Chapter - II

Review of Literature
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REVIEW OF LITERATURE

2.1 Introduction

A review of all available related studies is quite indispensable to understand the basic concepts and theories pertaining to a research problem. In fact, a research gain a deep and perfect perception only from the experience gained in reviewing the publication closely related to the topic of interest. Hence a genuine attempt is made to review some of the outstanding studies related to the present research study. The review of literature is classified as a) Studies on Salt b) Studies on Growth c) Studies on Productivity and d) Studies on Commercial efficiency.

2.2 Studies on Salt

Agarwal (1976) traced the historical features of the salt manufacturing activity in India and drew pointed attention to the manner in which crude methods of salt making were prevalent in the Pre-British days and hoe these methods were gradually replaced by more and more scientific methods.

Kripa Ram Halidiya et.al (2004) analysed the health problems among the salt workers. The study was merely based on primary data. The aim of the study was to find out prevalence of hypertension and blood pressure in brine workers were affected by the presence of ulcers on their limbs. They found the prevalence of hypertension of 15.6 percent while it was 4.3 percent in those not having ulcer. Prevalence of hypertension was significantly higher in the group of brine workers with ulcers.

Perumal (2004) made the study on the "Working conditions of salt workers in Tamil Nadu" during the year 2004. The author had chosen Arumuganeri of Tuticorin District, as the study area and the primary data had
been used for this analysis. The study aimed to analyse the wage difference and to find out the prevailing working conditions and also to test whether the welfare measures provided the salt manufacturers were coincided the ILO recommendations. The result of the study showed that, a) the male workers were paid Rs.53 per day and female workers were paid Rs.47 per day and they worked for the entire week, the working hours for female workers was about 6 hours and for male 7 hours. b) There was no job security for the salt workers. Bonus was given on the basis of sex and experience of the workers. The male workers got bonus from Rs.1,000 to Rs.2,500 the female workers bonus was restricted with Rs.1,000 to Rs.2,000. c) the workers were got only the festival allowance varies from Rs.100 to Rs.500. He concluded that the conditions of salt workers were very poor and their living conditions should be improved.

Uday Maharkar (2008) critically focused on the health problems faced by the workers, and he also explained how the salt workers have exploited by the traders, transporters and retailers in an inland salt industry in Gujarat. He mentioned that, Gujarat produces almost 70 percent of India's salt and inland salt from this region accounts for almost 40 percent of Inland salt sold for Rs.3 per kg in the markets of North America, but the Agarias got just 15 paisa per kg less than their production cost in most cases. He also described how an Agarias hands and legs harden due to their constant work in salt, become nearly acid spray and therefore take time to burn when if is put on the funeral pyre.

2.3 Studies on Growth
Madan Gopal Jajoo, (1974) analysed the growth of 2001 listed manufacturing companies in Japan during the period of 1961-70. The companies were divided first into major industrial groups and then into product groups. The growth of output in the listed companies was more rapid than that in the relative industry group. Industry groups which did not achieve the average growth were mainly companies engaged in the basic consumer goods producing industries which had been long established. The correlation analysis of the growth in
output with the increase in fixed assets showed that in several product groups the increase in fixed assets did not result in a matching increase in output.

Metha (1974) made a study on growth of Indian industries by using compound growth rate. This study was based on CMI (Centre for Monitoring Authority) and ASI Annual Survey of Industries) data were adjusted to make them comparable both with respect to coverage and classification at the three digit level disaggregation. A consistent time series of data pertaining to individual industries were presented at current prices for the period 1953-65. Growth rates of variables such as fixed capital, working capital, total productive capital, and total number of persons employed, wage bill, gross output, total of raw materials, fuel, purchase, services and depreciation in real terms were then analyzed.

Anbumani (1985) examined the growth of small scale industries for the period 1970-1980. His analysis look into consideration 17 industrial groups with the following indicators of viz. number of enterprises, gross fixed capital, installed capacity, employment, value added and net profits and had computed compound growth rate for all the industry groups and based on these results, he concluded that the small-scale industries registered a remarkable growth during the study period.

Burange (1999) analysed the growth and structure of manufacturing sector in Maharashtra. The state was experiencing significant changes in the industrial composition wherein capital and intermediate goods industries were becoming dominant. The manufacturing sector was itself undergoing major structural changes over the period 1979-80 to 1994-95. The state realized a high growth rate in fixed capital resulting decrease in employment. The rising capital intensity and thereby substitution of capital for labour, low growth rates of output and value added, all did not indicated satisfactory performance of the
state on the industrial front. He concluded that there was a revival in the manufacturing sector in post-reform period.

Ganesan (2001) has made an attempt to estimate the growth performance of co-operative sugar mills in Tamil Nadu for the period of 10 years (1990-2000) with selected indicators such as number of factories, cane crushed, duration of crushing season, sugar recovery, and sugar production by using compound growth unsatisfactory growth rate.

Subramanian (2001) examined the growth of South Indian Visacose Limited (1980-1991) with the selected indicators namely output, fixed capital, gross profit, interest payment and income by using the compound growth rate method. Thus the selected indicators had recorded an impressive growth rate but the growth rates were not uniform and varied widely.

Kui-Wai Li and Tung Liu (2010) examined the growth attributes of manufacturing industries in China for the sample period of 1999-2007. All manufacturing industries were grouped into and four main industry groups and four geographical regions. A revised Solow’s growth method was used to decompose the growth attributes into input growth, scale effect, technical progress, and technical efficiency change. A stochastic frontier model was applied to the translog production function. The empirical findings showed a strong presence of technical progress, while labour input had rapidly been replaced by human capital. Structural transformation in the industrial sector was evident, so as regional imbalances.

2.4 Studies on Productivity

Sinha et.al (1968) measured productivity trends in Indian cotton textile industry during the period 1950-1963 and estimated the share of labour and capital in productivity gains as well as in the entire divisible part of net output. The analysis brought out significant advances in productivity during the period.
It was therefore concluded that sustained rise in productive efficiency alone could make the industry a promising field for additional investment consistent with the legitimate aspirations of workers for rising levels of living.

Anil Kumar Chatterjee (1973) made an attempt to estimate the productivity in selected manufacturing industries for the period 1946-1965. The results of the estimates showed that there had been a definite improvement in productivity in most of the manufacturing industries covered by our study. Though no consistent or uniform pattern was noticed in the individual industries. There were also wide variations in the degree of improvement in productivity.

Dholakia et.al (1975) made an attempt to test empirically the validity of the marginal productivity hypothesis of wage determination in the case of the Indian economy by using the data on the organized manufacturing sector. The broad methodology followed in the study consists in estimating the Cobb-Douglas production function for Indian industries on the basis of the time series (1946-64) data and also the cross-section data for years 1960 & 1964 and in turn deriving the series of estimated value of marginal product of labour from the estimated production function. By regressing the observed wage rate on the estimated marginal product of labour, the linear relationship between the two was then estimated and tested. A few other test criteria such as the Douglas criterion are also applied. The main findings of the study were that wages paid in Indian manufacturing industries do not reflect the corresponding marginal productivity of labour. Tracing the divergence between the two to the market imperfections, an attempt was also made on an experimental basis to estimate the implicit elasticities of supply of labour in a few selected industries.

Beri (1976) examined three inter-related hypotheses regarding productivity on the basis of both time series and cross-section data relating to the Indian manufacturing industries. In regard to the first hypothesis, the study
established a close relationship between alternative labour costs and mechanization. In respect of the second hypothesis it showed that productivity was governed by the level of mechanization. Finally in case of third hypothesis the study gave sufficient statistical evidence to show that there was an inverse relationship between the proportion of production workers to other employees and productivity.

May et.al (1979) measured productivity in Canadian manufacturing from 1948-1976. The rate of productivity including intermediate inputs was estimated and compared to simplest measures of productivity. The theoretical framework was based on developments on exact and superlative index by Diewert (1976) and others. The sensitivity of the estimates to alternative measures of labour and capital services was investigated.

Vijay et.al (1980) estimated the Cobb-Douglas and CES production functions for twenty seven major Indian manufacturing industries. The authors evolved an alternative method of estimation of CES production function. It was observed in the study that a) there were inter industry differences in the rate of growth of technical change b) there was less scope for factor substitution and the elasticity of substitution was less than unity in most of the industries c) the CES production function seemed to be an appropriate specification for most of the industries d) most of the industries experienced decreasing return to scale and e) there were inter – industry differences in the pattern of income distribution among the factors of production.

Anne Krueger et.al (1982) estimated the rates of Total Factor Productivity (TFP) growth for two-digit manufacturing industries in Turkey over the period 1963 to 1976. Estimates were presented separately for the public and private enterprises in each industry. It was shown that periods of slower productivity growth coincided with periods of a more stringent trade regime. It was also shown that, despite the fact that the rate of growth of TFP was about the same in
the public and private sectors, absolute levels of inputs in the public sector enterprises were much higher than in their private sector counterparts.

Chakravarty and Hojman (1982) estimated a non-homogeneous variable-elasticity of substitution. From 1961 to 1976 output declined, returns to scale increased and the elasticity of substitution fell. At the end of the period, the elasticity of substitution between capital and labour in the coal industry was still large and there might be room for greater employment in the industry at a time of high and rising unemployment, subject to other overall considerations. While marginal productivity of labour in physical terms had been stagnant, price rises in the industry in recent years had been in excess of what was needed to finance wage settlements. Perhaps price rises granted to the coal industry by the UK government were justified, but they required closer scrutiny.

Buzacott (1985) analysed how productivity was determined by managers making rational decisions on the basis of their perceptions about markets, finance and technological alternatives. The approach was illustrated by considering the effect of technological change on different firms within the industry.

Ahluwalia (1985, 1991) examined total factor productivity (TFP) for the period 1959 to 1985. These studies showed that during the two decades of the sixties and the seventies total factor productivity in the manufacturing sector declined. However, there was also a finding that in the first half of eighties productivity growth improved. The dominant source of the acceleration in total factor productivity had been the growth of value added. The measure of TFP used in the study was derived from a translog production function under the assumption of competitive equilibrium.

Denny et.al (1992) analysed the factor productivity growth and trends in relative efficiency levels in the National Two-Digit manufacturing of Japan,
Canada and the United States during the last quarter-century. The well-known slow down in productivity growth rates in the 1973-80 period was a common phenomenon across the three countries but was felt most strongly in Japan and least in Canada.

Subramanian (1992) analysed the partial and total factor productivity growth of labour and capital to study the nature of returns to scale and to estimate the elasticity of substitution between capital and labour in cotton textile industry in Tamil Nadu for the period 1975-76 to 1985-86. It brings out the improving quality of labour, massive investment on machinery and declining overall efficiency of cotton textile industry in Tamil Nadu. It highlighted the need for good industrial relations and use of appropriate technology for the highest performance of textile industry in Tamil Nadu.

Balakrishnan and Pushpangandan (1994) studied the total factor productivity growth (TFPG) for Indian manufacturing from 1970-71 to 1988-89. The statistical analysis confirmed a turnaround if TFP estimates were derived from the value added single-deflation series. The point however that is if TFP index is derived by double-deflation, there was an absence of an increase in the growth rate of TFP.

Chiranjib Neogi et.al (1994) analysed inter temporal efficiency variations in Indian manufacturing. The results were significantly conclusive: Technical efficiency had been falling over time. This along with TFP changes helped to understand the nature of industrial development in recent past. An inquiry into the sources of inter-industry efficiency variations shows that skill, labor productivity and profit played significantly positive role, while capital intensity works against general beliefs.

Van Ark (1994) study showed that for the manufacturing sector as a whole, value added per hour worked in East Germany was 28.6 percent of the
level in West Germany in 1987. The comparative productivity performance in food products and beverages and in chemicals in East Germany was well above this average, but the productivity level in machinery and equipment was below 20 percent of the West German level. The study dealt with the problems involved with quality differences, and it discussed the reasons for the more unfavourable performance of East Germany when based on comparisons of value added rather than gross output. The study concluded with a discussion of the changes in comparative output and productivity performance in the past five decades.

Martin et.al (1996) examined the micro-economic evidence using the plant level data from the Longitudinal Research Database (LRD). They found that increased employment as well as productivity contributed almost as much too overall productivity growth in the 1980’s as the plants that increased productivity as the expense of employment. Further there were striking differences by sector (defined by industry size, region, and wages and ownership type) in the allocation of plants in terms of whether they upsize or downsize and whether they increase or decrease productivity. Nevertheless, in spite of the striking differences across sectors defined in a variety of ways, most of the variance of productivity and employment growth was accounted for by idiosyncratic factors.

Rolf Fare et.al (1996) decomposed the Malmquist productivity change index into technical change and technical efficiency change for Taiwanese manufacturing industries. The results obtained indicated that total factor productivity (TFP) growth in the long run was dominated by technical change, that technical change and efficiency change did not always move together, and that R&D activity benefits technical progress. It also compared the productivity estimates with those of Lee's (1991) parametric approach.
Subal Kumbhakar et.al (1996) concerned with the measurement of total factor productivity (TFP) growth and technical change in Swedish manufacturing industries during the period 1964-1989. Two alternative formulations of technical change, viz., the time trend model and the general index model were used for measuring TFP growth and technical change. Measures of these were embedded in a cost minimization framework where they estimated the translog cost function along with the associated cost share equations. The cost function accommodated industry-specific variability through an error component model. The models were estimated using the iterative seemingly unrelated regression method after some transformations to the cost function. Empirical results show that the general index model was superior to the time trend model when the pattern of technical change and total factor productivity growth were examined.

Leung (1997) analysed total factor productivity (TFP) growth from industry level data for Singapore over a time series, and then regressed the estimates to a list of variables. The TFP growth was estimated to be around 2-3 percent per annum over the last ten years, somewhat higher than previous estimates but remained a small fraction of the actual GDP growth. The variables found to have significant influence on TFP growth included foreign ownership, export orientation, and remuneration per employee. The result also suggested that Singapore had not gained much from learning-by-doing.

Das (1998) analyzed seventy-six three digit industries covering the period 1980-81 to 1993-94. This study found that productivity response to the trade policy reform was mixed. This study correlated the productivity growth with different measures of trade liberalization. However, the results of this exercise showed that in majority of the cases the trade liberalization variable had a statistically insignificant positive relationship with productivity growth.
Arup Mitra (1999) estimated the time variant technical efficiency and total factor productivity growth for 17 two digit industry groups. The total factor productivity growth in a large number of industries seemed to have improved and across most of the states during 1985-86 to 1992-93 as compared with the rates estimated for the period 1976-77 to 1984-85. Technology acquisition, efficient utilization of resources and infrastructure development were some of the factors which possibly contributed to the increase in TFPG.

John Van Reenen (2000) analysed the effects of training on direct measures of industrial productivity by using a panel of British industries between 1983 and 1996. Training information was derived from a question that had been asked consistently over time in the Labour Force Survey. This was combined with complementary industry-level data sources on value added, wages, labour and capital. And used a variety of panel data techniques (including system GMM) to argue that training significantly boosts productivity. The existing literature had underestimated the full effects of training for two reasons. First, it had tended to treat training as exogenous whereas in reality firms may choose to re-allocate workers to training when demand (and therefore productivity) was low. Secondly, our estimates of the effects of training on wages were about half the size of the effects on industrial productivity. It was misleading to ignore the pay-off firms take in higher profits from training.

Oustapassidiset et.al (2000) used firm level data to examine the market power versus efficiency hypothesis by taking into consideration both the long-term behaviour of profitability and the possible endogeneity bias among profitability, market share and advertising variables. In a sample of 266 Greek food manufacturing firms in the period 1987-95, two stages least square results showed both a direct effect of firm characteristics and an indirect effect of industry characteristics on profitability which do not provide support for the efficiency hypothesis alone but they showed that profitability was affected by both firm and industry variables.
Peter Hanel (2000) analysed the relationship between total factor productivity growth and the R&D expenditures of Canadian manufacturing industries in the presence of inter industry and international spillovers of technology. In contrast to studies that presume that international spillovers were incorporated in imports of intermediate and/or capital equipment goods, the study paper assumed that the principal channel of transmission of new technology was foreign direct investment. Three original proxies for international spillovers use information on patenting, the size and the origin of foreign ownership in the host country and the R&D expenditures in the country of origin. The results suggested that the nexus between industry's own R&D expenditures and the TFP growth was significant and positive, especially for the process-related R&D. Domestic inter industry spillovers of new technology had a larger effect on TFP than industry's own R&D expenditures. All three proxies for international technology spillovers were associated positively and significantly with TFP growth. However, international spillovers contributed to TFP growth less than domestic inter industry spillovers and less than own process-related R&D.

Stevan et.al (2000) found that the productivity growth in U.S grain milling and feed manufacturing had been consistently strong and positive. In grain milling approximately 15 percent of the growth was due to size economies. Technical change had been capital-using, increasingly capital saving and in recent years, decreasingly labour saving or increasingly labour using. The quality of capital had risen relative to that of labour and materials. In all but the baking industry, capital intensification and incentives for plant size and growth remained unabated.

Agarwal (2001) analysed the technological change, technical efficiency and total productivity growth of CPSE, industry group-wise and firm-wise. Partial productivities and the Solow index of total factor productivity growth...
were used for estimating productivity growth at the industry group level while panel data estimation method using the Random Effects Model and a modified form of the Composite Error Term Frontier Production Function Model as developed by Cornwell, Schmidt and Sickles, had been used for estimating the technological change and growth of technical efficiency at the firm level. The results showed that the public sector enterprises had not experienced a significant technological change during the 1990s. Further, the results pointed that the decreasing returns to scale in production. Results also suggested that a majority of the firms had low levels of technical efficiency and that the efficiency has not improved significantly over time. However, the growth of technical efficiency was observed in some firms in the engineering sector and many firms in the petroleum producing/selling sector.

Mullen (2001) utilized a translog cost function to produce econometric estimates of the separate influences of technical change versus scale efficiency in contributing to multifactor productivity growth within the US manufacturing sector. The analysis generates (two-digit) industry-specific parameters that captured the effects of output versus time-related shifts in the cost function over the 1949-1991 periods. Thus initial evidence concerning the relative importance of technical progress (versus 'scale') cannot be provided as a source of productivity gains within two-digit industries. The parametric estimates of total factor productivity growth were compared with existing Divisia measures to explore the shortcomings of the growth accounting technique. These long-run patterns hold implications for the productivity convergence hypothesis traced to knowledge spillovers between industries.

Mahadevan (2002) examined the productivity performance of Australia's manufacturing sector by decomposing its output growth into input growth, technological progress and gains in technical efficiency. This three-way decomposition is done with an improved version of the stochastic frontier model using eight, two-digit industry level data from 1968-69 to 1994-95. Empirical
evidence showed that input growth fueled output growth from 1968-69 to 1973-74, but since then, total factor productivity (TFP) growth has been the main contributor of output growth. While the trend of TFP growth was found to be promising for most industries with positive and increasing technological progress, the negative gains from technical efficiency over time was however cause for concern.

Ozlem et.al (2003) measured technical efficiency and total factor productivity changes by estimating a translog stochastic frontier production function for the Turkish manufacturing industry in selected provinces. This method incorporated technical change and had time-varying technical efficiency effects. The stochastic frontier function was estimated by using panel data based on eighteen selected provinces of Turkey for the 1990-98 periods. The performance of public and private sector measured separately. The probable reasons of different performances of provinces in terms of efficiency were discussed. In this context, the effects of average firm size, the share of regional production and the time period were discussed.

Richard et.al (2003) analysed the contribution to productivity growth of internal restructuring (such as new technology and organizational change among survivors) and external restructuring (entry, exit and market share change). They found that a) external restructuring accounted for 50 percent establishment labour productivity growth and 80-90 percent of establishment TFP growth b) much of the external restructuring affect came from multi-establishment firms closing down poorly performing firms and opening high-performing new one and c) external competition was an important determinant of internal restructuring.

Sivadasan (2003) examined the effect of removing licensing requirements, liberalizing foreign direct investment and reducing tariff rates on plant-level and aggregate productivity. The study covered the period from 1986-
87 to 1994-94. The study found that relicensing and other micro-reforms had a significant positive impact on productivity. The study also depicted an increase in mean intra-plant productivity level and also in the aggregate productivity growth following FDI liberalization.

Ali et al. (2004) analysed efficiency and productivity changes in 12 broad segments of food manufacturing industries during pre and post liberalization periods, covering a period of two decades, from 1980-1981 to 2001-2002. The nonparametric Data Envelopment Analysis (DEA) approach was used to compute the Malmquist Total Factor Productivity (TFP) change, which had been further decomposed into efficiency and technical change. The study also evaluated the performance of major inputs used in the food processing industry and identified the causes of inefficiency across various segments.

Biswanath Goldar (2004) presented an alternative set of estimates of TFP growth in Indian manufacturing in the last two decades, which had largely been made following the methodology of input and output measurement adopted in the previous studies. The estimates indicated a slow down in TFP growth in Indian manufacturing in the post reform period.

Xiaolan Fu (2004) analysed the impact of exports on total factor productivity (TFP) growth in a transition economy using a panel of Chinese manufacturing industries over the period 1990-1997. TFP growth was estimated by employing a non-parametric approach and was decomposed into technical progress and efficiency change. The results did not found evidence suggesting significant productivity gains at the industry level resulting from exports. Findings of the current study suggested that, for exports to generate significant positive effect on TFP growth, a well-developed domestic market and a neutral, outward-oriented policy are necessary.
Yosuke Okada (2005) examined the determinants of productivity in Japanese manufacturing industries, looking particularly at the impact of product market competition on productivity. Using a newly available panel data on around ten thousand firms in Japanese manufacturing for the years 1994-2000, the study showed that competition, as measured by lower level of industrial price-cost margin, enhances productivity growth, controlling for a broad range of industrial and firm-specific characteristics.

Fernandes & Ana Margarida (2006) studied the determinants of total factor productivity (TFP) for manufacturing firms in Bangladesh using data from a recent survey. The study obtained TFP measures by making use of firm-specific deflators for output and inputs. Controlling for industry, location, and year fixed effects. The study found that (1) firm size and TFP were negatively correlated (2) firm age and TFP exhibited an inverse U shaped relationship (3) TFP improved with the quality of the firm's human capital (4) global integration improves TFP (5) firms with research and development activities and quality certifications had higher TFP, while more advanced technologies improve TFP only in the presence of significant absorptive capacity; (6) power supply problems cost firms heavily in terms of TFP losses and (7) the presence of crime dampens TFP.

Benjamin et.al (2007) studied the impact of regulation on productivity and welfare in the U.S. sugar manufacturing industry. While this U.S. industry had been protected from foreign competition for nearly 150 years, it was regulated only during the Sugar Act period, 1934-74. The study showed that regulation significantly reduced productivity, with these productivity losses leading to large welfare losses. The initial results indicated that the welfare losses were many times larger than those typically studied – those arising from higher prices. And also argued that the channels through which regulation led to large productivity and welfare declines in this industry were also present in many other regulated industries, like banking and trucking.
Daveri and Jona-Lasinio (2007) employed input-output tables to study the relation between off-shoring and productivity growth in the Italian manufacturing industries in 1995-2003. The results indicated that not all types of off-shoring were positively related to productivity growth. In particular, the international outsourcing of intermediates within the same industry (“narrow off-shoring”) is beneficial for productivity growth, while the off-shoring of services was not. The study also found that the way in which off-shoring was measured may matter considerably.

Mokhtarul (2007) estimated productivity growth in Malaysian manufacturing over the period 1983-1999. Malmquist Productivity Indices (MPIs) was computed using non parametric Data Envelopment Analysis (DEA) type linear programming, which show productivity growth sourced from efficiency change and growth in technology. Unlike previous studies, this study identified the sources of productivity growth in Malaysian manufacturing industries at the five digit breakdown of Malaysian Standard Industrial Classification (MSIC) thereby revealing more industry specific efficiency and technical growth patterns. Results indicated that a high majority of the industries operated with low levels of technical efficiency with little or no improvement over time.

Jens (2008) investigated structural change among the four-digit industries of the US manufacturing sector during 1958–1996 and its relation to productivity growth within a distribution dynamics framework. Focus was on the transition density of the Markov process that characterizes the value-added shares of the industries. This transition density is estimated nonparametric ally as well as by maximum likelihood, in which case the functional form of the density was motivated by a search theoretic model. The nonparametric fit and the maximum likelihood fit show striking similarities. The relation of structural change to a measure of total factor productivity change was tested by quintile regression and appeared to be significantly positive throughout.
Pandey (2009) had undertaken a comparative study of productivity in the manufacturing sector for China and India using data from survey of manufacturing industries for the two countries. The study found that productivity of manufacturing industries in China relative to that in India improved substantially over the 1998-2003 period. Specifically, the average total factor productivity (TFP) growth for the manufacturing sector over this period was about 11 percent higher in China than in India. This study documented two substantial changes in government policies in China that were not witnessed in India. First, the late 1990s saw an enormous wave of ownership restructuring due to the formal endorsement of private property rights by the Chinese central government. Second, in 1997 a large scale labour retrenchment program was launched to address the long standing problem of labour redundancy in the public sector. Using data from the Chinese survey of manufacturing industries, we quantify the impact of these large scale institutional changes on TFP of Chinese manufacturing industries. The study found that these policy changes can explain about 30 percent of the growth in TFP of manufacturing industries. Hence it concluded that these institutional changes in China can account for a significant part of the gains in productivity of manufacturing industries in China relative to that in India over the 1998-2003 periods.

Abhay Gupta (2010) addressed the question of why productivity growth in Indian manufacturing was slow in the pre-reform period and analyzes how economic reforms in the 1990s accelerated productivity growth. The answer lies in two subtitle but important distortion-inefficiency mechanisms, which affected productivity growth by distorting intermediate input allocation. The interaction of quantitative restriction policies and inflexible labour laws resulted in lower than optimal materials per worker usage. The combination of high inflation and unavailability of credit exacerbated this factor distortion and lowered productivity growth further. Using a panel dataset on Indian industries, this article found widespread underutilization of materials compared to labour until
recently, and this sub-optimal materials per worker usage lowered productivity growth.

Brouwer (2010) examined the relationship between competition, innovation and productivity for the Netherlands. The study found strong evidence for a positive impact of competition on Total Factor Productivity (TFP) at the industry level. Competition directly increased TFP by reducing X-inefficiencies and removing inefficient forms from markets, but also through more innovation. Nonetheless, there existed an inverted U- curve between competition and innovation for the Netherlands, at least for manufacturing industries. The results of the study indicated that a negative effect of competition on productivity through lower innovation expenditures arises only at very high levels of competition.

Saibal Ghosh (2010) examined the association between growth in total factor productivity and economic reforms. Accordingly, the study first computed industry-level productivity growth using advanced econometric techniques and thereafter ascertains the time frame over which economic reforms impact productivity. The evidence suggests that productivity growth was not reliably higher after reforms than prior to reforms. In addition, the findings indicated that it is primarily the interest rate channel that is important in explaining changes in productivity. Among macroeconomic policies, trade reforms and industrial relicensing appear to be instrumental in explaining productivity changes.

Aradhna Aggarwal & Takahiro Sato (2011) examined the effects of firm’s dynamics on industry level productivity growth in India during the period 2000-01 to 2005-06 using plant level panel data of 22 manufacturing industries. The empirical analysis was based on decomposition techniques of aggregate productivity growth. The analysis was confined to large sector plants. Results suggested that the contribution of entry of new plants to aggregate productivity growth was positive in most industries. While newly established plants had
rather small entry effect, small plants that grow and enter the large size class had substantial effects on industry level productivity growth. In low tech matured industries entry effects were supported by the productivity growth of the continuing firms. In medium tech industries entry effects were modest; productivity growth of the continuing firms was supported by reallocation effects. In high tech industries all the three effects seemed to reinforce productivity growth.

2.5 Studies related to the Commercial Efficiency

Jung Woo Kim et.al (2005) examined the technical efficiency of firms in the iron and steel industry and tried to identify the factors contributing to the industry’s efficiency growth, using a time-varying stochastic frontier model. Based on findings which pertain to 52 iron and steel firms over the period of 1978-1997, POSCO and Nippon Steel were the most efficient firms, with their production, on average, exceeding 95 percent of their potential output. Their findings also shed light on possible sources of efficiency growth in the industry. If a firm was government owned its privatization was likely to improve its technical efficiency to a great extent. A firm’s technical efficiency also tended to be positively related to its production level as measured by a share of the total world production of crude steel. Another important source of efficiency growth identified by the empirical findings was adoption of new technologies and equipment. The study concluded that continued efforts to update technologies and equipment were critical to the pursuit of efficiency in the iron and steel industry.

Jajri et.al (2006) examined ‘Technical efficiency, technological change and total factor productivity growth in Malaysian manufacturing sector’. The analysis was based on data from the Industrial Manufacturing Survey of 1985 to 2000 collected by the Department of Statistics Malaysia using Data Envelopment Analysis (DEA). The results showed that during the period under study, TFP growth was increased and the major contribution of TFP growth in
technical efficiency. Nevertheless, technological change showed increasing trend over time. The industries that experienced high technical efficiency were food, wood, chemical and iron products. However, for food and wood industries technical progress was higher than technical progress. The other industry that shows larger technical progress than technical efficiency was textile industry but both values were below unity.

Randolph Tan (2006) estimated the technical efficiency change in Singapore manufacturing industries for 1975 to 1998 using the Malmquist index. The results showed that on average, there had been improvements in technical efficiency over the sample period for overall manufacturing. This broadly corroborated the results from an earlier stochastic frontier analysis.

Mahmood Iskhan et.al (2007) examined the efficiency of the large-scale manufacturing sector of Pakistan using parametric as well as non-parametric frontier techniques. Production frontiers were estimated for two periods 1995-96 and 2000-01 for 101 industries at the 5-digit PSIC. The results showed that there had been some improvement in the efficiency of the large-scale manufacturing sector, though the magnitude of improvement remained small. The results were mixed at the disaggregated level whereas a majority of industrial groups had gained in terms of technical efficiency, some industries showed deterioration in their efficiency levels.

Singh et.al (2007) revealed that most of the mills were in the efficiency range of 60–80 percent. Efficiency was higher in the private sector (81 percent), followed by the public (73 percent) and co-operative (66 percent) sectors. Though the study had advocated the continuation of partial decontrol policy, it had urged the policymakers to streamline strategies that promote stabilization of sugarcane economy and make the state a credible supplier of sugar in the international market, benefiting growers, processors and, in turn, consumers.
Alias et.al (2010) analysed the technical efficiency of the Malaysian wooden furniture industry. The objective of this research was to examine the efficiency of wooden furniture industry by determining the technical efficiency using stochastic frontier production model. Results showed that firm was output is 54 percent less than the maximum output which can be achieved from the existing inputs. The technical inefficiency on individual firm varied from 1.63 to 94.69 percent and so did the potential to increase firm output from the existing inputs. This evidence suggested that many firms still operate below the efficiency level, confirmed the conventional view that labour-intensive firms were most likely inefficient.

2.6 Conclusion

Thus it is evident that most of the studies reviewed the issues related to other manufacturing industries in different aspects such as growth, technical efficiency, productivity and structural change. Only few studies are related to salt industry. These studies also discussed about labour issues only. No worthwhile studies have been made so far to analyse the growth, productivity, commercial efficiency of salt refineries. So the present study makes an attempt to overcome this shortcoming.
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