant amounts in the computerisation process is clear from a list of the investments made by Banas in recent times.

Table-6: Recent investments made by Banas

| Purpose | Approximate amount in Rs. million |
|--|-----------------------------------|
| Banas II milk processing plant having 0.65 million litres milk handling 0.1 Million litres pouch packing 40 tons per day butter packing 60 tons per day powder plant | Rs. 1080 |
| Cattle feed plant | Rs.10 + Rs.15 (planned) |
| Bulk coolers (104 in number) | Rs. 120 |
| Computerisation of Dairy co-operative societies | Rs. 20 |
| Dairy herd improvement programme | Rs. 10 |
| Breed preservation project | Rs.15 |
| Ice-cream and UHT milk plant | Rs.100 |
| Overall investments in computerisation during this period (excluding the computerisation in-built in Banas II project) | Rs.20 |

It is clear from the above table that given the priorities of expansion of processing capacities, computerisation is seen as an item that can wait – or at least as something that can be done at leisure. There are specific instances which has encouraged such an attitude in Banas.

Member Participation

In case of Banas we have to remember that the members are village level DCSs. There is very little interface with individual members of the DCSs. Therefore the situation in this case is a bit more complex than what we would see in integrated co-ops. As all the 1200 DCSs in the district are members of Banas, they form the general body and take the final decisions. These DCSs are represented by an elected board of directors, elected from amongst the chairmen of all the DCSs. However, the fact that this is a second tier co-op does not make it any less answerable to the members.

What has computerisation done to the member relations in case of Banas?

We have to remember that the point where the member interaction is the highest was the first to be computerised. This was the milk billing system. Banas has had an established system wherein the members are compensated on a three axis system. They are first paid an initial price for the milk – the price is determined not only on the quantity but also on certain quality parameters such as fat content. The members are then compensated at the end of the year after the accounts are pooled on the overall patronage for the year. The members are also compensated for their investments in the share capital in the form of dividends. These dividends are limited as dictated by co-op principles and law.

The computerisation has only strengthened member relations with the union. The information flow is faster, and is more accurate. Therefore, member DCSs are in a position to get back to the co-op in case of any discrepancies. Since the milk accounting system is integrated not only with supply of inputs (cattlefeed) and also with veterinary services, multiple financial flows are avoided thereby making transactions simpler.

Are the members willing to contribute towards greater efficiency?

It might be difficult to get back to the members at this point in time for further contribution towards computerisation. For the Banas II project, Banas raised finances in two ways – first it increased the minimum capital contribution required for deriving its services. The share capital contribution expected earlier was Rs.0.60 per kilo of fat delivered by the DCS in the past year. This was initially raised to Rs.0.80/Kg-fat and later to Rs.1.00/Kg-fat. In this manner Banas was able to generate sufficient cash to get in for a plant expansion. The second aspect was that Banas did not declare a dividend for two years in order to conserve resources. The member DCSs are fresh with this memory and therefore might not be too willing to commit greater resources at this point in time. They would want to see some returns flowing in from these huge investments

before committing anything else. There is a slight resentment in the minds of the members and Banas would like to start paying dividends from the current year onwards.

Another point to be considered is the fact that over a period of time, there would be pressure on the DCSs to make investments in their own infrastructure. Of the 1,200 primary DCSs most of them are having electronic milk testing machines, but only half of them have computers. There would be increasing pressure on them to augment the facilities at the primary level and get some automation in place. We have seen in the case of Kheda district, the DCSs are moving away from collecting milk in cans to directly collecting them in bulk coolers. This reduces the handling contamination as well as losses. It even reduces transportation costs as the milk will then be taken to the dairy once a day as per a pre-fixed schedule, instead of the current practice of twice a day. Given that GCMMF is getting into exports very aggressively, it would not be long before there is pressure on DCSs to improve their infrastructure to ensure quality. Therefore, it is imperative that the primaries also have to make their own significant investments.

In an earlier study on capital formation in DCUs, (Sriram, Reddy and Agrawal, 1996b) it was found that co-ops within the same state seem to be adopting different strategies to mobilise capital from their members. Each of these strategies led to different levels of satisfaction. In areas where there was intense competition for milk, it made sense to pay the members a high patronage and ask them to voluntarily deposit the money back in the DCU either as share capital or as deposits. In cases where there was lesser competition, a check off strategy seemed to work. In cases where the level of satisfaction was very low at transaction levels, members instead of thinking of investing in the DCU resorted to change in management. Given these complex relations, it is possible for us to presume the following as far as Banas is concerned:

- at the transaction level, members are generally satisfied, partly owing to computerisation and prompt settlement of accounts – reflected by increased milk supply to Banas
- there is very little competition from outside
- Banas is old enough to have created fair amount of bonding

The members would be willing to contribute, provided that there is no fatigue in contribution. Now that Banas has gone on an aggressive growth path, it might be worthwhile to examine if computerisation can be built in the current phase of financing or will have to wait for the next round.

Technological

The technological issues are significant for any organisation and it becomes even more so, where the willingness to deploy resources is limited. In addition the wide fluctuation of prices in

hardware makes the decision making process so much more complex in a traditional organisation like a co-op which is used to get multiple quotations, do a comparison, do due audit diligence and place orders. What happens when each of the supplier quotes for a different configuration? Buy in of the management in such circumstances could be complex. Banas came out with a unique solution for this problem. They entered into a long term contract with a major hardware supplier that they would get hardware on their dealer price and a specified percentage of discount. This seemed to take away most of the complexity in hardware purchase. Not only was the supplier good in supplies, the after sales was also impeccable and therefore it was rather smooth as far as hardware was concerned.

However, the issue of Banas being located in a fairly remote location meant that the costs were so much higher. It did not hamper basic accessibility to services because over a period of time Banas was talking of a fair number of computing systems for the service providers to travel all the distance, but still services were that much more expensive.

While in Banas, all the general applications are on open-source software, the specific applications are on different proprietary packages. For instance, accounts are on canned software called Tally. The other departments like the veterinary service department and the store run on software developed in-house by Banas in collaboration with the local software professionals. This means that there is not interface software between the accounts and the store, which is an important link. This duplicates a whole lot of work and makes the system only marginally more efficient than the manual system. Banas has been toying with the idea of going in for computerisation whole hog by acquiring an ERP package. However, even here, they have been unable to decide and put their foot forward. Now it is a peculiar situation where Banas still dreams of going in for ERP, and if that is going to happen there is no point in building/buying small packages for department level efficiency issues. But since that decision is not taken, even the local development is put on hold. To add to the complication one has to remember that Banas is in an embedded three-tier APC system. Therefore there is also a concern as to how this would interface with the software at the DCS and the federal level.

For the past few years Banas has been talking to GCMF on uniform implementation of ERP across all the twelve unions. In the meantime, Banas has also gone ahead and invited some vendors to come to the plant and make an assessment of how much it would cost to implement such a package. The quotes given by various vendors has varied so widely that the management has decided to put it on the back burner till the issue settles down. Therefore, technology has resulted in some hesitancy in the minds of the management of Banas. Technology here is

translated into costs and also the lack of intricate knowledge to assess the cost benefits of one technology against the other.

However, non-implementation of ERP has not prevented them from trying other technologies. First the co-op installed a V-Sat in collaboration with GCMF and gave connectivity to the entire Dairy campus. At that time, 50 personal computers were purchased with little resistance and several staff got hooked on to the computer out of sheer curiosity factor. Currently the network provides e-mail and internet services. Recently they have launched an ambitious project titled "Chiraag" (lamp). This project possibly by-passes the immediate need of networking within the organisation but certainly tries to increase the member-interface with cost effective technologies.

One of the problems in linking up the chilling centres and veterenary service centres with the main campus is the issue of connectivity. The telecom infrastructure in the area is not good enough to achieve this. However, Banas through its Chiraag project has found an innovative way to addressing the issue.

The project, currently under a pilot phase intends to use low cost wireless technology. This technology called "corDECT", developed by scientists at the Indian Institute of Technology, Madras is available at an affordable cost. This technology uses a wireless in local loop system and provides connectivity in a 30-kilometre radius. The idea is to link up the dairy with the DCS (which has the space to run such an Internet kiosk). While this not only provides data on milk collection, disease outbreak, need for veterinary assistance, position of inputs and therefore increases the transaction efficiency of the system, but also builds up tremendous amount of goodwill by the sheer access to information that the members of primary DCSs would get. How this would affect the member relations and the rest of the computerisation process of the co-op is still to be seen. However, the outlay on this is not proposed to be significant as the kiosk is expected to be self-financing in the long run.

Legal and Contractual issues:

Buying software with full licence means costs. Software costs have been a significant issue for Banas. This part of it is a bit touchy as the tangibility is uncertain. This is one area where Banas seems to have run into a rough patch. Let us look at this issue in two different phases.

First is about the generic software that is to be used in day to day transactions. Since most of the standard software packages turn out to be very expensive for a 130 node licence, Banas decided to go in for open source software. So Banas has its systems on the linux operating system, and

uses openoffice/star office for all its applications. This means that the skill levels required of the staff in the computer department should be so much greater. The adoption of this technology was purely driven by cost considerations initially, and now it is re-inforced by considerations of security. There is a latent resistance to this by the users who have seen alternate software packages work elsewhere. They think Banas is not really compatible with the outside world.

The second is application software specific to certain function. They have a licenced version of the accounting software, and are constantly paying for the upgrades. However all other software has been developed in-house and therefore there is no major legal/contractual issue on that.

The bottom line is – they have tackled the legal issue by looking at open source software and building in-house software.

Human Resource Training

As far as training is concerned Banas has been very innovative in buying in staff members through aggressive use of training strategies, thereby overcoming a lot of the attitude related problems. However they have not had any training interface with the members, since none of the members get to use the computing facilities. However, it would be interesting to see how Banas approaches training of its members in the new Chiraag project where the members are expected to be the users of the facility.

On the general use of computers within Banas, around 400 staff have already been trained in house. They feel that outsourcing of training is very expensive. The training imparted to the 40 employees uses Gujarati as the medium of instruction and teaches them rudiments of the operating system, printing, browsing and sending e-mails. The basic objective of this training is to remove the fear of use of computer from the staff.

In addition, using the log registers on the network, they were able to trace the usage levels of each of the employees as they signed in everyday. This helped in identifying two sets of distinct people – people who still did not use, and were apprehensive even after training and people who had adopted to the system well. “Lead users” were identified using the log data. These users were further trained on basic trouble shooting, given some administrative rights on the network and made as referees in times of problems. This helped. They were able to pull the apprehensive people along, and people who had to seek clarification had to just call somebody in the close vicinity rather than go to the computer department. This helped a great deal in getting the entire staff hooked on to the computers.

Implementation

This is a significant issue as far as Banas is concerned. Banas has not been able to take a decisive step forward in computerising all divisions. The reason for the slight set-back is because Banas does not have a clear implementation plan as far as computerisation is concerned. There is some doubt on the timing of when ERP is to be implemented, there is also some doubt as to what should be the nature of ERP and whether it is to be done in tandem with the other DCUs or the Banas should do it on its own. This has led to the following problems:

- Computer staff are not sure if they have to build in computerisation in smaller modules or wait for the grand ERP to come
- There is no clarity on the roadmap to integration of several modules that have already been built with the other departments
- There are initiatives in the larger domain such as the Chiraag project, which does not seem to fit into the current phase of computerisation.

Given the above, the computerisation has been implemented on the basis of the computer department's willingness to do work on a sub-module and the target department's willingness to be a part of the implementation plan. The veterinary service booking division is a classic case of both the parties being willing. The accounts however have a canned package but are not satisfied with the working fully, but would be willing to be a part of the larger package only if it is going to integrate their function with other functions. There are some divisions like the purchase division which are not inclined as they do not see a bottleneck in the way they are functioning now.

On the external environment side, the federation has not pushed the total computerisation agenda with all the unions and since there is no great benchmarking available for Banas, the external push for computerisation is also not available. This does not mean that Banas has not computerised enough – but this only indicates the potential that they could achieve in the next few years. Nevertheless, one has to admit that this has been one of the most progressive looking DCUs as far as the computerisation programme is concerned.

Summary

Based on the study of Banas, the following significant points could be made:

- There is an overall appreciation the computerisation per-se is desirable and increases the efficiency of any organisation.
- The fear of lay-offs is not well founded and people have seen no lay-offs – instead they have seen only re-deployment as a result of computerisation.

- It is easier to buy-in staff when the current processes are cumbersome and repetitive in nature. It is difficult when the formats and processes used are simple and structured.
- Language could be a barrier in computerisation – particularly when we are talking of co-operatives that are away from the cities.
- There is little resistance when a new automated facility is set up as long as it does not disturb the older staff working in the older facility.
- The political management of the co-operative is willing to consider investments in computerisation if the case is put up in a convincing manner. However, there is a greater degree of comfort in aspects that appear tangible (such as automation of the plant) than computerisation which appears intangible.
- Benchmarking with nearby co-operatives and demonstration of the technology elsewhere helps in buying in the elected management.
- The hypothesis that there would be resistance from certain quarters because “information is seen as power” does not seem to be well founded. Computerisation is seen as one more facility that makes work simpler. Therefore it is easier to sell the idea in divisions that are used to making use of gadgets (calculators in accounts)
- Computerisation seems to have minimal impact on member relations with the co-op. However members do appreciate when the aspects that affect them are done more efficiently – example milk billing and veterinary services.
- Technological issues could be significant depending on the situation. Hardware is difficult to procure till a minimum economic size is achieved because of the remote location of the co-op. Software building and support is also difficult to get, and has to be done in active association with some software champion from within the organisation. Infrastructure facilities are generally not good and therefore relying on external service providers or depending on externally managed infrastructure might not really work out. However there seem to be cost-effective solutions that can be implemented by the co-op itself.
- Canned software is seen as costly and there is a clear preference for in-house software. Even standard software is taken from open sources because of cost and copyright issues.
- Training is a significant issue. It is good to get most of the staff to use computers. Banas has used innovative ways to track the performance post-training and reinforce the training.
- The need for an implementation plan – both time and cost wise is absolutely important – otherwise there are high chances of faltering on the way.
- Implementing such an ambitious programme becomes a bit difficult in embedded systems where the sister DCUs, the federation and the primary DCSs are not moving or thinking on the same lines as the DCU. To that extent the problem in implementation is greater in networked/embedded system co-ops than stand alone co-ops.

Part C

Synthesis

Based on the two case studies carried out in Gujarat, India various issues pertaining to computerisation of co-ops can be discussed. This work is to be seen partly as a continuation of the studies in member control and capital formation work carried out in the early 90s. While there are significant implications on how the strategy of computerisation is dovetailed with the strategy of capital formation, there are also some new insights one gets in understanding how decision-making processes happen in co-ops.

Impact on member relations and other structural issues

In two of the earlier studies on capital formation – one in the agricultural co-op sector and one in the dairy sector – a clear pattern that emerged was that co-ops behave differently vis-à-vis their members depending on the level of market maturity. In areas where competition is intense, co-ops resort to a more market related approach. Therefore, they have independent and multiple transactions with members rather than have interlinked transactions. In areas where the markets are not mature it is possible for co-ops to have interlinked transactions because the members have little choice in withdrawing from the co-op. This is because the other alternatives are not attractive enough. The agricultural co-op study also found that the market maturity was linked to the amount of resource endowments available in the area. However this was not very easily tested in the dairy co-op study as the interlinkages between various tiers of the co-op system created tighter binding making withdrawal of patronage a difficult proposition.

The study on computerisation indicates that not only issues related to capital formation follow the pattern, but other decision-making processes also follow from the same structural implications. For the study on computerisation we chose two co-ops in Gujarat. The first was a stand-alone multipurpose co-op operating in a free market. The other was a dairy union operating in an interlinked structure. It naturally follows that the stand-alone co-op has greater flexibility in deciding on operational and strategic issues unlike the co-op in the interlinked structure.

Having identified that the co-op in a stand-alone environment has more flexibility, how does the issue of computerisation pan out in such a co-op? We have the example of Amalsad multipurpose co-op in this study. Amalsad on the whole faced little problems in implementing its plan of computerisation. This was because Amalsad was free of other linkages and could readily take decisions without the need for benchmarking. However, a similar co-op in Andhra Pradesh where the markets are not as mature did not take to computerisation as quickly and efficiently as

Amalsad did. Though, the co-op in Mulukanoor in Andhra Pradesh was not specifically studied for this purpose, the knowledge based on recent visits for a different study is being used to make some comparisons. In a co-op where transactions are interlinked and the members are tied to the co-op – it is possible that some of the forward looking systems do not get implemented due to inherent complacency. The lack of benchmarks is one of the reasons why Mulukanoor did not get into computerisation. In case of Amalsad, there are eight other high performing co-ops in its area and therefore if it had not taken the initiative, it soon would have followed some other co-op that took the initiative.

In case of the Banas Dairy Union, the entire investment in computerisation was examined from the point of view of what other sister unions are doing. The interlinkages with the federation and the primary co-op, and the intensity of interaction with the members were other factors. In Amalsad the interaction with the members is on a daily basis, by virtue of it being a primary co-op. In case of Banas the interaction with primary members is filtered through a society and therefore the dealings are with an institutional structure – rather than with individuals. Therefore the pressure to resort to computerisation was not high as long as the others were not doing it.

Amalsad represents a base level activity. The complexity of operations is not high, therefore implementation of computerisation could be fairly simple. In Banas there is already a significant amount of investment in processing capacity. The members see value addition in improved processing – which directly affects the revenues realised for the primary product – milk. The members and management do not see the value addition in processing of data. Therefore an investment in automation – computerised plant and machinery – was much easier than investment in computerisation.

Having identified the broad structural issues, we may now look at some specific issues.

1. **Leadership:** These cases very clearly indicate the important role of the chief executive in the decision-making process of co-ops. If the chief executive is convinced and is passionate about computerisation, the implementation becomes fast and the processes appear to be simpler as in case of Amalsad. If the chief executive has some doubts, then the burden falls on the computer department to convince the chief executive – this role is counterbalanced by opponents of computerisation and therefore the task is so much more complex. Therefore the role of leadership operational can never be undermined.

2. **Consensus:** Building a wider consensus for implementation of something as important as computerisation is very important. There are two constituents that need to be taken into confidence – the board and the employees. The strategy to convince the board seems to be similar in both the co-ops. The board is usually concerned about costs. As long as the investments are within reasonable limits, the board will agree. In case of Banas which is a much larger co-op and therefore the investments are expected to be significantly high. The route adopted was to cut costs on software – by going in for open-source software, building the software in-house rather than buy off the shelf software and phasing out the acquisition of hardware. In case of Amalsad, software development was phased out, while acquisition of hardware was bundled with a general plan of automation. So computers were bought at the same time as grading and weighing equipment.

Taking the employees into confidence needs careful consideration. In both instances we did not find “fear of losing” job to be one of the considerations. However there was fear of using technology and resentment to change. Amalsad tackled it by identifying a select set of people and involving them with the software development team and by putting them on the job – so that they realise the benefits of using computers. Banas tackled it by computerising different departments gradually, resorting to in-house training, identifying department wise lead employees and encouraging the laggards to consult the lead people. In both the instances the importance of “stick” (visible or invisible) was also seen. However in Banas where there does not seem to be a top management buy in for a whole-hog computerisation policy, we found that some departments could still resist computerisation. For employees, the language in which they interface with the computer also becomes a significant issue.

3. **Is Information Power?** The studies did not indicate any insecurity because of increased access to information. Computerisation by and large is seen as an enabling mechanism to improve efficiency and reduce drudgery. Though in cases where information was available it was used for strategic purposes in examining efficiencies and improving systems, this was seen as a welcome measure rather than as a threat. The conclusion to be drawn is that information is power to the co-op, but does not upset the balance of relationships within the co-op between various constituents.
4. **Infrastructure:** Infrastructure is not seen as a major constraint. The level of computerisation in the co-ops that were studied was very functional. Given the local economy and its insulation from the outside market co-ops can make do with a certain amount of lag in the flow of information. Therefore telecommunication network, interconnection and other

issues do not seem to be the "top-of-the-mind" problems. However, as the co-ops are away from the cities makes it that much more difficult to access hardware and software support services. Banas solved it by having a large pool of computers within the campus thereby making it attractive for service providers to operate locally. Amalsad being a smaller co-op solved it by encouraging other co-ops to computerise and thereby created a large enough local market for the service providers. Internet connectivity did not seem to be an issue as both the co-ops were operating with known customers having established relationships. Both were not really operating out in the "open market" but in a market where there were long term understanding and unwritten contracts.

- 5 **Other Issues:** On the implementation plans, both the co-ops did not seem to have a formal plan of implementation. However, in a chief executive led effort (Amalsad) the implementation was done in a time bound manner. The specifications and expectations were also constantly conveyed to the software specialist. In case of Banas, a clear plan of computerisation does not seem to exist and therefore there are signs of faltering. The importance of an implementation plan cannot therefore be undermined.

It appears that implementing the computerisation in phases reduces the problems because:

- a) The costs are usually kept under control and monitored against results. There is a control on the results for which the co-op is making payments.
- b) It helps in buying in the employees, there are no cultural shocks and people slowly get cued in.
- c) There is ample scope for mid course correction.
- d) Cash outflows could be spread and the board members seem to like this

On the whole, computerisation process seems to be an interesting segment of the decision making processes in co-ops. Its close relation with the member participation, capital formation issues is striking. Computerisation is generally not seen as a revolutionary intervention. Instead, it is seen as a process through transaction efficiency can be improved. Computerisation does not seem to be perceived as a threat, but as an opportunity. The only issue that seems to be worrying is "how will it affect an employee's work style and how much incremental learning will an employee have to make". If this issue is solved and the chief executive is convinced implementation of computerisation appears to be fairly routine and simple.

References:

- Agrawal, Rajesh, Raju KV, Reddy K Prathap, Srinivasan R and Sriram M S** (1994): Successful Capital Formation Strategies for Agricultural Co-operatives in India. Research Report submitted to the FAO of United Nations. Anand: Institute of Rural Management. (mimeo).
- Datta, Samar** (2002): *Institutional Economics Approach to Small Farmer Credit: Case of Amalsad Society* in Datta Samar K and Sriram M S "Flow of Credit to Small and Marginal Farmers in India" – A report submitted to the Ministry of Agriculture, Government of India. Ahmedabad: Indian Institute of Management. (mimeo)
- Mishra, Debiprasad and Shah, Tushaar** (1992): "Organisational performance of Village Co-operatives" *Small Enterprise Development* Vol.3, No.1, March 1992, pp.4-13.
- Shah Tushaar** (1995): Making Farmers' Co-operatives Work: Design, Governance and Management. New Delhi: Sage Publishers.
- Shah Tushaar** (1996): Catalysing Co-operation: Design of Self-governing Organisations. New Delhi: Sage Publications.
- Sriram M S, Reddy, Prathap K and Agrawal Rajesh** (1996a): Capital Formation Strategies in District Level Dairy Co-operative Unions. Anand: Institute of Rural Management (Mimeo)
- Sriram M S, Reddy, Prathap K and Agrawal Rajesh** (1996b): *Capital Formation Strategies in District Level Dairy Co-operative Unions in Gujarat* in Rajagopalan R (Ed): Rediscovering Co-operation: Co-operatives in the Emerging Context (Volume III) Anand: Institute of Rural Management.
- Sriram M S** (2000): Financial Co-operatives in Quebec, Canada: A Study of the Desjardins Movement. *Journal of Rural Development*, Vol19, No.2, April-June 2000. Hyderabad: National Institute of Rural Development.