A STUDY OF INDUSTRIAL CO-OPERATIVES IN KERALA
WITH
SPECIAL REFERENCE TO MODERN SMALL SCALE SECTOR

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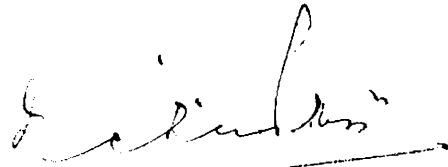
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CERTIFICATE

This is to certify that the thesis **"A Study of Industrial Co-operatives in Kerala with Special Reference to Modern Small Scale Sector"** is a bona fide record of research work done by Shri.Velayudhan.K.V. under my Supervision and Guidance. The thesis is worth submitting for the award of the degree of Doctor of Philosophy in Economics under the faculty of Social Sciences.

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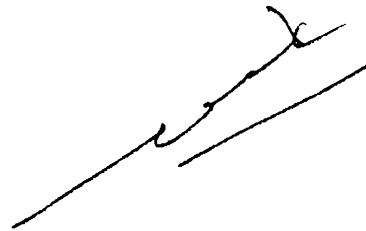
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DECLARATION

I hereby declare that this thesis is the record of bona fide research carried out by me in the Department of Applied Economics, Cochin University of Science and Technology. I further declare that this thesis or any part thereto has not been previously submitted for any degree in this or any other university.

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ACKNOWLEDGEMENT

C O N T E N T S

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CHAPTER 1

INTRODUCTION

Industrial Revolution of the 18th century brought in its wake basic changes in technology, production and productivity. Despite its positive contribution towards the growth of manufacturing industry and the manifold increase in the wealth of nations, the industrial revolution evoked sharp criticism from different quarters for its impact on society. Industrialisation not only created new classes and strata but also led to concentration of wealth in the hands of a few, the owners of the means of production. At the same time, the conditions of work and levels of living of the working population deteriorated steadily for long period of time in general and industrial workers in particular.

The plight of workers in the new system evoked sympathetic response in the writings of several reformers like Saint-Simon, Charles Fourier, Sismondi and Robert Owen. Owen believed that man is the outcome of his environment. He argued that human character was formed for them by their environment, and

that the evils which moralists found in the poor were due to the degrading conditions under which they were forced to live and work.[2]

Owen offered leadership to the Rochdale pioneers venture - an alternative form of business organisation - which upheld the principle of co-operation.[3] Ever since the establishment of the first co-operative society in England by the Rochdale Pioneers in 1844, the message of co-operation has spread to almost all the countries of the world.[4]

Owen and others of his ilk dreamt of a society based on co-operation and mutual help instead of competition and exploitation of man by man. They set out the fundamental principles of co-operation: association, voluntary co-operation, democratic government of the enterprise and social motive[5]. The founders did not give, however, strong ideological foundation to the co-operative concept; rather, they were concerned only with the removal of misery of the workers and formed societies as a tactical solution for the problem. Thus the co-operative concept was to them only a pragmatic idea; it acquired an ideological base only over time.

Different thinkers have variously defined the concept of co-operation. Horace Plunkett considers co-operation as "self help made effective by organisation"[6]. Calvert defines

co-operation "as a form of organisation wherein persons voluntarily associate together as human beings on a basis of equality for the promotion of their economic interest"[7]. International Labour Office defines: "A co-operative is an association of persons, usually of limited means who have voluntarily joined together to achieve a common economic end through the formation of a democratically controlled business organisation making equitable contribution to the capital required and accepting a fair share of the risk and benefits of undertaking".[8]

The concept of the co-operative lies in between two extremes: individualism on the one hand and socialism on the other. It stands for individual rights tempered by consideration of justice, equity and fair dealing as between man and man, and aims at the prevention of exploitation of the weak. Although at the initial stage, the concept of the co-operative was confined to that of helping the workers, it gradually received alternative interpretations and assumed larger meaning. In fact, there arose various schools of thought on co-operatives[9].

Derek C. John considers the industrial co-operative as an autonomous enterprise in which (a) many workers or (members) own stock, (b) ownership is widely distributed among the workers who own much of the voting stock, (c) working members participate in the enterprises, management and control, and (d) they share in

the distribution of the surplus, usually on the basis of the work".[10] According to David H. Wright, it "redefines the worker's job by including him in the policy making and work co-ordination tasks of management, as well as productive processes".[11] Thus the responsibility of decision-making and work co-ordination in a co-operative also falls on the workers in addition to their normal work . Industrial worker co-operatives are, in fact, productive firms that are democratically owned and managed by their workers[12]. This idea is emphasized by Kerr and Harris as well.[13] The worker co-operatives are designed to be the type of firms in which where the people working in them jointly appropriate the fruits, whether positive or negative, of their joint labour. The legal structure of the worker co-operative or self-managed firm is defined as the structure that implements the labour principle in its property structure and the democratic principle in its governance structure. Ellerman mentioned that in worker co-operatives, the traditional roles of the employees and owners are abolished. There are only worker members, no employee owners. Workers qualify for co-operative membership by virtue of working in the firm. Further, a worker co-operative or self-managed firm is neither privately owned nor publicly owned; neither a capitalist firm nor a socialist enterprise. It is only a democratic social institution[14]. Industrial co-operatives assure worker's participation in the enterprise's decision-making and democratic leadership in management.

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In short, the worker's co-operative is an enterprise which is owned, managed and controlled by workers themselves. The industrial co-operative emerged in the West as a critical reaction to the adverse consequences of Industrial Revolution.

Though the co-operatives thus germinated in the industrial sector in the western countries, their beginnings in India were in the agricultural sector. During the last decades of the 19th century, the cultivators in Deccan reacted against the money lenders, who levied usurious rates of interest, which led to the widespread riots.[15] The Government was forced to think of an alternative form of organisation for the relief of the farmers; they found the alternative in co-operatives. In consequence, co-operatives were started as a rehabilitation measure to the poverty stricken farming community. This form of organisation soon got acceptance from various other sections of the population and spread to different States of India. Thus during early decades of the 20th century, co-operatives emerged in Kerala also. During the past eight decades, the message of co-operatives has received wide acceptance among the people of Kerala. Consequently, about 60 per cent of the people of the State are by now associated with one form or other of the co-operatives[16]. Among these the co-operatives in the service sector ,especially, co-operative banks, have forged much ahead of others. The performance of the co-operatives in the producing sectors,

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especially, in small scale manufacturing, appears to be much less significant.

Industrial co-operatives have a vital role in accelerating development of small scale industries. In a capital-scarce, labour-abundant country like India, wedded to the twin objectives of growth and social justice, small scale industry is expected to play a vital role in resolving chronic problems of poverty, inequality, under-employment and unemployment. Large scale manufacturing enterprises have naturally their pride of place in the nation's economy; but the small scale sector as a supporting factor has become inevitable, and its importance as an integral part of the industrial system cannot be over-emphasized. Small scale industries have great significance as intermediary stabilisers and as the catalytic agents in accelerating economic development. Both theoretical considerations and the little empirical evidence reported in the literature, suggest that small enterprises are often economically efficient and labour-intensive and that they have a significant role in achieving rapid growth of both output and employment.[17]

Even in highly industrialised economies small scale industries contribute a substantial share of the national output[18] Increasing trends of growth of small business are noticed in most developed countries. The contribution of the small scale sector is about one-third in the U.K., two-fifths in the U.S. and

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nearly three-fourths in Japan. In Britain several incentives are given to the self-employed sector on the assumption that the encouragement of small business is an effective solution to the problem of unemployment.[19] In all countries, small scale industry provides employment for a substantial proportion of the industrial work force and accounts for a large proportion of all industrial establishments[20]. Small enterprise development is an essential and important factor for generating employment and encouraging economic growth in developing countries.[21] In contrast to top-down economic planning and implementation, small enterprise programs are based on several 'bottom up' development premises which include the need for (a) self-employment opportunities among the poor; (b) employment which is labour-intensive rather than capital -, and education-, intensive, (c) economic growth based on small scale business initiatives, (d) an economic base from which to foster business expansion, (e) the use of natural resources in the economic development process; (f) development strategies that assist in the transmission of economic initiatives and opportunities from the informal to the formal sector; (g) economic development opportunities for indigenous populations as opposed to 'alien minorities within a developing country's social and economic structure; (h) poverty alleviation through new sources of income (i) technology adaptation to indigenous resources; and (j) development of entrepreneurial skills and talents.[22] India's policy of encouraging the small scale sector as an integral part of the industrial development programme which lays particular

emphasis on large scale capital-intensive industry, has been lauded as unique by renowned economists.[23] Industrial development cannot be achieved with out taking into account two factors: 1) manufacturing industry should be the basis of development and 2) industrial development cannot be achieved with out involvement of the small scale industry.[24]

The report of the Steering Committee of the Kerala State Planning Board for the preparation of the VIII five Year Plan on Industry and Mining[25] listed several factors inhibiting and promoting growth of small industrial units. Kerala's educated manpower, the native intelligence of the Keralites best suited for taking up logic-based professions and availability of a well-developed and broad-based physical infrastructure particularly in the transport and communications sectors, are a few of the positive factors identified. On the negative side, may be mentioned high wage rates, preference on the part of the educated for white collar jobs, lack of entrepreneurship, paucity of essential resources for industrial use, high density of population and the distance factor which places Kerala away from the major domestic markets.

In this context, it would appear that the industrial co-operative movement could possibly play a vital role in accelerating the momentum of small industrial development of Kerala which has a wealth of highly educated and skilled manpower.

However, in spite of the encouragement extended by the Government, the movement does not seem to have been picking up in the modern small scale sector. The present study is an attempt to analyse the factors that have affected the performance of the industrial co-operatives in the small scale industrial sector of Kerala.

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Notes and Reference

1. Sethi, Krishnan. C, et al (ed.), (1981) P.XI

2. Cole, G.D.H. (1944) p.15

3. Rochdalers are known as the 'Pioneers' because they were the first to find a successful store, give a final shape to the co-operative principles and propagate the message of dignity of labour and glory of the worker.

4. Pillai, M.V.N. (1971) p.3

5. Jack, Bailey (1960) p.19

6. Plunkett, Horace (1928) p.7

7. Quoted in Bedi, R.D. (1971) pp.6-7

8. Young Johns B.A. (1977) p.7

9. Hajela, T.N., (1973), p.4. According to Hajela, the various Schools of Thoughts were: 1) The Co-operative Enterprises. (2) The Co-operative Commonwealth, and (3) The Socialist Co-operatives. According to the followers of the first School, Co-operative Institution is a voluntary association of independent economic units, organised, capitalised and run by and for its members, providing and marketing goods and services on cost to cost basis to their members. The second School of Thought concentrate not only on improving the economic position of members within the existing framework but also aims at eliminating the competitive, capitalist system and replacing it by one, which is based on mutual co-operation. The third School believe that the co-operative movement can be an important instrument in furthering the socialist progress.

10. Jones, C. Derek, (1984) p.3.

11. Wright, David, H., (1979), p.28.

12. Jackall, Robert and Levin, Henry, op. cit., p. 3.

13. Quoted in Jackal, Ibid., p. 63.

14. Ellerman, David, P. (1984), pp.870-76.

15. Das Gupta, Sipra   (1984), p. 9-10.

16. Government of Kerala (1991), Hand book of co-operative movement in kerala,p.11

17. Cortes, Berry and Ishaq (1987)

18. Pillai, V.R. (1986).

19. Khar Banda & Stellworthy, (1986).

20. United Nations, (1958).

21. Anderson, (1982)

22. Harper, (1984)

23. Little, IMD.(1987), p. IX.

24. Yoshikuni, Ohnishi, (1992), Productivity, Vol 33,No 2, p, 216.

25. Government of Kerala (1990), Report of Steering Committee, State Planning Board.

CHAPTER 2

REVIEW OF LITERATURE AND DESIGN OF THE STUDY

This chapter introduces the theoretical basis of the co-operatives and findings of major empirical investigations and presents the design of the present exercise.

2.1. Theoretical basis of the co-operatives

Vanek's[1] general theory of labour-managed market economics provides a comprehensive theory in support of an economic system different from Capitalism and Socialism. In this system the employees manage the enterprise and share the surplus. The decisions are taken by the firm and the control of the government over the individual firm is meagre. However, it is noted that the principle of labour management is in conflict with the principles of control and management by the owners of capital but not with the principles of private or social ownership of production assets.

Ireland and Law[2] made an attempt to study the economics of labour managed enterprises. They examined the differences between conventional firms and labour managed enterprises. "Conventional firm

is a technical unit within which resources are combined for the production of marketable goods and services"[3]. Inputs are hired and output decisions are made by the owner of the firm or the entrepreneur. The entrepreneur is also the residual claimant and is often, assumed to have an interest in maximising profit. The authors have examined the economics of enterprises in which labour is the residual claimant. The right to share the residual in this case derives from the provision of labour service within the firm and not from the ownership of capital. The control can be envisaged as being exercised directly or indirectly through a hired or elected manager. Workers are thus not hired inputs but may be described as members of the firm and the members share the surplus of revenue over non-labour costs.

Ellerman[3] who compared the legal structure of the conventional neo-classical firm with that of the worker co-operatives found superiority in the latter. While in the conventional neo-classical firm demand from the part of workers for better benefits is ignored, attempt to increase output and productivity continues. He uses a simple model to make the concepts explicit. Consider a simple production process[4] in a manufacturing enterprise where workers use up raw material (X) and the machine service (K) to produce output (Q). If we conceptually treat the productive activity of workers as another, 'input', the labour service (L), then L is also "produced and used up in the production process. In a capitalist firm

the productive activity of labour is indeed legally treated as a commodity 'L' that is purchased in the employment contract.

The net result of assets and liabilities resulting from production, is called the economic profit, (EP). If the outputs are listed as positive and the inputs as negative, then the EP would be represented by the vectors

$$EP = (Q, -X, -K, -L)\ldots\ldots(1)$$

where EP = Economic profit

      Q = Output produced
      X = Raw material used
      K = Machine service
      L = Labour service

The equation (1) in value terms can be written as:

$$\text{Economic Profit} = PQ-P*X-RK-WL\ldots\ldots(2)$$

where   P = Market price of output
       P*= Market price of raw material
       R = Market price of capital service
       W = Market price of labour service.

Then the economic profit (EP) is produced through the production process of the labour. The main motive of the capitalist is to maximise the economic Profit (EP). This can be achieved by increasing the total output (QP). Contrarily the worker-owned firm is so designed that the people working in it appropriate the positive and negative fruits of labour[5]. In this firm, workers are not employees since they are not selling labour to the firm or capitalist. They

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qualify for co-operative membership by virtue of working in the firm. The members have the opportunity to solve their problems and take decisions by their own efforts rather than through any external agency. This is not unrealitic since the method was the outcome of the endeavours of the working class to protect themselves against poverty and exploitation perpetuated ruthlessly on them by the capitalist. Naturally, as an alternative form of organisation, the co-operative firm assures several conveniences to the members. Co-operative assures higher income to the members than what a worker would get in the conventional firm. This can be observed from the following production process.

Let Q, X, K and L be the vectors of output, raw material, machine service and labour activity respectively.

The labour product = $(Q, -X, -K)$

The human activity is regarded as another 'input' to the production which could be represented as the fourth component in the vector.

Thus the labour product = $(Q, -X, -K, 0)$
$$= (Q, -X, -K, -L) + (0, 0, 0, L)$$
EP + Labour Commodity.

In a capitalist firm the workers do not appropriate the entire labour product. The workers are paid only for their labour (0, 0, 0, L), while the employer legally appropriates the whole economic profit (Q, -X, -K,-L). However, in the co-operative firms the workers are the owners of the means of production. The net economic value of the assets and liabilities, (Q, -X, -K) is;

$$\text{Value of labour product} = PQ - P*X-RK$$
$$= WL + \text{Economic Profit....(3)}$$

The difference between the conventional and the worker owned firm is that in the former the workers receive the wage, WL;

$$WL = PQ - P* X - RK - EP....(4)$$

Whereas in the latter the profit is not diverted to any other channel. Hence the worker appropriates the amount WL + EP which is greater than WL of the conventional firm. Thus the worker's income in the worker-owned firm is higher than that in the conventional firm.

Moreover, the alternative venture provides the members opportunities for participation in decision-making in different ways, viz; serving as Board members, electing members to the Board of Directors, voting on critical issues, working side by side with Board members and voicing complaints and making suggestions freely to the General Managers . Such opportunities are not available in the conventional firm. Further the entire firm is managed by the Committee elected by the members. Thus there are certain fundamental

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differences between the two in the pattern of ownership, decision making and management. The co-operative sets limits to concentration of wealth, which is considered to be the focus of vehement criticism against capitalism.

2.2. Empirical Investigations

Thomas and Logan[6] examined the historical and organisational significance of co-operatives, centred on Mondragon in Spain's Basque province, and analysed their economic aspects. They found that co-operstives gave considerable attention to create full employment condition and safe guard existing jobs. Education and training in the Mondragon groups showed their orientation towards the welfare of society as a whole. A net work of institutions formed a supporting structure for the co-operative factories. Funds were made available to spread educational and training achievements among the community of the district in which Mondragon is located. In Mondragon all workers were members of co-operatives,. the only exception being highly skilled experts who were employed temporarely for short periods. Since every worker was a member they were fully committed to their goals, a condition which improved productive efficiency on a continous basis.The surplus is distributed on the basis of the financial position of the co-operatives. This practice has successfully prevented the differential between the highest and the lowest earnings from exceeding a range of three to one. The annual profits have been consistently used to strengthen the financial structure of the

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co-operative. Apart from ten per cent allocation to social projects, the entire annual surplus is added to own funds. The success of this organisation is reported to the General Assembly and the Supervisory Board which consist of three categories: Students, Staff and Supporting institutions. A Council of students and a Council of Staff, both elect representatives to the Board, while the Supporting institutions nominate their representatives in proportion to their 'financial stake'. Thus the authors came to the conclusion that the co-operatives have done remarkably well with respect to employment creation, earning levels and yield on resources.

Roony[7] examined the correlation between employees ownership and workers' participation in the employee- owned firms. This study was carried out in the U.S.A on the basis of data collected through questionnaires. The targeted population consited of the majority employee-owned firms and non-employce-owned firms matched by size. Information on the extent of workers' participation in twelve areas was collected and listed with the help of the index developed by adding the weighted scores for each possible area of participation. From the analysis, it is found that contrary to expectations, there exited little worker participation in employee-owned firms. Employee-owners wanted and expected greater participation in management and the lack of work participation caused problems in some employee-owned firms.

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Abel and Mahoney[8] examined the performance of small scale industrial producer co-operatives in developing countries. Small Scale Industry covered organisations which had fewer than 100 members each. The co-operatives were studied in detail in four countries: India, Peru, Indonesia and Senegal. Four units were taken for detailed study from the former three countries and two from the last one. Shortage of capital and lack of good management were identified as problems faced by capital-intensive Industrial producer co-operatives. The performance of the Industrial Producer Co-operatives was in general poor in cases in which the skill-mix of the (initial) members was inapprop riate; in the success cases high levels of solidarity were obseved among the members.

Chris Conforth ,etal.[9] examined the performance of industrial Co-operatives in the United Kingdom using empirical evidence. A detailed study of two local support organisations (CSU) was carried out first. Formation and survival of co-operatives since the enactment of Industrial Common Ownership Act was examined in the second section; the third section reported case studies of sixteen co-operatives, examined in terms of their development as business units and democratic organisation.The membership of the co-operatives was seen to have increased rapidly up to 1984 and then leveled off. Differences existed in the patterns of development among co-operatives. It was found that, being small units the economic performance and labour process of co-operatives are strongly influenced by external conditions in their particular labour, capital

and product markets. At the stage of their begining , most of these units were seen to have been severly under-capitalised with workers of low level of skills, or skilled workers who were very old. They found it   difficult to attract, develop or retain persons with ability and competence in management.   All these factors contributed to low labour productivity, their survival depending mostly on low wages or long hours of unpaid overtime work.

Several studies in India also have gone into   the problems and performance of industrial co-operatives. Mehta[10] was one of the earliest to study the problems of industrial co-operatives in this country. He traced the development of industrial co-operatives in the different states. This was by and large descriptive study which emphasised the significant role that the   Industrial co-operatives could play in the country's development.

Venkatappa[11] examined the progress and problems of Handloom Weavers Co-operatives in Karnataka State by analysing the changes in membership, number of looms, share capital and working capital.   It was observed that due to lack of organisational set up among the weavers and the non-effective working of the existing co-operatives, the coverage of looms under the co-opeartivefold was small. The major problems of the co-operatives identified were: (a) social problems, (b) problems relating to management, (c) organisational defects ,and (d) administrative problems.   Venkattappa advanced the following suggestions to solve them: Construction of separate worksheds for

running of looms, supply ofadvanced technical know-how to the workers, appointment of paid staff to provide better management, supply of raw material to weavers at controlled rates and introduction of modern technology.He also emphasised the need for strenthening the apex institutions financially.

Choubey[12] analysed the problems and prospects of weavers co-operatives in Bihar by examining the working and the dormant primary weavers co-operatives in the State. He found that in Bihar several spurious weavers co-operatives had sprung up whose sole interest was getting Government rebate and other concessions. Weavers co-operatives in the State were facing a number of problems: (a) of organisation, revitalisation, management and supervision, (b) of supplies (c) of Finance and Auditing, (d) of Education and Training and (e) of marketing. Choubey made a few suggestions for government action for solving these problems. His suggestions included amendment of the Co-operative Societies Act, opening of raw materials depots and research cell, establishment of separate cell in the central co-operative banks for meeting the financial needs of primary societies or setting up another independent financial agency to serve them adequately, and a well designed training and educated programme for members. He observed that , even though the performance and function of these co-operatives were not satisfactory, they had immense potentiality in Bihar.

Cavvery and Sudha Nayak [13] emphasised the need of Industrial Co-operatives for Tapioca Processing. The authors pointed out that TamilNadu has a good record of successful industrial co-operatives for several Cottage and Small Scale Industries in the fields of production and marketing. The steps taken in the State for the formation of Tapioca Processing Industries had helped the farmers and assured steady prices for both the segments of the industry. The study concluded with the optimistic note that the economic conditions of the Sago and Starch manufacturers were looking up.

Rayudu[14] examined the financial performance of six Co-operative Spinning Mills of Andhra Pradesh using ratio analysis. (The Ratios used are: current Ratio, Acid-test Ratio and Debt equity Ratio). The objectives of the research were to examine the financial positions of co-operative mills, financial operations and performance, and the nature and extent of Government's financial spoon feeding. Further, he studied the relationship between various variables as depicted in financial statements and evaluated the returns on capital invested. For this study, six co-operative mills were chosen at random. The analysis revealed that all the six mills in the co-operative sector had accumulated losses, the member's share capital base was very weak, and there existed heavy doses of outsider's finance.

Mahaptro[15] made an effort to study the nature of Cotton Handloom Industry in India. The handloom industry, everywhere in the

country, was struggling for survival for several decades. Over and above this, it was fighting a loosing|battle with the cotton textile mills and powerlooms. Yet, the industry in Orissa, like in many other parts of the country, did show some inherent vitality to survive the vicissitudes. In his view, the major evil in the handloom industry is the master weavers. The master weavers have become exploiters of the poor weavers. However, the growth of the co-operative sector might lead to automatic shrinkage and ultimate extinction of the master weaver system. Small household weaving would ultimately show good results if they get the same facilities of credit, marketing and research which large units enjoyed by virtue of their size and resources. Mahapatro has also mentioned that the coverage of the co-operative system was not adequate in his study area.

Ghuman and Anil Monga[16] examined the performance of the co-operative sugar mills in Punjab using both primary and secondary data. They analysed the performance of the financial and physical activities of the co-operative sugar mills of Punjab. In order to examine the managerial performance, informal interview techniques were used. Financial performance was evaluated through information on share capital and profit and loss account. For the evaluation of physical performance, indicators such as sugar cane crushed per unit, sugar produced per unit(in quantity and in value) per society were used. All the units under the study were found running at a loss. To overcome the loss,the following suggestions were made: (a) the political interference around the location of co-operative mills

should be minimised and new mills located in areas having sufficient quantity of sugarcane, (b) in order to enjoy economies of scale the installed capacity of co-operative mills should be enhanced considerably, (c) efforts have to be made to minimise inventories by using modern materials and management techniques and (d) the government of Punjab should make arrangements for cultivation of improved varieties of sugar cane.

Thanulingom and Gurumoorthy[17] discussed the financial performance of the Handloom Co-operatives in Paramkudi Town in TamilNadu. They used three categories of ratios: (a) Liquidity ratio (b) Profitability ratio and (c) Turn over ratio . Liquidity ratios were used to judge the firm's ability to meet short term obligations. The profitability of the societies was examined with the help of gross profit ratio, net profit ratio, operating ratio and return on investment. The effective utilisation of different assets was assessed with the help of stock turn over ratio and debtors turn over ratio. This analysis has drawn a dismal financial picture of the handloom co-operatives in TamilNadu.

Uma and Thanulingam[18] examined the operational efficiency of co-operative spinning mills in TamilNadu for a period of six years from 1980 to 1985. The profitability of these units were measured in two ways: (1) by evaluating the financial performance and (2) by evaluating the operational performance with the help of relevant ratios, (net operating profit ratio, operating ratio, material cost

ratio and labour and overhead cost ratio), which were calculated using available balance sheet data. This analysis also presents a dismal picture of the handloom co-operatives in the State.

Rajagopal[19] analysed the economics of modern co-operative rice mills in Madhya Pradesh, employing the case study method. Various disadvantages of the traditional Paddy processing method are explained. He estimated losses incurred at different levels of processing: (a) 1 to 1.5 per cent of paddy through shedding in the field and transportation, (b) 1.2 per cent due to eating away by birds and rodents durig open drying and (c) 3 per cent in milling. Thus the major item of loss was the traditional system of milling. Further, the study showed that modernisation of rice mills in co-operative sector had a great impact on the regional economy. It reduced the influence of intermediaries in the processing of paddy to a large extent. Owing to these reasons, Rajagopal argued for modernisation of rice mills owned and operated by the marketing federation.

Ravinder Sharma, et al.[20] have done cost benefit analysis of Tea Co-operatives in Kangra District of Himachal Pradesh. Cost benefit ratio of the factory under study during the period and net profits from tea processing in different years were computed. Data relating to the fixed assets and variable costs were collected from the records of the factory. The study pointed out that the total income earned by the factory from the sales of tea has significantly

increased. But profits were found only over a part of the period under study because the total cost increased year after year and the factory income was just adequate to meet its variable costs. The researcher reminds that more care should be taken so that the financial positions of the society could be improved by adjusting the total cost with the output.

NarayanaSamy and Ramachandran[21] examined the factors affecting the growth and development of Co-operative Sugar factory by a case study of Amaravathi Co-operative Sugar Mill in Tamil Nadu. They examined different factors such as area under sugar cane production, membership, equity capital, Debt capital, net working capital, cane price, cost of production, machinery utilisation, sales price, income expenditure and profit. The authors concluded that the mill should bestow better attention to cane development activities for increasing recovery, increasing supply of sugar cane, strengthening of capital structure, controlling of expenditure and improving the machinery utilisation to improve its operational efficiency.

Om Prakash Kajipet and Narayana Reddy Rapole[22] have made an effort to examine the potentiality of industrial co-operatives as a better solution for rural unemployment. They argued thus : (a) agricultural production in India, to a considerable extent, is being organised on capitalist lines and led to growth of disguised and open unemployment, (b) the increasing unionisation among agricultural labour resulting in higher wages and downward wage rigidities which

reduces labour absorption in agricultural operations and (c) Government legislative measures (such as minimum wages) and insistence by Government and labour unions on payment of minimum wages, discouraging labour absorption in agriculture activities. Finally, they noted that, the factor price distortions of capital and labour in India are also favouring intensive use of capital in agriculture. Based on the above facts Kajipet and Rapole considered the co-operative forms of organisation to be more suitable and appropriate than any other form for development of the farm sector and rural industries. The main objectives of the industrial co-operatives, the authors noted were: (i) provision of employment and ensuring regular work to the rural unemployed and rural artisans and (ii) improvement in the living conditions and economic betterment of rural artisans and the rural unemployed by ensuring fair and regular wages to them. Consequently, the solution to the problem lay in the organisation of rural industries and agricultural allied activities along co-operative lines.

2.3.2. RELATED STUDIES IN KERALA

Ravi Makrari[23] made an effort to study the levels of living of the beedi workers in Kerala. He studied the problems which the workers were facing and observed three types of exploitations in the beedi sector: (i) of workers by owners of means of production, (ii) by middle man and (iii) of helpers by the workers. The only exception to this type of exploitation was the Dinesh Beedi Co-operative

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ociety. Here the members got several benefits denied to their ournterparts in the other types of organisations. Based on these acts, the writer argued that the co-operatives are the only solution o the problems of the unorganised workers in the beedi sector.

Vasudevan [24] examined the role played by the beedi o-operatives to rehabilitate the unemployed beedi workers and reation of additional employment opportunities. He also examined the ktent to which the societies succeeded in implementing the Beedi and igar Workers Act of 1966. With the help of case study method (A case tudy of Kerala Dinesh Beedi) Vasudevan established that within a riod of seven years from its begining the society succeeeded in nding employment to all the displaced beedi workers of Kannur tstrict and creating additional employment opportunities. He noted lat the co-operatives were very effective in the beedi industry. The rkers are free from exploitation by middle man. In addition the cieties succeeded in implementing many of the provisions of Beedi ld Cigar-Workers Act of 1966.

Pyaralal Raghavan[25] has examined the evolution of beedi dustry in Kannur District. He analysed various factors which have htributed to the success of beedi co-operatives such as the ganisational structure, managerial system, marketing efficiency, rker's participation, worker's commitment, etc. Further, he amined the history of evolution of this organisation. The changes in e organisation of production of the beedi industry of Kannur

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District were similar to those in the other traditional industries. But unlike the other traditional industries, the beedi co-operatives emerged as a viable unit of production. The success of the co-operatives could be attributed to the commitment and motivation of the workers and trade unions in addition to efficient management.

Rajagopalan[26] identified the structural differences in the handloom industry betbeen North and South Kerala, with the help of a sample survey. He analysed the problems of co-operatives in Cannanore and Trivandrum Districts. His study revealed that the industry reflected varied historical experiences and had developed on quite distinct lines in the two regions. Consequently, Trivandrum and Cannanore exhibited wide variation in the type of industries which in turn led to a divergence in the organisation of production and in marketing channels. He observed that while the industry was relatively more organised in Cannanore and depended on distant markets, in contrast, in Trivandrum it was highly decentralised in nature and depended on domestic market. Further, it was observed that cheap handloom good were being brought into Kerala from neighbouring states in large quantities posing fresh threats to this industry in general.

Mathew George[27] has made a historical analysis of handloom industry in Kerala. The study identified the following as the major causes of the crisis in the handloom industry : (1) under production, 2) under employment and (3) accumulation of unsold stock. The majority of the members in the co-operatives received employment only

for less than 175 days in a year. Majority of the production by the societies is carried out with the help of financial schemes and State Government's rebate scheme. The societies tend to depend more and more on institutional finance and lose progressively their Capacity to become self-reliant.

Manual[28] examined capacity utilisations of handloom co-operatives in Kerala. He measured empirically the extent of capacity utilisation in the handloom industry region-wise and analysed the underlying factors. Primary data were collected through a sample survey from Kannur and Trivandrum districts for the period 1979-85 . He found that in the handloom sector, labour shortage was a serious problem (not to the same extent in all regions) due to the prevalence of extremely low wage rates in the industry. Though a weaver is a skilled worker, he was paid less than other skilled workers like a carpenter or a mason. Inadequate credit facilities and challenge from the mills and powerloom sectors reduced the production and demand of handloom textiles. The decline of demand leads to the decline in the level of utilisation of capacity.

Toney Joseph[29] has done a comparative analysis of the cottage and factory subsectors of the co-operative sector in the handloom industry of Kerala. He examined structural differences in the cottage and factory subsectors of the co-operative sector operational cost and profit margin and the relative differences in the working conditions enjoyed by the members in both subsectors in the state. Sample survey

method was employed and Kannur District was chosen for study due to the dichotomic structure of the industry. It is observed that about 33% of the weavers are under co-operative sector (the four types of handloom industries are: household co-operatives (primary societies), non household co-operatives (industrial co-operatives, private household sector, private non Household sector). But the average production was found to be high among the industrial society which showed relatively high productivity. Further, the weavers, in general felt that they were pursuing a job of low status and hence majority of them did not like to bring their children into the handloom sector. Most of them had joined the co-operatives either for better remuneration or for protection against exploitation.

Apart from the above research studies, a large volume of writings by journalists and popular writers is available on problems of traditional industries and their workers. The studies cited are useful as a source material for method, design and analysis in the present study; however, their usefulness is limited since they concentrate on the traditional sector. The present study focuses its attention on the co-operative ventures in the modern Small Scale Sector a topic on which available literature is scant if not non-existent. It has a special significance in the present context of Kerala when growth of the modern industrial sector is identified as its major problem.

2.3 Design of the study

2.3.1. Statement of the Problem

Industrial co-operatives in the modern small scale sector, have to play an important role in the industrialisation of a State like Kerala. Almost all the previous studies on industrial co-operatives in Kerala were confined to the traditional industries and virtually no serious attempt has so far gone in to the problems of modern Industrial Co-operatives. The present study is an attempt in this direction. The specific objectives of the study are the following:

2.3.2. Objectives of the Study

1. To trace the evolution of industrial co-operatives in Kerala and identify the factors which have contributed to their growth and development.

2. To analyse the efficiency of industrial co-operatives in terms of:

     (a) growth, productivity and capacity utilization.
     (b) The financial performance of the industrial co-operatives.

3. To analyse the level of worker's involvement in the industrial co-operatives.

2.3.4. Scope of the study

The scope of the present study is confined to the modern small scale industrial co-operatives.

2.3.4.1 Small Scale Industries

Frequent changes in the definition of Small Scale Industries in India pose several problems to researchers. Moreover, the administrative definition of small, medium and large scale industries in India is unidimensional. It takes into account only one criterion, ie. the fixed assets without considering other relevant factors.

According to the official source small scale industry comprises industrial units with investment less than Rs.60 lakhs and ancillary unit with investment less than Rs.75 lakhs in machinery and equipment[30].

2.3.4.2. Modern Small Scale Manufacturing Industries

The main differences of modern and traditional industries may be identified in the following four phases: (1)Out look (2) Product and Product design (3) Physical technology of Production (4) Social technology of organisation and management.Based on these ideas the modern manufacturing industries may be defined as firms which are progressive in outlook and adaptable to changing conditions, use the result of modern science and invention in their Production Processes and apply reasonably up-to-date ideas of organization and management in their business operation.[31] The Central Statistical Organistion has classified the industries in to different groups. This grouping is

generally known as National Industrial Classification (N I C) .The NIC
is presented at different levels of aggregation : one digit, two digit
or three digit . In the three digit classification the manufacturing
industrial groups are spread from 200 to 399. Out of this, the
industries coming under 200-299 are basically agro-based or forest
based industries.The industries coming under 300-399 are the
intermediate and engineering industries and they are often referred to
as the modern manufacturing industries. Thus the scope of the present
study is confined to these (300-399) industries.[32]

2.3.4.3. Industrial Co-operatives

It is difficult to get a single specified definition of
industrial co-operatives by which the entire concept could be
explained. Different definitions explain various aspects of the
industrial co-operatives from different angles.

Generally, an industrial co-operative can be defined as a
firm which is wholly or substantially owned and controlled by persons
who work in it and run it for their mutual benefit. Further, this is
a firm in which the workers retain a majority control of the
enterprise. Control is exercised democratically on the basis of one
person one vote, membership is open as far as possible to all workers
and there are limits on the returns to be aimed at in capital invested
in the enterprise[33].

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However, according to the Kerala Co-operative societies Rules[34], 1969, Industrial Producer co-operative is a society which is organized in the industrial sector. All the prevailing conditions which are applicable to other societies are applicable to the producer co-operatives too. Hence, in the present study industrial co-operatives which are registered under the Kerala Co-operative Societies Rules 1969 and engaged in manufacturing activities are chosen for detailed study.

3.5 Data Source

Since the statistics available from the secondary source are found insufficient, a detailed primary investigation is undertaken.

2.3.6. The Universe of the Study

There are 1062 Small Scale industrial co-operatives in the manufacturing sector in Kerala, out of which only 458 were working in 1989-90. All the registered, working small scale manufacturing industrial co-operatives which are spread in the industrial group 300-399 are identified for the detailed study.

2.3.7 Method of Analysis

The study proceeds in two different stages. The first stage involves an analysis on the evolution of industrial co-operatives.

This gives a brief account of the co-operative movement and makes an assessment of the functioning the function of the co-operatives In the second stage, a detailed micro analysis of industrial co-operative units is undertaken which forms the core of the empirical analysis. The analysis is presented in three sections (a) growth,productivity and capacity utilisation (b) financial analysis (c) co-operative management and worker's involvement.

Growth rates of output, value - added, labour and fixed capital are estimated and the average annual growth rates and the trend growth rates are obtained. In the productivity analysis,the factor productivity - labour productivity and capital productivity indices are estimated. Total factor productivity (T F P) measures are employed to get the total productive efficiency. Three sets of indices namely Translog, Solow and Kendrick, are worked out to find the T.F.P. Capacity utilisation is measured by the minimum capital output ratio method.

As is widely understood,the performance of industrial units depends much on financial management. An attempt is also made in this direction .The financial analysis is done by estimating the financial ratios like liquidity ratios, solvency ratios and profitability ratios.

Now-a-days the success of an enterprise also depends on management and attitude of worker.In the present study,the last

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section analyses the co-operative management and worker's involvement. Likert-type scale is used to analyse the various levels of involvement of member workers and non-member workers.

2.3.8 Scheme of the Study

The study is presented in seven chapters. The second chapter presents a review of literature and design of the study. The evolution of industrial co-operatives in Kerala is traced in chapter three. Growth, productivity and capacity utilisation of modern industrial co-operatives are discussed in chapter four. Financial performance and management is examined in chapter five. Co-operative management and worker's involvement are discussed in chapter six. The last chapter summarises the major findings of the study.

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Notes and References

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31. Stanley and Morse, (1965)

32. Govt. of India, (1987), Ministry of planning, Dept. of Statistics revised national industrial classification. According to this classification the total units are classified under eight broad three digit NIC classes. Out of the total 20 units, four are engaged in the manufacturing of drugs, medicines and allied products, three units each in the manufacturing of rubber products not elsewhere classified and manufacture of fabricated structural metal products and two units each engaged in the manufacture of plastic products of not else where classified, manufacture of hand tools weights and measures and general hardware, manufacture of metal products not else where classified, manufacture of electrical machinery, apparatus and parts thereof.

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CHAPTER 3

GROWTH AND DEVELOPMENT OF INDUSTRIAL CO-OPERATIVES

This chapter traces the genesis, growth and development of industrial co-operatives. In the first part growth and development of industrial co-operatives in India will be traced; the second part deals with the evolution of industrial co-operatives in Kerala.

3.1 The genesis of co-operatives in India.

Co-operatives germinated in the industrial sector in the western countries while in India it was in the agricultural sector that they originated. In 1875 when cultivators in Decan revolted against the money lenders who exploited them [1] which forced the government to think of an alternative set-up. It started co-operatives as a rehabilitation measure to the poverty -stricken farming community. Immediately after the formation of the co-operatives, the government realised the need of indepth studies on co-operatives and sent Frederick Nicholson to the European countries for this purpose. Nicholson submitted his report in 1899 strongly favouring the development of agricultural co-operatives as in Germany. The report led to the passing of the first co-operative legislation in India, the Credit Co-operative Societies Act, 1904. Through this enactment, the government assured several benefits to the members of

the societies, mainly loans to farmers at moderate rate of interest. The Indian Co-operative movement thus acquired its organisational form and achieved legal status. Since then the co-operative movement has grown to enormous proportions. Table 3.1 shows the progress of co-operatives during the years immediately following the enactment of the Act in 1904.

Table 3.1

Performance of Co-operatives in India

Year	No.of societies (in thousands)	No.of members (in lakhs)	Working capital (Rs. in lakhs)
1906-07	0.87	0.91	23.72
1907-08	1.36	1.49	44.14
1908-09	1.97	1.80	82.32
1009-10	3.43	2.25	124.68
1910-11	5.32	3.05	203.06
1911-12	8.18	4.03	335.74

Source : Mamoria, C.B., and Saksena,RD. (1977)
Co-operation in India, Kitab Mahal,
Allahabad, P.127.

The Act of 1904 was meant only for the development of the primary credit societies. There was no provision given for the development of non-credit societies. This limitation was removed by the Co-operative Societies Act, 1912. The second phase in the progress of the co-operative movement in India begins with the 1912 Act.

Till 1912 co-operatives were meant primarily for the development of the agriculture sector. One of the important provisions in the 1912 Act was recognition of non-credit societies. It was

instrumental for the development of industrial co-operatives in the country. By the year 1914 the number of societies shot up to 14881 and membership to 695998.[2]

In 1914, the Government of India appointed a Committee under the chairmanship of Edward Maclagan[3] to study and report on the effective implementation of the co-operative system. Their report was submitted in 1915. Since then the development of co-operatives was rapid as may be seen from the Table 3.2.

Table 3.2

Progress of Co-operatives in India 1914-15 to 1945-46

Year	No. of societies (in thousands)	No. of members (in lakhs)	Working Capital (Rs. in crores)
1914-15	11.79	5.48	5.40
1916-20	28.48	11.29	15.18
1921-25	57.71	21.55	36.36
1926-30	93.94	36.89	74.89
1931-35	105.71	43.22	94.61
1936-40	116.96	50.77	104.68
1941-45	149.89	72.18	124.35
1945-46	172.17	91.63	164.00

Source : Reserve Bank of India (1956),
Review of Co-operative movement in India 1952-54.

Eventhough the above statistics show remarkable growth in the co-operative movement, the 14th Conference(1944) of Registrars of Co-operative societies expressed dissatisfaction with the tardy development of industrial co-operatives and made a few recommendations. Based on the recommendations, the Government of India

constituted a Co-operative Planning Committee in January, 1945, under the Chairmanship of R.G. Saraiya.[4] Various measures for the development of industrial co-operatives were suggested by Committee many of which were accepted by the 15th Conference of Registrars of Co-operatives. The development of industrial co-operatives and employment generation through these measures remained small even after.

The Census of India, 1951, revealed that 74.1 per cent of all industrial workers were employed in the small scale sector and only 25.9 per cent in organised industries.[5] To a large extent, the preponderance of the small sector was direct result of the industrial policy of the government. The avowed objective of the industrial policy outcomes of policy resolutions of 1948, 1956 and 1973, were (i) increasing production and productivity in the priority sectors, (ii) encouraging small scale industries with a view to generating more employment and fostering entrepreneurial talents, (iii) bringing about regionally balanced industrial development, (iv) preventing concentration of economic power by the control of monopolies and large houses and controlling foreign investments in domestic industry.[6] The industrial policy of the First Five year plan which was launched in 1951 was based on the 1948 resolution. Eventhough the government had given priority to the small scale industrial sector, industrial co-operatives did not receive their due attention.[7] Although industrial co-operatives did not flourish government had already realised their employment potential. In 1958 the government of India appointed the first working group on Industrial Co-operatives.[8]

The major terms of reference of the working group were to review the progress of industrial co-operatives, village and small scale industries and to examine the factors impeding their progress. Further, they were expected to examine procedural aspects and supervision of societies, discuss financial, organisational and marketing problems of industrial co-operatives and recommend measures for ensuring accelerated development of industrial co-operatives with special reference to the objectives and programmes of the Second Five Year plan.

Most of the recommendations of the Committee were accepted by the Government of India. When the lop-sided nature of the progress of the industrial co-operatives during the period of 1957-61 came to the attention of the Government, a second study group under the chairmanship of Shri. B.P. Patel was appointed in September 1962. The group submitted its report in May, 1963. All the recommendations (except the one on transfer of industrial co-operatives to the co-operative department) were accepted by the Government.

From Table 3.3 it may be seen that the development of industrial co-operatives during the period 1960-61 to 1981-82 was by no means spectacular. Membership increased from 25.64 lakh to only 33.68 lakh. The number of societies rose from 33266 to 46979.

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Table 3.3

Performance of Industrial Co-operatives in India

during the period of 1960-61 to 1981-82

Year	No. of societies	Membership (in lakhs)	Working capital (Rs.in crores)
1960-61	33266	25.64	44.42
1970-71	46640	30.22	212.93
1978-79	45252	31.50	243.64
1979-80	44947	33.41	263.16
1980-81	48281	36.07	---
1981-82	46979	33.68	---

Compiled from :(1) NABARD, Review of Co-operative Movement in
India, 1978-1982, P.153

Though the development in the industrial co-operatives in India was modest, expansion of co-operatives in other sectors was quite impressive (Table 3.4). The number of societies increased from 1.80 lakhs in 1950-51 to 3.42 lakhs in 1986-87. The membership increased from 137 lakhs in 1950-51 to 1465 lakhs in 1986-87. During this period the working capital increased from Rs.276 crores to Rs 47552 crores.

Table 3.4

**Number, membership and working capital
of all Co-operatives in India.**

Year	No. of societies (in lakhs)	Membership (in lakhs)	Working capital (Rs. in crores)
1950-51	1.80	137	276
1960-61	3.32	352	1312
1970-71	3.20	644	6809
1980-81	3.26	1176	25119
1984-85	3.15	1410	37769
1985-86	3.21	1420	41548
1986-87	3.42	1465	47552

Source : Government of India, Ministry of Agriculture,
Dept. of Agriculture and Co-operative, (1988),
Co-operative Movement in India, A statistical
Profile, New Delhi, P.9

3.2 Origin of Co-operatives in Kerala.

The Co-operative movement in Kerala began in the second decade of the 20th century. Co-operatives first appeared in the erstwhile Travancore State in 1914 largely due to the initiative taken by the State Government. The Trancore Co-operative Societies Regulation was promulgated in the same year.[9] A co-operative department was started in the following year.

3.2.1 Formation of co-operative societies in Travancore.

The first co-operative society in Travancore, (The Central co-operative Bank), came into existence in November, 1915.[10] The membership in the Banks was opened to both societies and individuals. The main objective was to finance the Primary Societies. In the first

year itself twenty five societies were registered. A number of societies were registered in that year on communal basis but the department was against the formation of such societies. Another notable feature was the involvement of women in the co-operative movement. In 1936 there were more than 25 thousand women members in the co-operative societies. Further, there were nine societies exclusively for women and most of them dealt with non-credit activities.[11]

In 1936 the number of societies, affiliated to the central Bank rose to 712. The societies had a total working capital of about Rs. 92 lakh. The average working capital and the average paid up capital per society being Rs.5274 and Rs.2,050 respectively.

The primary society forms the unit and the basis of the whole co-operative system. Two types of societies existed: agricultural and non agricultural. A profile of the societies during the period 1927-1936 is give in Table 3.5.

Table 3.5

Performance of co-operatives in Travancore during 1927 -1936

year	No of societies (in lakhs)	% of As	No of Membership (in lakhs)	% of As	Working capital (Rs.in crores)	% of As
1927	1.50	82	1.50	81.5	26.19	70.20
1928	1.62	82	1.77	80.0	46.00	50.00
1929	1.69	81	1.95	78.2	54.18	50.00
1930	1.76	81	2.12	77.2	50.41	61.90
1931	1.79	81	2.19	75.6	55.92	59.80
1932	1.75	81	2.22	74.0	60.37	57.70
1933	1.71	82	2.28	71.2	65.15	55.70
1934	1.71	81	2.27	64.9	67.76	54.20
1935	1.70	80	2.21	69.4	66.22	53.80
1936	1.72	80	2.18	68.6	120.34	71.40

Note: As-   Agricultural Societies

Source : Pillai, Velu T.K (1940) op. cit. p.683

Though the co-operatives in Travancore were formed mainly with a view to providing easy credit to the peasants, non-credit Societies also existed in large numbers. The important non-credit co-operative societies were insurance societies, house building societies, women's societies, rural reconstruction societies, marketing societies, consumer's societies and school and college societies.

3.2.2 The Great Depression and Co-operatives

The Great Depression in the 1930's witnessed the collapse of many co-operative societies all over India. Native states also felt its impact. In 1932 the Government of Travancore appointed the

Co-operative Enquiry committee under the chairmanship of G.K Devdhar. The Committee made a comprehensive survey and submitted its recommendations in 1934 for the improvement of co-operative movement in the state. The Government examined the recommendations and accepted many of them and a new co-operative Act was passed in February 1973.

Despite much steps, the Co-operative movement in Travancore languished till the end of second World War.[12]

The co-operative movement was introduced in the Cochin State by 1910.[13] There were sixty seven co-operatives at the end of 1904 and they were scattered throughout the 273 villages of the State.[14] The Cochin Co-operative Societies Act was passed in 1938.

When the States of Travancore and Cochin were integrated in 1949, a common co-operative act was passed (the Co-operative Societies Act 1951).

Malabar which was part of the Madras State,was governed by the Madras Co-operative Societies Act, 1932. For the enactment of common law of co-operatives for all the region, Kerala had to wait till 1969.[15]

The development of co-operatives during the period between 1936 and 1956 (till the formation of Kerala state) may be observed from the Table 3.6

Table 3.6

Performance of Co-operatives from 1936 to 1955-56 in Travancore, Cochin and Malabar.

Year	No. of societies (in lakhs)	Membership (in lakhs)	Working capital (Rs. in lakhs)
1936	1719	2.18	120.34
1945-46	1426	1.76	52.00
1950-51	2574	3.54	172.00
1955-56	2917	4.57	191.00

Source : (1) Velupillai,T.K.(1940), The Travancore State manual, Government of Kerala, Trivandrum.
(2) Various issues of Administrative Report of Co-operative Department, Government of Kerala, Trivandrum.

The development of co-operatives since the formation of present state of Kerala has been phenomenal. During the period 1955-56 to 1986-87, the number of societies increased from 2.92 thousand to 4.52 thousand; membership from 4.57 lakhs to 91.92 lakhs and working capital from Rs. 191 lakhs to Rs. 126846 lakhs.

Though the number of co-operatives increased progressively, the relative share of agricultural co-operatives has kept on declining. Co-operatives have spread to agro-based industries, but mostly to traditional industries like coir, handloom, handicrafts, beedi and fisheries.

Based on the popularity of co-operatives in the agricultural sector, several Committees recommended the establishment of co-operatives in the coir sector.[16] The Unemployment Enquiry Committee, constituted by the Government of Travancore in 1949 also

recommended the reorganisation of coir industry on a co-operative basis. Based on these recommendations, the scheme was sponsored by the Travancore-Cochin Government in 1950.

Table 3.7

Performance of co-operatives in Kerala from 1955-56 to 1986-87

Year	No. of societies (in lakhs)	% Agri	No of Membership (in lakhs)	% Agri	Working Capital (Rs.in lakhs)	% Agri
1955-56	2.92	63.5	4.57	57.5	191	45.0
1960-61	3.72	67.7	12.69	66.3	1027	66.8
1965-66	3.79	67.0	18.88	68.3	2638	82.0
1970-71	4.03	46.8	26.12	63.6	6048	79.9
1980-81	3.86	40.4	56.91	64.9	60323	61.8
1981-82	3.75	41.5	61.22	74.6	69045	58.5
1982-83	4.02	38.3	64.26	72.3	83065	50.6
1983-84	4.19	36.6	64.67	72.9	101090	59.3
1984-85	4.36	35.3	74.78	69.4	120694	57.6
1985-86	4.43	34.7	83.22	72.5	109674	59.1
1986-87	4.52	33.9	91.92	71.6	126846	59.1

Note : Agri-Agriculture

Sources : (1) Compiled from Administrative Reports of Co-operative Department, Government of Kerala, for various years.
(2) Government of Kerala, (1988), Statistics for planning 1983,86,88 Dept.of Economics and statistics, Trivandrum.

Performance of coir industry may be seen from table 3.8 as follows:-

Table 3.8

Performance of coir industry from 1974-75 to 1989-90

Year	No.of Societies	No.of members (in '000)	Husk Purchased value (Rs in lakhs).	Value of production (Rs in lakhs).
1974-75	196	80	70	101
1979-80	409	196	148	651
1980-81	415	198	183	523
1981-82	462	215	189	721
1982-83	464	218	179	750
1983-84	464	218	125	495
1984-85	544	231	208	699
1985-86	555	246	260	796
1986-87	429	222	152	663
1987-88	421	229	247	738
1988-89	419	232	273	793
1989-90	423	227	271	782

Sources : (1) Government of Kerala, (1989), Economic Review,
State planning Board, Trivandrum, pp.87-88
(2) Government of Kerala, (1988), Statistics for
planning Department of Economics & Statistics,
Trivandrum.

Handloom is another traditional industry in which the co-operatives are popular. "Though the handloom industry in Kerala has to tell a past history of centuries old, the co-operative movement in the handloom sector is of a recent origin".[17] Within a small span of time co-operatives have attained a strong grip in the handloom industry. This may be observed from the table 3.9

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Table 3.9

Number of societies, value of production and sales in the Handloom co-operatives in Kerala.

Year	No. of Primary handloom weavers co-operates	Value of production (Rs.in lakhs)	value of sale (Rs. in lakhs)
1972-73	432	550	466
1980-81	552	1525	1557
1981-82	555	1635	1654
1982-83	564	1881	2342
1983-84	578	2242	2240
1984-85	578	2400	2242
1985-86	580	2500	2550
1986-87	580	3100	3200
1987-88	581	3340	3400
1988-89	590	NA	NA
1989-90	592	NA	NA

Sources : (1) Government of Kerala, (1988), Statistics for planning Directorate of Economic and Statistics, Trivandrum.
(2) Government of Kerala, Administration Report 1972, 1973 and 1976, Dept.of Industries, Trivandrum.

It is clear from Table 3.9 that the number of societies increased from 432 in 1972-73 to 581 in 1987-88. The production of handloom cloth in the co-operative sector increased from Rs.550 lakhs in 1972-73 to Rs.3,340 lakhs in 1987-88. During the period the sales increased from Rs.466 lakhs to Rs.3,400 lakhs. As per the Administration Report of Industries Department (1972-73) the co-operatives provided employment to three lakhs of people. The authorities consider this as an important factor and have extended their help in the sector. But a serious problem is that the industry cannot exist with the outdated technology,when it faces strong challenge from the other states with modern technology. Almost all the traditional industries are facing such problems. Beedi cooperatives

are the only traditional industry which successfully overcome the external challenges.

Beedi co-operatives were established in 1968 in Cannanore district to accommodate beedi workers numbering about 12,000 who were unemployed due to the lock-out of Mangalore Ganesh beedi company . In the beginning 3,000 workers out of 12,000 were selected and provided employment in the 20 primary societies. Gradually, these societies absorbed all the workers and created additional employment.

The number of societies, the number of workers employed, the value of production and the value of sale may be observed from the Table 3.10. It is clear that the number of co-operatives in the beginning was 20 but it increased to 32 in 1985-86. All on a sudden the number decreased to 22 since the Kairali beedi society with ten primary societies were closed in 1986.

Now the Dinesh Beedi Co-operatives provide employment to 33,518 beedi workers. Sales increased from Rs. 13.27 crores in 1968-69 to 36.17 crores in 1987-88. Production increased from Rs.12.13 crores in 1980-81 to Rs.34.97 crores in 1987-88. Thus beedi co-operatives present a very encouraging picture.

In addition to the traditional co-operatives, different types of co-operative societies are operating in Kerala – Marketing societies, Housing societies, School societies, Employees societies and so on. But all these are service societies.

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Even though service co-operatives are predominant in the State, manufacturing societies have not flourished in the industrial sectors except in the traditional sector like coir, cashew and handlooms. The traditional industries have several problems. One among them being the use of outdated technology. Another is the creation of co-operatives in order to rehabilitate the unemployed . This drawback may be rectified through induction of modern technology and they can be made viable.

Table 3.10

Performance of Beedi Co-operatives in Kerala.

Year	No.of Societies.	Workers Employed	Value of production (Rs.in crores).	Value of sales (in lakhs),
1968-69	20	3000	N.A	13.27
1980-81	20	25000	12.13	12.55
1981-82	22	25000	13.41	14.14
1982-83	22	25000	15.53	17.19
1983-84	22	35000	15.29	20.15
1984-85	32	40000	N.A	23.42
1985-86	32	40000	28.26	28.73
1986-87	22	40000	33.30	34.20
1987-88	22	33518	34.97	36.17
1988-89	22	32670	27.04	28.08
1989-90	22	33771	44.23	45.66

Sources : (1) Economic Review (various issues)
(2) Government of Kerala, (1974), Administration Report of Industries Department 1972-73, Department of Industries, P.40.

Even though the authorities could realise the importance of modernisation they are not willing to implement it due to several reasons. Though they know the importance of modern manufacturing

industries they are reluctant to start modern large and medium industries in the co-operatives field. This can be realised from the Table 3.11.

Table 3.11
Performance of large and medium scale industrial co-operatives in Kerala (1987-88)

Sl.No.	Sector	Agro-based	Engineering & Electric	Textiles	Total
1.	No.of Units	9	1	4	14
2.	Gross block (Rs.in lakhs)	1307	73	1234	2614
3.	Turnover (Rs.in lakhs)	3704	132	1812	10648
4.	Employment (nos)	1092	18	2015	3925

Source : Data compiled from Government of Kerala, (1988), State Planning Board Publications, Trivandrum.

There are only 14 large and medium industries in the co-operative field. They provide job to 3925 workers and the average employment per industry is 280. Further, agro-based industries are predominant in this sector. From the Table 3.11 it is obvious that the modern large and medium industrial co-operatives are hardly seen flourished in the state.

Considering that the authorities have given emphasis to small scale industries it is relevant to analyse the organisational set-up in the small scale sector.

Table 3.12 shows that the share of co-operatives in the small scale industry sector is declining. The relative share of

co-operatives to small scale industrial units decreased from 8.1 per cent in 1979-80 to 2.55 per cent in 1989-90.

Table 3.12

Number of S.S.I Units and industrial co-operatives

Year	Total no of S.S.I	Industrial Co-operatives	Percentage of Industrial Co-op.
1979-80	15976	1289	8.10
1980-81	18954	1291	6.80
1981-82	21977	1316	5.98
1982-83	24884	1365	5.48
1983-84	28117	1465	5.21
1984-85	31499	1388	4.41
1985-86	35365	1515	4.28
1986-87	40342	1515	3.76
1987-88	47192	1550	3.28
1988-89	55427	1586	2.86
1989-90	63938	1631	2.55

Source :Economic Review, various issues.

Table 3.13 shows the progress of the industrial co-operatives (industries class 200-399) in the small scale manufacturing sector. In 1979-80 there were 934 co-operatives, but in 1986-87 there were 1066 societies. Thus the progress (in terms of number of units) of manufacturing industrial co- operatives is discouraging compared to the progress of small scale industries.

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Table 3.13

Performance of manufacturing industrial Co-operatives

Year	Total No: of S.S.I Co-operatives	No: of manufacturing industrial Co-operatives	% manufacture Co-operatives to the total
1979-80	1289	934	72
1984-85	1388	1270	91
1985-86	1515	1063	70
1986-87	1515	1066	70

Source: Department of Industries and Commerce.

The proportion of manufacturing, including modern small scale industries, co-operatives, in the total small scale industrial co operatives is also given in Table 3.13. As is seen from the Table, the period - 1984-85, recorded a significant increase in the registration of manufacturing small scale industrial co operatives. In the year (1984-85) 91 per cent of registered S.S.I co-operatives came under the manufacturing sector. But on an average the manufacturing S.S.I co-operatives in the total registered S.S.I co-operatives is seen to around 75 per cent. This manufacturing sector can also be classified into two groups, 200-299 and 300-399 according to industrial classification. The latter group is treated as modern industries. Hence the present study is confined to these S.S.I co-operatives which are come under the industrial class 300-399.

From the Table 3.14 it is evident that the rate of sickness in small scale industrial co-operatives is far above the average rate

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of failure in the other forms of small scale manufacturing organisations. According to the published statistics of Government of Kerala, the sickness rate in the small scale industrial sector is 11.11 per cent (4.61 per cent is yellow and 6.50 per cent red).[18]Thus any research in the field should naturally be focused on the reasons for the "non-successful" performance of the industrial co-operatives in the small scale manufacturing sector.

The study by the Reserve Bank of India and others [19] have concluded that the most important reason is managerial. Thus the proposed study intends to examine this problem as well.

Table 3.14

Performance of the manufacturing industrial
co-operatives in the S.S.I Sector of Kerala.

Year	No.of societies	working	Dormant	Under liquidat- ion.	% of working socities.
1978-79	934	341	394	199	37
1979-80	1270	358	637	275	28
1984-85	1063	612	352	99	58
1985-86	1069	506	423	140	47
1986-87	1066	5?1	395	160	48

Source : Department of Industries and commerce, Government of Kerala.

In order to understand the managerial failure, it is imperative to analyse the managerial process in the co-operatives. The focus of the study then will be on the participation rate of the workers in the managerial process. The workers are expected, in worker owned organistions, by simple logic, apart from putting his productive

effort (labour input) to take part in the managerial process. The study thus will focus its attention towards the decision-making process, both tactical and strategic in the worker owned firms.

Notes and Reference

1. Dasgupta, Sipra, (1980), PP.9-10.

2. Reserve Bank of India, (1948), Review of Co-operative Movement in India, 1939-49, Bombay, P.80

3. Government of India, (1946), Report of the Co-operative Planning Committee, Bombay, PP.82-91.

4. Government of India, (1915), Review of   Co-operative Planning Committee, R.B.I., Bombay.

5. Shirokov.G.K ,(1980), p.14

6. Ahluwalia.,Isher Judge,(1985), P.147.

7. Mehta, S.C. (1975), p.45.
   There are only 13300 industrial co-operatives with 2.73 lakh members in 1956.

8. Government of India,(1958), Ministry of Industries and Commerce, First working Group on Industrial Co-operatives, p.23.

9 The object of the Regulation was to   facilitate the formation of societies for the promotion of thrift   and self-help among agriculturists, artisans and persons of   limited means, and, for that purpose, to provide for the   constitution and control of co-operative societies.

   Velupillai.T.K., (1940) , p.673.

10. Ibid. p.673.

11. Ibid. Vol.I,p.44 and Vol III,p.674.

12. Ibid p.303.

13. Report of the Cochin Banking Enquiry Committee, (1920) Cochin, pp.6-7.

14. Ibid, P.6

15. Government of Kerala, (1969) Kerala Gazette Notification No.24314/c3/69 date:12 may 1969, Trivandrum.

16. Government of Kerala, (1959), Report of C.A. Theyyunni Menon,Industries Department, Trivandrum, p.4.

17.Government of Kerala, (1986)   Directory of Primary Handloom

   Co-operative Societies in   Kerala, p.1
18.Editorial (1989), Small Enterprises Development
   Management and Extension Journal,vol.16,No.1 p.9

19.Ibid, p.4.

CHAPTER 4

**GROWTH, PRODUCTIVITY AND CAPACITY UTILIZATION
IN THE INDUSTRIAL CO-OPERATIVES**

Economic performance of a firm or an industry can be evaluated in terms of indicators such as growth, productivity and capacity utilisation. This chapter is devoted to the analysis of the performance of selected units with the help of these indicators. The discussion is organised in three sections. The concepts, measurement and empirical analysis of growth is presented in the first section. The second section deals with the theory of productivity which is followed by the empirical findings. The last section is devoted to the analysis of capacity utilisation.

4.1. Growth

Growth is one of the most important features of the modern industrial organisation . It has been argued that growth is a necessary condition for the long run survival of the firm in an uncertain and constantly changing environment[1] . Growth of enterprises has also been emphasised as a means of using the existing productive resources more extensively or more effectively. Penrose[2] mentions the availability of unused productive resources,the ability to use labour

more extensively and the availability of new productive services, as the internal inducements to expand. Barna [3] found that the effects of technological change leading to rising productive efficiency meant that there was an increase in the real capacity of firms including management and that there were pressures in the firm to find way of using itself. It is also indicated that the primary reason for the pursuit of growth was the desire to preserve and strengthen the existing management team. The theories of the optimum size in the traditional theory, centre around the rate of growth concept. They assure that although there may exit no effective constraints on the size of the firms, yet there are certain constraints on their rates of growth [4].

4.1.1.Method of estimating growth rate

Growth rate of a variable is defined as the rate of change per unit of time, usually a year. It is generally estimated either by arithmetic or statistical method. If there are 'n' observations then the growth rate is obtained by the compound rate of growth obtained by the formula $p_t = p_0(1+r)^T$ where r is the average annual compound growth rate , p_0 and p_t are the initial and terminal values and 'T' is the time span.

Statistical estimation of the growth rate, usually referred to as the trend growth rate, is based on growth equations. The growth equations may be specified in alternative forms such as linear,

exponential, quadratic, logistic, etc. Different statistical methods such as the least square method , the maximum likelihood method, etc, are employed to get the estimated values of the parameters. Generally, the exponential trend equation of the form :$X=Ae^{bt}$ is estimated based on the least square principle. In the above equation, the estimated value of the parameter 'b' gives the average annual trend growth rate. The major advantage of the statistical approach is that it makes it possible to test the statistical significance of the estimated growth rate. Besides, it has the advantage of being a summary measure derived from a series of observations. Hence the present study is made on the basis of the model $X=Ae^{bt}$

4.1.2. Empirical analysis

Growth of an industry may be measured in two ways: vertical and horizontal. The vertical aspects relate to the growth in the number of units over time and the horizontal aspects refer to the growth of output, value, employment and fixed capital. This section attempts to analyse the growth pattern of industrial co-operatives invidually and group-wise.

The growth of industrial co-operatives is analysed in terms of selected economic indicators such as value of output, value -added employment and fixed capital. The unit- wise analysis of each variable is followed by industry-wise analysis.

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Growth indices of the output of the units are presented in Table 4.1. The decennial averages of the indices of the output of eight units, (01, 02, 03, 04, 05, 13, 15, 18) out of the total twenty lie above the base value suggesting the tendency of positive growth. However, the majority of the units show tendency of negative growth. Table 4.2 gives the estimated trend growth of output. It is seen that out of the twenty units, seven (01, 02, 04, 05, 13, 15, 18) show positive trend growth of output. Three out of these seven units produce drugs, medicines and allied products and are controlled mainly by Ayurveda practioners. One unit which produces rubber products, is controlled by rubber farmers. However the remaining three units, producing agricultural implements, bell -metal products and machine tools, are controlled by the workers of the concerned units themselves. Analysis based on industrial classification is presented below.

Table 4.3 shows the growth indices of output by industrial groups. The decennial averages of the indices of the output of two industries- 'drugs, medicines and allied products' (304) and 'manufacture of metal products not elsewhere classified (n.e.c.) (349)- come above the base values, indicating a tendency of positive growth.

The decennial average of the indices of the remaining five industries- 'Rubber products n.e.c'. (312), 'Plastic Products n.e.c'.(313), 'manufacture of fabricated structural metal products'

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Table 4.1

Growth indices of output of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1	100.00	113.00	130.00	120.00	121.00	126.00	163.00	160.00	158.00	153.00
2	100.00	94.00	96.00	103.00	123.00	112.00	103.00	121.00	148.00	149.00
3	100.00	210.00	236.00	177.00	168.00	187.00	188.00	137.00	145.00	136.00
4	100.00	113.00	60.00	103.00	120.00	214.00	261.00	192.00	216.00	216.00
5	100.00	90.00	126.00	135.00	147.00	162.00	133.00	181.00	180.00	166.00
6	100.00	114.00	81.00	56.00	8.00	1.00	1.00	1.00	1.00	1.00
7	100.00	123.00	109.00	93.00	53.00	32.00	1.00	1.00	1.00	1.00
8	100.00	81.00	68.00	49.00	18.00	18.00	32.00	31.00	43.00	41.00
9	100.00	143.00	104.00	90.00	74.00	74.00	78.00	76.00	75.00	77.00
10	100.00	58.00	89.00	79.00	97.00	86.00	101.00	95.00	132.00	73.00
11	100.00	127.00	18.00	18.00	34.00	22.00	15.00	29.00	37.00	41.00
12	100.00	78.00	286.00	283.00	63.00	24.00	8.00	24.00	23.00	103.00
13	100.00	109.00	130.00	217.00	188.00	162.00	163.00	172.00	176.00	191.00
14	100.00	49.00	126.00	91.00	80.00	69.00	43.00	23.00	30.00	13.00
15	100.00	645.00	874.00	800.00	765.00	828.00	997.00	878.00	981.00	878.00
16	100.00	98.00	126.00	36.00	93.00	14.00	100.00	56.00	103.00	104.00
17	100.00	70.00	74.00	64.00	48.00	57.00	58.00	49.00	34.00	44.00
18	100.00	121.00	114.00	93.00	120.00	143.00	123.00	124.00	123.00	134.00
19	100.00	92.00	90.00	88.00	87.00	91.00	89.00	89.00	81.00	80.00
20	100.00	90.00	92.00	82.00	81.00	67.00	60.00	56.00	58.00	55.00

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Table 4.2

Summary result of estimated trend equations of output of the units studied

Unit code	Estimated equation	R^2	Annual trend growth rate
01	$\ln OT = 4.62 + 0.0495T*$ (0.009)	0.79	4.95
02	$\ln OT = 4.67 + 0.0475T*$ (0.010)	0.32	4.75
03	$\ln OT = 5.19 - 0.0143T$ (0.029)	0.03	-1.43
04	$\ln OT = 4.29 + 0.1252T*$ (0.003)	0.64	12.52
05	$\ln OT = 4.56 + 0.0683T*$ (0.013)	0.76	6.83
06	$\ln OT = 5.67 - 0.6706T*$ (0.102)	0.84	-67.06
07	$\ln OT = 6.36 - 0.6829T*$ (0.115)	0.82	-68.29
08	$\ln OT = 4.35 - 0.1119T*$ (0.057)	0.32	-11.19
09	$\ln OT = 4.76 - 0.5314T*$ (0.016)	0.57	-53.74
10	$\ln OT = 4.36 - 0.0234T$ (0.024)	0.10	-2.34
11	$\ln OT = 4.03 - 0.0925T$ (0.071)	0.15	-9.25
12	$\ln OT = 5.14 - 0.1959T**$ (0.116)	0.26	-19.59
13	$\ln OT = 4.73 + 0.0580T*$ (0.021)	0.49	5.80
14	$\ln OT = 5.02 - 0.1981T*$ (0.640)	0.68	-19.81
15	$\ln OT = 5.72 + 0.1468T*$ (0.061)	0.41	14.68
16	$\ln OT = 4.34 - 0.0132T$ (0.079)	0.01	-1.32
17	$\ln OT = 4.54 - 0.0887T*$ (0.016)	0.79	-8.87
18	$\ln OT = 4.64 + 0.0254T*$ (0.012)	0.37	2.54
19	$\ln OT = 4.58 - 0.0174T*$ (0.004)	0.69	-1.74
20	$\ln OT = 4.68 - 0.0731T*$ (0.007)	0.94	-7.31

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.3.

Growth indices of output of the units according to the industrial groups

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100	128	113	118	130	161	183	160	174	171
312	100	112	105	96	70	65	43	62	59	54
313	100	95	102	51	21	21	33	34	45	46
340	100	74	79	76	78	61	61	63	71	92
343	100	71	127	104	111	105	87	76	83	86
348	100	420	559	540	485	499	625	541	616	599
357	100	93	97	85	67	80	80	69	50	62
360	100	92	96	81	84	80	79	65	62	60

(340),' manufacture of machine tools their parts and accessories (357) and 'manufacture of electrical industrial machines, apparatus and parts'(360)- fall below the base value, indicating the tendency of negative growth.

Further, the estimated growth equations presented in Table 4.4 reveal the exponential trend of output of various industries. Two industries (304, 349) show increasing trend while the remaining six industries (312, 313, 340, 343, 357 360) exhibit declining trend. The trend growth rate of metal products industry, not elsewhere classified (n.e.c)' (349) is the highest, namely 5.02 per cent per annum . The peculiarity of this industry is that the units in this industry are controlled mainly by the workers. The industry 304 which registered the next highest growth rate 2.75 percent is controlled mostly by Ayurveda medical practioners, the workers in them having little say in management

The growth indices of the value-added of the units are presented in Table 4.5. The decennial averages of the indices of the value- added of ten units (01, 02, 03, 04, 05, 10, 13, 15, 16, 18) lie above the base values indicating a tendency of positive growth. The trend growth of value addition of all the 20 units under study is presented in Table 4.6. As in the case of output growth, seven units (01,02,04,05,13,15,16) show positive trend growth rates in value-added also. Industry-wise performance given in Table 4.7 shows that the decennial averages of the indices of three industries

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Table 4.4

Summary result of estimated trend equations of output according to the industrial groups

Ind. code	Estimated equation	R^2	Annual trend growth rate
304	$lnOT = 2.00 + 0.0275T*$ (0.005)	0.80	2.75
312	$lnOT = 2.08 - 0.0399T*$ (0.009)	0.73	-3.99
313	$lnOT = 1.95 - 0.0500T**$ (0.025)	0.34	-5.00
340	$lnOT = 1.91 - 0.0077T$ (0.008)	0.10	-0.77
343	$lnOT = 2.05 - 0.0139T$ (0.010)	0.19	-1.39
349	$lnOT = 2.38 + 0.0502T*$ (0.020)	0.41	5.02
357	$lnOT = 2.03 - 0.0273T*$ (0.006)	0.75	-2.73
360	$lnOT = 2.04 - 0.0257T*$ (0.003)	0.75	-2.57

Figures in the paranthesis represent standard error
*   Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.5

Growth indices of value added of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1	100.00	109.00	137.00	120.00	124.00	129.00	138.00	209.00	143.00	195.00
2	100.00	95.00	104.00	121.00	152.00	136.00	128.00	139.00	148.00	151.00
3	100.00	304.00	342.00	242.00	255.00	257.00	254.00	189.00	193.00	178.00
4	100.00	106.00	89.00	102.00	182.00	301.00	314.00	275.00	320.00	314.00
5	100.00	91.00	108.00	115.00	148.00	164.00	126.00	257.00	248.00	156.00
6	100.00	105.00	84.00	46.00	15.00	1.00	1.00	1.00	1.00	1.00
7	100.00	109.00	101.00	75.00	43.00	21.00	1.00	1.00	1.00	1.00
8	100.00	87.00	64.00	50.00	17.00	13.00	26.00	20.00	41.00	37.00
9	100.00	113.00	63.00	55.00	46.00	48.00	55.00	53.00	22.00	24.00
10	100.00	87.00	107.00	98.00	109.00	104.00	141.00	13.00	159.00	102.00
11	100.00	140.00	17.00	17.00	60.00	31.00	16.00	45.00	60.00	61.00
12	100.00	65.00	166.00	210.00	31.00	26.00	22.00	26.00	23.00	32.00
13	100.00	137.00	140.00	185.00	178.00	165.00	176.00	177.00	181.00	203.00
14	100.00	10.00	183.00	81.00	78.00	36.00	20.00	3.00	61.00	10.00
15	100.00	329.00	465.00	285.00	156.00	875.00	890.00	780.00	780.00	760.00
16	100.00	87.00	121.00	98.00	93.00	66.00	81.00	55.00	177.00	179.00
17	100.00	72.00	115.00	59.00	52.00	57.00	58.00	46.00	27.00	41.00
18	100.00	152.00	145.00	106.00	136.00	142.00	102.00	110.00	107.00	130.00
19	100.00	90.00	34.00	30.00	32.00	33.00	32.00	62.00	65.00	58.00
20	100.00	84.00	86.00	72.00	70.00	54.00	52.00	51.00	82.00	79.00

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Table 4.6

Summary result of estimated trend equations of value added of the units studied

Unit code	Estimated equation	R^2	Annual trend growth rate
01	$\ln VT = 4.56 + 0.0635T*$ (0.015)	0.68	6.35
02	$\ln VT = 4.56 + 0.0502T*$ (0.010)	0.74	5.02
03	$\ln VT = 5.42 - 0.0049T$ (0.040)	0.01	-0.49
04	$\ln VT = 4.30 + 0.1669T*$ (0.028)	0.81	16.69
05	$\ln VT = 4.43 + 0.0953T*$ (0.025)	0.65	9.53
06	$\ln VT = 5.70 - 0.6689T*$ (0.101)	0.85	-66.89
07	$\ln VT = 6.20 - 0.6729T*$ (0.099)	0.85	-67.29
08	$\ln VT = 4.35 - 0.1349T*$ (0.065)	0.35	-13.49
09	$\ln VT = 4.78 - 0.1522T*$ (0.028)	0.79	-15.29
10	$\ln VT = 4.66 - 0.0308T$ (0.081)	0.02	-3.08
11	$\ln VT = 3.96 - 0.0385T$ (0.088)	0.02	-3.85
12	$\ln VT = 5.01 - 0.0204T*$ (0.069)	0.52	- 2.04
13	$\ln VT = 4.77 + 0.0561T*$ (0.014)	0.67	5.61
14	$\ln VT = 4.62 - 0.2036T**$ (0.132)	0.23	-20.36
15	$\ln VT = 5.01 + 0.1941T*$ (0.059)	0.57	19.41
16	$\ln VT = 4.08 + 0.0633T$ (0.074)	0.08	6.33
17	$\ln VT = 4.70 - 0.1178T*$ (0.026)	0.72	-11.78
18	$\ln VT = 4.85 - 0.0094T$ (0.019)	0.03	-0.94
19	$\ln VT = 4.01 - 0.0239T$ (0.053)	0.25	-2.39
20	$\ln VT = 4.47 - 0.0372T**$ (0.024)	0.23	-3.72

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.7.

Growth indices of value added of the industrial groups

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100	132	154	231	206	309	371	326	342	338
312	100	95	78	69	49	38	22	45	47	28
313	100	92	107	114	112	108	105	65	68	60
340	100	123	115	92	76	49	23	86	103	37
343	100	88	188	163	173	144	98	82	92	128
349	100	253	360	189	121	576	721	625	606	640
357	100	97	96	79	72	71	78	64	41	58
360	100	81	41	67	62	48	81	63	61	60

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(304, 343, 349) are above the base values.   The estimated growth

equations   of value- added for the industrial groups presented   in

the Table 4.8 indicate that value-added of two industries (304,   349)

are positive.   It is   observed that, as in the case   of   output,   the

manufacture of metal products had   the   highest   annual   trend growth

rate,8.20 per cent per annum.

        Growth indices of the employment of the units, are presented

in Table 4.9. The decennial averages of the indices   of   three   units

(01, 18, 20) lie above the base value indicating   positive   growth   in

the employment generation.   In the case of the majority of the   units,

the rate of growth of employment   is   seen,however,   either   zero   or

negative.   The annual trend growth rates (Table 4.10) of   employment

of four   units (01, 18, 19, 20)   are positive.

        The performance of the growth of employment   of   the

industrial groups are given in Table 4.11. The decennial averages   of

the indices of the employment of the two industries   (304,   360)   come

above the base value, two keeping (340, 349) the same   level   and   four

(312, 313, 343, 357) lying below the   base   value.   Thus   employment

generation shows little significant   change.   Estimated trend   values

further confirm this observation specifically. The industry   360   has

shown 0.68 per cent annual compound rate of growth in employment while

the industry 304 records 0.27 per cent growth. Two   industries   (340,

349) have shown no significant change and others have   shown   negative

growth (Table 4.12).

Table 4.8

Summary result of estimated trend equations of value added according to the industrial groups

Ind. code	Estimated equation		R^2	Annual trend growth rate
304	lnVT	= 2.06 + 0.0611T* (0.009)	0.85	6.11
312	lnVT	= 2.04 - 0.0600T* (0.010)	0.69	-6.00
313	lnVT	= 2.09 - 0.0249T* (0.009)	0.49	-2.49
340	lnVT	= 2.09 - 0.0427T* (0.024)	0.29	-4.27
343	lnVT	= 2.13 - 0.0088T (0.015)	0.04	-0.88
349	lnVT	= 2.08 + 0.0820T* (0.024)	0.59	8.20
357	lnVT	= 2.05 - 0.0342T* (0.007)	0.77	-3.42
360	lnVT	= 1.87 - 0.0108T* (0.013)	0.09	-1.08

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

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Table 4.9

Growth indices of employment of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1	100.00	100.00	157.00	157.00	157.00	157.00	157.00	157.00	157.00	157.00
2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
3	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
5	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
6	100.00	100.00	100.00	100.00	20.00	20.00	20.00	20.00	20.00	20.00
7	100.00	100.00	100.00	100.00	94.00	94.00	39.00	39.00	39.00	39.00
8	100.00	100.00	100.00	100.00	87.00	87.00	87.00	87.00	87.00	87.00
9	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
10	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
11	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
12	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13	100.00	100.00	100.00	100.00	78.00	78.00	78.00	78.00	56.00	56.00
14	100.00	110.00	100.00	100.00	80.00	80.00	60.00	80.00	60.00	50.00
15	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
16	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
17	100.00	95.00	94.00	92.00	88.00	88.00	88.00	88.00	88.00	88.00
18	100.00	100.00	122.00	121.00	116.00	116.00	115.00	112.00	112.00	107.00
19	100.00	100.00	24.00	24.00	93.00	93.00	93.00	93.00	93.00	93.00
20	100.00	100.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00

Table 4.10

Summary result of estimated trend equations of employment of the units studied

Unit code	Estimated equation		R^2	Annual trend growth rate
01	lnLT	$= 4.73 + 0.0437T*$ (0.016)	0.48	4.37
02	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	----
03	lnLT	$= 5.61 + 0.0000T$ (0.000)	0.00	-----
04	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	-----
05	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	----
06	lnLT	$= 4.92 - 0.2341T*$ (0.051)	0.72	-23.41
07	lnLT	$= 4.97 - 0.1369T*$ (0.027)	0.76	-13.69
08	lnLT	$= 4.63 - 0.0203T*$ (0.004)	0.73	-2.03
09	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	------
10	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	-----
11	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	-----
12	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	- ----
13	lnLT	$= 4.77 - 0.0682T*$ (0.010)	0.84	-6.82
14	lnLT	$= 4.81 - 0.0795T*$ (0.013)	0.82	-7.95
15	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	-----
16	lnLT	$= 4.61 + 0.0000T$ (0.000)	0.00	----
17	lnLT	$= 4.58 - 0.0130T*$ (0.003)	0.75	-1.30
18	lnLT	$= 4.69 + 0.0049T$ (0.008)	0.05	0.49
19	lnLT	$= 3.95 + 0.0586T$ (0.064)	0.09	5.86
20	lnLT	$= 4.65 + 0.0152T*$ (0.006)	0.48	1.52

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

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Table 4.11

Growth indices of the employmant of the industrial groups

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100	100	100	105	105	105	105	105	105	105
312	100	100	100	100	72	64	47	47	47	47
313	100	100	100	89	89	89	89	89	89	89
340	100	100	100	100	100	100	100	100	100	100
343	100	100	100	100	100	100	79	68	79	58
349	100	100	100	100	100	100	100	100	100	100
357	100	97	101	97	96	95	94	94	94	93
360	100	89	97	98	110	110	110	110	110	110

Table 4.12

**Summary result of estimated trend equations of
employment according to the industrial groups**

Ind. code	Estimated equation		R^2	Annual trend growth rate
304	lnLT	= 2.00 + 0.0027T* (0.001)	0.64	0.27
312	lnLT	= 2.09 - 0.0480T* (0.006)	0.88	-4.80
313	lnLT	= 2.00 - 0.0064T* (0.002)	0.64	-0.64
340	lnLT	= 2.00 + 0.0000T (0.000)	0.--	0.00
343	lnLT	= 2.09 - 0.0242T* (0.006)	0.71	-2.42
349	lnLT	= 2.00 + 0.0000T (0.000)	0.--	0.00
357	lnLT	= 2.00 - 0.0035T* (0.001)	0.78	-0.35
360	lnLT	= 1.98 + 0.0068T* (0.002)	0.67	0.68

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

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Growth indices of fixed capital of industrial units are
presented in Table 4.13. The decennial average of the indices of the
fixed capital of eight units(01, 02, 03, 04, 05, 06, 11, 15) come
above the base value and the trend values are given in the Table 4.14.

The growth indices of the fixed capital of the industries
are shown in Table 4.15. The decennial average of the indices of
fixed capital of the industry 304 comes above the base value
indicating the tendency of growth of fixed capital while the average
value of the remaining seven industries falls below the base value
showing the tendency of declining growth. Estimated trend values of
the fixed capital of the units on the basis of the industrial groups
are presented in Table 4.16. It is obvious from the table that only
one industry, 304, has registered positive trend growth of fixed
capital (1.12 per cent) and all the other industries had negative
growth.

From the above discussion, it is clear that the growth
performance of industrial co-operatives, on the whole, has been poor
.However, certain units which are controlled by workers themselves
present a better picture. Similarly some units belonging to specific
industrial groups such as 'drugs, medicines and allied products' and'
metal products not elsewhere classified' show comparativley better
performance.

Table 4.13

Growth indices of fixed capital of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1	100.00	91.00	83.00	93.00	87.00	122.00	118.00	114.00	109.00	105.00
2	100.00	104.00	109.00	96.00	89.00	70.00	73.00	148.00	145.00	144.00
3	100.00	181.00	218.00	227.00	213.00	204.00	202.00	216.00	209.00	203.00
4	100.00	112.00	112.00	120.00	122.00	121.00	126.00	128.00	129.00	129.00
5	100.00	118.00	101.00	131.00	168.00	128.00	150.00	296.00	322.00	204.00
6	100.00	103.00	117.00	109.00	106.00	106.00	106.00	106.00	106.00	106.00
7	100.00	101.00	97.00	96.00	92.00	87.00	85.00	84.00	84.00	82.00
8	100.00	99.00	97.00	96.00	95.00	94.00	93.00	92.00	95.00	94.00
9	100.00	88.00	95.00	94.00	93.00	91.00	90.00	86.00	85.00	84.00
10	100.00	96.00	92.00	88.00	85.00	81.00	79.00	77.00	74.00	72.00
11	100.00	98.00	95.00	93.00	91.00	95.00	93.00	91.00	152.00	151.00
12	100.00	99.00	99.00	98.00	98.00	98.00	98.00	98.00	98.00	98.00
13	100.00	98.00	96.00	93.00	90.00	88.00	86.00	105.00	104.00	101.00
14	100.00	98.00	95.00	93.00	95.00	91.00	90.00	88.00	85.00	89.00
15	100.00	106.00	107.00	109.00	106.00	102.00	91.00	100.00	101.00	99.00
16	100.00	98.00	95.00	93.00	92.00	90.00	88.00	82.00	85.00	84.00
17	100.00	96.00	93.00	90.00	99.00	97.00	95.00	94.00	93.00	91.00
18	100.00	93.00	86.00	81.00	80.00	74.00	81.00	68.00	67.00	65.00
19	100.00	96.00	95.00	94.00	94.00	88.00	86.00	83.00	82.00	81.00
20	100.00	97.00	90.00	91.00	93.00	91.00	89.00	88.00	81.00	79.00

Table 4.14

Summary result of estimated trend equations of fixed capital of the units studied

Unit code	Estimated equation		R^2	Annual trend growth rate
01	lnKT	= 4.47 + 0.0263T* (0.013)	0.36	2.63
02	lnKT	= 4.45 + 0.0368T (0.030)	0.17	3.68
03	lnKT	= 5.03 + 0.0421T (0.024)	0.28	4.21
04	lnKT	= 4.65 + 0.0248T* (0.004)	0.84	2.48
05	lnKT	= 4.03 + 0.0114T* (0.026)	0.70	1.14
06	lnKT	= 4.66 + 0.0009T (0.005)	0.01	0.09
07	lnKT	= 4.65 - 0.0256T* (0.002)	0.95	-2.56
08	lnKT	= 4.59 - 0.0074T* (0.003)	0.71	-0.74
09	lnKT	= 4.58 - 0.0149T* (0.004)	0.67	-1.49
10	lnKT	= 4.63 - 0.0366T* (0.001)	0.99	-3.66
11	lnKT	= 4.42 + 0.0400T* (0.018)	0.36	4.00
12	lnKT	= 4.60 - 0.0018T* (0.001)	0.62	-0.18
13	lnKT	= 4.54 + 0.0042T (0.008)	0.03	0.42
14	lnKT	= 4.61 - 0.0155T* (0.002)	0.87	-1.55
15	lnKT	= 4.67 - 0.0082T** (0.005)	0.22	-0.82
16	lnKT	= 4.62 - 0.0211T* (0.002)	0.93	-2.11
17	lnKT	= 4.58 - 0.0053T** (0.004)	0.22	-0.53
18	lnKT	= 4.61 - 0.0449T* (0.005)	0.91	-4.49
19	lnKT	= 3.63 - 0.0243T* (0.002)	0.96	-2.43
20	lnKT	= 4.62 - 0.0217T* (0.003)	0.83	-2.17

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.15

Growth indices of fixed capital of the industrial groups

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100	112	113	119	120	119	124	130	131	130
312	100	101	104	101	97	95	94	93	92	91
313	100	98	96	95	94	93	92	91	93	92
340	100	98	97	97	96	97	96	95	89	89
343	100	98	95	93	94	90	89	92	89	82
349	100	102	101	102	99	96	90	81	84	82
357	100	95	92	88	95	94	93	89	88	86
360	100	96	92	95	93	91	88	86	92	80

Table 4.16

Summary result of estimated trend equations of fixed capital according to the industrial groups

Ind. code	Estimated equation	R^2	Annual trend growth rate
304	$\ln KT = 2.02 + 0.0112T*$ (0.002)	0.88	1.12
312	$\ln KT = 2.02 - 0.0060T*$ (0.001)	0.84	-0.60
313	$\ln KT = 2.26 - 0.0343T$ (0.035)	0.11	-3.43
340	$\ln KT = 1.99 - 0.0004T$ (0.001)	0.03	-0.04
343	$\ln KT = 1.99 - 0.0046T*$ (0.001)	0.68	-0.46
349	$\ln KT = 2.02 - 0.0059T*$ (0.001)	0.72	-0.59
357	$\ln KT = 1.99 - 0.0051T*$ (0.001)	0.62	-0.51
360	$\ln KT = 2.00 - 0.0097T*$ (0.001)	0.92	-0.97

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

4.2. Productivity

Productivity expresses input-use efficiency of the production process and productivity growth is recognized as a key feature of economic dynamics. The rate of industrial growth is determined by the rate of expansion in productive resources employed in industry and overall efficiency in the use of resources, viz. the rate of improvement in total factor productivity.

4.2.1. Measures of productivity

Productivity is measured using different methods. The difference among these methods arises from the different connotations attributed to the concept of productivity. These methods may broadly be classified into:

(a) Partial productivity measures, and

(b) Total productivity measures.

4.2.1.1. Partial Productivity measures

This section explains the partial productivity measure, especially, labour productivity and capital productivity. The simple indicator of productivity is the partial productivity measures derived in terms of single input, other inputs assumed to remain constant. This indicates the presence of as many partial productivity

ratios as the number of individual inputs. Partial productivity ratio may be expressed either as average or marginal. Average productivity ratio is the output per unit of input.

In the context of production process involving two factor inputs $(X_1$ and $X_2)$, the average productivity ratios are defined as follows:

Average productivity of $X_1 = \dfrac{Q}{X_1}$

Average productivity of $X_2 = \dfrac{Q}{X_2}$

Where 'Q' is the total level of output and X_1 and X_2 are the levels of two inputs used.

Marginal productivity approach presupposes the existence of a well-defined production function. Given the production function

$Q = f(X_1, X_2)$ the marginal productivities are determined as:

Marginal productivity of (X_1),

$$MP_1 = \frac{\delta Q}{\delta X_1}$$

$$= f_1^0(X_1, X_2) \quad \text{and}$$

Marginal productivity of (X_2),

$$MP_2 = \frac{\delta Q}{\delta X_2}$$

$$= f_2^0(X_1, X_2)$$

If the production function is homogeneous then the productivity ratio is expressed as constant proportion of average productivity ratio.

4.2.1.1.1. Labour productivity

Labour productivity is a commonly used partial productivity indicator. It is broadly defined as the ratio of output to the corresponding input of labour, labour being measured in terms of number of workers or man hours. Labour productivity thus measured in terms of output-labour ratio does not necessarily reveal the intrinsic efficiency of labour. Rather, it indicates the saving achieved in labour use as a result of overall productive efficiency of factor substitution[5]. Further, productivity ratio could become a misleading indicator if it is not understood in its proper sense. As average labour productivity is a simple ratio between output and labour input, rising productivity need not necessarily reflect a real gain. If output decreases sharply and employment decreases even more rapidly, productivity will show increase eventhough it will not have made any contribution towards economic or social gain[6]. It is therefore, imperative that while interpreting the ratio one must take cognizance of the physical changes in output in juxtaposition with the direction

in which such change takes place. Despite its limitations, labour
productivity is often used to measure the savings in labour use in
producing a given output. Further productivity or any other partial
productivity index may correctly reflect changes in productive
efficiency as long as the movement in labour and other resources are
proportional or nearly proportional[7].

4.2.1.1.2 Capital productivity

Similar to the concept of labour productivity, capital
productivity is defined as output per unit of capital. Capital
productivity being a partial measure like labour productivity has the
same set of limitations. Further, capital productivity measured in
terms of output- capital ratio reflects not only the use efficiency of
capital but also the level of technology in use. Therefore, capital
productivity ratio alone can not be regarded as a base for drawing
conclusions on capital use efficiency . Above all, the measurement of
capital poses several difficulties which make it a formidable task to
arrive at reliable estimates of capital productivity. In fact, it has
been argued that it is impossible to construct an index of the
quantity of capital as capital is essentially a value concept that is
affected by changes in the relative factor prices- interest and wage
rates (Robinson, 1955). Also the technology factors are such that,
several types of machines are either complementary or substitutes as
required by the aggregate condition. Nevertheless, capital

productivity ratio is commonly employed in productivity studies and its inverse is interpreted as capital required per unit of output.

4.2.1.2. Total Factor Productivity

Partial productivity measures express the productive efficiency of a given individual input. These measures do not express the overall productive efficiency of the firm. Total factor productivity (TFP) is the measure employed for this purpose. The analysis of TFP is carried out, in general, in terms of three indices-Kendrick, Solow, and Translog. The Translog index alone is presented in the text of this thesis since we find that all the three indices show the same trend. (The other two indices are given in the Appendix)

Estimates of total factor productivity are designed to provide an indication of the change in the overall efficiency with which the resources are utilized in the production process[8]. If input and output consist of a single homogeneous commodity the total factor productivity is equal to the rate of growth of output minus the rate of growth of input. In a multi-product, multifactor case, the total factor productivity growth is the difference between the rate of growth of aggregate output and the rate growth of the sum of the weighted inputs[9].

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4.2.1.2.1   The Kendrick Index

The Kendrick Index is an arithmetic index when factor inputs are combined arithmetically with the base year as fixed weights. It implicitly assumes a homogeneous production function. The Kendrick measure of factor productivity is defined as:

$$A_t^k = \frac{V_t}{w_0 L_t + r_0 K_t} \qquad (1)$$

Where A is the Total productivity V, L and K are value-added, Labour and Capital respectively and Wo and ro are rewards (or factor payments) to labour and capital respectively. If all the variables are expressed in index number with a common base, the index of total factor productivity growth is obtained as follows:

From equation (1) we have

$$\frac{V_t}{V_0} = A(t) \left[\frac{W_0 L_t + r_0 K_t}{V_0} \right] \qquad (2)$$

$$= A(t) \left[\frac{W_0 (L_0 L_t)}{(V_0 L_0)} + \frac{r_0 (K_0 K_t)}{(V_0 K_0)} \right] \qquad (3)$$

$$= A(t) \left[\alpha_0 (L_t/L_0) + \beta_0 (K_t/K_0) \right] \qquad (4)$$

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$$\text{ie} \quad A_t = \frac{V_t / V_0}{\alpha_0 \, (L_t / L_0) \;+\; \beta_0 \, (K_t / K_0)} \tag{5}$$

Where α_0 and β_0 are the factor shares in the initial period. The assumption of linear production function of the form $V = \alpha L + \beta K$, perfect substitutability between labour and capital along with the profit maximisation, are implied in the formula. This index has been extensively used by Schomokler, Abramovitz and Kendrick and is called the SAK index. Even though it is easy to calculate this arithmetic index, it has certain limitations. The most important limitation is that it is based on a linear production function which fails to allow for the possible changes in the marginal productivity of factors.

4.2.1.2.2 Solow Index

Solow suggests a new measure of total factor productivity which he calls "technical change" defined as a shorthand expression for any kind of shift in the production fuction. . This measure assumes that: (1) the production function is linearly homogeneous in labour and capital, (2) the factors are rewarded according to their marginal products, and (3) there is neutral technical progress, implying shifts in the production function leaving the marginal rate of substitution among factors unchanged. Accordingly, the production function takes the form.

$$V_t = A(t) \; f(L_t, K_t) \tag{1}$$

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Where V,L,K and A represent the value added, Labour Capital and measurement of the accumulated effects of shifts in the production function over time. By differentiating equation (1) totally with respect to time.

We get:

$$\frac{dV}{dt} = A \left[\frac{\partial f}{\partial L} \frac{dL}{dt} + \frac{\partial f}{\partial K} \frac{dK}{dt} \right] + f(LK)\frac{dA}{dt} \qquad (2).$$

Dividing equation (2) by V = A(t) f(L,K) and denoting the time derivatives by dots.

$$\frac{\dot{V}}{V} = \frac{\dot{A}}{A} + A \frac{\partial f}{\partial L} \frac{\dot{L}}{A} + A \frac{\partial f}{\partial K} \frac{\dot{K}}{V} \qquad (3)$$

The marginal productivity conditions for labour and capital imply.

$\dfrac{\partial V}{\partial L} \dfrac{L}{V} = S_L$ and $\dfrac{\partial V}{\partial K} \dfrac{K}{V} = S_K$ where S_L and S_K are shares of labour and capital.

Substituting the results in equation (3) we obtain

$$\frac{\dot{V}}{A} = \frac{\dot{A}}{A} + S_L \frac{\dot{L}}{L} + S_K \frac{\dot{K}}{K} \qquad (4)$$

denoting $\dfrac{\dot{V}}{V}$ (the proportionate growth of V) by $\bar{V}, \dfrac{\dot{A}}{A}$ by $\bar{A}$

$\dfrac{\dot{L}}{L}$ by $\bar{L}$ and $\dfrac{\dot{K}}{K}$ by $\bar{K}$, we may write equation (4) as

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$$\bar{V} = \bar{A} + S_L \bar{L} + S_K \bar{K} \qquad \text{or}$$

$$\bar{A} = \bar{V} - (S_L \bar{L} + S_K \bar{K}) \qquad (5)$$

Equation (5) tells us that the rate of growth of total factor productivity is equal to the difference between the rate of growth of value added and the weighted sum of the rates of growth of labour and capital, the weights being the respective shares.

It is possible to write the above basic equation in different forms ,we have:

$$\bar{A} = \bar{V} - \left[(1-S_K) \bar{L} + S_K \bar{K} \right]$$

$$= (\bar{V}-\bar{L}) - S_K (\bar{K}-\bar{L}) \qquad (6)$$

where $(\bar{V} - \bar{L})$ is the rate of change in labour productivity (V/L) and (K/L) is the rate of change in capital per unit of labour input (K/L). Denoting $(\bar{V}-\bar{L})=P$ and $(\bar{K}-\bar{L})=Q$ equation (6) becomes

$$A = P - S_K Q \qquad (7)$$

using equation (7) we can estimate proportional change in total factor productivity, given the series of labour productivity and capital labour ratios and the share of capital. A series of technical change can be derived from the identity.

$$A(t+1) = A(t) \left[1 + \frac{\Delta A(t)}{A(t)} \right] \text{ assuming } A(0) = 100$$

The Solow measure, unlike the previous one, uses changing weights.

4.2.1.2.3 Translog Index

The translog index developed by Christenson, Jorgenson and Lau is derived from the explicitly specified Translog production function which provides a second approximation to an arbitrary twice differentiable continuous function. The translog production function is characterized by constant return to scale and varying elasticity of substitution ranging from 0 to ∞. It is specified (with two inputs) as follows:

$$\ln V = \alpha_O + \alpha_L \ln L + \alpha_K \ln K + \alpha_T \ln T +$$
$$1/2 \ \beta_{KK}(\ln K)^2 + \beta_{KL} \ln K \ln L + \beta_{KT} T \ln K +$$
$$1/2 \ \beta_{LL}(\ln L)^2 + \beta_{LT} \ln K + \beta_{TT} T^2 \qquad (1)$$

Where V, K and L refer to value added, Capital and Labour respectively. T denotes time trend as a Proxy for technical change.

Introducing the assumptions of constant returns to scale, perfect competitive equilibrium and Hicks-neural technical change and further differentiating equation (1) totally with respect to time and rearranging the terms, we have

$$\frac{d \ln V}{dT} = S_K \frac{d \ln K}{dT} + S_L \frac{d \ln L}{dT} + A(t) \qquad (2)$$

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Where S_K and S_L are the value of shares of capital and labour respectively which under constant returns to scale, sum to unity. A(t) is the growth of value added with respect to time holding capital and labour constant. Then the above equation can be rearranged in to the following form.

$$A(t) = \frac{d \ln V}{dT} - S_k \frac{d \ln K}{dT} - S_L \frac{d \ln L}{dT} \qquad \ldots \ldots (3)$$

Modelling the rate of technical change in terms of discrete points of time say t and (t-1), we may write

$$A(t) = (\ln V_t - \ln V_t - 1) - S_K (\ln K_t - \ln K_{t-1}) - S_L(\ln L_t - \ln L_{t-1})$$

$$\text{Where} \quad S_K = \frac{S_{Kt} + S_{Kt-1}}{2}$$

$$S_L = \frac{S_{Lt} + S_{Lt-1}}{2}$$

Thus the average rate of technical change may be presented as the difference between successive logarithms of value-added minus the weighted average of difference between successive logarithms of inputs, the weights being the corresponding average shares. The expression for A(t) given above is termed as the average quantity index of technical change.

4.2.1.3 Comparison of alternative indices of TFP

A comparison of the above indices of TFP shows that the behavioural restrictions of the underlying production relations such as constant returns to scale, perfect competition and marginal productivity conditions are the same for all the indices. However, significant difference may be noticed in the case of elasticity of substitution. Solow indices assume unitary elasticity of substitution; it is constant elasticity in the case of Kendrick index; and Translog index permits elasticity of substitution to vary. Another fundamental difference is with regard to the nature of weights assigned to the factor inputs in the process of their aggregation. Kendrick indices make use of the base period value shares, the Solow index operates on the current period value shares of the respective factor inputs and in Translog index employs the average of the current and previous period values shares. Compared to the other two indices, the Translog index has several theoretical and empirical advantages as it is based on a more flexible form of production function. Further, the Translog index enables to decompose the total factor productivity growth into technical change, scale effects and other components.

4.2.2. Measures of Variables

Productivity analysis requires proper measurement of input and output variables. The definitions available do not often satisfy

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the requirements of productivity studies. Hence, the conceptualisation and method of measurement of variables used in the study are discussed below.

4.2.2.1. Measurement of output

In the literature of productivity analysis, output is measured in terms of either value added or gross output. On the issue of choice between the two, several studies have advocated the use of the former[10]. If the latter is chosen it becomes necessary to specify the production function in terms of labour, capital and material used.

If the value added concept is taken, the question arises about the choice between net value- added and gross value added. Gross value- added is the difference between total value of output minus total value of input, the former being obtained by deducting the depreciation from the gross value added. It may be pointed out, however, that from the available source it is difficult to make proper estimates of depreciation.

In the present study gross value- added is used to represent output. It is obtained by deducting total value of input from gross exfactory value of output. Gross value- added at constant price is obtained by deflating the current value of output each industry with corresponding official wholesale price index of a related base year. We have chosen in our exercise 1970-71 as the base.

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The single deflation method is followed since it is rather a difficult task to get suitable deflators for the heterogeneous group of material inputs.

4.2.2.2. Measurement of Labour

Pertaining to the measurement of labour input, there are three alternatives available: 'man-hours', 'workers', and 'employees'. The use of man-hours used is often considered a better measure. However, in a situation in which the unit is operating in a single shift, man-hours and man days have the same connotation. When the total number of employees is regarded as a the measure of labour input, both 'workers' and 'other than workers' are reckoned. The latter category includes Administrative, Professional, Scientific and Technical personnel including Supervising staffs. The simple addition of the two categories of workers involves the assumption that workers and other than workers are perfectly substitutable and marginal productivity levels are of same. Such an assumption poses a serious limitation to the measurement of labour input[11]. To overcome such limitation certain studies omitted the categories, other than workers, from the measurement of labour input. But others have argued that 'employees' are as much important for getting the work done as 'workers' and that the service of the former should also be taken into account in the measurement of labour input[12].

In the present study se go by the latter approach and include in the catogory of labour both workers and employees.

4.2.2.3. Measurement of Capital Input

As indicaed earlier,measurement of capital involves several conceptual and theoretical issues. There is no universally accepted method for measuring capital. Here we do not intend to review the theoretical controversies. Rather, we confine to a description of the methodology usually followed in productivity studies.

The primary issue on the measurement of capital input is the choice between the flow concept and the stock concept of capital. Following the various empirical studies we estimate the capital on the basis of the stock concept.

In the measurement of capital stock, an important choice arises between gross stock of capital and net stock of capital. The former assumes, original value of assets in stocks to remain unchanged until the year of retirement whereas the latter assumes the original value of assets to decline gradually over their service lives[13]. Thus the gross capital stock is measured by the aggregate capital less retirements, and the net capital stock is aggregate capital expenditure less depreciation. Although the net capital has certain theoretical relevance, it is difficult to sort out the net capital

stock. Moreover, several studies have recorded the superiority of the gross capital stock over that of the net capital stock concept.

Two important methods are available for obtaining estimates of gross capital stock:1. Perpetual inventory accumulation method (PIAM) and (2) the method of capital census. The former is the most widely used method for the estimation of capital stock. The capital stock of a particular year, using this method, is traced to the stream of past investment at constant price. This idea can be expressed in the mathematical format.

$$K_s = \sum_{t=s-n}^{s} \Theta_{ts} I_t$$

where ks is the capital stock at the end of year `s`. `It` is the investment at constant price made in the year `t`, 'Ots' is the proportion of investment of the `t`th year remaining in year `S` and `n` is the age of the oldest capital good in existence.

The most serious practical problem in applying the above method is the difficulty in getting adequate data on annual investment for a sufficiently long period of time. Another variant of PIAM consists in obtaining a bench-mark estimate gross capital stock and then carrying it forward or backward with the help of annual estimates of capital formation adjusted for discarding. This method can be expressed as follows:

$$K_T = K_0 + \sum_{t=1}^{T} (1_t - rK_{t-1})$$

where   KT denotes the gross capital stock at the end of year 'T', Ko denotes the bench mark (base year) capital stock where I_t is the gross investment of the year t, 'r' be the annual rate of discarding and 'rK_{t-1}' is themeasured amount of assets discarded during the year 't'.

Several studies have attempted to estimate the capital stock in Indian Manufacturing using perepetual inventory accumulation method (PIAM)[14]. Thus, it is the addition to capital stock that is deflated, rather than the stock itself. The stream of investment generated in such a manner is added to a base year estimate.

4.2.2.4. Measurement of Capital in present study

In the present study, value of gross fixed capital stock at constant price is used as the measure of capital. It includes plant, machinery and equipment, land and building. From the data, collected from the co-operatives, we have made estimates gross capital stock at constant price following the PIAM. In this study the year of establishment is regarded as the base year for the estimation of capital.

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4.2.2.5. Share of labour in value added

The share of labour in value added is derived by dividing the total earnings by the value-added. Value added, $\alpha = E/V$ where E is total labour earning and V is the value added.

4.2.2.6. Share of capital in value-added

It is derived by subtracting the share of labour in value added from unity ie., $\beta = 1-\alpha$ where α is the share of labour in value added.

4.2.3. Empirical results

The productivity measures of industrial co-operatives, in terms of previously explained indicators, have been presented in this section.

The labour productivity indices of the units studied are presented in Table 4.17 and the estimated trend growth rates for the period from 1980-81 to 1989-90, are presented in Table 4.18.

The decennial average of the labour productivity indices of ten units (01, 02, 03, 04, 05, 10, 13, 15, 16, 18) come above the base value indicating atendency of positive growth in productivity. The estimated trend growth rates presented in Table 4.18 reveal that

labour productivity of the nine units (01, 02, 04, 05, 10, 13, 15, 16, 18)   show positive values. The evidence over the decade indicates a weaker rising trend in labour productivity of the majority of the units. However, the performance of the units on the basis of industrial groups helps to create a wide perception, pertaining to the industrial co-operatives, in the industrial scenario of the State.

Labour productivity indices of the industrial groups are presented in Table 4.19. The decennial averages of the labour productivity indices of the industries 304, 343 and 349 lie above the base value indicating a tendency of increasing productivity. However the decennial averages of the remaining five industries (312, 313, 340, 357, 360) fall below the base value indicating a tendency of a declining labour productivity. Table 4.20 reveals the weak rising trend in labour productivity of various industrial groups.   Three industries (304, 343, 349) have shown an upward trend of labour productivity while the majority, out of the eight, have shown a downward trend of labour productivity. This finding elucidate the poor performance of the industrial co-operatives in terms of labour productivity. The capital productivity indices of the units studied are presented in Table 4.21 and the estimated trend growth rates of the units for the period are presented in Table 4.22.

The decennial averages of the indices of half the total number of units (01, 02, 03, 04, 05, 10, 13, 15, 16, 18) lie above the base value indicating atendency of positive growth in capital

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Table. 4.17

Labour productivity indices of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	100	99	98	77	79	148	151	133	91	125
02	100	95	105	121	153	107	91	137	147	153
03	100	305	344	243	256	260	254	388	192	179
04	100	106	120	173	62	405	513	373	418	418
05	100	111	88	116	150	168	125	257	269	156
06	100	92	81	45	37	50	32	32	24	26
07	100	90	71	76	45	22	21	71	54	91
08	100	84	62	59	158	112	139	84	92	58
09	100	109	106	104	107	101	83	63	80	76
10	100	87	108	107	110	114	141	141	187	156
11	100	109	16	18	60	31	16	45	60	60
12	100	66	57	61	31	45	43	26	22	76
13	100	146	141	228	299	229	289	287	219	295
14	100	98	84	81	78	45	34	53	103	120
15	100	329	368	283	233	639	548	628	688	692
16	100	112	124	132	108	116	142	172	165	162
17	100	97	158	83	76	74	86	68	40	58
18	100	196	153	112	148	158	116	130	125	155
19	100	89	95	65	35	48	48	53	48	39
20	100	96	90	85	88	82	75	56	50	44

Table 4.18

Summary result of estimated trend equations of labour productivity of the units studied

Unit code	Estimated equation	R^2	Annual trend growth rate
01	lnLT = 4.46 + 0.0369T** (0.026)	0.20	9.69
02	lnLT = 4.49 + 0.0423T (0.031)	0.45	4.23
03	lnLT = 5.22 - 0.0055T (0.022)	0.40	-0.55
04	lnLT = 4.25 + 0.2119T* (0.055)	0.63	21.19
05	lnLT = 4.44 + 0.0967T* (0.028)	0.61	9.67
06	lnLT = 5.97 - 0.5412T* (0.056)	0.92	-54.12
07	lnLT = 6.31 - 0.8029T* (0.021)	0.58	-80.29
08	lnLT = 6.31 - 0.2087T* (0.079)	0.46	-20.87
09	lnLT = 5.11 - 0.1179T (0.113)	0.12	-11.79
10	lnLT = 5.93 + 0.1349T** (0.086)	0.23	13.49
11	lnLT = 4.23 - 0.0731T (0.103)	0.06	-7.31
12	lnLT = 5.41 - 0.2220T** (0.129)	0.27	-22.20
13	lnLT = 4.64 + 0.2557T* (0.046)	0.79	25.57
14	lnLT = 4.40 - 0.1246T (0.133)	0.09	-12.46
15	lnLT = 4.71 + 0.2939T* (0.069)	0.69	29.39
16	lnLT = 4.08 + 0.0861T* (0.009)	0.58	9.61
17	lnLT = 4.87 - 0.0906T* (0.027)	0.57	-9.06
18	lnLT = 4.92 + 0.0003T (0.023)	0.01	0.03
19	lnLT = 0.27 - 0.0579T (0.350)	0.26	-5.79
20	lnLT = 4.38 - 0.0460T* (0.058)	0.89	-4.60

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.19.

Labour productivity indices of selected industrial Group

YEAR	Industrial groups							
	304	312	313	340	343	349	357	360
1980-81	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1981-82	131.71	94.54	105.00	123.32	164.91	253.04	100.84	88.96
1982-83	146.91	78.35	104.54	115.01	177.47	359.92	94.52	83.99
1983-84	220.47	68.75	106.69	105.82	153.87	189.11	79.71	79.40
1984-85	196.63	67.43	107.10	100.07	163.37	221.04	75.21	90.76
1985-86	295.28	59.22	103.21	106.61	172.50	576.86	74.50	84.65
1986-87	311.18	96.96	61.43	103.70	156.82	625.24	68.20	45.87
1987-88	311.18	96.96	61.43	103.71	156.82	625.24	68.20	45.87
1988-89	326.42	92.46	85.57	102.71	154.63	603.19	43.02	42.48
1989-90	332.25	59.27	73.65	79.75	205.38	640.44	52.19	33.56

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Table 4.20

Summary result of estimated trend equations of
labour productivity according to the industrial groups

Ind. code	Estimated equation		R^2	Annual trend growth rate
304	lnLT	= 4.65 + 0.1361T* (0.020)	0.85	13.62
312	lnLT	= 4.48 - 0.0305T (0.028)	0.13	-3.05
313	lnLT	= 4.77 - 0.0455T* (0.015)	0.53	-4.55
340	lnLT	= 4.77 - 0.0231T* (0.010)	0.39	-2.31
343	lnLT	= 4.37 + 0.0848T (0.089)	0.13	8.48
349	lnLT	= 4.87 + 0.1852T* (0.043)	0.70	18.52
357	lnLT	= 4.72 - 0.0713T* (0.016)	0.71	-7.13
360	lnLT	= 4.86 - 0.1144T* (0.021)	0.79	-11.44

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

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Table. 4.21

Capital productivity indices of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	100	110	167	130	143	180	201	182	130	187
02	100	92	96	127	172	182	125	93	101	106
03	100	169	158	110	120	128	126	87	92	88
04	100	95	106	144	51	336	406	293	325	324
05	100	115	94	126	166	191	144	298	316	185
06	100	90	69	41	14	94	61	62	45	28
07	100	89	73	79	46	24	58	33	25	43
08	100	85	83	85	96	104	131	79	84	53
09	100	108	112	114	110	107	105	63	78	74
10	100	90	117	122	129	141	179	184	251	204
11	100	107	18	20	66	32	17	49	27	24
12	100	65	59	63	32	46	45	27	24	78
13	100	149	147	168	165	237	235	136	193	203
14	100	101	193	86	82	40	22	33	60	71
15	100	310	438	259	326	761	930	611	661	526
16	100	142	132	119	147	111	135	139	141	161
17	100	86	160	85	67	67	79	64	38	58
18	100	211	217	168	218	249	164	217	209	257
19	100	93	97	70	34	48	65	60	56	48
20	100	81	88	86	98	85	76	46	40	33

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Table 4.22

Summary result of estimated trend equations of capital productivity of the units studied

Unit code	Estimated equation		R^2	Annual trend growth rate
01	lnKT	= 4.71 + 0.0538T** (0.022)	0.44	5.38
02	lnKT	= 4.52 + 0.0054T (0.231)	0.39	0.54
03	lnKT	= 5.07 - 0.0479T (0.041)	0.04	-4.79
04	lnKT	= 4.25 + 0.1773T* (0.056)	0.55	17.73
05	lnKT	= 4.44 + 0.1148T* (0.028)	0.68	11.48
06	lnKT	= 5.95 - 0.7808T* (0.087)	0.90	-78.08
07	lnKT	= 6.02 - 0.0950T* (0.421)	0.52	-9.05
08	lnKT	= 6.32 - 0.2189T* (0.080)	0.48	-21.89
09	lnKT	= 5.07 - 0.0801T (0.112)	0.06	-8.08
10	lnKT	= 5.42 + 0.1537T* (0.086)	0.28	15.37
11	lnKT	= 4.42 - 0.1130T (0.095)	0.15	-11.30
12	lnKT	= 5.42 - 0.2209T** (0.129)	0.27	-22.09
13	lnKT	= 4.90 + 0.1813T* (0.057)	0.56	18.13
14	lnKT	= 4.35 - 0.1001T (0.170)	0.04	-10.01
15	lnKT	= 4.65 + 0.3021T* (0.072)	0.61	30.21
16	lnKT	= 4.12 + 0.0553T* (0.008)	0.42	5.53
17	lnKT	= 4.87 - 0.0982T* (0.028)	0.61	-9.82
18	lnKT	= 4.98 + 0.0508T* (0.026)	0.31	5.08
19	lnKT	= 0.22 - 0.0519T* (0.353)	0.26	-5.19
20	lnKT	= 4.45 - 0.4240T* (0.061)	0.86	-42.40

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

productivity. Table 4.22 elucidate the trend growth of capital productivity. Nine units, (01, 02, 04, 05, 10, 13, 15, 16, 18) show an upward trend of capital productivity. The industry wise performance of these units are presented in Table 4.23.

Capital productivity indices of the industrial groups are presented in Table 4.23. The decennial averages of the capital productivity indices of the drugs medicines and allied products industry (304), hardware industry (343) and manufacture of metal products industry (349) lie above the base value . The averages of indices of the other five, out of the eight, industries lie below the base value indicating a declining trend of capital productivity.

Table 4.24 elucidate the weak,but rising trend in capital productivity of various industrial groups. Three (304, 343, 349) out of the eight industries have shown an upward trend.

Total factor productivity indices of units studied are presented in Table 4.25 and the estimated trend growth rates of these units, for the period 1980-81 to 1989-90, are presented in Table 4.26.

The decennial average of the total productivity indices of 11 units (01, 02, 03, 04, 05, 08, 10, 13, 15, 16, 18) lie above the base value indicating a tendency of positive growth in total factor productivity. Table 4.26 reveals the trend growth of total factor

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Table 4.23

Capital productivity indices of the units
according to the industrial groups

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100.00	117.74	136.18	193.63	171.11	258.78	298.71	250.39	262.20	258.67
312	100.00	93.91	75.38	68.44	50.33	39.84	23.65	48.46	51.13	30.01
313	100.00	100.00	106.99	107.99	106.78	102.68	102.80	60.21	81.00	70.25
340	100.00	125.43	117.62	109.44	117.49	114.85	113.90	106.23	102.99	99.71
343	100.00	175.24	186.01	165.28	174.39	151.35	103.40	143.08	132.65	118.12
349	100.00	248.53	355.21	135.85	222.20	600.08	805.01	687.66	647.52	698.88
357	100.00	102.19	104.49	89.72	75.15	75.68	84.05	71.87	45.88	67.08
360	100.00	92.58	82.16	78.98	76.21	70.07	42.36	26.17	23.19	17.91

Table 4.24

Summary result of estimated trend equations of capital productivity according to the industrial groups

.Ind. code	Estimated equation		R^2	Annual trend growth rate
304	lnKT	$= 4.63 + 0.1147T*$ (0.019)	0.81	11.47
312	lnKT	$= 4.66 - 0.1255T*$ (0.032)	0.65	-12.55
313	lnKT	$= 4.78 - 0.0468T*$ (0.017)	0.48	-4.68
340	lnKT	$= 4.77 - 0.0110T**$ (0.081)	0.19	-1.10
343	lnKT	$= 4.51 + 0.0456T$ (0.092)	0.04	4.56
349	lnKT	$= 4.83 + 0.1994T*$ (0.044)	0.72	19.94
357	lnKT	$= 4.75 - 0.0682T*$ (0.016)	0.69	-6.82
360	lnKT	$= 5.05 - 0.1990T*$ (0.025)	0.89	-19.90

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

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Table. 4.25

Total factor productivity indices of the units
studied (Translog)

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	100	94	106	101	100	239	239	203	135	182
02	100	97	110	118	141	86	74	133	142	146
03	100	479	623	428	456	447	434	336	337	309
04	100	108	122	181	65	421	552	406	457	459
05	100	108	84	109	139	185	114	231	240	139
06	100	91	74	42	53	50	32	33	24	15
07	100	88	76	78	53	27	44	25	20	31
08	100	85	67	66	80	173	122	135	143	98
09	100	105	103	97	90	84	74	70	53	51
10	100	85	102	99	99	101	121	118	155	131
11	100	105	17	18	68	31	17	41	68	71
12	100	65	58	28	31	44	42	26	49	78
13	100	150	150	298	215	275	244	275	280	218
14	100	97	118	77	75	69	73	70	79	75
15	100	304	328	250	222	854	864	853	858	833
16	100	124	110	136	123	144	146	155	106	122
17	100	82	146	74	69	67	77	61	38	53
18	100	191	158	114	148	152	114	122	117	142
19	100	92	96	80	38	55	52	67	62	48
20	100	98	88	90	81	76	45	36	31	24

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Table 4.26

Summary result of estimated trend equations of total factor productivity of the units studied

Unit code	Estimated equation		R^2	Annual trend growth rate
01	lnTFPT	= 4.45 + 0.0889T* (0.032)	0.48	8.89
02	lnTFPT	= 4.41 + 0.0311T (0.350)	0.60	3.11
03	lnTFPT	= 5.08 + 0.0272T (0.497)	0.08	2.72
04	lnTFPT	= 4.23 + 0.2123T* (0.055)	0.64	21.23
05	lnTFPT	= 4.38 + 0.0836T* (0.028)	0.50	8.36
06	lnTFPT	= 5.57 − 0.5392T* (0.056)	0.92	−53.92
07	lnTFPT	= 6.33 − 0.6020T* (0.201)	0.52	−60.20
08	lnTFPT	= 6.33 − 0.2283T* (0.080)	0.50	−22.83
09	lnTFPT	= 5.08 − 0.1329T* (0.017)	0.16	−13.23
10	lnTFPT	= 6.01 + 0.1415T** (0.089)	0.24	14.15
11	lnTFPT	= 4.26 − 0.0784T (0.100)	0.07	−7.94
12	lnTFPT	= 5.41 − 0.2222T** (0.128)	0.27	−22.22
13	lnTFPT	= 4.72 + 0.2425T* (0.048)	0.76	24.25
14	lnTFPT	= 0.68 − 0.9508T* (0.511)	0.30	−95.09
15	lnTFPT	= 4.71 + 0.2912T* (0.068)	0.70	29.12
16	lnTFPT	= 4.05 + 0.0782T* (0.010)	0.48	7.82
17	lnTFPT	= 4.84 − 0.1009T* (0.026)	0.65	−10.09
18	lnTFPT	= 4.91 − 0.0095T (0.230)	0.03	−0.95
19	lnTFPT	= 0.32 − 0.0659T (0.399)	0.32	−6.59
20	lnTFPT	= 4.57 − 0.3807T* (0.060)	0.84	−3.81

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level
** Significant at 10 Per cent probability level

Table 4.27

Total factor productivity indices of the units
according to the industrial groups (Trans Log)

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
304	100.00	139.92	161.40	251.03	225.34	336.75	415.54	379.15	398.25	393.38
312	100.00	94.14	75.89	68.25	75.32	65.11	69.56	70.61	68.22	69.48
313	100.00	108.18	104.92	102.00	88.32	81.00	68.61	60.20	52.00	51.81
340	100.00	122.19	113.58	82.74	76.25	82.03	80.33	87.09	83.15	80.52
343	100.00	169.11	182.63	157.39	167.31	160.26	123.70	151.10	167.96	173.50
349	100.00	252.56	357.58	188.21	220.62	572.00	678.96	595.07	589.47	612.91
357	100.00	96.31	90.60	74.45	71.28	69.86	77.21	62.54	39.34	56.41
360	100.00	92.28	82.14	84.19	81.13	79.57	41.08	25.08	23.12	16.46

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Table 4.28

Summary result of estimated trend equations of total factor productivity according to the industrial groups

Ind. code	Estimated equation		R^2	Annual trend growth rate
304	lnTFPT	= 4.67 + 0.1566T* (0.021)	0.87	15.66
312•	lnTFPT	= 4.56 − 0.0483T* (0.010)	0.73	−4.83
313	lnTFPT	= 4.87 − 0.0915T* (0.010)	0.91	−9.15
340	lnTFPT	= 4.70 − 0.0365T* (0.014)	0.47	−3.65
343	lnTFPT	= 4.41 − 0.0703T (0.093)	0.09	7.03
348	lnTFPT	= 4.88 + 0.1794T* (0.042)	0.69	17.94
357	lnTFPT	= 4.71 − 0.0789T* (0.016)	0.76	−7.99
360	lnTFPT	= 5.09 − 0.2063T* (0.031)	0.85	−20.63

Figures in the paranthesis represent standard error
* Significant at 5 Per cent probability level

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productivity. Nine units shown an upward trend of Total Factor Productivity (01, 02, 03, 04, 05, 10, 13, 15, 16).

It can be observed from Table 4.27 that the decennial averages of the total factor productivity of three industries (304, 343, 349) lie above the base value. The trend growth of total factor productivity of the industry presented in table 4.28 depicts the upward trend growth of three industries (304, 343, 349) and downward trend growth of the remaining five industries. In sum this reflects, the poor performance of the industrial co-operative in the state.

The above analysis of partial as well as total factor productivity reveals the poor performance of the productive efficiency of the industrial co-operatives. The labour productivity, capital productivity and the total factor productivity of the majority of the units have shown falling trend. However, certain units, controlled fully by the member-workers and some others belonging to specific industrial groups such as drugs and medicines have shown relatively commendable performance.

4.3 Capacity utilization

Capacity utilization is an important parameter in determining efficiency. Engineering capacity can easily be calculated[15] but economic capacity, as it is influenced by several factors, is not easy to measure. Due to this, different methods are

developed for measuring capacity utilization. The most important and widely used methods have been identified as (1) the Wharton index method (2) the R B I index method and (3) the Minimum capital output ratio method.

The Wharton index method is developed by Klein and summers[16]. The first step in the estimation of this method is to identify the peaks that are regarded as full capacity and these peak outputs are taken to be equal to the capacity outputs for the corresponding periods. The capacity for the period preceding the first peak and succeeding the last peak are determined by extra polating the trend line. This is only a rough and ready measure of capacity utilization which has certain limitations. The major limitations of this method are: (1) peak output need not represent the full capacity output and (2) if the investments are varied the actual capacity may be quite different from the trend seen through peak's curve.

A modified version of Wharton school measure of capacity is the index of potential utilization which is developed by R.B.I.[17] However, there is some difference between these two measures. The important ones are: (1) it makes use of monthly output indices for locating peaks where as the Wharton measures make use the quarterly series (2) such monthly peaks are regarded as potential output for each year . No attempt is made to connect successive peak by linear interpolation as is done in the case of Wharton index and (3) monthly

indices of output are not deseasonalised. In the case of industries
like sugar, tea and salt, annual peak is considered to indicate
potential output rather than the monthly index to take account of
seasonality.

Minimum capital-output ratio method is another widely used
and popular method. In this method the maximum capacity of an
industry is that amount of output in which the capital output ratio
has the minimum value. Fixed capital output ratios are estimated in
terms of constant prices. A bench mark year is thus chosen on the
basis of the lowest capital output ratio which is regarded as capacity
output. The estimate of capacity is obtained by dividing real fixed
capital stock by minimum capital output ratio. The utilization rate
is given by actual output as a proportion of the estimated capacity.[18]

CU = O/C where

C = K/(K/O) Min.

where CU is the rate of capacity utilization.
O - the real output, C - the estimate of capacity, K - the real fixed
capital stock and (K/O) min. the minimum capital output ratio.

This method is based on the relationship between capital
and output. Eventhough the reliability of this method depends on the
accuracy of the measurement of capital and output it reflects both
qualitative and quantitative changes.[19]

4.3.1. Measures of Capacity Utilization in the Present Study.

Very little information is readily available for the industrial co-operatives of Kerala. Hence and attempt is made to construct capacity utilization index on the basis of minimum capital-output ratio.

Capacity utilization of the units studied and that of the industrial groups are presented in Table 4.29 and 4.30 respectively.The decennial averages of the rate of capacity utilization are in the range of 25.39 and 84.70. However, the decennial average of the capacity utilization rate of industrial groups reveal that two industries (313, 360) do not utilise even 50 per cent of their capacity.

The above analysis of labour productivity capital productivity, total factor productivity and capacity utilization, of the industrial co-operatives (unit-wise and industry-wise), reveals that the performance of this industrial organization is, in general, not up to the mark. However, the group 'drugs, medicines and allied industries' shows upward trend in labour productivity, capital productivity and total factor productivity;the industrial group including 'manufacture of hand tools , weights and measures and general hardware' (303) and 'manufacture of metal product n e c' (349) controlled by workers have also shown upward trend in all these measures of productivity.

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Table. 4.29

Rate of capacity utilisation of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	32	45	60	63	71	55	79	86	93	100
02	38	44	40	62	84	100	95	59	77	84
03	63	79	78	73	86	93	100	73	84	87
04	27	37	17	35	43	81	100	78	91	98
05	68	65	100	86	76	75	80	55	75	85
06	80	100	65	51	73	53	87	84	75	68
07	73	100	93	87	54	35	89	85	83	77
08	56	100	78	60	23	24	44	45	64	63
09	61	100	78	71	62	65	70	75	78	84
10	29	21	33	33	49	55	67	66	100	58
11	63	100	37	94	35	27	33	38	28	33
12	27	26	89	100	26	30	41	20	24	57
13	26	36	43	79	72	91	91	80	89	100
14	17	11	28	22	22	24	15	8	100	9
15	51	38	40	33	54	74	100	82	94	100
16	60	62	48	52	68	70	86	75	88	100
17	87	93	98	86	73	75	100	89	63	84
18	22	43	39	39	57	83	66	83	86	100
19	40	48	55	62	86	82	90	100	81	82
20	38	40	42	58	74	70	85	100	78	79

Table 4.30

Index of capacity utilization .

Year	Industrial Group							
	304	312	313	340	343	349	357	360
1980-81	35.02	79.95	100.00	55.99	25.13	6.63	76.63	43.26
1981-82	46.49	100.00	10.79	51.74	22.27	37.53	88.41	45.94
1982-83	42.18	94.44	12.28	55.13	40.45	49.55	96.18	17.79
1983-84	53.26	94.08	65.86	59.11	47.54	51.72	86.72	17.64
1984-85	61.50	74.15	28.91	67.48	48.41	59.31	71.98	25.59
1985-86	79.84	71.69	29.88	62.91	53.01	69.98	97.74	27.00
1986-87	95.33	49.58	50.48	66.22	44.28	93.95	100.00	29.70
1987-88	83.21	71.00	52.27	76.88	38.95	82.07	94.37	100.00
1988-89	94.76	73.92	70.72	100.00	95.76	95.54	71.55	83.93
1989-90	100.00	71.86	76.05	83.17	100.00	100.00	94.94	81.16

NOTES AND REFERENCES

1. Marris, (1980)

2. Penrose, (1959)

3. Barna, (1962)

4. Marris, (1964)

5. Kendrick, (1956) p.248

6. Steiner, (1950) p.323

7. Stigler, (1961) p.47

8. A distinction can be made in this context between total factor productivity and total factor productivity growth. The former is a static concept which explains the level of productivity at a point of time where as the latter is dynamic in nature and measures changes in productivity over time.

9. Goldar, (1986) p.45

10. Goldar, (1986) and Radhkrishnan (1989)

11. Goldar, (1986) p.49

12. Ibid p.49

13. Griffin, (1979)

14. Hasim and Dadi, (1973), Ahluwalia (1985), Goldar (1986), Radhakrishnan (1989)

15. The concept of capacity utilisation is very difficult to define and even more difficult to measure. In the literature on the subject, two concepts of capacity are often referred to (a) the engineeering capacity and (b) economic capacity. The engineering capacity denotes the maximum output that can be produced with a given stock of capital facilities under normal conditions of production. On other hand the economic identifies the capacity output with the output rate prevailing when short run average total cost per unit is the minimum. It should be noted therefore under ideal conditions, capacity in the economic sense would become closer to or identical with, the engineering concept of capacity.

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16. Klein and Summers, (1966)

17. RBI (1970) index of potential production and potential utilisation ratio for the manufacturing industries in India, RBI bullettin, April 1970 p. 574

18 Sastri, (1984) p.30

19. Panic, (1978) p.32

CHAPTER 5

FINANCIAL PERFORMANCE OF THE INDUSTRIAL CO-OPERATIVES

The previous chapter presented the physical performance of the industrial co-operatives, in the modern small scale sector of Kerala, during the 1980's. The financial performance of the firm is equally important as its physical performance. The focus of this chapter is therefore on the financial analysis of the selected industrial units.

5.1 METHODOLOGY

The financial statement of the units has been taken as a rough ready indicator of the overall performance. Proper analysis and interpretation of the statement is required to assess the financial behavior of a firm or an industry. In this study, for the simplicity of analysis, the commonly used techniques (Common size statement analysis and ratio analysis) are used for evaluation. Discussions are made unit-wise and industry-group-wise. The important ratios which are used in this chapter for evaluation are: (1) Liquidity ratios(Current ratio, Acid Test ratio, Inventory turnover ratio, and Working capital turnover ratio), (2) Solvency ratios or test of long term financial condition (Debt equity ratio, Interest coverage ratio), and (3) Profitability

ratios (Gross profit margin and Net profit margin). At the outset, the common size statement analysis is presented.

5.2 Common size statement analysis

In the previous chapter we found that the physical performance of the industrial co-operatives has not shown a healthy trend. Does the overall financial performance also present similar trend ? This question may be examined on the basis of common size statement. The relationship of the different parts of the total in a single statement may be expressed in terms of percentage shares. The resulting statement is called a common size statement[1] which is a device for the study of balance sheet and of their changes. Common size balance sheet is really a miniature of the original one the percentages being exactly the original figures and much easier to read. Further, these statements, are most helpful in making comparisons.[2]

In the present study the common size statement analysis is used to analyze the financial performance of the co-operatives (both unit-wise and industry_wise) for the years 1980-81 and 1989-90.

The percentage share of each source of funds in selected units for the two years is presented in Table 5.1. It is observed that in all cases the long term loan exceeds 50 percent of the total funds whereas the total of all other components-equity by

members,equity by government and retained earnings -are below 50 percent. It is found that the percentage share of long term loan to the total funds has varied widely among the units from 50.1.(unit20) to 89.4 (unit 07) in 1980-81 and 51.6 (unit20) to 90.2 (unit 06) in 1989-90. Further, nine out of the twenty units have shown a declining tendency in long term loan while ten units have shown an increasing tendency. Only in the case of one unit, no change observed in the percentage share of long term loans. The equity by members in eight units, that of government in 13 units, and the retained earning in ten units have shown an increasing tendency. The percentage shares of each source of funds to the total in the different industries for two years, 1980-81 and 1989-90, are presented in Table 5.2.

The figures for each industry have been computed by taking averages of the figures of firms in the industry. It is observed that in all cases the long term loan exceeds 50 per cent of the total funds where as the total of all other components (equity by members,equity by government and retained earnings) is below 50 per cent in both the years. The percentage share of long term loan in the capital has varied widely between industries from 50.9 (360) to 89.0 (312)in 1980-81 and 52.2 (360) to 89.4 (312) in 1989-90. However three (304,343,349) out of the remaining six industries, have shown a tendency of decline and the others (313,340,357) an increasing tendency. During the period, equity by members has shown a declining tendency.

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Table 5.1

Common size balance sheet of the studied unit (source of funds)

Unit code	Equity by members		Equity by government		Reatained earning		All long term loans	
	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90
01	11.2	12.0	4.9	5.0	1.9	2.1	82.0	80.9
02	11.5	11.9	5.2	5.1	2.2	2.1	81.2	80.9
03	12.1	10.9	5.3	4.5	2.3	3.4	80.3	81.2
04	10.4	11.2	5.1	4.6	2.0	2.0	82.5	82.3
05	4.6	3.8	3.0	3.5	3.5	2.5	88.9	89.0
06	4.2	3.8	3.6	3.9	3.5	3.3	88.7	90.2
07	4.1	4.1	3.6	4.3	2.9	2.4	89.4	89.0
08	7.9	7.4	10.9	11.0	1.8	2.0	79.4	79.8
09	7.7	7.4	11.5	11.8	2.2	2.2	78.6	78.6
10	22.0	14.0	15.2	17.1	2.8	3.5	60.0	65.4
11	22.4	14.8	15.9	17.4	3.1	3.0	58.6	64.8
12	22.5	14.4	15.4	17.4	3.4	4.2	58.7	63.7
13	14.9	15.2	9.2	9.7	4.1	4.6	71.8	70.5
14	15.3	15.8	10.0	9.9	4.5	5.0	70.2	69.3
15	17.9	17.8	13.8	14.6	4.9	7.8	63.4	59.8
16	18.3	18.6	14.4	15.0	5.3	8.2	62.0	58.2
17	3.8	3.2	8.4	8.2	6.3	6.1	81.4	82.5
18	3.7	3.6	8.8	9.4	6.9	6.7	80.6	80.3
19	7.3	7.8	37.9	36.1	2.8	2.9	52.0	53.2
20	8.5	8.4	38.3	36.9	3.2	3.1	50.1	51.6

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Table 5.2

Common size balance sheet of the selected industries (source of funds)

Ind. code	Equity by members		Equity by government		Reatained earning		All long term loans	
	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90
304	11.3	11.5	5.1	4.8	2.1	2.4	81.5	81.3
312	4.3	3.9	3.4	3.9	3.3	2.8	89.0	89.4
313	7.8	7.3	11.2	11.4	2.0	2.1	79.0	79.2
340	22.3	14.4	15.5	17.4	3.1	3.7	59.1	64.5
343	15.1	15.5	9.6	8.8	4.3	4.8	71.0	69.9
349	18.1	18.2	14.1	14.8	5.1	8.0	62.7	59.0
357	3.8	3.4	8.6	8.8	6.6	6.4	81.0	81.4
360	7.9	8.1	38.2	36.5	3.0	3.0	50.9	52.2

Various components of income which indicate the economic activities of the units are presented in Table 5.3. It is seen that the relative share spent for raw materials of six units (01,02,03,04,13,16) has increased between 1980-81 to 1989-90. The relative share of wages and salaries of 16 units, including two (01,03) from the previous six,has also shown an increasing tendency. Further, during the period the relative share spent for interest payment of 13 units have also risen. From these indicators it is realised that the performance of the units does not suggest improvement in financial efficiency. The various components of income on industry-wise basis are presented in Table 5.4. The relative share spent for raw materials and wages and salaries of three industries (304, 343, 349) increased nominally. This naturally shows increased productive activity. However, in the case of other industries (312, 313, 340,357,360) the relative share for raw materials declined sharply while the relative share of wages and salaries increased significantly.

From the foregoing discussion it appears that the financial dealings of the co-operatives do not show healthy trends Further evaluation of the financial performance is however necessary before drawing firm conclusions.

5.3 Ratio analysis

Ratio analysis is a widely used tool of financial analysis. It describes the significant relationship that exists

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5.3 Ratio analysis

Ratio analysis is a widely used tool of financial analysis. It describes the significant relationship that exists

Table 5.3

Common size income statement of units studied

Unit code	Cost of rawmaterials		Power and fuel		salaries and wages		Interest		Others[*]	
	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90
01	51.1	52.0	1.8	1.7	32.4	33.6	11.0	11.0	3.7	1.7
02	52.0	53.9	1.2	1.4	33.0	32.8	11.1	10.4	2.7	1.5
03	52.5	53.0	1.2	1.7	32.2	33.0	11.3	10.7	2.8	1.6
04	53.2	56.0	1.0	1.2	32.0	31.9	11.6	10.0	2.2	0.9
05	47.0	44.0	0.5	0.1	41.5	43.8	10.1	10.5	0.9	1.6
06	48.2	40.9	0.3	0.1	41.9	47.8	8.5	10.0	1.3	1.2
07	48.8	42.0	0.4	0.1	40.2	46.4	9.6	10.1	1.0	1.4
08	49.3	43.2	1.0	3.4	38.2	40.6	9.8	10.6	1.7	2.2
09	46.9	40.8	1.2	3.6	39.2	41.0	10.4	12.0	2.3	2.6
10	59.9	58.1	2.0	1.9	27.8	28.8	8.4	10.0	1.9	1.2
11	58.0	55.9	2.4	1.9	28.6	29.3	9.0	11.2	2.0	1.7
12	56.2	53.6	2.5	2.5	29.0	30.1	9.9	11.9	2.4	1.9
13	48.0	53.0	1.8	1.4	36.2	34.5	11.9	9.1	2.1	1.8
14	52.6	49.4	1.2	1.8	33.8	37.5	10.7	10.1	1.7	1.2
15	50.0	49.8	1.0	1.6	35.1	37.0	8.9	10.0	2.6	1.6
16	50.4	52.6	1.4	1.4	37.3	36.6	10.3	8.0	3.0	1.4
17	42.3	34.8	1.9	2.6	41.9	46.3	12.1	12.4	1.8	3.9
18	41.6	34.4	1.4	2.4	42.2	46.3	12.5	13.0	2.3	3.7
19	44.5	44.5	2.9	2.1	39.7	40.4	9.8	10.1	3.1	2.9
20	45.9	44.1	2.7	1.7	39.3	41.6	9.2	9.9	2.9	2.7

* Includes profit

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Table 5.4

Common size Income Statement of the units studied according to industrial groups

Unit code	Cost of rawmaterials		Power and fuel		salaries and wages		Interest		Others*	
	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90	1980-81	1989-90
304	52.2	53.7	1.3	1.5	32.4	32.9	11.1	10.5	3.0	1.4
312	48.0	42.3	0.4	0.1	41.2	46.0	9.4	10.2	1.0	1.4
313	48.1	41.5	1.1	3.5	38.7	41.3	10.1	11.3	2.0	2.4
340	58.1	55.7	2.3	2.1	28.4	29.4	9.1	11.2	2.1	1.6
343	50.3	51.0	1.5	1.6	35.0	36.0	11.3	10.1	1.9	1.3
349	50.2	51.2	1.2	1.5	36.2	36.8	9.6	9.0	2.8	1.5
357	41.2	34.6	2.3	2.5	42.1	46.3	12.3	12.8	2.1	3.8
360	45.2	44.3	2.8	1.9	39.5	41.0	9.5	10.0	3.0	2.8

* Includes profit

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between figures shown in a balance sheet, in a profit and loss account, in a budgetary control system or in any other part of accounting organisation.[3] Ratios express numerical or quantitative relationship between two items or variables - and are calculated by dividing an item of the relationship with the other. As a tool of financial management, ratios can be expressed as percentage or fraction or a stated comparison between numbers.[4]

Ratio analysis makes related information comparable. In other words, ratios convert figures into meaningful comparable forms making inference easier. Comparison is thus the basis of ratio analysis. Ratios provide a co-ordinated frame of reference for the financial manager.[5] To the management, the analysis is an invaluable guide in the discharge of its basic function of forecasting, planning, co-ordination, communication and control. Financial ratios are for a business enterprise, what blood pressure, pulse rate, and temperature are for an individual. They are symptoms whereby the state of health of the enterprise may be determined. An analysis of these ratios will reveal whether the financial condition of the enterprise is very strong, good, partly good, or poor.[6]

A ratio is said to be hyper sensitive since a new entry of one transaction could change its magnitude drastically. This necessitates the careful selection of the ratios which suit the nature of a business. Another limitation of the ratios is that they are not exact measures of the financial situation as the

balance sheets and profit and loss accounts which are based on
accounting conventions, personal judgments and recorded facts.
Ratios do not take into consideration non-monetary factors such as
general economic climate and Government and Management policies,
even though these have a vital influence on the financial strength
of the enterprise. All that they give is an overall view of the
dynamic relationships among several components.[7]

Even if ratio analysis has these limitations, it is
invaluable from the point of view of entrepreneurs, bankers and
shareholders. Hence an attempt is made to study the state of
liquidity, solvency and profitability of the industrial units.

5.3.1. Liquidity ratio or short term financial analysis

The liquidity ratios helps to asses the short term
financial strength of a firm. A proper balance between the two
contrary requirements- liquidity and profitability- is required
for efficient financial management. An understanding of the short
term financial position helps the management to ensure that funds
are used in the proper channel. Further, it helps members of the
units also to understand their current financial position.

The indicators we use to measure the liquidity position
are, the current ratio , the acid test ratio, the inventory
turn-over ratio and the working capital turn over ratio. These

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ratios are worked out for the industrial co-operatives at the unit level for ten years from 1980-81 to 1989-90.

5.3.1.1 Current Ratio

Current ratio is the ratio of the total current assets to current liabilities and depicts the margin of current assets by current liabilities.[8] The minimum of 2:1 is often referred as reasonable standard of liquidity.[9]

Eventhough, a high current ratio is desirable, it does not always indicate the actual financial position of the firm. A business with high current ratio may not be in a position to pay current liabilities because of an unfavourable distribution of current asset in relation to liquidity.[10] On the other hand, a low value of current ratio does not necessarily mean that the firm is not viable.Though, this device is not free from such limitations, it is widely used in financial analysis.

Table 5.5 suggests that the current ratios of units, for the period of ten years, are not satisfactory. The average current ratio is found favourable only for one unit(03) all the other cases showing current ratio is far below the standard value. This means that the latter group of units are not in a position to meet the creditor's demand promptly which again is a danger signal to the units. The industry -wise analysis (Table 5.6) reveals the same pattern of performance.

Table. 5.5.

Current ratios of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	1.1	1.0	1.0	1.5	1.6	1.2	1.3	1.6	1.4	1.6	1.33
02	1.2	1.2	1.2	1.5	1.7	1.3	1.1	1.8	1.8	1.8	1.43
03	2.5	2.3	2.5	2.9	2.7	2.8	2.9	2.4	2.3	1.9	2.52
04	2.4	1.9	1.0	0.8	1.2	0.9	0.8	0.8	0.9	0.8	1.07
05	1.4	1.3	1.2	1.2	1.2	1.1	1.2	1.1	1.1	1.2	1.20
06	0.9	1.0	1.0	1.0	1.0	0.9	1.0	1.0	0.9	1.0	0.97
07	1.2	1.1	1.1	1.1	1.0	1.0	0.8	0.5	0.4	0.4	0.86
08	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	0.9	0.97
09	1.1	1.0	1.0	1.0	1.0	1.0	0.9	1.0	0.9	1.0	0.99
10	1.0	1.1	1.0	1.1	1.0	1.2	1.1	1.1	1.1	1.1	1.08
11	1.2	1.2	1.0	1.1	1.2	1.1	1.2	1.1	1.1	1.1	1.13
12	1.1	1.0	1.1	1.1	1.2	1.2	1.3	1.1	1.1	1.1	1.13
13	1.1	1.0	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.04
14	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.09
15	1.0	1.1	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.05
16	1.0	1.1	1.3	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.17
17	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.09
18	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.02
19	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00
20	0.7	1.0	1.0	0.9	1.0	0.8	1.0	1.0	1.0	1.0	0.94

Table 5.6

**Industry average of current ratios
for the period 1980-81 to 1989-90
Industrial Code**

Year	Industrial code							
	304	312	313	340	343	349	357	360
1980-81	2.5	1.2	1.1	1.1	1.1	1.1	1.1	0.9
1981-82	2.8	1.4	1.0	1.1	1.1	1.5	1.1	1.6
1982-83	1.9	1.3	1.0	1.1	1.1	1.2	1.1	1.0
1983-84	1.7	1.4	0.9	1.2	1.2	1.2	1.1	1.0
1984-85	1.6	1.9	0.9	1.3	1.3	1.2	1.0	1.0
1985-86	1.8	2.0	1.5	1.5	1.4	1.8	1.0	0.9
1986-87	1.7	1.2	1.0	1.1	1.2	1.9	1.1	1.4
1987-88	1.9	0.9	1.0	1.1	1.1	1.8	1.1	1.0
1988-89	2.0	0.9	1.0	1.2	1.2	2.0	1.1	1.0
1989-90	2.2	0.8	1.1	1.2	1.3	2.0	1.1	1.0
Mean	2.01	1.30	1.05	1.19	1.20	1.57	1.08	1.08

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5.3.1.2 Quick or Acid Test Ratio

Current ratio is not regarded as a refined device to
measure the financial performance of a firm. A more accurate
indicator of liquidity is the Acid Test Ratio[11] which is the ratio
of current assets less inventories to current liabilities or
liquid assets to current liabilities.[12] In a trading concern an
acid-test ratio of 100 per cent (1:1) is satisfactory.[13] The
overall liquidity position of a firm as revealed by the current
ratio and the acid-test ratio would depend on the liquidity of
each component of current assets.[14]

In Table 5.7 we observe that the averages of the
acid-test ratio of the 19 units are far below the standard
value.. These units are not in a position to meet current
obligations as and when they arise. The industry -wise analysis
(Table 5.8) also reveals that there is only one industry(304)
which has had standard performance. No other industry has been in
a position to meet current liabilities.

5.3.1.3 Inventory Turnover Ratio

The ratio of sales to inventory is regarded as
indicating the turnover position of inventory.[15] This measure
establishes the relation between the cost of goods sold during a
given period and the average amount of inventory outstanding
during that period.

Table. 5.7.

Acid-test ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	0.7	0.7	0.6	0.8	0.8	0.5	0.5	1.0	1.1	0.8	0.75
02	0.6	0.6	0.5	0.7	0.7	0.4	0.4	1.0	1.0	0.8	0.67
03	1.0	0.9	0.8	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.57
04	1.3	1.2	0.6	0.6	0.5	0.6	0.5	0.5	0.6	0.6	0.70
05	1.3	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.12
06	0.3	0.1	0.2	0.1	0.5	0.6	0.4	0.7	0.8	0.9	0.46
07	0.1	0.1	0.1	0.1	0.6	0.4	0.5	0.2	0.1	0.1	0.23
08	0.4	0.6	0.6	-0.9	0.4	0.3	0.5	-5.3	-3.2	-3.5	-1.01
09	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.16
10	0.1	0.4	0.1	0.4	-0.3	0.3	0.2	0.2	-0.1	1.0	0.23
11	0.1	0.2	-0.4	1.0	0.6	0.4	0.5	0.4	0.5	0.6	0.39
12	0.1	0.1	-0.3	0.1	0.7	0.5	0.8	-0.4	-0.4	-0.3	0.09
13	0.1	-0.1	-0.1	-0.1	0.1	-0.1	0.1	0.1	0.4	0.1	0.05
14	0.1	0.1	0.1	0.1	-0.1	-0.1	0.1	0.1	0.3	0.5	0.12
15	0.1	-0.1	-0.1	0.1	-0.1	0.1	0.1	-0.1	0.1	0.3	0.04
16	0.1	0.2	-0.1	-0.1	-7.0	0.2	0.3	0.1	0.4	0.3	-0.56
17	0.3	0.3	0.1	0.3	0.3	0.1	0.2	0.1	0.3	0.2	0.22
18	0.1	0.1	0.1	0.1	0.1	-0.1	0.1	0.1	0.1	0.1	0.08
19	-0.2	0.5	0.5	0.5	-0.1	0.1	0.4	0.3	0.4	0.1	0.25
20	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.97

Table 5.8

Industry average of Acid test ratios
for the period 1980-81 to 1989-90

Year	Industrial Code							
	304	312	313	340	343	349	357	360
1980-81	1.2	0.8	0.8	0.4	0.4	0.5	0.3	0.5
1981-82	1.8	0.8	0.8	0.7	0.6	0.5	0.4	0.8
1982-83	1.7	0.8	0.7	0.6	0.4	0.6	0.4	0.9
1983-84	0.8	0.7	0.6	0.8	0.5	0.4	0.6	0.8
1984-85	0.9	0.8	0.5	0.8	0.7	0.7	0.5	0.4
1985-86	0.8	0.8	0.8	0.8	0.7	0.6	0.3	0.2
1986-87	0.8	0.8	0.5	0.6	0.6	0.8	0.3	0.7
1987-88	0.9	0.5	0.3	0.8	0.6	0.9	0.4	0.5
1988-89	0.8	0.5	0.8	0.8	1.0	0.3	0.4	0.6
1989-90	0.9	0.5	0.3	0.9	0.7	1.0	0.4	0.4
Mean	1.07	0.70	0.61	0.72	0.62	0.63	0.40	0.58

Theoretically, this ratio is expressed through the relationship between cost of goods and average inventory at cost. But the ratio of sales to inventory may be used as a substitute for the ratio of cost of goods sold to average inventory in case the cost of goods sold is not available.[16] Sometimes, net sales and average inventory at selling prices are used to compute the ratio. For accuracy, monthly inventories are suggested in computation. However, in most cases the average of inventories at the beginning and end of accounting period is taken for the analysis. It may serve as an approximate measure of turnover for getting a broad picture of the firm's performance. A low inventory turnover may show dull business and a higher one is said to signify better management of inventory. A turnover of nine times is broadly accepted as the standard[17]. In this study the ratio of sales to average inventory is used for the analysis.

It is clear from Table 5.9 that the average inventory turnover ratio of units varies from 1 to 16.46 for the manufacturing units. On the basis of standard stock turnover of 9 times, the position appears to be unfavourable in the case of 18 out of the 20 units.The average inventory turnover ratios on industry-wise basis presented in Table 5.10 indicates the poor management of inventory. The manufacture of drugs, medicine and allied product industry(304) records the highest where as the manufacture of hand tools, weights and measures and general hardware industry (343) records the lowest average inventory

Table. 5.9.

Inventory turnover ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	2.4	2.5	2.5	2.3	2.2	2.6	2.1	2.2	2.4	2.0	2.32
02	2.6	2.5	2.5	2.4	2.7	2.8	2.3	2.8	2.6	2.2	2.54
03	3.5	3.7	2.8	2.1	2.3	2.3	2.0	1.6	1.4	1.3	2.30
04	5.0	3.9	1.5	1.7	3.0	10.3	8.0	4.3	4.0	4.1	4.58
05	12.9	14.2	14.8	15.3	20.4	23.0	15.2	17.5	18.4	12.9	16.45
06	11.1	13.3	9.4	7.2	2.2	1.6	3.9	3.6	3.4	3.0	5.87
07	5.8	7.8	5.6	4.2	4.4	9.5	0.1	0.4	0.4	0.4	3.86
08	1.1	0.8	1.0	0.4	1.0	1.3	1.0	1.2	1.0	1.2	1.00
09	6.8	9.6	9.1	9.8	8.7	9.7	11.3	10.6	8.8	8.8	9.33
10	2.9	3.1	3.8	4.2	2.2	3.0	3.5	3.4	3.5	4.9	3.45
11	4.5	5.9	0.1	0.1	0.1	6.0	4.8	6.4	8.7	10.8	4.74
12	7.1	6.5	10.0	7.3	3.5	3.0	3.6	10.2	5.1	9.3	6.56
13	2.5	2.4	1.6	1.4	1.1	1.2	1.3	1.3	1.7	2.6	1.71
14	2.8	2.9	2.5	2.7	2.6	2.2	1.1	0.9	1.3	2.6	2.16
15	0.8	5.9	6.8	7.8	6.0	6.0	4.8	2.9	3.0	2.3	4.63
16	6.0	5.3	4.4	2.6	2.8	4.0	4.6	3.0	5.5	6.8	4.50
17	3.4	3.3	0.3	3.1	4.2	4.1	3.8	2.9	2.8	2.9	3.08
18	1.5	1.4	1.8	1.7	3.0	4.0	3.1	3.2	3.1	3.3	2.61
19	3.4	9.4	8.8	5.4	4.2	6.2	5.5	8.2	4.6	3.5	5.92
20	2.8	1.7	2.0	2.8	2.4	4.6	2.5	3.3	1.5	1.8	2.54

Table 5.10

**Industry average of inventory turnover ratios
for the period 1980-81 to 1989-90**

Year	Industrial Code							
	304	312	313	340	343	349	357	360
1980-81	5.1	4.9	4.9	4.9	2.7	3.4	2.5	3.1
1981-82	4.8	4.7	5.3	5.2	2.7	5.6	3.8	5.6
1982-83	5.9	4.0	5.5	4.6	2.1	5.6	2.1	5.4
1983-84	5.8	3.9	5.4	3.8	2.0	5.2	2.5	4.1
1984-85	5.2	4.0	5.4	4.9	1.8	4.4	3.6	3.3
1985-86	5.7	4.4	5.5	4.0	1.7	4.9	4.1	5.4
1986-87	6.9	1.4	6.2	4.0	1.3	4.7	3.5	4.0
1987-88	6.1	2.1	6.0	6.7	1.1	3.0	3.1	5.8
1988-89	6.0	2.4	5.8	5.8	1.5	4.3	3.0	3.1
1989-90	6.7	4.4	6.0	6.1	2.6	4.6	3.2	2.6
Mean	5.82	3.62	5.60	5.00	1.96	4.57	3.14	4.24

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turnover ratio. In the case of all other industries, the overall average ratios are within the range of 3.14 to 5.60

5.3.1.4 Working Capital Turn over Ratio

A relationship exists between the sales of a firm and the amount of its working capital. This relation of net sales to net working capital is defined as working capital turnover ratio which establishes the sales intensity per unit of working capital. This ratio indicates whether the business is being operated on a small or large amount of net working capital in relation to sales.

The average working capital turnover ratio of the units are presented in Table 5.11. They vary from 0.46 to 7.5. The sales intensity of the industrial units are thus seen to be unsatisfactory. The average working capital turnover ratios (industry wise) presented in Table 5.12 show that the manufacture of rubber products industry (312) has the highest and the plastic products industry (313) the lowest average working capital turnover ratios. In the case of other industries the ratios are within the range 1.0 to 2.11.

The preceding analysis on unit-wise and industry-wise basis, gives an appropriate idea of the poor financial position and inefficient financial management of industrial co-operatives. In order to get a clear picture of the overall financial

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Table. 5.11.

Working capital turn over ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	1.7	2.1	2.0	2.3	2.4	2.2	2.0	3.1	2.0	1.8	2.16
02	1.9	2.2	2.1	2.1	2.6	2.0	2.2	3.2	2.1	1.9	2.23
03	4.5	4.9	1.6	2.2	1.6	1.9	2.8	8.2	4.0	4.2	3.59
04	1.3	0.8	0.6	1.2	1.2	1.8	2.4	1.8	1.9	2.0	1.50
05	6.6	7.1	7.0	8.1	11.7	9.4	6.2	7.4	6.2	5.3	7.50
06	1.0	1.3	0.9	0.9	0.6	0.2	0.2	0.6	0.4	0.4	0.65
07	0.9	0.9	0.9	0.8	1.0	1.0	0.1	0.1	0.1	0.1	0.59
08	0.6	0.5	0.4	0.7	0.5	0.8	0.8	0.1	0.1	0.1	0.46
09	0.5	1.7	0.7	0.7	0.6	0.6	0.8	0.7	0.2	0.2	0.67
10	1.5	1.8	1.8	2.3	1.1	2.4	2.0	1.7	1.7	3.8	2.01
11	1.1	1.0	0.1	0.1	0.1	0.6	0.4	0.6	0.5	0.6	0.51
12	1.1	1.8	1.6	1.8	1.6	0.7	1.4	1.3	0.8	1.9	1.40
13	1.1	1.1	0.7	0.5	0.5	0.7	0.8	0.8	1.1	1.1	0.84
14	1.3	1.4	1.2	1.4	1.2	1.0	0.6	0.5	0.9	1.7	1.12
15	0.2	2.0	2.8	3.8	2.1	2.5	1.8	1.3	1.4	1.1	1.90
16	1.9	1.8	1.3	1.1	1.6	1.7	2.1	1.4	2.4	2.3	1.76
17	1.2	1.1	1.2	1.2	1.3	1.3	1.2	0.9	1.0	1.0	1.14
18	0.1	5.6	0.7	0.8	1.0	1.3	1.1	1.1	1.1	1.1	1.39
19	0.7	0.8	1.2	0.8	0.5	1.2	0.8	0.9	0.8	0.7	0.84
20	3.3	2.3	1.0	0.2	1.4	1.1	0.8	1.0	0.7	0.8	1.26

Table 5.12

Industry average of working capital turnover ratios for the period 1980-81 to 1989-90

Year	Industrial code							
	304	312	313	340	343	349	357	360
1980-81	2.2	2.8	0.5	1.3	1.3	1.8	0.6	2.0
1981-82	2.2	3.1	1.1	1.7	1.3	1.9	1.5	1.5
1982-83	2.0	2.9	0.6	1.1	0.8	2.0	1.0	1.7
1983-84	2.0	3.3	0.7	1.4	0.9	2.0	1.0	3.8
1984-85	2.1	3.2	0.6	0.9	0.9	2.0	1.2	1.0
1985-86	1.9	3.6	0.7	1.2	0.9	2.1	1.3	1.2
1986-87	2.0	2.1	0.8	0.9	0.7	2.2	1.1	0.8
1987-88	2.1	2.7	0.4	1.2	0.7	2.4	1.0	0.9
1988-89	1.9	2.2	0.2	1.1	1.0	2.3	1.1	0.8
1989-90	1.6	1.9	0.2	2.1	1.4	2.4	1.1	0.8
Mean	2.00	2.78	0.58	1.29	1.00	2.11	1.09	1.45

performance, we have to examine the long term financial conditions of these industries.

5.4 Analysis of long term financial condition or solvency ratios

When the financial condition of a firm is to be examined, both the short and the long term financial conditions have equal importance. The short term creditors are most interested in the current debt paying ability of the industry while share holders and long term creditors are concerned more with its long term financial prospects. The long term solvency of a firm may be examined by using capital structure ratios. which reflect its ability to assure the long term creditors of periodic payment of interest during the period of the loan and repayment of principal amount on maturity or in pre-determined installments at due dates.[18]

5.4.1. Debt - Equity Ratio

Debt-equity ratio or external internal equity ratio is used to determine the proportion of debt in total financing. The debt-equity ratio shows the relation between claims of creditors and that of owners. This ratio provides an idea of the amount of capital supplied to the firm by the creditors and owners respectively . Normally, debt-equity ratio of 2:1 is acceptable. A capital intensive industry may have a high debt equity ratio.

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The indicators used to measure the long term financial condition is the debt equity ratio and the interest coverage ratio. These ratios are worked out for the unit level (table 5.13)and industry level (table 5.14) for ten years from 1980-81 to 1989-90..For each year the ratio for the industry is obtained by averaging the firm level ratios. The industry average for 10 years thus obtained is averaged to obtain overall average ratio for each industry

Debt-equity ratio shows the extent to which debt financing has been used in the business. A high ratio shows that the claims of creditors are higher than those of owners. From the Table 5.13 it is observed that the average debt equity ratio between 1980-81 to 1989-90 varies from 0.89 to 8.50 Moreover, the average ratios of 15 out of the 20 units are found satisfactory. The overall averages of the debt-equity ratios of the selected industrial groups are presented in Table 5.14. The values vary from 1.18 to 6.56. It is obvious that all these industries have debt-equity ratios exceeding one which means that the capital contributed by the creditors exceeds owner's capital contribution. Moreover, six out of the eight industries have debt ratios exceeding the standard values of two and the remaining two industries have ratios less than the standard. Thus, the debt ratios of industrial co-operatives under study seem to be high and unfavorable to their smooth functioning .

Table. 5.13.

Debt-equity ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	4.9	4.1	3.9	4.0	4.0	3.9	3.8	3.9	3.9	3.9	4.03
02	5.1	5.0	5.0	5.0	5.0	5.9	4.8	4.7	4.8	4.4	4.97
03	5.8	5.9	5.9	5.5	5.8	5.9	5.8	5.9	5.9	5.4	5.78
04	5.4	4.2	4.0	4.1	4.2	5.1	5.1	4.9	5.2	4.5	4.67
05	6.5	6.8	6.8	8.0	8.9	8.8	8.8	6.7	8.0	6.0	7.53
06	6.8	6.3	6.8	5.9	5.3	8.0	8.0	8.8	6.8	6.8	6.95
07	6.3	6.6	5.8	4.9	6.3	6.1	9.2	7.1	8.2	8.1	6.86
08	3.2	3.3	3.3	3.0	3.0	3.0	3.0	3.9	3.5	3.0	3.22
09	5.6	5.1	5.5	4.5	4.2	4.0	3.0	3.0	2.9	2.9	4.07
10	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.6	1.6	1.6	1.41
11	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.9	1.9	2.14
12	0.3	0.4	0.4	1.6	1.6	1.6	1.8	1.9	1.8	1.9	1.34
13	1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.23
14	8.8	8.8	8.6	8.5	8.5	8.5	8.4	8.4	8.3	8.2	8.50
15	0.7	0.5	0.4	0.3	2.4	3.4	3.1	3.0	2.0	2.4	1.82
16	2.2	2.2	2.2	2.4	2.4	2.5	2.7	2.7	2.7	2.7	2.47
17	5.7	5.7	5.8	6.0	6.2	6.4	6.8	7.3	7.8	8.0	6.57
18	2.3	2.3	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.10
19	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.1	3.1	2.1	2.10
20	0.1	0.1	3.0	3.3	0.4	0.4	0.4	0.4	0.4	0.4	0.89

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Table 5.14

Industry average of debt equity ratios for the period 1980-81 to 1989-90

Year	Industrial Code							
	304	312	313	340	343	349	357	360
1980-81	5.2	0.8	3.8	1.4	2.8	1.1	4.3	1.0
1981-82	5.0	8.1	3.4	1.2	2.6	1.8	4.1	1.1
1982-83	5.1	8.3	3.5	1.3	2.3	1.4	4.5	1.2
1983-84	5.5	7.0	3.0	1.9	3.0	2.1	4.0	1.7
1984-85	4.2	7.1	3.1	2.0	2.8	2.0	3.8	1.0
1985-86	4.1	7.2	3.2	2.2	2.6	2.3	4.2	1.1
1986-87	5.1	6.9	3.0	2.1	2.9	2.4	4.5	1.2
1987-88	5.3	6.8	3.2	2.3	2.3	2.0	4.1	1.4
1988-89	6.0	6.8	3.4	2.1	2.7	2.1	4.3	1.0
1989-90	7.0	6.6	3.3	1.8	2.2	3.0	4.5	1.1
Mean	5.25	6.56	3.29	1.83	2.62	2.02	4.23	1.18

5.4.2. Interest coverage ratio

This ratio measures the debt-servicing capacity of a firm in so far as fixed interest on long term loan is concerned. It is determined by dividing the earning before interest and taxes by the fixed interest charges on loans. It shows how many times the interest charges are covered by the profit out of which they will be paid. Too high a ratio implies unused debt capacity. On the other hand too low a ratio is a danger signal to the firm, that it is using excessive debt. The standard for this ratio for an industry is that its fixed interest charges should be covered six to seven times.[19]

Table 5.15 shows the interest coverage ratios of the industrial units from 1980-81 to 1989-90. The average of these ratios varies from(-)4.44 to 8.30. On an average, therefore ,the debt servicing capacity of the units (15 in numbers) is found poor. Interest coverage ratios on industry-wise basis, given in the Table 5.16, vary from -4.51 to 9.53. The ratios are found unsatisfactory in all industries except two.

The evidence suggests therefore that financial position of the units and industries are weak, have been incurring excessive debt and do not have the ability to offer assured payment to creditors.

Table. 5.15.

Interest coverage ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	-1.4	1.3	1.5	8.5	5.4	8.6	5.2	10.3	10.7	9.3	5.94
02	-1.6	1.8	1.4	9.8	5.2	10.9	5.5	11.6	10.9	9.9	6.54
03	-1.5	1.4	1.6	9.3	5.3	8.2	5.5	10.8	10.8	9.8	6.12
04	-1.5	1.6	1.5	9.2	5.4	8.7	5.0	10.9	10.8	9.0	6.06
05	-4.4	-8.2	-6.5	-4.0	-9.4	-5.8	0.4	7.1	8.2	1.4	-2.12
06	-5.4	-8.8	-6.9	-6.0	-9.5	-5.2	0.6	7.8	7.6	1.8	-2.40
07	-3.4	-8.2	-7.3	-6.8	-9.3	-5.2	0.8	7.0	8.2	1.6	-2.26
08	-8.8	-10.5	-10.1	6.1	-0.5	-2.1	3.8	-5.2	-8.2	-8.9	-4.44
09	-8.9	-10.1	-10.5	5.8	-0.3	-2.5	3.2	-5.8	-7.8	8.8	-2.81
10	-1.6	-0.8	0.8	-11.3	-2.1	-2.6	-6.9	-0.6	-0.8	-7.0	-3.29
11	-1.4	-1.0	-0.5	-11.5	-2.8	-2.8	-7.3	-0.2	-0.9	-7.6	-3.60
12	-1.5	-0.9	-0.5	-11.1	-2.3	-2.7	-2.1	-0.4	-0.7	-7.1	-2.93
13	2.7	5.1	-1.4	4.8	1.6	1.3	2.8	2.7	2.5	2.5	2.74
14	2.9	5.5	1.1	4.4	1.6	1.0	2.4	2.9	3.3	3.1	2.82
15	-12.3	-0.9	3.7	-5.8	-9.0	18.9	20.4	24.8	25.2	17.5	8.25
16	-12.5	-0.9	3.9	-5.6	-9.0	18.7	21.2	24.4	25.9	16.9	8.30
17	-2.5	-1.1	-2.6	-2.8	-2.4	-2.5	-2.1	-2.9	-2.8	-2.5	-2.42
18	-2.9	-1.3	-2.2	-2.0	-2.4	-1.9	-2.3	-2.9	-2.4	-1.7	-2.20
19	-3.2	-3.9	-3.9	-3.2	-3.1	-3.6	-2.9	-3.6	-3.6	-3.4	-3.44
20	-2.8	-3.7	-3.9	-2.8	-3.3	-3.2	-2.9	-4.0	-2.9	-3.7	-3.32

Table 5.16

Industry average of interest coverage ratios for the period 1980-81 to 1989-90

Year	Industrial code							
	304	312	313	340	343	349	357	360
1980-81	-1.5	-4.4	-8.9	-1.5	2.8	-12.6	-2.7	-3.0
1981-82	1.5	-8.5	-10.3	-8.9	5.3	0.9	-1.2	3.8
1982-83	1.5	-6.9	-10.3	-0.6	1.2	3.9	-2.4	-3.9
1983-84	8.2	-5.6	6.0	-11.3	4.6	5.4	-2.4	-3.0
1984-85	5.6	-9.4	0.4	-2.4	1.6	-9.3	-2.2	-3.2
1985-86	9.1	-5.4	-2.3	-2.7	1.1	18.8	2.2	-3.4
1986-87	5.3	0.6	3.5	-7.1	2.6	20.8	-2.2	-2.8
1987-88	10.9	7.3	-5.5	-0.4	2.8	24.6	-2.9	3.8
1988-89	10.8	8.0	-8.0	-8.0	2.9	25.6	-2.6	-3.2
1989-90	9.5	1.6	-8.8	-2.2	12.8	17.2	-2.1	-3.1
Mean	6.19	-2.27	-4.42	-4.51	3.77	9.53	-1.85	-1.81

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5.5 Test of profitability

Theoretically the basic objective of a firm is to earn a satisfactory return from its investment. The economic viability of a firm is determined on the basis of the level of returns. In view of this, the measurement of profitability has much importance.

The term profit has different conceptual dimensions and hence there can be different profitability ratios. Two of these are: gross profit margin and net profit margin .

5.5.1 Gross profit margin

The gross profit margin indicates the profit margin left over after meeting the cost of production. A higher value of the ratio is expected to indicate a higher rate of profitability and a lower ratio a low level of profitability.

The performance of the units in terms of gross profit ratios is presented in the Table 5.17. It is seen from Table that 12 out of the 20 units have negative gross profit ratios.

Table 5.18 shows that only three industries, manufacture of drugs, medicine and allied product industry, (304) manufacture of hand tools, weights and measures and general hard wares industry (343) and manufacture of metal products not else where

Table. 5.17.

Gross profit sales ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	10.1	10.1	10.1	10.2	10.3	10.1	10.2	10.1	10.1	10.1	10.14
02	12.1	12.4	12.3	12.3	12.4	12.1	12.3	12.0	12.5	12.1	12.25
03	9.1	11.2	10.1	9.3	12.1	10.2	10.1	12.1	10.3	10.7	10.52
04	10.2	10.3	10.2	10.3	10.0	10.6	10.6	10.5	10.5	10.6	10.38
05	-7.0	-14.5	-14.1	-14.4	-12.1	-9.0	-54.0	-60.0	-69.0	-67.0	-32.11
06	-5.0	-11.0	-8.0	-7.0	-4.0	-12.0	-31.0	-12.0	-41.0	-38.0	-16.90
07	-34.0	-38.0	-32.0	-29.0	-24.0	-45.0	-47.0	-42.0	-41.0	-44.0	-37.60
08	-10.1	-10.1	-20.2	-20.3	-20.2	-20.1	-20.5	-20.1	-20.2	-20.1	-18.19
09	-10.1	-6.0	-44.0	-30.0	-168.0	-26.0	-27.0	-28.0	-29.0	-29.0	-39.71
10	-20.0	-20.0	-70.0	-10.0	-30.0	-19.0	-75.0	-2.0	-10.0	-10.0	-26.60
11	-17.0	-15.0	-14.0	-16.0	-15.0	-12.0	-17.0	-19.0	-26.0	-27.0	-17.80
12	-15.0	-17.0	-18.0	-14.0	-15.0	-14.0	-13.0	-12.0	-13.0	-12.0	-14.30
13	30.0	30.0	40.0	30.0	10.0	10.0	10.0	10.0	10.0	10.0	19.00
14	5.0	15.0	15.0	5.0	10.0	15.0	8.0	55.0	15.0	25.0	16.80
15	-2.2	10.0	10.0	-10.0	-10.0	30.0	19.0	11.0	10.0	19.0	8.68
16	12.0	11.5	13.0	10.5	8.6	9.2	11.0	10.5	11.5	9.0	10.68
17	1.0	1.0	5.0	-1.0	-5.0	-7.0	-4.0	-3.0	-1.0	-1.0	-1.50
18	-2.0	-1.0	-2.0	-1.0	-6.0	-8.0	-6.0	-4.0	-4.0	-5.0	-3.90
19	-40.0	-17.0	-6.0	-55.0	-79.0	-68.0	-72.0	-69.0	-99.0	-88.0	-59.30
20	-28.0	-14.0	-9.0	-42.0	-62.0	-60.0	-70.0	-62.0	-80.0	-72.0	-49.90

Table 5.18

Industry average of the gross profit sales ratios for the period 1980-81 to 1989-90

Year	Industrial Code							
	304	312	313	340	343	349	357	360
1980-81	8.3	-7.0	-9.4	-90.0	17.0	-20.0	-5.0	-32.0
1981-82	11.4	-14.0	-23.0	24.0	14.0	7.0	8.0	-41.0
1982-83	13.4	-14.2	-19.0	-24.0	15.0	4.0	29.0	-18.0
1983-84	14.2	-14.4	-37.0	-3.0	15.0	-25.0	-11.0	-8.0
1984-85	10.6	-12.0	-25.0	-80.0	15.0	-3.0	-6.0	-54.0
1985-86	9.7	-9.0	-48.0	-30.0	13.0	-20.0	-1.0	-74.0
1986-87	13.4	-55.5	-11.0	-31.0	15.0	26.0	-8.0	-63.0
1987-88	14.4	-65.0	-39.0	-31.0	18.0	36.0	-11.0	-70.0
1988-89	12.1	-68.0	-199.0	-41.0	16.0	52.0	-22.0	-97.0
1989-90	10.9	-68.8	-188.0	-36.0	27.0	48.0	-9.0	-84.0
Mean	11.84	-32.79	-59.84	-34.20	16.50	10.50	-3.60	-54.10

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classified (349), produce positive gross and net profits. The remaining five out of the eight industries have recorded negative gross and net profit margins. Among these industries manufacture of electrical industrial machine apparatus and parts (360) records the lowest profit margin.

5.5.2 Net profit margin

The net profit margin, net profit as per cent of net sales, indicates the margin left as returns to the owner funds after meeting all expenses, including interest and taxes. Other things remaining the same, a higher value of the net profit to net sales indicates a higher efficiency of the production system which fully indicates the economic viability of the firm.

A reasonable gross profit margin is necessary to earn adequate net profits. The average net profit ratios of the majority of the unit are found to be negative (Table 5. 19). The industry-wise analysis shows that the overall average net profit ratios of five industries out of eight are negative (Table 5.20).

To sum up : the financial performance analysis reveals the precarious financial position of the industrial co-operatives in Kerala. There is drastic decline in profitability and considerable erosion in liquidity on account of higher increase in liabilities than in assets. Further, the long term financial position is very weak. Majority of the industries are heavily

Table. 5.19.

Net profit sales ratio of the units studied

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Mean Value
01	9.0	9.2	6.3	12.1	7.0	7.0	10.3	10.3	10.1	9.6	9.09
02	6.5	8.6	8.2	10.2	6.0	6.5	11.2	11.1	12.0	8.5	8.88
03	7.0	10.0	9.0	8.0	9.0	8.0	9.3	11.1	9.7	7.9	8.90
04	5.1	7.0	6.0	7.0	8.0	7.0	8.0	9.2	7.6	6.8	7.17
05	-9.0	-15.0	-15.1	-14.8	-13.2	-10.1	-57.0	-62.0	-71.0	-69.0	-33.62
06	-6.0	-12.0	-9.0	-8.1	-4.6	-12.5	-32.0	-13.1	-43.0	-39.5	-17.98
07	-36.0	-39.5	-34.0	-31.2	-27.0	-47.0	-48.5	-43.0	-42.5	-46.0	-39.47
08	-12.0	-11.0	-22.0	-21.4	-23.0	-22.0	-21.5	-22.0	-20.8	-21.0	-19.67
09	-12.1	-8.0	-49.0	-32.0	-171.0	-28.0	-29.5	-29.9	-31.0	-32.1	-42.26
10	-23.0	-24.0	-74.5	-12.4	-34.0	-21.3	-77.0	-5.0	-12.0	-13.1	-29.63
11	-19.0	-18.0	-15.0	-19.0	-17.0	-13.0	-19.0	-23.0	-29.0	-29.5	-20.15
12	-18.0	-19.5	-21.4	-16.0	-18.0	-19.5	-14.8	-14.3	-15.0	-14.3	-17.08
13	27.0	26.5	38.0	27.0	8.0	9.0	7.0	8.0	9.0	8.0	16.75
14	4.0	13.2	12.5	3.6	7.5	12.4	6.2	53.0	12.0	22.0	14.64
15	-3.0	8.0	9.0	-11.0	-12.0	28.0	17.0	9.0	9.0	17.0	7.10
16	10.1	9.5	11.0	9.0	7.0	8.2	9.5	9.0	8.0	7.0	8.83
17	-1.0	-0.5	-4.0	-3.0	-7.0	-8.0	-6.0	-4.5	-3.4	-2.4	-3.98
18	-3.5	-2.8	-4.0	-3.0	-8.0	-9.0	-7.2	-5.5	-6.0	-7.0	-5.60
19	-43.0	-18.5	-8.0	-58.0	-82.0	-70.0	-74.0	-71.0	-101.0	-91.0	-61.65
20	-30.0	-16.0	-11.0	-44.0	-65.0	-62.0	-72.0	-64.0	-82.0	-75.0	-57.10

Table 5.20

Industry average of the net profit sales ratios
for the period 1980-81 to 1989-90

Year	Industrial Code							
	304	312	313	340	343	349	357	360
1980-81	7.0	-8.0	-9.8	-100.0	15.0	-24.0	-8.0	-34.0
1981-82	10.0	-15.0	-26.0	23.0	12.0	6.0	7.0	-42.0
1982-83	8.0	-15.1	-22.0	-25.0	13.0	3.0	27.0	-20.0
1983-84	13.0	-15.0	-40.0	-32.0	14.0	-28.0	-12.0	-11.0
1984-85	8.0	-13.0	-30.0	-82.0	10.0	-9.0	-7.0	-56.0
1985-86	7.0	-10.0	-52.0	-32.0	12.0	-21.0	-2.0	-76.0
1986-87	12.4	-66.2	-18.0	-36.0	12.0	25.0	-9.0	-66.0
1987-88	12.2	-69.2	-42.0	-36.0	16.0	35.0	-12.0	-72.0
1988-89	11.1	-90.1	-212.0	-51.0	17.0	51.0	-23.0	-99.0
1989-90	9.6	-88.9	-202.0	-38.0	24.0	47.0	-10.0	-86.0
Mean	9.83	-39.05	-65.38	-40.90	14.50	8.50	-4.90	-56.20

burdened by debts and they are not in a position to pay interests being caught in a debt trap. The poor performance may have several underlying reasons, such as managerial or institutional. The ensuing chapter endeavours to discuss some of the questions with respect to the management of co-operatives and the involvement of the workers in management.

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CHAPTER 6

CO-OPERATIVE MANAGEMENT AND WORKER'S INVOLVEMENT

In the preceding two chapters, the efficiency of the industrial co-operatives, in terms of growth, productivity, capacity utilisation and financial performance was analysed. The dismal performance, exemplified by the several indicators, calls for an analysis of factors that have possibly affected the industrial units adversely. In the case of industrial Co-operatives where the workers themselves are the owners and managers, labour unrest which is considered in many quarters as an important factor affecting work efficiency in Kerala should be expected to be on the low side. In the present chapter, in pursuing the causes of inefficiency, particular attention is paid to managerial quality and worker's involvement in industrial co-operatives. The exercise is likely to throw up resulted which would be of significance to policy making. Though, in principle, industrial co-operatives are owned and managed by workers, in Kerala the worker's role in the management of industrial co-operatives is seem to be minimal. Further, it varies among the co-operatives depending upon difference in the relative representation of member-workers and non-member workers.

6.1 Co-Operative Management

Management in a co-operative has to function within the frame work of a complex system of democratic control. The General Body of the members of a co-operative constitutes its body politic. The ultimate authority of the co-operative is vested in the general body. The democratic control would be ideal ,if all the members could directly supervise the management of the day-to-day affairs. But it would be neither expedient nor economical for all the members together to supervise and manage the society. Therefore, the members elect from among themselves the Board of Directors which is the designated authority to control management. Thus the members exercise control over the Board and the latter over the executive management which in turn is appointed by the Board. The General Body cannot interfere with the actions of the Board in the exercise of authority conferred on it by the bye-laws. However, the General Body possesses the authority to elect or remove the Board of Directors. Thus the General Body satisfies the basic elements of democratic control indirectly. However, the success of democratic control would depend on the efficiency of the members. Naturally, educational qualifications, the cause of co-operativisation and political affiliation of the members in general and Board in particular should be expected to have a significant role to play in the quality management of co-operatives. The discussion below on these aspects is made on

the basis of a study of workers on a sample basis and of the entire Board of Directors.

The educational qualifications of the Board members of the co-operative units are presented in Table 6.1. It may be observed that the majority of the Board members have relatively low academic qualifications say S.S.L.C or below. Table 6.2 shows however that wide inter-co-operative differences exist in respect of educational qualifications of Board members. For instance in industry 349, all the Board members had education of less than S.S.L.C level. On the other hand in industry 304, all the Board members possessed professional educational qualification, see Table 6.2

It is also revealed that none of the managerial personnel had professional managerial education. The founders of Co-operative movement had anticipated this problem right from its inception and had emphasised [2] as a remedial measure the imparting of co-operative education to all members. [3]

Classification of the Board members according to co-operative education is presented in Table 6.3. It is observed that only a small proportion, 12 out of 140, had acquired any type of formal co-operative education. The lack of co-operative education of the managerial personnel must have been one of the reasons for the poor performance of the co-operatives.

Table 6.1

**Classification of Board members in the units
according to the educational qualifications**

Units	Below S.S.L.C	S.S.L.C	Grad-uate	P.G.	ITI	Dip-loma	Engg.	Profess-ional	Total
01	-	-	-	-	-	-	-	4	4
02	-	-	-	-	-	-	-	7	7
03	-	-	-	-	-	-	-	7	7
04	-	-	-	-	-	-	-	10	10
05	2	2	3	-	-	-	-	-	7
06	1	2	3	-	1	-	-	-	7
07	-	5	1	-	1	-	-	-	7
08	-	4	3	-	-	-	-	-	7
09	-	4	1	-	2	-	-	-	7
10	4	2	1	-	-	-	-	-	7
11	3	3	1	-	-	-	-	-	7
12	3	4	-	-	-	-	-	-	7
13	-	5	2	-	-	-	-	-	7
14	1	3	2	-	1	-	-	-	7
15	7	-	-	-	-	-	-	-	7
16	7	-	-	-	-	-	-	-	7
17	-	-	-	-	5	2	-	-	7
18	-	-	-	-	4	3	-	-	7
19	-	3	1	1	-	-	2	-	7
20	3	4	-	-	-	-	-	-	7
Total	31	41	18	1	14	5	2	28	140

Table 6.2

Classification of Board members in the industrial groups according to the educational qualifications

Ind. Code	Below S.S.L.C	S.S.L.C	Grad-uate	P.G.	ITI	Dip-loma	Engg.	Profess-ional	Total
304	-	-	-	-	-	-	-	28	28
312	3	9	7	-	2	-	-	-	21
313	-	8	4	-	2	-	-	-	14
340	10	9	2	-	-	-	-	-	21
343	1	8	4	..	1	-	-	-	14
349	14	-	-	-	-	-	-	-	14
357	-	-	-	-	9	5	-	-	14
360	3	7	1	1	-	-	2	-	14
Total	31	41	18	1	14	5	2	28	140

Table 6.3

**Distribution of the Board members in the units
on the basis of co-operative education**

Sl. No.	Description	No.	Percentage
01	Board members having co-operative education	12	9
02	Board members not having co-operative education	128	91
	Total	140	100

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Another factor which would determine the quality of the management is the commitment of the Board members to the co-operative. It is understood from Table 6.4 that majority of the Board members ,in the units under study are non- workers. The only exception to this general pattern are industries 313, 349 and 357,see Table 6.5.

Another major factor could be the political affiliation of the Board members. It is seen from Table 6.6 that the majority of the units, 16 out of 20, are governed by Board members having political affiliation. Industry-wise analysis shows that in all the industries, except one, Board members had clear political affiliation, see Table 6.7

Thus we find that the majority of the Board members are non- workers and persons without co-operative education and with clear political affiliation. Non-workers in position of management is against the basic principle of co-operation, which by definition is an organisation owned and controlled by workers on the basis of the democratic principles. The political affiliation of Board members leads oftentimes to situations in which, the co-operatives are subjected pressures from outside, namely by political parties whose interest need not necessarily conform to those of the co-operatives. In short, various factors like lack of education, lack of professional management and external interferences are seen to have adversely affected the quality of management of the co-operatives. Apart from the quality of

Table 6.4

Classification of Board members in the units on the basis of work performance

Units	Worker	Non worker	Total
01	—	4	4
02	—	7	7
03	—	7	7
04	—	10	10
05	—	9	9
06	—	7	7
07	—	7	7
08	4	3	7
09	5	2	7
10	6	1	7
11	1	6	7
12	1	6	7
13	1	6	7
14	1	6	7
15	7	—	7
16	5	—	5
17	7	—	7
18	7	—	7
19	—	8	8
20	3	3	6
Total	48	92	140

Table 6.5

Classification of Board members in different industrial gorups according to the work performance

Ind. Code	Worker	Non worker	Total
304	–	28	28
312	–	23	23
313	9	5	14
340	8	13	21
343	2	12	14
349	12	–	12
357	14	–	14
360	3	11	14
Total	48	92	140

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Table 6.6

Classification of Board members in the units on the basis of political attachment

Units	Politically attached	Politically not attached	Total
01	-	4	4
02	4	3	7
03	-	7	7
04	5	5	10
05	5	4	9
06	4	3	7
07	4	3	7
08	4	3	7
09	3	4	7
10	5	2	7
11	3	4	7
12	7	-	7
13	7	-	7
14	7	-	7
15	4	3	7
16	5	-	5
17	5	2	7
18	5	2	7
19	4	4	8
20	3	3	6
Total	**84** (60)	**56** (40)	**140** (100)

Note : Figures in the paranthesis are the percentage to the total

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Table 6.7

Classification of Board members in different
industrial groups   according to political attachment

Ind. Code	Politically attached	Politically notattached	Total
304	9	19	28
312	13	10	23
313	7	7	14
340	15	6	21
343	14	-	14
349	9	3	12
357	10	4	14
360	7	7	14
Total	84	56	140

management, there may exist other factors which also influence the performance of co-operatives. To some of the more important among them, we now turn.

6.2   Employment structure of the Co-operatives

Employment structure may have a bearing on performance. The classification of the members and workers on the basis of the units under study is presented in Table 6.8.   There are 5090 members but only 212 (about four per cent)are member workers.

Table 6.9 presents the percentage distribution of members and member-workers by industrial groups.   It may be observed that only a small percentage of workers are members. For example, the industrial group which employs the highest percentage of members (360) employs only 41.25 per cent . In the case   of three   industrial groups only less than two per cent of members are workers. Since the majority of the workers are non-members, the poor performance of the industrial co-operatives in terms of ,productivity and capacity utilisation which   was observed earlier, could perhaps, to a considerable extent, be attributed to the lack of worker's involvement in productive activity. An examination of the socio-economic background of workers might throw light on other factors which affect worker's commitment.

Table 6.8

Distribution of members and workers
of the units studied

Units	No. of members	No. of workers		
		Member	Non member	Total
01	64	3	12	15
02	864	8	18	26
03	641	8	22	30
04	657	9	11	20
05	542	6	19	25
06	242	4	14	18
07	222	5	9	14
08	108	7	22	29
09	51	2	6	8
10	122	5	1	6
11	88	8	1	9
12	218	7	1	8
13	240	1	1	2
14	175	5	8	13
15	212	32	8	40
16	123	8	4	12
17	322	40	62	102
18	119	21	18	39
19	56	23	13	36
20	24	10	8	18
Total	5090	212	258	470

Table 6.9

Classification of members and workers according to the industrial groups

Ind. Code	Total Members	Total workers	Member workers	% of workers to members	% to member workers to total workers
304	2226	91	28	1.26	30.77
312	1006	57	15	1.49	26.32
313	159	37	9	5.66	24.32
340	428	22	20	4.67	90.91
343	415	15	6	1.45	40.00
349	335	52	40	11.94	76.92
357	441	142	62	14.86	43.66
360	80	54	33	41.25	61.11
Total	5090	470	213	4.18	45.32

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6.2.#. Socio-economic background of the workers

The distribution of workers according to age is presented in Table 6.10. It is observed that the majority of workers in the age group 36-45 are non-members.

The educational qualification of the workers is presented in Table 6.11. It is seen 52 per cent of the member workers do not have even S.S.L.C. education. The majority of the better qualified and the professionally educated belong to the non-member category. The non-member workers are likely to be less committed to the cause of the co-operative than the member-workers . They may seek better opportunities elsewhere and may therefore have less of permanent interest in the society. The extent to which individuals would seek better opportunities would depend partly on their economic status, determined by household background and current income levels.

Distribution of workers, on the basis of the source of current income, is presented in Table 6.12. It is observed that 70 per cent of the member-workers depend solely on their salary. However, only 36 per cent of the non-member workers are in this group. Furthermore, 64 per cent of the non-member workers have alternative sources of income. This fact implies that the dependence of the member-workers on the co-operative for sustenance is much higher than that of the non-member workers.

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Table 6.10

Distribution of the workers in the units
on the basis of age

Sl. No.	Range of Age	Members No.	Members Percentage	Non members No.	Non members percentage
01	18-35	17	34	12	24
02	36-45	12	24	27	54
03	46-55	21	42	11	21
	Total	50	100	50	100

Table 6.11

**Distribution of the workers in the units
on the basis of educational qualification**

Sl. No.	Qualification	Members		Non members	
		No.	Percentage	No.	percentage
01	Below S.S.L.C	26	52	18	36
02	S.S.L.C	11	22	17	34
03	Technically Qualified	13	26	15	30
	Total	50	100	50	100

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Table 6.12

Distribution of the workers in the units on the basis of income

Sl. No.	Source of Income	Members		Non members	
		No.	Percentage	No.	percentage
01	Salary & Wages	35	70	18	36
02	Other than Wages & salary	15	30	32	64
	Total	50	100	50	100

The distribution of workers on the basis of the wages and salaries presented in Table 6.13. shows that 70 per cent of the member- workers get monthly wages below Rs.1000. The corresponding percentage among non-member workers is smaller, 34 per cent . The majority of workers in the latter group belong to higher wage categories.

This finding reinforce the earlier one that the dependence of the member-workers on co-operatives is much stronger than that of the non-member-workers.

The length of service of the member and non -member workers is presented in Table 6.14. The length of service of member workers and non-member workers lies in the range of 0-20 years. In general the proportion of workers with less than 10 years of work is higher among non-members. Whether this phenomenon is due to larger incidence of leaving work in the co-operatives by non-member workers in search of better opportunities is not certain.

Contrary to the co-operative ideas, an important phenomenon observed in the industrial co-operatives of Kerala is that majority of the workers are found to have actively participated in trade union activities. It is seen from the table 6.15 that 83 per cent of the total workers are members of trade unions. Furthermore, 74 per cent of the member workers and 92 per cent of the non member workers are involved in trade union

Table 6.13

Distribution of the workers in the units on the basis of wages & salary

Sl. No.	Wages & salaries (Rs.)	Members No.	Percentage	Non members No.	percentage
01	0 - 500	11	22	2	4
02	501 - 1000	24	48	15	30
03	1001 - 2000	12	24	24	48
04	above 2000	3	6	9	18
	Total	50	100	50	100

Table 6.14

Distribution of the workers in the units
on the basis of length of service

Sl. No.	Length of service in yrs.	Members No.	Percentage	Non members No.	percentage
01	0 - 5	16	32	27	54
02	6 - 10	28	56	18	36
03	11 - 20	6	12	5	10
04	above 20	-	-	-	-
	Total	50	100	50	100

Table 6.15

Distribution of the workers in the units
on the basis of trade union activities

Sl. No.	Trade Union	Members		Non members		Total	
		No.	%	No.	%	No.	%
01	Activist	37	74	42	93	83	83
02	Not activist	13	26	4	8	17	17
	Total	50	100	50	100	100	100

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Table 6.16

Distribution of the workers in the units
on the basis of political attachment

Sl. No.	Political attachment	Members No.	%	Non members No.	%	Total No.	%
01	Attached	26	52	41	82	67	67
02	Not attached	24	48	9	18	33	33
	Total	50	100	50	100	100	100

activities. Again it is found that the 67 per cent of the total workers are associated with political parties (table 6.16). Thus it is significant to note that trade union activities are stronger among the non-member workers.In several academic and administrative discussions, the view has been expressed that political interference is one of the reasons for the efficiency lapse of the sector.

6.3 Level of involvement of workers in the co-operatives

The problem of labour commitment assumes considerable significance in the context of increasing labour productivity[4]. Organisational commitment refers to the nature of an individual's relationship with an organisation. That is, a highly committed member will demonstrate (a) strong desire to remain as part of the organisation, (b) willing to exert high levels of effort on behalf of the organisation and (c) definite belief in the values and goals of the organisation. Two major views of employee's dedication focus on effective attachment and calculative involvement. The emotional based view of organisational commitment emphasises the employees sense of unity and share values with the organisation[5]. Another view of organisational commitment centers on the calculative aspects of employees - organisation relationship, thus envisioning economic factors to be of primary importance Still another version of organisational commitment refers to person's effective relations to the characteristics of his employing organisation. It is concerned

with the feeling of attachment to the goals and values of the organisation for its own sake rather than instrumental reasons. However, Steers[6] explains organisational commitment as the relative strength of an individual's identification with and involvement in a particular organisation. Further, it is argued that commitment is characterised by three factors: (a) a strong belief in and acceptance of the organisation goals and values, (b) a willingness to exert considerable effort on behalf of the organisation and (c) a strong desire to remain as a member of the organisation.[7] Another argument is that the worker ownership may affect employees commitment Worker owners were found to have higher levels of influence, greater identification with company's goals and greater job[9] satisfaction.[8]

In the co-operatives, workers are the owners of the unit while in the conventional firm workers are hired to work by the owners of the firm. Opportunity for the decision making in the conventional firm is rare, while in the co-operatives it is taken by the members . The co-operatives operate according to the principles of wages equalization while in the conventional firms worker's wage rates vary depending upon the job they perform. Further, in the co-operatives individuals pay depending on the effectiveness of the entire organisation. This leads to the hypothesis that organisational commitment is greater among the co-operative owners than among the workers in a conventional organisation.[9]

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The task of the present section is to examine the link between the theoretical views with the empirical experience. For this purpose, the level of involvement of the workers, both member and non-member, is to be examined.

Likert - type scale[10] is used to analyse the various levels of involvement of the workers. The twenty statements in the second part of the schedule is intended to reflect the workers involvement. Each statement will find seven possible response categories (strongly disagree, moderately disagree, slightly disagree, neither agree nor disagree, slightly agree, moderately agree and strongly agree). Responses obtained are analysed and scores assigned as a bipolar scale for the different categories of responses indicating strongly agree to strongly disagree with a score range of 7 to 1 (ie. strongly agree 7, moderately agree 6, slightly agree 5, neither agree nor disagree 4, slightly disagree 3, moderately disagree 2 strongly disagree 1) Maximum Score attainable is 140 and minimum 20. The range of the total score from 20-140 is divided into three groups (20-60, 61 - 100, 101 - 140). The first group is taken as the workers with low level of involvement, second with moderate level and the third with high level of involvement. Mean and coefficient of variation of the scores of the member and non member workers are computed. These two parameters are used to examine the differences in the level of involvement of the member workers with that of the non-member workers.

The workers, on the basis of the scores they attained, are presented in the table 6.17. The mean score of the member workers are 102 with standard deviation 25.29. However, the mean and standard deviation of the score of the non-member workers are 86.8 and 23.45respectively . The coefficient of variation of the member and non-member workers are 24.79 and 27.01 respectively. The level of involvement of the workers is presented in the table 6.18.Workers are classified into three groups on the basis of the level of involvement.The first group show low level of involvement. The second group shows moderate level of involvement and the third group has high level of involvement.

Thus, it is realised that the non-member workers in the co-operatives have less commitment to the organisation. Eight per cent of the member workers show low level of involvement as against 12 per cent of the non-member workers in this category. Twenty eight per cent of the member workers are of the moderate level of involvement as against 62 per cent of the member workers. Finally, 64 per cent of workers show a high level of involvement as against 26 per cent of the non-member workers.

To sum up, the analysis shows that the existing industrial co-operatives in Kerala are not organised in accordance with the co-operative principles which assume, fundamentally, absence of external interference and exploitation. In addition, these industrial units are not getting the services of professional management. Above all, the workers commitment is

Table 6.18

**Distribution of the workers in the units
on the basis of the level of involvement**

Sl. No.	Description	Members No.	%	Non members No.	%
01	Low level of Involvement	4	8	6	12
02	Moderate level of Involvement	14	28	31	62
03	High level of Involvement	32	64	13	26
	Total	50	100	50	100

Table 6.17

Classification of workers
on the basis of the score they attained

Sl. No.	Range of score	member	Non member
01	20- 40	1	2
02	41- 60	3	4
03	61- 80	6	11
04	81-100	8	20
05	101-120	19	9
06	121-140	13	4
Total		50	50
Mean		102.00	86.80
S.D.		25.29	23.45
C.V.		24.79	27.01

Note : S.D. - Standard Deviation

C.V. - Coefficient of Variation

found to be on a low side. The reasons for this state of affairs are embedded in the legal frame work itself. The co-operatives are envisaged as worker owned firms working on democratic principles. But, in industrial co-operatives of Kerala as found earlier, only about 4 percent of the members are workers. In other words majority of the members are non workers and they, because of their money power, superior knowledge and skill, control the destiny of the co-operatives. Further, due to this non-worker ownership and managerial control the production relations also follow the usual pattern of exploitation. This findings warrant to effect necessary changes in the Co-operative Act of Kerala so as to limit the assistance rendered by the State to the deserving workers alone. This may be done either by incorporating necessary amendments to the present Co-operative Act or enacting a new piece of legislation. Discussion in this chapter reveals that the research in this direction can provide better answer to the non success of the industrial co-operatives. However, due to several constraints present study is taken only limited indicators for this purpose which shows ample scope for further reach.

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Notes and Reference

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5. Rhodes and Steers, (1981), p.1019.

6. Oliver, Nick, (1984), p.31.

7. Ibid., p.31.

8. Rhodes and Steers, (1981), p.1015.

9   Ibid., p.1016.

10 Wilkinson and Bhandarkar, (1977), p.225.

CHAPTER 7

SUMMARY AND CONCLUSIONS

In this Chapter we summari the discussion and recapitulate and highlight the major conclusions. This study constitutes a pioneering systematic attempt to identify the problems and prospects of the modern small scale industrial co-operatives in Kerala. The performance of the industrial co-operative was analysed with the help of the secondary data while discussion at the unit and industry-group levels was made mainly on the basis of primary data collected personally through interviews with structured schedules, of all the industrial co-operatives selected.

The progress and development of the co-operative movement in Kerala has been substantial particularly in terms of the quantitative aspects. This form of organisation has made forays primarily in the service sector activities, mainly banking and trade. However, the performance of the co-operatives in the productive sector particularly manufacturing, has not been impressive.

The analysis of growth of the units, in terms of output, value-added, employment and fixed capital, revealed the dismal performance of the modern small scale industrial co-operatives during the 1980s. It is observed that the annual growth rate of output of the units varied from (-)68.29 to 14.68 and that only seven units showed rising trend. The annual trend growth rate of value-added varied from (-)66.89 to 19.41. The corresponding growth of employment and fixed capital of the units varied from (-) 23.41 to 5.86 and (-)4.49 to 4.21 respectively. For the half of the total number of units no change was discerned in the growth of employment.

The industry-wise analysis has been carried out to get a wider perception pertaining to the role of co-operatives in the industrial scenario of Kerala. The annual trend growth of employment is slow due to the low investment rate. The trend growth rate of output varied from (-)5.0 to 5.02 and only two industries showed a rising growth trend of output. The trend growth rate of value-added varied from (-)6.0 to 8.20 and only two industries had rising trend; the growth rate of employment varied from (-)4.80 to 0.68. Growth rate of fixed capital revealed the low level of capital investment which lay in the range of from -3.43 to 1.12. There was only one industry which showed rising trend of fixed capital.

The productivity analysis reveals the low level of labour productivity, capital productivity and the total factor productivity in all these units. Labour productivity and capital productivity of the majority of the units have shown declining trend. However, the units which are entirely controlled by member workers showed better performance. Similarly, the units which are fully controlled by professionals also showed better performance.

The industry-wise analysis reaffirmed this conclusion. The total factor productivity analysis revealed rising trend in three industries,- manufacture of drugs, medicines and allied product (304), manufacture of hand tools, weights and measures and general hardware (343), and manufacture of metal products n.e.c(349). In the others declining trend was observed. The capacity utilisation analysis revealed that units in which growth trend was rising experienced problem of idle capacity. This observation is found valid both at the level of units and industry-groups.

The financial performance analysis which is done with the help of common size statement and ratio techniques presented a picture of unhealthy practices in financial dealings. Common size statement analysis disclosed the fact that all the industrial co-operatives were depending heavily on loans from outside

agencies and that the equity by members or government were not collected promptly and adequately. The ratio analysis method was employed to examine the liquidity, solvency and profitability of the industrial co-operatives. The short term financial position which was analysed in terms of current ratio, acid-test ratio, inventory turnover ratio and working capital turn over ratio, presented a dismal financial picture of the industrial co-operatives.

The current ratio of the units for the study period, was not satisfactory. This ratio was favorable only for one unit and in all the other cases it was far below the accepted standard In fact in seven out of the eight industries' current ratios were less than the conventional standard.

The acid test ratio of the 19 units was found to be far below the standard. The units were not in a position to meet current obligations. There was only one industry which had an overall mean acid test ratio exceeding the standard ratio of one.

The average inventory turn over ratio, in the case of units, varied from one to 16.46 while the overall ratio, in the case of industrial group varied from 1.96to 5.82 .This finding reinforces the observation that the financial performance of industrial co-operatives was poor.

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The average working capital turn over ratio of the units varied from 0.46 to 7.5 while the overall average of industries lay in the range of 1.0 to 2.11.

A high debt-equity ratio observed was indication of the fact that the claims of creditors were greater than those of owners. The unit-wise ratio varied from 0.89 to 8.50 during the study period. Thus, the total debt of all these units exceeded capital contribution by members. The overall average of the ratios of the industries varied from 1.18 to 6.56.

The interest-coverage ratio of the units, varied from (-) 4.44 to 8.30. The average ratio of 12 units were negative, a sure indication of their inability to make the interest payments out of their earnings. The overall ratio, in the case of industrial groups was in the range of (-)4.51 to 9.53.

The profitability of the units as well as the industrial group were tested using the gross profit-sales ratio and net profit-sales ratio. The gross profit sales ratio of twelve units had negative values,not at all a sign of healthy financial position. The industry-wise analysis reveals that three industries- manufacture of drugs, medicine and allied product industry (304), manufacture of hand tools, weights and measures

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and general hardware industry (343) and manufacture of metal products industry not elsewhere classified (349)- did have positive gross and net profits.

Thus, the financial performance analysis highlighted the unhealthy financial position of the industrial co-operatives. Further, there was a drastic decline in profitability and considerable erosion in liquidity on account of increase in liabilities . The long term financial position of the industrial co-operatives was also weak.

The dismal performance exemplified by the several indicators, growth, productivity, capacity utilisation and financial management, called for an in- depth analysis of the factors which accounted for it. In the case of industrial co-operatives in which the workers themselves were the owners and managers, labour problem which is considered in many quarters as an important factor affecting efficiency in Kerala, was expected to be on the low side. This hypothesis was tested in some details.

Worker's involvement in the co-operatives and their socio-economic background were first taken up. The political and the trade union affiliation of these workers, both member and non-member, was also examined. It was seen that member-workers

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formed only a small portion,about four per cent of the total
number of members. Since the majority of the workers' were
non-members the poor performance of the industrial co-operatives
in terms of productivity and capacity utilisation, as was observed
earlier, could have been , to a large extent, due to the lack of
worker's commitment to productive activity. This surmise was
verified by the analysis of worker's involvement. On the,
average, the level of involvement of the member workers were found
to be far above that of the non-member workers. The mean score of
the member workers was 102 while for the non-member workers it was
only 86.80. The coefficient of variation of these measures were
24.79 and 27.01 respectively.

Further, it is seen that the educational qualification,
formal and co-operative, of the workers were not of the desirable
level.

The member workers were receiving remuneration at levels
lower than those of non-member workers. Hence, they involved
themselves actively in trade union activities to secure better
emoluments and service benefits. In this process, the principles
of co-operatives get violated and flouted.

The performance of the managerial personnel was also
found to be poor. The managerial personnel did not possess, in

general,the required qualifications or training. Further, as a consequence of the political affiliation of the Board members, the co-operatives were coming increasingly under the pressure of external influences, particularly of the political parties.

In sum, the ideals of co-operatives are not being realised in the modern small scale sector. Their performance in terms of growth, productivity, capacity utilisation and financial management leaves much to be desired. The analysis reveals that the dismal performance of the individual units should not be interpreted to be the failure of the co-operative principles but to be the results of the faulty steps followed by the persons in position of control and authority. These co-operatives were formed without considering the ability of the members, their technical know - how, and their experience to contribute to production. The management, elected bodies of the co-operatives , did not have adequate representation of the workers. Further, in terms of managerial capacity and education, the expertices were weak. Thus, the problems behind the non success of the co-operatives in the modern small scale sector of Kerala arose primarily due to defects in the formulation and design of the functioning of co-operatives. The loopholes in the co-operative rules must have helped to overlook these aspects at the time of registration of the units concerned. In principle, the co-operative is a sound and desirable democratic form of

organisation; however in practice, the ideology, philosophy and principles have been given the go-by: The co-operative seems to have degenerated into an organisational form which the exploitative character of capitalist enterprise persist. The legal framework that has been provided for the co-operative in Kerala provides freedom for all to start industrial co-operatives and wide scope to abuse the fundamental tenets co-operation. Further, the lacuna of legal framework and the administrative system have enabled political and other interest groups to penetrate in to the co-operatives for partisan gains. Legally speaking the co-operatives fulfill the requirements of this organisational form; but in practice they too partake of the exploitative characteristics of private capitalist firms.

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APPENDIX

A P P E N D I X - A

SUPPLEMENTARY STATISTICAL TABLES

Table A.2.1

Classification of SSI units according to
the type of Organisation as on 1984-85.

Sl. No.	Type of organisation	% to the Total
1	Proprietorship	80.03
2	Partnership	17.19
3	Co-operatives	1.09
4	Private Limited	0.97
5	Public Limited	0.01
6	Charitable society	0.71
	Total	100.00

Source :- Department of Industrial and Commerce.

Table A.2.2

Performance of SSI units during the period 1980-81 to 1989-90

Year	Total SSI	SSI Co-op.	% of working Co-op. to the Total
1980-81	18986	1289	55.0
1981-82	21972	1289	56.98
1982-83	24884	1291	57.30
1983-84	28117	1316	57.49
1984-85	31499	1365	57.38
1985-86	35365	1465	47.33
1986-87	40342	1515	42.50
1987-88	49191	1550	42.75
1988-89	57422	1586	42.33
1989-90	63698	1631	42.17

Source :- 1. Economic review various issues
2. Department of Industries and commerce

Table. A.4.1.

Total factor productivity indices of the units studied (Kendrick)

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	100	94	103	98	97	223	224	192	128	173
02	100	97	110	118	142	86	75	174	188	191
03	100	453	575	413	423	416	404	312	312	287
04	100	109	123	180	65	422	540	394	442	443
05	100	108	84	109	139	155	114	231	242	139
06	100	91	76	43	52	92	59	60	43	27
07	100	89	74	79	53	27	44	25	18	32
08	100	87	65	67	79	174	121	136	142	99
09	100	106	102	101	89	83	71	66	54	50
10	100	85	102	99	99	100	121	118	154	131
11	100	107	17	18	58	30	16	43	71	70
12	100	65	57	29	31	44	43	26	48	79
13	100	151	152	298	215	275	244	275	280	218
14	100	97	118	77	75	63	72	70	82	74
15	100	303	327	250	223	853	863	853	858	833
16	100	126	112	137	122	143	145	157	106	122
17	100	92	146	74	70	68	77	61	36	52
18	100	193	154	113	147	154	114	123	118	144
19	100	92	86	80	38	56	52	67	62	49
20	100	98	88	89	86	77	45	38	32	24

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Table A.4.2

Total Factor productivity indices (Kendrick) of Selected Industrial Groups

Year	Industries							
	304	312	313	340	343	349	357	360
1980-81	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1981-82	139.33	94.30	109.09	122.46	162.84	249.84	96.24	91.93
1982-83	160.00	76.83	104.84	113.95	175.73	356.46	90.52	82.52
1983-84	246.69	68.60	102.85	82.92	151.61	186.80	74.30	84.81
1984-85	221.04	79.66	88.65	74.79	161.17	221.89	71.39	79.75
1985-86	330.76	75.08	80.18	80.91	160.66	593.80	69.74	75.69
1986-87	404.18	70.44	68.02	79.53	121.40	781.65	76.99	40.07
1987-88	363.84	76.40	60.29	85.01	144.76	670.36	61.99	24.78
1988-89	381.99	73.97	52.50	81.82	163.77	636.19	38.84	22.09
1989-90	377.25	73.60	51.08	80.12	175.46	682.73	55.04	17.15

Table. A.4.3.

Total factor productivity indices of the units studied (Solow)

code	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
01	100	94	108	103	101	249	249	212	140	190
02	100	87	110	118	140	88	76	146	155	160
03	100	507	652	469	478	469	454	351	352	323
04	100	108	122	181	64	414	544	400	450	452
05	100	108	85	109	139	155	114	231	240	139
06	100	91	74	43	52	37	23	24	17	11
07	100	88	75	79	53	27	44	25	19	32
08	100	85	67	66	80	173	122	135	143	98
09	100	104	101	99	90	82	73	68	51	49
10	100	86	102	99	89	101	121	119	154	131
11	100	104	17	19	58	31	17	44	70	71
12	100	65	57	28	31	44	43	26	49	78
13	100	149	154	296	227	276	243	276	278	217
14	100	95	121	76	75	65	65	65	80	70
15	100	305	329	252	224	853	864	884	859	835
16	100	125	112	136	120	143	144	157	106	121
17	100	92	145	74	69	67	77	61	36	53
18	100	188	156	113	145	151	112	118	113	137
19	100	93	95	82	35	56	50	67	64	48
20	100	88	88	88	85	77	43	38	30	25

Table A.4.4

Total Factor Productivity Indices (Solow) of Selected Industrial Groups

Year	Industries							
	304	312	313	340	343	349	357	360
1980-81	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1981-82	140.50	93.98	108.61	121.92	153.63	255.31	96.38	92.10
1982-83	162.11	75.86	104.75	113.38	163.27	361.24	90.69	85.14
1983-84	253.23	68.02	102.60	82.63	141.31	190.03	74.78	84.10
1984-85	227.20	67.44	88.86	76.23	150.02	222.04	71.58	82.45
1985-86	339.45	57.12	80.84	81.97	146.28	573.07	70.17	79.68
1986-87	419.50	69.19	68.43	80.28	114.03	679.77	77.54	40.57
1987-88	382.54	75.61	60.29	87.06	136.54	595.72	62.89	24.93
1988-89	401.81	78.96	52.64	83.10	167.03	590.21	39.63	22.61
1989-90	396.89	72.92	51.32	80.48	170.12	613.74	56.54	16.81

A P P E N D I X - B

SCHEDULES USED FOR THE FIELD SURVEY

APPENDIX - B.1

Schedules used to study the performance

of the Industrial Co-operatives

Block 1. Identification details

1.01   Name and address of the unit

1.02   Year of establishment

1.03   Register No.

1.04   Year of commencement of Production

1.05   Major Product/Production

1.06   Accounting year

1.07   No. of members

1.08   No. of shares

1.09   No. of shares fully subscribed

1.10   Total Equity

1.11   Any Equity participation by Government or any other agency.

Block 2.   Source of Finance.

Item	* Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-9
2.1.1 Share Cpl.(membs)											
2.1.2 Govt. Shares											
2.1.3 Other Co.Optives											
2.1.4 Other Apex Bodies											
2.2.1 Loan from Govt.											
2.2.2 Loan from KFC.											
2.2.3 Loan from N.Bank											
2.2.4 L.F. Co.Op.Bank											
2.2.5 L.F. Public											
2.2.6 Pvt. M. Lenders											

* Y.C.P. Year of Commencement of Production.

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Block 3.   Fixed Capital

Item	Years										
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-
3.1 Land											
3.2 Building											
3.3 Machinery											
3.4 Transport equip and vehicle											
3.5 Others											

3.6 Depreciation.

Block 4.   Inventory of working capital at the end of each working year

Items	Years										
	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	19
4.1 Raw-material											
4.2 Fuel & Electricity											
4.3 Rent paid											
4.4 Value of semifinished goods											
4.5 Value of finished in stock											
4.6 Others											

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Block 5. Rawmaterials

Items			Years									
	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-8		
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
5.1												
5.2												
5.3												
5.4												

Code   1. Within the District   2. Outside the District   3. Outside the State   4. Outside India

Block 6. Particulars of Fuel, Electricity and others

Items	Y.C.P		1980-81		1981-82		1982-83		1983-84		1984-85		1985-86		1986-87		1987-88		1988-89	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
6.1 Electricity																				
6.2 Other fuels																				
6.3 Lubricants																				
6.4 Diesel																				
6.5 Petrol																				
6.6 Water																				

Block 7. Products Manufactured

Items	Y.C.P		1980-81		1981-82		1982-83		1983-84		1984-85		1985-86		1986-87		1987-88		1988-89	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
7.1																				
7.2																				
7.3																				
7.4																				
7.5																				

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ock 8 Marketing outlets

tems	Y.C.P		1980-81		1981-82		1982-83		1983-84		1984-85		1985-86		1986-87		1987-88		1988-89	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
.1 Export																				
.2 Outside State																				
.3 Within State																				
.4 Within Dt.																				
.5																				

lock 9. Particulars of sales under Government purchase programme

tems	Y.C.P.		1980-81		1981-82		1982-83		1983-84		1984-85		1985-86		1986-87		1987-88		1988-89	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
.1 State Govt gency																				
.2 Govt Autono ous bodies																				
.3 Central Govt nstitutes																				
.4																				
.5																				

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ck 10. Particulars of produces sold to Large Scale units

Items	Y.C.P.		1980-81		1981-82		1982-83		1983-84		1984-85		1985-86		1986-87		1987-88		1988-89		199
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q
1 Public sector																					
2 Private sector																					
3 Joint sector																					
4 Other Co-operatives																					
5																					

ck 11. Value added and net surplus generated

Items	Y.C.P	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	198
1 Value added											
2 Net surplus generated											
3 Dividents distributed											
4 Reinvestment											
5											

ck 12. Capacity Utilisation

Items		Years										
	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989
.1 Installed capacity											
.2 Utilised capacity											
..3 working days (No)											
.4 Repair/maintanance(No)											
.5 Total No. (12.3 + 12.4)											
..6 No. of shifts per day											
2.7 Length of shifts/day											
2.8 Reasons -low capacity Utl.											
2.8.1 Labour strike											
2.8.2 Shortage-raw materials											
2.8.3 Power shortage											
2.8.4 Lack of demand											
2.8.5 Mechanical problem											
2.8.6 Others											

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ock 13. Employment

Items		Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1
.1 Managerial personel	R											
	T											
.2 Supervisory	R											
	T											
3.3 Technical person	R											
	T											
3.4 Sales workers	R											
	T											
3.5 Clerical & related	R											
	T											
3.6 Drivers & others	R											
	T											
3.7 Sweeper & Scavenger	R											
	T											
3.8 Other unskilled Workers	R											
	T											
3.9 Contract Workers	R											
	T											
3.10 Total	R											
	T											

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Block 14. Wages, Salaries and other benefits

Items	Years									
	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	198
14.1 Salary											
14.2 Wages to workers											
14.3 Bonus											
14.4 Contribution to P.F. & other benefits											
14.5 Other benefits											
14.6 Wage to contract workers											
14.7 Total Wage Cost											

Block 15.1. Trade Unionism - Lay off, lockout and strike

Mandays lost	Years									
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1
15.1.0 No of Strikes -Total											
15.1.1 Strike											
15.1.2 Lockout											
15.1.3 Lay off											
15.1.4											

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ck 15.2.   Industrial Dispute and mandays lost according to cause

Causes	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	19
					Years						
.2.1 Wage increase											
.2.2 Discharge/dismissal											
.2.3 Retrechment											
.2.4 Closure											
.2.5 Leave											
.2.6 Bonus											
.2.7 Others											
.2.8											

1. Number of strike   2. Number of maintenance cost

ock 15.3   Industrial Disputes Settled according to type of settlement

pe of settlement	Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1
					Years						
5.3.1 Voluntary negotiation											
5.3.2 Conceliation											
5.3.3 Withdrawal											
5.3.4 Adjudication											
5.3.5 Arbitration											
.3.6											

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Block 16  Personal Management and Industrial Relations
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16.1 Do you have a personal department ? If so who is in charge of it ?

16.2 Do you provide training to

    1. Manager Yes/No   2. Supervisor Yes/No   3. Factory Workers Yes/No   4. Field Workers Yes/No

16.3 What is the criteria of promotion ?

16.4 Do you maintain any performance report on the personal ?

    What is the content and regularity ?

16.5 Are you prescribing any qualification or experience for management personal ?

16.6 Method of recruitment of staff

Category of staff	From employment exchange	By advertising	Relatives of the members (specify)	Any other system	Capital participation enforced or not If yes give details
16.6.1 Managerial Cadre					
16.6.2 Clerical Cadre					
16.6.3 Factory Worker					
16.6.4 Field Worker					
16.6.5 Watch and Ward					

16.6.6 Do you give any training to new recruits.

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Block 17.1

Worker's Participation in Management

Socio-economic background of board members

ame	Age	Education	Occupation	Political affiliation	Name of organisation	No. of shares
.						
..						
.						
..						
..						
..						
..						
.						
0.						

Block 17.2. Frequency of Meetings

?	Causes	Year										
		Y.C.P.	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1
7.2.1	Board meeting											
7.2.2	General body											

Schedules used for the study of Socio-Economic profile and involvement of the workers

PART-I

1. Personal particulars

  1.1. Name of the worker   : :

       Age: Sex:

  1.2. Educational Qualifications : :

       a) General   : :

       b) Technical   : :

  1.3. No. of members in your   : :
       family

  1.4. Earning members of the   : :
       family

  1.5. Do you have any income   : :   Yes/No
       other than salary

2. Family Details

  2.1. Type of family   : :   Nuclear/Joint/Others

  2.2. Status in the family   : :   Head/Eldest   /Others
                                          ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
                                               son/daughter

  2.3. No. of dependent   : :

  2.4. Are you residing with   : :   Yes/No
       your family

       If No give reason   : :

  2.5. If not, place of stay   : :   Within 5Km./10Km./20km
                                          above 20 Km.

3. Employment Details

    3.1.   Present employment   ::

    3.1.1. Date of entry   ::   Designation:

    3.1.2. Nature of employment   ::   Permanent/Temporary/Casual

    3.1.3. Salary   ::

    3.1.4. Bonus, Allowance etc.   ::

    3.1.5. Other benefits if any   ::

    3.2.   Details of previous employment

    3.2.1. Name of the employer   ::

    3.2.2. Period   ::

    3.2.3. Salary   ::

    3.2.4. Reasons for leaving   ::

4. Trade Union Activities   ::

    4.1. Is their any trade union activities in the firm   ::   Yes/No

    4.2. If yes which are they   ::

    4.3. Are you member of any Union   ::   Yes/No

    4.4. Are you a member of any political/social   ::   Yes/No

        If yes specify the name   ::

    4.5. Do you occupy any position   ::

5. Details of member ship

   5.1. Are you member of ....   ::   Yes/No
        ....Society

   5.2. Have you been participat-
        ing the activities of
        the society since its   ::
        formation

   5.3. Do you occupy any position
        in the policy decision   ::
        body

   5.4. No.of shares you have   ::
        with amount

   5.5. If not a member now you
        got employment   ::

   5.6. Did you give any donation   ::

PART - 2

The following statements are intended to reflect various degree of
your alienation/involvement with the industrial co-operative society.
For each of the statements listed below, you will find seven possible
responses (answers) catogories. Please indicate the degree of your
agreement or disagreement with the statement by putting appropriate
numbers.

Strongly disagree	(1)	Moderately disagree	(5)
Slightly disagree	(2)	Neither agree or disagree	(6)
Slightly agree	(3)	Moderately agree	(7)
Strongly agree	(4)		

1. I am willing to put in a great
   deal of effort beyond that
   normally expected in order to   :: (1) (2) (3) (4) (5) (6) (7)
   help this organisation be
   successful

2. I talk up this organisation to
   my friends as a great organisa- :: (1) (2) (3) (4) (5) (6) (7)
   tion

3. I feel very little loyalty to
   this organisation(R)   :: (1) (2) (3) (4) (5) (6) (7)

4. I would accept almost any type
   of job assignment in order to   :: (1) (2) (3) (4) (5) (6) (7)
   keep working for this organi-
   sation.

5. I find that my values and the
   organisations values are very   :: (1) (2) (3) (4) (5) (6) (7)
   similar.

6. I am proud to tell others that
   I am part of this organisation   :: (1) (2) (3) (4) (5) (6) (7)

7. This organisation really inspi- :: (1) (2) (3) (4) (5) (6) (7)
   ers the very best in me in the
   way of job performance

8. It would very little change in
   my present circumstances to
   cause me to leave this organi- :: (1) (2) (3) (4) (5) (6) (7)
   sation

9. I am extremely glad that I
   choose this organisation to
   work for over others I was   :: (1) (2) (3) (4) (5) (6) (7)
   considering at the time I joined

10. There is not too much to be
    gained by sticking with this   :: (1) (2) (3) (4) (5) (6) (7)
    organisation

11. Often, I find it difficult
    to agree with this organisation :: (1) (2) (3) (4) (5) (6) (7)
    policies on important matters
    relating its employees(R)

12. I really care about the fate   :: (1) (2) (3) (4) (5) (6) (7)
    of this organisation

13. For me this is the best of
    all possible organisations   :: (1) (2) (3) (4) (5) (6) (7)
    for which to work

14. Deciding to work for this
    organisation was definite   :: (1) (2) (3) (4) (5) (6) (7)
    mistake on my part (R)

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15. It is pleasure to continue   ::
    in my present work in the   (1) (2) (3) (4) (5) (6) (7)
    organisation

16. Most people working in this
    organisation are forced to be :: (1) (2) (3) (4) (5) (6) (7)
    dishonest

17. I consider it is my duty to
    complete the assignment given :: (1) (2) (3) (4) (5) (6) (7)
    to me inspite of adverse
    circumstances

18. In this organisation there
    is no system for appreciating :: (1) (2) (3) (4) (5) (6) (7)
    good work done by employees

19. I really do not care for the
    future of this organisation   :: (1) (2) (3) (4) (5) (6) (7)

20. I am fully committed to the
    objectives of this organisa-   :: (1) (2) (3) (4) (5) (6) (7)
    tion.

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