Chapter III

REVIEW OF LITERATURE

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INTRODUCTION

Review of literature pertaining to current field of investigation mainly aims at critically reviewing and re-examining the earlier conceptual and empirical studies. The major methodological limitations and directions for further research highlighted by the previous research with a view to identify and define ‘the research gap’ will be addressed by the current research study.

Accordingly, this chapter presents the literature review on size and output, productivity and labour, capital and profitability, size of the firm, competitiveness, capacity and capital and finally economic reforms and productive capacity

A number of studies on efficiency of Small and Medium industries were undertaken. Among the interesting ones were Dhar and Lydall (1961); Hajara (1965); Sadesara (1966 and 1969); Mehta (1969); Bhavani (1980 and 1991); Goldar (1985 and 1988); Little, Mazumdar and Page (1987) and Ramaswamy (1990). Most of the earlier studies used the partial productivity ratios for a measure of the relative efficiency of SMEs.

SIZE AND OUTPUT

Dhar and Lydall, Hajra, Sandesara and Mehta studied the relationship between size and output capital ratio by using the data from confederation of medium industries. The report showed positive
relationship. Bhavani’s study is on the census data of Small-Scale industries conducted by the Development Commissioner of Small-Scale Industries in 1973-74. Goldar, in his 1985 study, estimates a frontier production function using firm level data from CSSI for small-scale Washing Soap industry to obtain measures of technical efficiency. Measures of partial and total factor productivity and an analysis of technical efficiency reveal that tiny units are inefficient compared to relatively bigger units within the small-scale washing soap industry. The positive relationship between unit size and efficiency, and high capital intensity of relatively larger units suggest a trade off between output gain and employment loss. Little (1987) discovers very little regularity in the patterns of partial and total factor productivity and in their relationship with firm size in five small-scale industries when size is measured either by number of workers employed or by the value of fixed assets. An analysis of technical efficiency based on three factors of production reveals that there are wide variations in total factor productivity. Within each of the five industries, variation in technical inefficiency is substantial and there is no systematic relationship between employment size and technical efficiency. Only in Machine Tools industry, technical efficiency is correlated with firm size. As for the sources of variations in technical efficiency, four variables namely the average experience of the labour force, the age of the capital stock, the experience of the
entrepreneurship and the level of capacity utilisation are found to be significant in one or more industries. Goldar uses a total factor productivity index based on the Cob Douglas production function, to assess relative efficiency of 37 industries. The data for this study were drawn from the statistical reports of a sample survey of SSI units undertaken by the Reserve Bank of India.

**PRODUCTIVITY: LABOR AND CAPITAL**

It is observed that in almost all industries labour productivity in small-scale units is less than that in large-scale units. On the other hand, capital productivity in small units is higher in 22 industries when gross invested capital is used and in fifteen industries when net invested capital is used as a measure of capital input. The relative efficiency index which is a weighted average of partial productivity indexes is less than unit for 34 out of 37 industries suggesting that the SSIs are relatively less efficient than large-scale units. The study observes that economies of scale and better management are significant sources of efficiency for large units. Similarly higher relative efficiency can also be attributed to mechanized technologies. Ramaswamy (1990) estimates partial productivity of labour and of capital and relative efficiency using unit level data for four industries: Motor vehicle parts, Agricultural machinery and parts, Machine tools and parts and Plastic products. He uses the same relative efficiency index as Goldar does. His analysis indicates that capital
intensity and partial productivity are sensitive to alternative measures of firm size. There is little regularity in the behaviour of capital labour ratio and employment size. Partial factor productivity of labour and of capital also does not exhibit any significant relationship with firm size when size is measured in terms of employment. However, a positive relationship is observed between capital and labour ratio and investment size of the unit. Labour productivity rises while capital productivity falls as the investment size of the unit increases. Efficiency indexes show neither systematic nor substantial differences between employment or investment size classes of units.

**INCENTIVES TO SSIs**

Some studies have been undertaken on various programmes and incentives to small industries promotional activities of DICS (District Industrial Centers) and problems associated with the implementation of the promotional institutions and the problems faced by the entrepreneurs. Small Industries Extension Training (SIET) in its study on hire purchase has observed that the growth in the number of units and the expansion of capital intensity alone may not create the necessary impetus to the growth unless considerable productivity changes have also been effected through fuller capacity utilization. Most of the units utilizing full capacity have been either big export-oriented industries or local-need-based activities. The reasons for this under utilization were mostly insufficient demand
and inadequate financial resources for working capital. In a study on spatial diversification of manufacturing industries in Uttar Pradesh (1979), while furnishing evidence of a continued spatial concentration, has noted a decline in the share of factory employment in five most industrialized districts from 57 percent in 1960 to 55 percent in 1975 and also in 10 industrially least developed areas from 1.10 percent to 0.56 percent. He has concluded that there is a need for a small degree of dispersal of manufacturing activity in favour of backward areas with some degree of industrialization. Malgawakar in his study of problems of small industry in Andhra Pradesh has found the lack of infrastructure as a general problem. The industrial estates alone cannot overcome the locational disadvantages. The infrastructural facilities were either very weak or non-existent in rural areas. In Urban areas, with necessary industrial climate and infrastructural facilities, the growth of industries was relatively faster. The scarcity of indigenous raw materials has been a serious bottleneck. Scarce raw materials supplied through quotas were not sufficient to meet the demands of the units. There were delays in the disbursement of loans due to the existence of procedural delays and insistence of tangible securities.

The development of small industries also depends on the size of market, which in turn depends partly on the efficiency of the size of market, which in turn depends partly on the efficiency of the distribution
of machinery. It is observed that there was a time lag between sales and realization of sale proceeds and this affected production of the enterprises. This study has also found that the incentives provided by the state and the centers were not within the reach of all the entrepreneurs in rural areas.

Andhra Pradesh Industrial Technical Consultancy Organization (A.P.I.T.C.O) and Kerala Industrial Consultancy Organization (K.I.T.C.O) conducted a study on the various problems faced by the industries in three states namely Kerala, Karnataka and Andhra Pradesh. The study revealed that the serious problem faced by the units was the inadequacy of working capital. 69 percent of units in Kerala, 44 percent of units in Karnataka and 52 percent of units in Andhra Pradesh were facing the same problem. The next serious problem was marketing. 30 percent of the units in Kerala felt it as another setback. Non-availability of raw materials has affected the productivity of several units in all the states especially, in industry groups such as metal products in Kerala, Chemicals, Rubber and Plastics and metal products in Karnataka, machinery and parts, metal products and chemicals in Andhra Pradesh. It was observed, that the delay in getting timely finance also hampered the productivity of the units and this led to high cost of production, as observed in few cases, in all the states.
Sarma (1982) who made a study on growth and problems of Small-Scale sector in Andra Pradesh has observed that the backward districts of the state improved their relative positions in terms of units’ employment and capital during 1966-75. Majority of the small units are confronted with the problems of raw materials and finance.

Rajula Devi (1984) in her study made on the evaluation of rural Industries Project Programme found the following serious deficiencies (i) Some part of the assistance was provided to relatively larger amongst small-scale units, (ii) Assistance was diverted to towns which were excluded from the purview of the scheme (iii) Rural artisans did not receive adequate credit. Indian Institute of Management (1988) in its study conducted on ‘Evaluation of DIC programme in Andra Pradesh’ observed that the General Manager, DIC, as Secretary to the single window committee is expected to hasten up the processing entrepreneurial cases and thus help the minimization delay. Single Window committee just recommends and requests for speedy action and the DIC have no powers to hasten up and clear up such delayed cases. Several entrepreneurs in every DIC have been annoyed to find their cases long pending with developmental agencies and local bodies due to indifferent attitude or lack of empathetic understanding of entrepreneurial problems. With regard to the activities like term-loan assistance, working capital assistance, capital subsidy, land and factory shed, many
entrepreneurs seemed to have received the requisite help from DIC. In these activities, DIC have mostly recommending powers. For raw materials and other information, DIC’s seem to be playing a very small role.

DICs have been functioning for over a decade since their inception. The above studies have tried to indicate certain deficiencies of various schemes including district Industries but, they have not evaluated the performance of DIC at a regional level. Hence, it is time to undertake an evaluative study, which is area-specific since India is a vast country with varied socio economic conditions.

**MECHANIZATION VS HUMAN LABOUR**

Bhagavathi Committee opposes fast introduction of mechanization designed to replace human labour but, at the same time, recommends introduction of sophisticated technology in certain areas. The committee recommends reduction to the maximum extent possible in the installed capacity in various industries in order to generate employment in the industrial field. The committee virtually favours creation of employment at any cost without going into the economics of the scheme.

In a study on rural industrialization in India Bepin Behari examined the problems, possibilities and perspectives of rural industrialization and discussed the crisis in Indian villages and the need for the new strategy of rural industrialization and the provision of fuller
employment in rural and small-scale industries and technologies. He traced out agricultural development, encouragement to village and small-scale industries and general awareness for incorporating appropriate technological transformation in rural India. Further he reviewed various measures taken by the government towards rural industrialization, local industrial growth, agro-based industries, mini-rural cement plants, utilisation of annual waste and harnessing natural power.

K.V. Bhanujam, has suggested that appropriate technology should be developed to promote the rural small industries. N.V Ratnam opines that infrastructure development for industrialization in the rural areas and investment in basic services designed to realize the full potential of the human resources in the rural areas should receive a high priority.

Gunnar Myrdal has recommended the adoption of a strategy based on predominantly labour intensive techniques for creating capital and production. Sen Johnson, Vinod Vyasulu and Raj Krishna suggested the need for the adoption of an employment oriented strategy of industrialization to absorb the rural labour force.

Tin Bergen opines that the strategy of industrialization should lay emphasis on labour intensive industries, which will create more employment and maximize income. He suggests the adoption labour-intensive but reasonably efficient techniques. Gautham Mathur opines that appropriate techniques in the consumption goods sector will be of
low degree of mechanization creating incidentally a lot of employment per unit of investment of scarce capital. Dr. Wu Jageh in his study pointed out that both the capital output ratio and wage capital ratio show an inverse relationship with capital intensity. He recommends the setting up of SSI in countries having large unemployment. A.C. Minocha has suggested that the strategy of employment-oriented industrialization should aim at the development of SSI in rural areas. K.M. Rastogi, in his study suggests that the SSI should make use of the indigenous resources in an optimal manner. UNIDO’s (SSI in Latin America, Publication) study indicates that the small enterprises with low-level of investment per worker tend to achieve a productivity of capital.

K.M. Rastogi has also made a case study of Madhya Pradesh that he calls a unique case of growing unemployment and poverty amidst plenty. He is in favour of only Small-Scale and Villages Industries, which make optimum use of indigenous resources and techniques. According to him, there are hundreds of items which can be produced in rural and Small-Scale Industrial units more economically than in a large sector.

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the industrial field. The committee virtually favours creation of employment at any cost without going into the economics of the scheme.

**INDUSTRIAL STATES: IDEAL LOCATIONAL FACTORS**

One of the accepted techniques of protecting and promoting small-scale industries is the programme of industrial estates. The establishment of industrial estates in India is mainly an economic lesson drawn from Britain. The industrial estate idea was originally suggested by the International Planning Team assembled with the aid of Ford Foundation, which undertook a study of small-scale industries in India. It was decided that the tool of industrial estate should be adopted for the development of small-scale industries.

The programme of industrial estates in India took concrete shape from the beginning of the Second Five Year Plan but there have not been many systematic studies of the subject. William Bredo, while discussing the economic characteristics, planning and working of industrial estates in a comparative and international framework, has given some insight into the Indian scene. A similar study was made by the United Nations Organization based on research studies, seminars and technical cooperation projects. It gives an account of the objects and policies of industrial estates in developing and developed countries, their planning, organization, types, sizes and problems of management and financing. Further, there are important studies on the programme of industrial
estates in India by Dhar and Lydall, Alexander, Nagaiya, Somasekhara, Bandyopadhyaya, Kulkarni and Urmil Chopra. (Development of small industries-Laxminarasaih.M (1999))

The objectives and implementation of the programme of industrial estates in their early stages in India have been discussed at great length by Alexander. Various economic aspects such as the relationships between capital, employment and output, location and setting of the estates and entrepreneurs attitude to the estate, etc. at the national level have been discussed by Dhar and Lydall. At the time of these studies, the programme of industrial estates was only 6-8 years old in the country. The studies have thrown light on the shortcomings in the implementation of the programme and pointed out its limitations. Nagaiya’s study reviews the working of industrial estates programme from its inception till 1969 and gives the trends in expenditure on the programme and physical achievement at national level.

At the regional level, Somasekhar, Bandyopadyaya, Kulkarni and Chopra examined the effectiveness of industrial estates in the process of industrialization in Mysore (Karnataka), West Bengal, Maharashtra and Rajasthan states respectively. The main emphasis of the first three studies has been on utilization of industrial estate facilities and the efficiency of the units working in the industrial estates vis-à-vis similar units working outside.
The study by Urmil Chopra has certain limitations. It covered only nine of the thirteen industrial estates in Rajasthan. The analysis in respect of investment, employment and output is confined to the estate units only. It contains inter-state, inter-location and inter-industry comparisons within the industrial estates.

Kalyana Bandyopadhyaya has discussed the different socio-economic context in which the industrial estates were developed. But her work is mainly confined to the industrial estates in West Bengal upto 1965. R.K.Bharti presented a comprehensive and critical survey of the programme of industrial estates in various countries and also examines the role and progress of the industrial estates programme in India.

We have United Nations Publications on the industrial estate programme covering policies, plans and progress of industrial estates in different countries. They deal with policies and principles bearing on the establishment of industrial estates, the physical planning and technical and organizational problems involved. Some of these reports made observations on the industrial estates programme in India, mainly based on the Five-year Plan documents and the reports of various committees appointed by the Government of India on the subject. In addition, there are reports of various committees and working groups appointed by the Government of India at different stages of the programme.
In the light of the vastness of the country, the wide variation in the level of industrial development of different regions and rapidly changing industrial environment, it is important to undertake more micro / regional studies from time to time in order to determine the effectiveness of the programme as a tool for small-scale industrial development.

Profitability and Size of the Firm

The literature review made on the study of profitability and size of Small-Scale industries by Renu Luthra, J.V. Vaishampayan and Dheeraj Misra revealed that no empirical research is available on profitability and size relationship in small business firms. In the light of this, their research work reveals interesting facts on this subject pertaining to small business enterprises. The significant factors include

a. Economies of scale arising from ‘the actual physical organization of production activities’ (Shepherd 1979). Increased specialization of both men and machines or in other words the greater division of labour produce more output from a given input

b. Economies arising from ‘Physical Laws” favouring large size such as area-volume relationships

c. Economies of massed reserves. Large firms have enough reserves of equipment and goods to tide-over sudden breakdowns in production or in meeting an unprecedented increase in demand.

Pecuniary economies can arise from the following sources:
a) The ability to spread fixed costs over a large volume of output reducing the average cost of the commodity produced.

b) Volume discounts when inputs are purchased in bulk. Large firms may possess a degree of monopoly power, which puts them in a position of strength in bargaining situations. Cost savings arising from technical economies realized by an independent supplier may also be passed on to large buyers of the input.

c) Economies in pooling managerial resources when a large firm operates a number of plants.

d) Economies in raising capital through borrowing or by the issue of fresh stock. Fixed transaction costs can be spread over a greater volume of borrowing reducing the average cost of capital raised. Besides, investments in large firms are treated as less risky because the chances of bankruptcy are smaller. Variation in earnings may also be small. Risk-averse investors may, therefore, prefer large firms even if the interest rates offered are low. Investments in well-diversified large firms are considered equivalent to investments in diverse portfolios.

Empirical evidence on size-profitability relationship in general is quite vast and varied. Studies which reported a negative relationship include: Crum (1939), Singh and Whittington (1968), Haines (1970), Shepherd (1972), Smyth, Boyes and Pesau (1975), Whittington (1980),
Promfret and Shapiro (1980), Ravenscraft (1983) and Amato and Wilder (1985). Studies which reported a positive relationship include: Steubdk (1945), Alexander (1949), Hall and Weiss (1967), Samuels and Smyth (1968), Kamerschen (1968) and Marcus (1969). Stellar (1963) detected a parabolic relationship. Both Crum (1939) and Singh and Willington (1968) obtained their results by considering only profit making firms. Steindl (1945) attributed Crum’s results to the increasing capital intensity of production. Singh and Whittington’s investigations stressed the underlying specification to be the best fit. Haines (1970) reported low rank correlation between profitability and invested capital but on discovering that small and medium sized firms appeared more frequently among the most profitable firms, determined the relationship to be negative. His study has been criticized for not taking account the influences of market structure, growth and economy-wide fluctuations. Association of size with profitability was also reported by Shepherd (1972) in his study of relatively diversified firms. His approach was more comprehensive taking account of several firm and market structural variables. The objective of Smyth (1975) was to compare the size profitability relationship for the U.S. and the U.K as also to examine whether the relationship held for alternate measures of profitability (rate of return on equity and rate of return on assets) and size (sales, assets, employment and equity). The results they obtained were mixed. Equity
was found to be strongly and negatively related to the profit equity ratio and positively related to profit on assets.

Overall, their conclusion was that the size difference accounted for only a small proportion of interim differences in profitability. In almost a repetitive study Whittington (1980) used four different measures of size (Net assets, gross assets, sales and value-added) to examine its influence on profitability (rate of return of net assets). The different size measures barring value added exhibited a weak negative relationship where as the use of the value added measure revealed a positive relationship. Overall, he concluded, average profitability was largely independent of size, which was also the conclusion of Pomfret and Shapiro (1980) in their study using grouped U.S. data.

**COMPETITIVENESS: CAPACITY AND CAPITAL**

An article published from National Institution of Small Industry Extension Training, Hyderabad, authored by P.D. Malgavkar named ‘Opportunities in the New Environment for Small and Medium Enterprises’ emphasizes that in the liberalized and globalized market SMEs must be creative and innovative; gives examples of SMEs that succeeded in spite of the controlled market as also of the phenomenal successes of Indians in the Free Market economy, their strength being innovation and technology; draws attention to the accelerating pace of technology developments and lists some promising technologies for
India; spells out physical and cultural climate conducive to technology growth, heightened skills and experiences and management style for fostering creativity and innovation.

This research paper presented a picture of dynamic, creative, innovative Small industrial entrepreneur taking advantage of the liberalized and globalized market, unconcerned about subsidies and protection. It also spelt out the physical and cultural climate, the fast paced growing technologies, the skills and experience development and the managerial style to sustain the loyalty, morale, commitment and brainstorming of the entire organization. Indian entrepreneurs have learnt to fight against adverse circumstances and environment. Given the opportunities, they will show outstanding success.

The article ‘Changing Priorities of SSI Sector in the Context of Economic Reforms’ by S.V. Prabhath published by National Institution of Small Industry Extension Training, Hyderbad, examines the future growth potential and structure of the small-scale industry sector as it emerges with the changes brought about and challenges posed as a result of the changed emphasis and new directions necessitated by the economic liberalization policies initiated in this country a few years ago. While the new economic reforms introduced were a clear watershed in the country’s economic management, the policies for SSI sector also signaled a departure with the past policies but continued with the basic thrust of the
SSI. The ramifications, however, are to be assessed but, prima facie, it appears to have withstood the changes because of its innate resilience. In any case, there is a need for reorientation of the past policies to render the sector viable in the light of the new imperative.

In this context there is a need for more positive policy intervention and innovative approaches. The governmental institutions have to be reoriented by introducing an element of autonomy and participation of private agencies to be able to meet the changing requirements of SSI with regard to information, technology etc. An effort should be made to promote clusters by inducing them through infrastructure development. Basic support for technology advancement is crucial in the changed context of growth and competitive survival. This would mean promoting a new class of entrepreneurs through training in managerial skills and technology advancement. While the SSE experienced problems due to the transition from the regulated economy to the market friendly economy in the long run, SSE can avail of the opportunities promised in the sector readjusting to the changing economic environment. Policy stipulations are crucial in enabling the SSE sector to effect readjustment at less cost. It shall also prevent the channelising of funds into product lines, which are less competitive.

In the research article ‘Technology support for Small-Scale Industry in Developing Countries’ author Henny Romijn explains that in
the early years of enterprise promotion, the precarious existence of many workshops was thought to stem from larger firms being more efficient as a result of economies of scale and the use of more productive techniques. The technological problem of small producers was predominantly seen to be one of lack of suitable machinery and equipment, in line with the literature about technology and development. Thus, their lack of competitiveness was attributed to high relative unit cost stemming from lack of appropriate hardware. Little attention was paid to the possibility that human skills, knowledge and organizational capacity to use, adapt and improve the hardware efficiently might also be in short supply and might constitute an equally crucial constraint on competitiveness. Moreover, the focus was on cost levels in individual small units versus those in larger firms, i.e. there was no recognition of potential competitive advantages that might accrue through exploitation of cluster or network synergies involving groups. Meanwhile, the preoccupation with the problematic horizontal or competitive relations of small firms with their larger counterparts prevented most researchers and policy makers from exploring growth possibilities through development of complementary (vertical) relations.

According to the information collected from Small-Scale Industrial Centers, Government agencies for small-scale industries and some of the associations of the small-scale industries, no in-depth studies
have been made till now on the capacity utilization of small-scale industries. Under utilization of capacity may be considered as one of the problems, but neither the entrepreneurs nor the concerned authorities have taken up this issue very seriously.

The study on Capacity utilisation in Industries made by the author Vijay K Seth reveals the following facts.

The evolutionary process of man was significantly influenced by his increasing capability of using other material objects to do for him what he could not do for himself. The stages of evolution of man, can be viewed as the process of increasing dominance of capital in the process of production. The dominance of capital increased considerably after the Industrial Revolution. The economic and social system that evolved with the increasing importance of capital has been rightly named as capitalist system. In the modern economies, accumulated capital stock symbolizes their capacity to produce.

The role of capital, in the process of production, emerged far more significant in theories of economic growth that emerged in response to the needs of post-war reconstruction and development. These theories have established that the rate of accumulation of capital determines the rate of growth of the economy (Solow 1956, Sen 1970). The acceptance of central role of capital in the process of production is based on the
possibility that capital can substitute for natural resources and it can also substitute for labour.

The theories that provide important role to capital accumulation in the process of development are not able to explain the prevailing economic reality in the capital scarce developing economies. In most of the underdeveloped economies a significant part of the industrial capital remains under utilized (Winston 1984). This paradox clearly establishes that capital accumulation is a necessary but not a sufficient condition of growth. Accumulation of capital is significant if it is accompanied by a proper rate of utilization.

The systematic work on the utilization of capital began with the work of Marris (1964). The annual operating hours of an item of plant, equipment or machine can be defined as the rate of utilization of capital. It is sometimes considered as synonymous with the extent of over time work (Nadri and Rossen 1969, Hazlendine 1974) and at time, it has been equated with the intensity of shift-working (Marris (1964), Winston (1974). In reality, however, the relationship between capital utilization, over time, and shift working is quite complex (Bosworth 1981).

In the Received Theory of Production, a production system, firm or economy, consists of a given stock of capital which is being operated at a given level of utilisation intensity. These theories accept a well-defined
relationship between quantities of labour and capital employed, expressed as ‘production function’.

This approach undermines the impact of variations in the rate of utilization on capital-output ratio. It is in this sense the utilisation of capital is of capital-saving kind and can increase the rate of growth of the economy.

In the context of developed countries, interest in the economics of utilisation of capital is associated with the potential output augmenting effects of increased utilization. This aspect of capital utilisation is the basis of controversy between Denison and Jorgenson and Griliches (Debusib 1972, Jorgenson and Griliches 1972). If we analyse this logic and the context of some of the important characteristics of the developing economies, we can easily understand the importance of capital utilisation for these countries. A typical under-developed economy is said to have following characteristics: (a) suffering from capital scarcity (b) overcrowded agricultural sector with large army of workers suffering from disguised unemployment and (c) scarcity of critical human capital.

Following the logic given above, in an underdeveloped economy where marginal propensity to save is low and taxation cannot be used beyond a particular limit to increase savings, utilisation can play a parallel role like savings. In these circumstances the policy should be to increase the rate of utilisation. Even if it affects the preference of workers
between day and night shift. It is because in a typical underdeveloped economy, the real choice that workers face is either to work in the night shift or to remain unemployed (Winston 1981, Bosworth 1981).

As higher rates of utilisation of capital result in saving in investments, it helps in the saving of foreign exchange. It also reduces the requirement for social overheads. The location of new capacity always involves a heavy investment in social overheads. The better utilisation of existing capacity will not require additional overheads. The role of utilisation of capital in economic growth has been clearly observed in empirical findings of Kim and Kwon (1974). Their study shows that increased utilisation of manufacturing capital stock in Korea worked as investment or capital accumulation (Kim and Kwon 1974).

The better rates of capacity utilisation can help in saving critical human factor because creation of new capacity necessitates the employment of additional managerial staff, where as, the increase in the rates of utilisation of capacity will not demand significant changes in the requirement of managerial skills. The operating managers can assign experienced workers to second shift generally less than those needed in the new operation.

Most of the developing countries are suffering from open unemployment, as well as disguised unemployment. Under these conditions it is required to expand industrial sector to reduce
unemployment and overcrowding in the agricultural sector. In these countries, therefore, what is required is capital widening, i.e. creating employment in the industrial sector with similar per capita requirement of capital. Under the conditions of shortage of capital, capital widening can be achieved through increased utilisation. The multiple-shift operation offers considerable scope for augmenting employment without additional capital investment of substantial nature (Thuy et. al. (19810; Bautista et. al. (1981); Seth and Seth (1994).

In the existing literature a clear distinction has been made between the concept of utilisation of capacity and utilisation of capital. The systematic study of utilisation of capital was initiated by Marris (1964), whereas, the studies regarding capacity utilization emerged in economic theory after the pioneering work of Chamberline (1933). The concept of capacity measures the differences between the actual and desired level of output, while utilisation of capital measures the extent of operational use and idealness among the inputs of capital. This suggests that the concept of capacity is associated with the theories of business cycles where attempt is being made to study ex-post fluctuations in the actual output from certain desired level of output. The concept of capital utilisation is related to the ex ante factors which have helped the management in deciding how much capital should be used ex ante (planned utilisation).
Hence, study of capital utilisation is more close to the studies on growth and efficiency.

The distinction between utilisation of capacity and utilisation of capital clearly shows that increased capital utilisation pari passu means increased productivity of capital because increase in the utilisation of capital means that production system is obtaining more output from a given stock of capital. On the other hand, the increases in the rate of capacity utilisation will increases in the output level which might improve the productivity of capital as well as that of other complementary input and factors of production. The overriding importance attached to the centrality of capital in analyzing capacity utilisation might have emerged because developed economies are using highly capital intensive technology. Therefore, in their case, a significant part of underutilization of capacity can be ascribed to underutilization of capital stock. Even in the case of developing economies, since capital is scarce factor, planners attach more importance to proper utilisation of inputs of scarce factor capital. However, in various theoretical and empirical writings, the concept of capacity used differs because of the purpose of the study, availability of data and importance provided to the centrality of capital.

**CAPACITY UTILIZATION IN DIFFERENT DEVELOPING ECONOMIES**

The studies conducted on capacity utilisation for different developing economies have established that in most of these economies a
significant part of productive capacity remains under utilized (Phan Thuy 1981 and Morawets 1981). It has been suggested that a proper use of output potential will not only improve the factor efficiency but also create additional jobs. For example, it has been estimated in the case of U.S. economy that their working hours per worker declined from 2700 hours per year (Pre-war period) to 2100 hours (Post-war period) that is a decline by 22 percent. But it did not result in 22 percent decline in machine hours. This is because reduction in the supply of working hours by an individual worker was more than compensated by the practice of multiple shift operation. This helped in saving of capital stock and increased labour absorption (Foss 1963).

To understand the relationship between the utilization of capacity on employment generation in India, an exercise was done which estimated potential output and employment under different assumption namely, (a) assuming 1) 80 percent, and 2) 90 percent of capacity on existing shifts basis and (b) assuming 1) 80 percent 2) 90 percent of utilisation level at desirable shift basis. The exercise revealed that if we estimate the gains in potential output and employment on the basis of desired level of shift operation of existing capacity, the gains in employment would equal the total increase in the employment during 1951-67 (Kabaj 1981).
However, some scholars argue that the option available to any economy is not only to achieve the additional employment with existing capital stock but with choices regarding adoption of new and efficient techniques which may or may not increase employment. It is this decision, which results in conflict between the objective of output maximization and employment maximization (Stewart and Streetan 1971). The conflict between these objectives emerges due to the existence of heterogeneity of products, where each product has its own production functions and consequently its own factor requirement. This causes selection of different product and industry mix to achieve alternative objectives (Stewart 1977 and Stewart and James 1982). If each product also experiences different rates of technological change, then employment creation might depend on the nature of factor bases embodied in the technology (Rosenbeerg 1976, Franssman 1986 and Seth and Seth 1994). It has been suggested that conflict might disappear and in fact these two objectives might become complementary, if introduction of new capital stock is accompanied by better rates of utilization.

Therefore, if in spite of these advantages, there exists a widespread underutilization of capacity in the developing economies, it is the manifestation of a number of causes. It is a symptom of certain imbalances in the growth, drawbacks in the government policies and
controls, quantity and quality of management and inappropriate choice of techniques of production.

The existence of excess-capacity in the manufacturing sector of underdeveloped countries, due to any of the factors mentioned above, suggests that it is not necessary that the rate of utilisation of capacity should vary with business cycles. That part of the variations in the rate of utilization of capacity that is related to the business cycles has been explored at great length in the theories of trade cycles. The other part that is not related to the business cycles needs elaboration.

The fact that utilization of capacity may not necessarily be linked with business cycles was made obvious by the study of Foss who observed that in the United States manufacturing sector capital stock was used not more than 75 percent of time even in the best of years (Foss 1963). Another important study that explained, theoretically and empirically, that the utilisation of capacity is not necessarily linked with business cycle is the study of Marris on British Industry (Marris 1964). In his study, Marris found that firms planned deliberately, ex-ante, to leave capacity idle. The ex-ante decision of leaving some part of capacity idle is based on the rational choice of management and it is an important component of their investment behaviour. In this sense, the ex-ante or planned underutilization is an instrument variable in the maximization of objective function of the management (Marris 1964). Therefore, while
analyzing industrial growth and stagnation in India it was also observed that (a) Continuous existence of excess-capacity in India Industries during mid-1960 and early 1970’s when Indian industry was experiencing relative stagnation and (b) Prevalence of excess-capacity even during the period 1960-64 when industry was experiencing high rates of growth between 8 to 10 percent per annum (Raj 1974). The prevalence of excess-capacity when economy is growing, clearly shows the ex-ante rates of utilisation, while existence of excess capacity during relative stagnation shows ex-post rates of utilisation.

This suggests that to understand the factors that determine the ex-ante rates of capacity utilization, one has to identify factors that are endogenous to the decision-making process of management at the micro-level namely different costs associates with shifts in the rates of capacity utilisation, economies of scale and scope, nature of competition (that is entry and exit barriers), nature of technology that is energy saving or labour saving or capital saving ) and elasticity of factor substitution, input prices etc. whereas, to know the role of ex-post factors in determining the rates of capacity utilization, it is essential to know factors that are exogenous to the firm like macro-economic environment and basic fundamentals of an economy.

After independence, under the influence of Post Great Depression and Post World War II created environment, India adopted a model of
planned development. Following this model, government introduced an all-embracing structure of regulations to regulate the behaviour of economic agents to achieve the goals embodied in the plan documents. The basis for adopting the model was that the competition is bad because it creates waste of resources. It is because when market forces provide opportunities for entry, more firms enter the market than can be sustained by the market over a business cycle. Therefore, some firms are forced to exit, which result in waste of capital and create unemployment of manpower. Hence, planners decided to develop capacity in the planned manner through licensing policy. In this kind of framework planners use to fix targets of new capacity for different industries and licensing authorities were granting licensed capacity in different industries according to the targets set by the planning authority. Policy-makers assumed that in this kind of framework there is no scope for excess capacity creation and problem of underutilization of capacity. This mindset of the policy-makers necessitated the policy of capacity rationing.

However, planners did not realize that they are practicing capacity rationing in the mixed economy where a substantial segment of the economy responds to the market signals. Therefore, licensing regulations were neither successful in creating capacity in accordance with the capacity targets fixed by the Planning Commission, nor it could guarantee
the appropriate rates of utilization. The mismatch between planned and actual capacity creation emerged due to following:

a) Because of long bureaucratic delays in getting license.

b) Some times, the time lag involved in getting the license was so long that it distorted all the calculations of costs and benefits made at the time of planning of the project that the promoters decided not to start the project.

c) It was also observed that some firms were obtaining license just to create entry barriers for the rival firms. Moreover, under the conditions of capacity rationing, it was a sensible strategy on the part of the firms to practice capacity pre-emption by asking for the target amount of capacity permitted under the government rules. This strategy on the one hand created entry barriers; on the other hand it created under utilization of capacity.

**ECONOMIC POLICY AND CAPACITY UTILIZATION**

Another set of economists hypothesized that industrial stagnation and emergence of widespread underutilization of capacity was direct outcome of faulty industrialization strategy followed during the first three plans (1951-66) accompanied by industrial licensing, controlled foreign trade regime and administered price of foreign exchange during the period. They argue that emphasis on the strategy of import, substitution, entry barriers created through license permit regulations like MRTP and
FERA along with very high tariff and non-tariff barriers collectively led to the underutilization of capacity. Excess capacities were created for the purposes of capacity pre-emption to create entry barriers which led to the emergence of market imperfections.

Theoretical literature has clearly established relationship between market imperfections and creation of excess capacity. This policy regime also resulted in shortages of imported raw materials, components and capital goods, which imposed supply constraints on the capacity utilization. It also reduced foreign direct investment and discouraged import of technology, which caused technological obsolescence and reduced international competitiveness of Indian industry. Not only this higher tariff walls and overpriced Indian currency reduced the size of external market, but also created demand side constraint on the growth of aggregate demand (Bhagwati and Desai 1970, Bhagwati and Srinivasan 1975 and Bhagwati 1994). They also suggest that the post-1976 recovery in output growth and better rates of capacity utilisation can be attributed to the process of decontrols and liberalization which began thereafter (Ahluwalia 1986 1991, Lucas and Papanek 1988).

**Capacity Utilization: Demand Pricing and Efficiency**

The aggregate demand also plays an important role in capacity creation and utilization in the industrial sector. The aggregate demand, according to national income accounting framework, consists of:
(a) private consumption, (b) Government consumption, (c) private and public investment, and (d) balance of trade. Therefore, size of the market (including internal and external market) assumes greater significance. Some of the economists have been debating on relative importance of domestic markets and external market. This debate is presented as a choice of strategy between, ‘import-substitution’ and ‘export-led-growth’. However, it should be noted that what matters in the biography of an economy is the aggregate size of the market. The aggregate size of market is immaterial. It is immaterial whether aggregate market is growing through expansion in domestic market or through increases in export. Therefore, these strategies are not mutually exclusive choice sets. Hence, in terms of a suitable strategy, policy-makers have to select an appropriate mix of size of domestic market and external market (Nayyar 1994).

The article ‘Capacity Utilisation and Prices within Industries’ of Peter S. Yoo an economist of the Federal reserve Bank of St Louis, published by the Federal Reserve Bank of St Louis (1995) reveals that, the strength of the economic expansion during the past two years has renewed fears of accelerating inflation. As these fears have grown, people have turned to various statistics to substantiate any sign of rising inflation. Commodity prices, wages sales to inventory ratio, civilian unemployment rates and capacity utilisation rates are some of the
statistics commonly used to predict the future path of inflation. These measures embody the basic idea of supply and demand. As the demand for scarce goods increases, their prices must also increase.

The staff of the Board of Governors of the Federal Reserve System measure capacity utilisation as the ratio of industrial production to industrial capacity.

Most of the empirical researchers on this subject use total industrial capacity utilisation and Consumer Price Index (CPI) or Product Price Index (PPI) finished goods based measures of inflation. Since inflation is an aggregate phenomenon, their focus is undoubtedly justified. Yet, the economic analysis that links inflation to capacity utilisation should apply to any product market, regardless of its size. Therefore, the relationship between price and capacity use should also be evident in industry level.

**ECONOMIC REFORMS ON PRODUCTIVE CAPACITY**

Another research article ‘Liberalization and the Behaviour of Indian Industry’ (A Corporate-sector Analysis Based on Capacity Utilization) published by Rupa Rege Nitsure and Mathew Joseph, examines the impact of economic reforms on productive capacity creation and utilization across various industries in the nineties. The results suggest that although substantial achievements occurred initially in creation and utilization of capacities in the various industries, there is significant room for further improvement in utilization. It analyses the
determinants of capacity use such as credit flow, import liberalization, fiscal consolidation and demand conditions, using panel data for 802 firms for the period 1993-98 too suggest an optimum combination of policies that is critical for realizing the unused capacity.

The research paper has examined the impact of economic reforms on productive capacity creation and utilization across various industries in the nineties by focusing on the private corporate segment of the Indian manufacturing sector. This analysis is particularly important, as the liberalization process has radically changed the operational environment of the industrial sector by dismantling the barriers to entry and growth and by promoting competition. The aggregate analysis for the manufacturing sector as a whole reveals that though a severe slowdown was witnessed by this sector immediately after the reform process began in 1991-92, a sustained acceleration in growth was experienced during the period 1993-96. A time-series analysis based on the Hodrick-Prescott filter estimates the current potential growth rate for the manufacturing sector at 9.0 percent as against 6.3 percent in the 1980s. This is facilitated by the high growth of savings, investment and actual output in the post-1991 period. The Hodrick-Prescott filtering (a standard approach followed by the IMF in estimating the output gap for the developing countries leads us to conclude that the three consecutive years of above-trend growth experienced by the manufacturing sector during 1993-96
has resulted in closing the negative output gap for the manufacturing sector in the subsequent years. This means there was no underutilized capacity in this sector during 1996-98. This conclusion gets considerably modified when the reforms are assessed on the basis of more appropriate database for the private corporate sector that captures the firm-specific, micro level characteristics.

The data on 802 medium and large scale companies from the private corporate sector when analysed for five years (from 1993-94 through 1997-98) reveals that after the first two years of structural adjustment, the private corporate sector staged a smart recovery from 1993-94, reflected in rising levels of capacity build up, physical production and capacity utilisation rate until 1996-97 and up to 1997-98 in capacity build up. The liberal import policy for capital goods contributed to the strong growth of installed capacity. Despite this policy measure, the growth in installed capacity was spearheaded by the growth in domestic capital goods sector reflecting the buoyant investment sentiments. A broad-based growth of production implying rising income levels and the newly acquired outward orientation (giving boost to the exports) resulted in a steady increase in the capacity utilisation rate of the private corporate sector; the same trends were shown more sharply by the basic and capital goods industries. The capacity utilisation rates remained somewhat volatile for the industries producing intermediate and
consumer durable goods during 1993-98. However, the recovery phase for the private corporate sector was reversed in 1997-98 owing to variety of factors. This phase of contraction was also led by the capital goods, followed by the consumer goods industries.

The capacity utilisation analysis for the private corporate sector shows that the recovery phase (1993-97) has resulted in the creation of large, build up of capacity in this sector and almost 22 percent of its installed capacity was in the unutilized state in 1997-98. Despite the strong recovery, the negative output gap was not closed for the private corporate sector in the later years of 1990s. The extent of unutilized capacity (or negative output gap) is widest for the capital goods industry followed by the intermediate goods industry. The larger extent of unutilized capacity clearly shows that the cyclical down turn was witnessed by this sector long before the producers actually came up against capacity constraints. This implies that there is considerable scope to achieve further growth with the appropriate policy package without subjecting the private corporate sector to demand-pull inflationary pressures.

The fixed effects panel regression analysis to identify the primary determinants of capacity utilization rates across various product groups from the private corporate sector shows that both the policy variables (such as the credit availability, import liberalization and the size of
government’s current expenditure) as well as the non-policy variables (like domestic and external demand for the finished produce of various product groups) have significantly affected the variation in capacity utilization rates during 1994-98. However, the relative impact of export demand and the size of government’s expenditure (capturing the effect of crowding out and higher interest rates) has been significantly larger (than that of the other variables) on the percentage point variation in the capacity utilization rates of various product groups during the period 1994-98. While the higher imports of capital goods negatively affected the capacity utilisation rates (by excessively contributing to the capacity build up) with a lag of one year, the other factors such as credit availability, domestic and external demand and the size of government’s current expenditure tended to affect significantly the capacity utilisation rates during the same year.

Kim and Kwon (1977) had analysed the rising trend in the level of capacity utilization for Korean economy in terms of the standard ‘source of growth’ approach. In this study, the magnitude of residual (that is total factor productivity) was reduced by about 28 percentage points, with only 8 percent of the output growth left to the residual, when the influence of improved capacity utilisation was subtracted from the conventionally measured residual. The evidence that improvements in the capacity utilisation rate have actually played a vital role in the expansion of the
Korean manufacturing industry points to the significance of this indicator of efficiency. Bruton (1967) and Williamson (1969) had also suggested that the bulk of productivity growth in Latin America and the Philippines must be viewed as a reflection of increased utilisation of resources.

The study of ICICI on Capacity Utilization has highlighted significantly lower levels of capacity utilization rates for the private corporate sector in India during the years 1991-92 and 1992-93 the early period of transition. Production has slowed down in this period due to a variety of factors such as import compression, rise in the cost of imports on account of substantial devaluation of Indian rupee, tight monetary policy and the cash margin requirements. From the demand side, there was a noticeable fall in effective demand due to mounting inflation and the reduction in public expenditure as a result of newly imposed fiscal discipline. This downturn in the economic activity was the essential fallout of stabilization measures initiated by the government for the macro-economic adjustment of the economy.

Gradually, the economy started responding favourably to liberalization measures in the form of faster growth, better export performance and greater self-reliance (that is, larger financing of imports through export earnings) (Ahluwalia and Little, 1998). The private corporate sector staged a smart recovery from the year 1993-94, from the 1991 crisis and the consequent stabilization efforts. This recovery was
aided by several policy initiatives taken by the government since July
1991, which primarily included a significant deregulation and de-
licensing of the industrial sector, rationalization and reduction of customs
duties, reduction of corporate taxes and deregulation of imports.
(Capacity Utilisation in the Private corporate Sector, 1991-92 and 1992-
93, ICICI Limited)

In India, the slow-down in industrial growth since the second half
of 1996-97 is attributed to various factors. On domestic front, the factors
include weak demand, infrastructural bottlenecks and inadequate credit
availability. On the external side, it is mainly the slowdown in Indian
exports on accounts of the slow down in world exports (Annual Report
1998-99, Ministry of Industry). The disaggregated analysis shows that the
demand has been slackening for basic goods like steel, organic and
inorganic chemicals, caustic soda and capital goods like transformers,
electronic components, commercial vehicles, automobile ancillaries as
well as many consumer durables. These have resulted in cut back of
production by these industries and build up of inventories.

Bsassim Shebeb, University of Bahrain in his research article,
‘Measuring Capacity Utilisation’ using a short run cost function: an
application to Bahrain economy, states that the level of capacity
utilisation is frequently the focus on discussions on economic
development, particularly in developing countries. The importance of this
measure of economic performance results from its impact on productivity. Higher unit cost (lower productivity) can arise from under or over utilisation of capacity. In addition, in most developing countries, capital is a scarce factor, thus under or over utilisation involves not only additional cost but also wasting this scarce resource. Therefore, levels of capacity utilisation have been increasingly viewed as crucial economic issue in developing countries. It is important to measure and to analyse the level of capital utilisation at the economy level and at the industry to develop proper policies with regard to new investments and the type of investments that should be encouraged. Therefore, with the process of development and importance of the structural transformation, it is very important to comprehend the fundamental concepts of measuring and analyzing capacity utilisation. The objective of his study is to determine the main underlying concepts of capacity utilisation and use the powerful analytic tool in understanding the economic performance of Bahrain economy and to measure and analyse capacity utilisation in Bahrain economy. The study showed that the presently structured industries in Bahrain economy, on average, have experienced capacity under-utilisation. The reasons behind the low economic performance were most likely due to the presence of a number of sub-optimal plants (industries) with significant capacity under-utilisation.
C.I.I. AND OTHER SURVEY STUDY

Business outlook survey conducted by Confederation of Indian Industries (CII) based on preliminary analysis of responses from 352 small and medium members reveals a dull scenario (June-2003). However, the small and medium industry foresees and improvement in the business situation in the coming years and expects an increase in turnover production, profit margins, capacity utilization and exports.

The CII survey covers a broad spectrum of industry groups and activities of the small and medium industry members all over the country. The survey relates to the actual performance of industry. From the survey report, one can understand that any of the internal or external problems of industry ultimately affects the production capacity.

David H. Hort explains in one of the books on Entrepreneurship that during the period of depression capacity underutilization is found in almost all industries. Market trend is directly connected with capacity utilization.

As per the information collected from the District Industries Centre of Dakshina Kannada and Kanara Small Industries Association, Mangalore till now no studies have been conducted on capacity utilization in Dakshina Kannada and Udupi Districts. One of the articles published in KSIA, Industrial Directory (2003), the writer B.S. Baliga, Chief executive Lamina Suspension Products Ltd., highlighted the major
reason for the present state of affairs of the Small scale Units. According to him, this is on account the growing tendency on the part of new entrepreneurs to start enterprises without adequate market studies and feasibility studies. New enterprises are started on the perceived success of existing ones rather than on the basis of realities. In the process excessive capacity is created in most of the industries and this results in continuous deterioration in the capacity utilization making most of the units to lose on a continuing basis.

Small Enterprises Development Management and Extension (SEDME) published articles on capacity underutilization in small industries. Professors Krishna Kumar, Dr Ramanath and Haphzibah conducted one of the studies. The researchers took sample units at Hyderabad and Secundarbad. The study revealed that 50 percent of small-scale units were not in a position to utilize more than 50 percent of their installed capacity. In the study prominent reasons indicated by the entrepreneurs are inadequate market demand and inadequate working capital. Other reasons are irregular and inadequate supply of power etc.

In another article of SEDME, the study conducted by Professors Jaychandran, Narendra Kumar and Dr. Himachalam at selected small-scale units of Tirupathi Industrial estate discloses that 50 percent were utilizing 25 percent to 50 percent capacity and the remaining 50 percent were utilizing 50 to 75 percent. And no unit was utilizing more than 75
percent of plant capacity. Further it revealed that age of the unit alone is not accountable for the extent of capacity utilization. Entrepreneurial talents and problems, which confronted the unit, also influenced the level of capacity utilization in the small-scale units under study.

The systematic work on the utilization of capital began with the work of Marris (1964). The annual operating hours of an item of plant, equipment or machine can be defined as the rate of utilization of capital. It is sometimes considered as synonymous with the extent of overtime work (Nadri and Rossen [1969], Hazlendine [1974]) and also been equated with the intensity of shift working (Marris 1964, Winston 1974). However, the relationship between capital utilization, overtime and shift working is quite complex (Bossorth 1981).

The distinction between utilization of capacity and utilization of capital clearly shows that increased capital utilization ‘pari-passe’ means increased productivity of capital because increase in the utilization of capital means that production system is obtaining more output from a given stock of capital. On the other hand the increase in the rate of capacity utilization will show increase in the output level, which might improve the productivity of capital as well as that of other complementary input and factors of production. Developed economies are using highly capital-intensive technology; therefore, in their case a significant part of underutilization of capacity can be ascribed to
underutilization of capital stock. Even in the case of developing economies, since capital is scarce factor, planners attach more importance to proper utilization of inputs of scarce factor capital. The studies conducted on capacity utilization for different developing economies have established that in most of these economies a significant part of productive capacity remains underutilized (Capacity utilisation in industries-Theory and evidence- by Vijay K. Seth)

The studies conducted on capacity utilization for different developing economics have established that in most of these economies a significant part of productive capacity remains under utilized. It has been suggested that a proper use of output potential will not only improve the factor efficiency but also create additional jobs. The fact that utilization of capacity may not necessarily be linked with business cycles was made obvious by the study of Foss who observed that in the United States manufacturing sectors capital stock was used not more than 75 percent of time even in the best of years (Foss-1963). Another important study that explained, theoretically and empirically, that utilization of capacity is not necessarily linked with business cycles is the study of Marris on British industry (Marris 1964). In his study Marris found that firms planned deliberately, ex-ante, to leave capacity idle. The ex-ante decision of leaving some part of capacity idle is based on the rational choice of
management and it is an important component of investment behaviour. In this sense, the ex-ante or planned underutilization is an instrument variable in the maximization of objective functions of the management (Marris-1964).

The scholars, who have studied the process of industrialization in India, generally divide the post independence experience of the process of industrialization in India into four sub-periods. The sub-periods are 1950-65, 1966-75, 1976-84 and 1985 onwards. The first sub-period is described as the period of high growth rates in industrial output and productivity covering the period dominated by the Nehru-Mahalanobi’s strategy. Most of the scholars who have studied the temporal changes in the performance of Indian industries noticed a marked declaration in the growth rates, described as relative stagnation, during 1966-75 (regime of Smt. Indira Gandhi). This sub-period witnessed the adoption of populist policies to achieve re-distribution of gains of development through policies aimed at removal of poverty.

Since 1985, a dramatic break with past occurred when through new economic policy, the process of liberalization was initiated by Rajeev Gandhi. This process of economic growth got further impetus after 1991.

Most of the studies conducted in developing countries in general and in India in particular have tried to explain the existence of underutilization of capacity. In spite of general acceptance of the
existence of underutilization of capacity, this area of study that has been conducted, emerged in response to either recession that affected the industrial sector during 1966 to 1975 (R.B.I. 1970) or to study the affect of government policies; regarding trade and industry on underutilization of capacity (Bhagwati and Desai 1970), (Bhagwati and Srinivasan 1975). Hence these studies are broadly speaking trying to link the underutilization of capacity with the factors that are exogenous to the firms.

Kaustuva Barik in his study on capacity utilisation in Indian paper Industry estimates the rate of capacity utilisation for the period 1973 – 74 to 1997 – 98 on the basis of the theoretical framework of variable cost function. It was based on the basic premise that deviation from full utilisation of capacity takes place as the levels of certain inputs, particularly capital, were fixed in the short run and that could be changed only in the long run. In order to meet the increase (decrease) in demand, the Industry puts the existing capital to more (less) intensive use. It was found that underutilisation of capacity prevails in the Indian paper Industry.

In one of the studies on Capacity Utilisation and US inflation, Prof. C Alan Garner, defined capacity (more precisely) as the greatest level of output that a Plant can maintain within the framework of a
realistic work pattern, taking account of normal downtime and assuming the availability of inputs to operate the machinery in place.

Federal Reserve’s concept of capacity tries to take into account both economic and engineering factors that determine capacity.

Mohammed E Chaffai (Universite de Sfax) and Michel Dietsch Universite Robert Schuman de Strasbourg conducted a study in the year 1999 on capacity utilisation and efficiency in the European Banking Industry. According to their study, no clear correlation exists between capacity utilisation and cost efficiency in the short run. Over capacity does not clearly result in cost inefficiency in the short run. However, the relation between cost efficiency and capacity utilisation is clearer in the long run.

Centre for Monitoring the Indian Economy (CMIE) report 1982 shows that average capacity utilisation of Indian Industries was the tune of 25.6 percent.

The study made by the NISET, Hyderbad in 1974 on 150 sample small-scale industrial units (110 Hyderbad and rest of them from other parts of Andrapradesh) gives a discouraging picture of the capacity utilisation by the units. Only 5.3 percent of sample units have utilised full capacity. At Sharma’s study in 1976 on 80 sample small scale industrial units of Assam reveals that the underutilisation of productive capacity exists with 79 percent of the cases surveyed.
Another study at Assam by H.K Boroah in 1980 shows 75.3 percent of the units surveyed suffer from capacity underutilizations.

Another study at Assam in 1985 by N.B Dey reveals that in 95 percent of the units surveyed suffer from capacity underutilisation.

Study of Ranabijoy Deb at Assam (1995) shows out of the 79 units surveyed underutilisation of capacity found to be present in 76 (96.2 percent) units.

Reasons behind underutilisation of production capacity vary from place to place, time to time, industry to industry and even unit to unit in the same industry and even unit to unit on the same industry. Any how, general reasons were finance, marketing, power shortage, raw material shortage, dearth of skilled labour, unfavorable climate and transport bottleneck etc.

From the above review of literature, it is obvious that researchers studied the subject capacity underutilization in industries at the national and international level. A few researchers have studied the status and role of small-scale industries. As per the information collected from various sources related to small industries of Karnataka and particularly for Dakshina Kannada and Udupi Districts no studies have been made on Capacity utilisation. Most of the industries, particularly SSI sector faces the problems of underutilisation, hence in this study an attempt has been
made to study the status of small and medium enterprises and capacity utilization.