CHAPTER - V
CHAPTER V
EMPLOYMENT GENERATION

5.1 Managerial aspects in employment generation

India has made considerable progress in alleviating hunger but at least one-fifth of the population is doomed to miserable poverty. According to World Bank Statistics, some 562 million people are in South Asia against 1.1 billion people below poverty line across the world. Hence alleviation of poverty, world wide, through the route of employment generation has been in the forefront by all the Governments. The contribution of construction industry in providing employment generation is immense. In India, much of the decrease in the incidence of poverty took place in the 1980s. The only cure for poverty is an increase in incomes to the people through construction, agriculture and services sector, by efficient use of resources, promoting growth. Risk sharing strategies by the Government in providing the constructions (private or corporate) with access to credit, work better than interest rate ceiling. "Construction industry’s employment elasticity is estimated at 1. This implies that for an increase of 10 per cent in value added in the construction cause an increase of 10 per cent employment". 66 This Chapter is designed to analyse on potential of employment generation in the construction industry.

5.2 Investment and employment in construction industry

The role of construction industry in employment generation was brought out in Chapter I para 1.4.2. "Capital invested in construction is much larger than any other industry next only to agriculture. Investment made in construction during 30 years after Independence was more than the total investment on its during the 150 years of the

66 Rau, A.N., op. cit, P - 37
British rule in India".\(^6\) During the period 1951 - 85, investment on construction was Rs.1,70,239 crores which worked out at 43.2 per cent of the total development investment”.\(^8\)

The contribution of construction to national income has also gone up substantially. "Gandhi and Kutty estimated the contribution of construction to national income at Rs.625 crores in 1960-61, Rs.1,853 crores in 1970-71 and Rs.6,756 crores in 1982-83. They further estimated that construction added 78 paise to GDP per rupee of investment which was the highest next only to banking and insurance".\(^9\)

"Of the 24.46 crores economically active population reported in the 1981 census, 35.65 lakhs (1.50 per cent) were in construction of which 10 per cent were women. During the same year, employment in the corporate sector and firms employing 10 or more persons and who submitted "returns" in construction industry was reported to be 11.61 lakhs and 11.87 lakhs in 1983".\(^0\)

In our Five Year Plans, apart from projects selected on account of contribution they make to growth and self reliance, special provision has been made for programmes to generate more employment as well as those which are expected to alleviate poverty. Basically employment generation and poverty alleviation are closely linked. Giving jobs to jobless enables them to have income and helps them to rise

\(^8\) National Committee on Science and Technology, Project and overviews of SRT. (NCST, New Delhi) Table I, P - 19.
\(^0\) Year Book of labour statistics, ILO, Geneva, 1984, Table - 2, P - 74.
above poverty line. Investment – as distinct from relief
measures – directed towards alleviation of poverty
inevitably gives rise to employment opportunity as well.

Large population may not be the cause of unemployment.
But it does aggravate the problem. However by simply
reducing the rate at which population is growing, one may
not be able to provide jobs to every one. It may not be even
possible to reduce population growth without improving the
living conditions of people, which requires that they should
be employed in order to develop an interest and hope for
better living.

"Over 320 lakh Indians, young and not so young, are
eagerly waiting for the knock of the postman hoping to
receive a call for a job from the employment exchange. Most
Indians are in need of some opportunity to work for earning
their livelihood". 71

"According to Mr. Sangma, Minister for Labour who
informed Rajya Sabha, that the backlog of unemployment was
estimated to be around 23 million, as on 01/04/1992 and the
projected total number of job seekers during 1992-97 is 50
million as per 8th Plan document. He also told that the
centre has proposal to bring a central legislation to
regulate employment and condition of service of buildings
and other construction work and the same is at an advanced
stage". 72

Hence, the increased investment in construction sector
to generate employment, assumes importance in the light of
the above background. A study on the extent of the
employment elasticity in the construction sector will

71 DAVP publication, "Jobs for million" (DAVP, Ministry of
Information and Broad Casting, Government of India),
P -1.

reinforce the justification for the requirement of increased investment in this sector.

5.3 Employment generation in construction sector through Government investments

Government investments contribute construction activities to a larger extent. As per the norms of National Building Organisation (NBO), construction contents for various annual plan outlays (actual from 1985-86 to 1989-90 and RE of 1990-91), and the employment generation in various heads of Development works are given in Table 5.1 and 5.2. The abstract of construction element and employment generation is computed in Table 5.3. It can be seen from the details that the aggregate construction content in the annual plan outlays of Central Government, State Government and Union Territories work out from 48.12 per cent to 49.60 per cent and an average of 48.33 per cent of the total plan outlays which is nearly half of the plan outlays. This shows the importance of the construction sector's role in various heads of developmental planning by the Government.

The employment generation by this construction sector works out to 3.25 million jobs per year for skilled, semi-skilled, managerial and technical categories. This is exclusive of the employment generation by the private sector construction companies on the works financed by themselves and unorganised construction activities by contractors, individuals etc. Skilled and semi-skilled categories employment generation alone comes to 680.49 million mandays per year. The employment generation for managerial and the technical categories comes to 9.82 lakh jobs per year.

"Figures available with labour ministry suggest that out of total work force of 316 million people, 30 million were in the organised sector." 73 This means that the employment generation by the Central, State and Union

Territories annual plan outlay excluding private sector construction industries and other unorganised construction sector, is roughly to the tune of 1/10th (i.e.) 10 per cent of the organised sector as a whole in India (i.e.) 3.25 millions out of 30 million. We can safely say that more than 10 per cent of the people employed are in the construction sector, financed by State investments. If we include unorganised sector, seasonal worker etc., the figure of employment in construction industry will be much higher. Prof. K.N. Vaid,\textsuperscript{74} in his analysis brought out that 1.133 crore persons were engaged in construction industry in 1983.

5.4 Calculation of mandays and value added of simplex company

"It is estimated that every one million rupees worth of construction generates 3,100 mandays of skilled and semi-skilled labour and 1,300 mandays of technical and managerial personnel".\textsuperscript{75} The employment generated can be worked out based on the works done by the company as reflected in their annual report.

"Gross value added comprises of net value added and depreciation provision. Net value added comprises of (a) salaries, wages and bonus (b) provident fund (c) employees welfare expenses including staff medical expenses (d) managerial remuneration (e) rent paid net of rent received (f) interest paid net of interest received (g) tax provision (h) dividends paid net of dividend received and (i) retained profits net of non-operating surplus/deficit".\textsuperscript{76}

These details can be computed pertaining to the company under study and correlated. Mandays and value added are tabulated in Table 5.4 and 5.5 respectively, under "tables" in the end of this thesis.

\textsuperscript{74} Vaid, K.N., op. cit. P - 192.

\textsuperscript{75} Estimates worked out by the National Building Organisation (NBO), taken from Rau, A.N., op. cit. P - 137.

\textsuperscript{76} RBI, Bulletin, March 1990 (A. Seshan of RBI, Bombay) P - 136 under "note" in the bottom.
5.5 Analysis for econometric estimation of the relationship between GDC and employment in construction sector (Invested by Central, State and Union Territories)

In order to arrive at the econometric estimation of the relationship between GDC and employment in construction sector, the converted linear regression between the variable \( \log X \) and \( \log Y \) (original non-linear equation \( Y = aX^b \) was converted into linear equation by taking logarithms on both sides), is done and the constants 'a' and 'b' (elasticity of employment generation) are computed as follows:

5.5.1 Analysis for the econometric estimation of the relationship between GDC and employment in construction sector invested by Central, State and Union Territories

The following details are computed from Table 5.6:

\[
X' = \frac{13.805}{4} = 3.4513, \quad Y' = \frac{19.4105}{4} = 4.8526
\]

\[
\beta = \frac{\Sigma X'Y' - n \bar{X'}\bar{Y'}}{\Sigma X'^2 - n \bar{X'}^2} = \frac{67.066 - 4 \times 3.4513 \times 4.8526}{47.6575 - 4 \times 3.4513^2} = \frac{0.01489}{0.01161} = 1.2825
\]

\[
\alpha = \bar{Y'} - \beta \bar{X'} = 4.8526 - 1.2825 \times 3.4513 = 0.4263
\]

\[
\sum(Y' - \bar{Y'})^2 = RSS = 0.011 + 0.00012 + 0.00065 + 0.0082 = 0.01997
\]

The Eqn. is \( Y' = 0.4263 + 1.2825 X' \)

\[
S_y^2 = \frac{1}{n-1} (\Sigma Y'^2 - n(Y')^2) = \frac{1}{3} (94.2137 - 4 \times 4.8526^2)
\]

\[
= \frac{1}{3} [0.02279] = 0.007598
\]

\[
S_{\bar{Y'}}^2 = \frac{(\bar{Y'} - \bar{Y})^2}{n-2} = \frac{0.0035461}{2} = 0.0017731
\]
\[ R^2 = \frac{0.0017731}{0.007598} = 1 - 0.2334 = 0.7666. \]  
Good fit.

\[
F \text{ ratio} = \frac{0.01997/1}{0.0035461/3} = 16.895 > \text{Table value } F_{1,3} = 10.13 \]

at 5\% significance level.

- Elasticity coefficient of employment with respect to GDP (capital) of India = 1.2825

5.6 Computation of elasticity of employment with respect to gross value added of the Simplex Concrete Piles (India) Ltd.

The following details are computed from Table 5.7

\[ \bar{X} = \frac{47.3825}{11} = 4.3075 \text{ as } n = 11 \]

\[ \bar{Y} = \frac{33.0591}{11} = 3.1872 \]

"In eqn. \( Y = \alpha + bX \),  
\[ b = \frac{\Sigma XY-n(X)(Y)}{\Sigma X^2-nX^2}, \quad \alpha = \bar{Y} - b\bar{X}, \text{ for regression analysis}. \]

In the eqn. \( \log Y = \log a + b \log X \)

\[ b = 0.8, \quad \alpha = \log a \]

\[ \frac{\Sigma XY-n(\bar{X})(\bar{Y})}{\Sigma X^2-nX^2} = \frac{151.9624-11 \times 4.3075 \times 3.1872}{204.9267-11 \times 4.3075^2} = \frac{151.9624-151.02}{204.9267-204.100} = \frac{0.9424}{0.8267} = 1.1400 \]

\[ \log a = \bar{Y}-b\bar{X} = 3.1872-(1.14 \times 4.3075) = (-)1.7234 \]

77 Alfred H.S. Ang and Wilson, H. Tang, "Engineering Planning and design - Regression and correlation analysis", Vol I, P = 288


\[ S_Y^2 = \frac{1}{n-1} \left[ \sum Y^2 - n(\bar{Y}')^2 \right] = \frac{1}{10} \left[ 112.8417 - 11(3.1872)^2 \right] \]

\[ = \frac{1}{10} [1.1010] = 0.1101 \]

\[ S_{Y'}^2 = \frac{\sum (Y'-\bar{Y})^2}{(n-2)} = 0.0023 \]

\[ R^2 = 1 - \frac{\sum (Y'-\bar{Y})^2}{S_{Y'}^2} = 1 - \frac{0.0023}{0.1101} = 0.979 \]

Hence the equation is good fit.

'F' ratio test

\[ F = \frac{\text{Mean square due to regression}}{\text{Mean square due to error}} \]

Mean square due to regression = \frac{RSS}{\text{Degree of freedom}} = \frac{\sum (Y'-\bar{Y}')^2}{1} = 0.3997 + 0.2314 + 0.0789 + 0.0032 + 0.005 + 0.0069 + 0.0362 + 0.0466 + 0.1004 + 0.0710 + 0.1271 = 1.1019

\[ F = \frac{1.1019/1}{0.0208/(11-2)} = 479.09 \]

Table value for 'F' at 1% significance level for one and nine degree of freedom = 10.56.

Hence 'F' calculated is greater than 10.56. Therefore the double log equation \( \log Y = (-) 1.7234 + 1.14 \log X \) is a good fit with 99% confidence interval.
5.7 Interpretation of double log equation and constants

"When two variables log-linear regression model is used, the relationship is as under:

\[ \log Y = \log a + b \log X \]

where X and Y are variables under investigation, 'a' is constant, 'b' is the regression coefficient which represents the elasticity index."\(^78\)

Elasticity is unitless dimensionless concept. It is just a pure number. Here it can be pointed out, that in the above equation 'b' is the slope of the log linear equation. Slope means rate of change.

If we convert the log linear equations to the normal form with logarithm relationship, it will be

\[ Y = a \times X^b \]

'b' denotes the ratio of change of 'X' and the rate of change of 'Y'. Hence the constant 'b' is dimensionless pure number. It denotes the elasticity index.

5.8 Meaning of elasticity index

In the constant \( b = (+) 1.14 \), in respect of variables, employment generation and gross value added, the sign shows the direction of change. The positive sign means that the employment generation and gross value added move in same direction. "Elasticity shows the proportion of change. If the elasticity is (+1), it would mean that 1% change in one variable would lead to 1% change in the second variable, in the same direction which means increase in one variable will increase in the other variable."\(^79\)

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78 Srinivasa Gowda M.V., "Organised sector employment in India" (Edited by Dr.R.K. Sinha under "Employment policy in India", New Delhi) P - 177, 178.
79 IGNOU study material MS - 9, "Managerial Economics" IGNOU, New Delhi), P - 147.
Sri A. Nagabushan Rau, an expert to UNIDO (United Nations Industrial Development Organisation) in 1973 and 1974 who worked on a book "Construction Sector in India" for UNIDO, the author of 100 technical papers and four books written for national and international organisations, in his research paper on "Status of Construction Sector in India" on the occasion of Fourth Dr. A.N. Khosla memorial lecture, stated that "The employment elasticity in construction sector is estimated at 1. This is indicative of importance of the sector in employment generation which is one of the key objectives of the Eight Five Year Plan". 80

The Simplex Concrete Piles (India) Ltd. has stood up to the level with elasticity index of employment generation at 1.14 during the period under study with reference to Gross Value added.

5.9 An overview of Indian Construction Industry

"The per capita daily earnings of workers in construction industry has risen from Rs.8.43 in 1971 to Rs.39.59 in 1985. The growth of employment in public sector construction (excluding Indian mission abroad, States of Arunachal Pradesh, Sikkim, Andaman and Nicobar Island, Lakshadweep) in 1989 was 11,80,000 and in private sector 94,000". 81 "The share of the organised sector employment in the total labour force in 1981 was 10.50 per cent." 82 Higher and steady areas of growth of investment and output are critically essential to higher rate of growth in organised sector employment.

The construction content in the annual plan outlays of Central, State and Union Territories worked between 48.12 per

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80 Rau A.N., op. cit. P - 37.
82 Srinivasa Gowda, M.V., "op. cit., P - 179.
cent to 49.60 per cent which is nearly half of the plan outlay, as all ministries' works have got construction content. This is a pointer towards the importance of the construction industry's role in National Development and Employment Programme.

"Indian entrepreneurs are so used to a sellers market that the real danger is not of surplus capacity but capacity creation not keeping pace with the emerging demand as population, the level of employment and income increases. The constraint of resources, which was often used as justifi cation for restrictive policy is more often a myth than a reality". 83 Hence greater pressure is likely on the private construction sectors to mobilise its own resources through equity, or debentures. With the ongoing process of Economic Liberalisation and other Reforms in Financial Sector, by Narashimha Rao's Government, the climate of investment in construction sector appear very encouraging, giving a fillip to the employment generation, in the days ahead.

"Over 12 per cent of the present population and 16 per cent of the active work force live in this sector. The average rate of growth of employment with industrial sector as a whole was about 2 per cent in the last decade. In this perspective, the growth of employment in construction sector touched 7 per cent and is increasing annually. The allied industries like cement etc, offers about 1.6 million jobs. It is a great asset forming industry adding 78 paise to GDP for every invested rupees, while it is only 20 paise for agriculture. The estimated building material industry is around Rs.22,000 crores". 84

84 Pallabi Chatterjee, "The importance of Standardisation" (The Economic Times, dt. 31.8.1992), P - 14.
5.10 Deduction

i) The investment of Central Government, State Government and Union Territories on plan outlays during late 80's contribute an aggregate construction content of 48.12 per cent to 49.60 per cent (i.e.) an average of 48.59 per cent which is nearly half of the plan outlays.

ii) The employment generation of the above construction content works out to 3.25 million jobs per year for skilled and semi skilled, managerial and technical categories i.e. roughly 10 per cent of the organised sector as a whole.

iii) During 1983, organised sector, unorganised sector, seasonal workers, workers with registered and unregistered contractors, builders and the Indian construction industry generated 1.133 crore jobs according to Prof. K.N. Vaid's analysis.

iv) The econometric relationship between GDC and employment of construction content of plan outlay in late 80s has been with an elasticity coefficient of 1.205 at 5 per cent significance level.

v) The representative company simplex company has econometric relationship between gross value added and employment with an elasticity coefficient of 1.14 and 1 per cent significance level. Hence the productivity of the company compares well with the industry level productivity.

5.11 Recommended actions

i) Employment generation is managerially linked with the business in this case construction business, which is dependent on efficiency in productivity, competition in the construction job market to get more investments at national level and more works at company level. The market is large,
flexible and characterised by simple technology, low wages and social backwardness. It is viable because of the elasticity to expand and shrink according to fluctuations in demand. Low productivity and economic backwardness warrant external stimuli to initiate change and development through skill formation and improving the economic conditions of workers. The strategies at industry and company level can be based on three pronged approach:

(a) Creating conditions that require contractors to employ only those workers whose skills are certified in three categories as unskilled, semi-skilled and skilled.

(b) Establishing an institutional mechanism that imparts skills in a manner, that is acceptable to workers as well as contractors, builders (firms/companies).

(c) Instituting a skills delivery system that creates skills in new workers, upgrades the skills of the existing workers.

ii) The long term strategy for sustainable skills development programme is to be resorted by setting Building Labour Board through legislation and institutional reorganisation.

iii) Managerial actions are required in cornering more works domestically and internationally to enhance employment generation, in the context of competition due to globalisation and new information technology. The consumers’/users’ of constructed assets needs must be the determinant of construction industry policies, actions and changes which are breath takingly fast. Specialisation and division of labour are the dictates of mass market. The changing complexion of market warrants a new set of tools and tactics in a systemised manner, to process oriented jobs rather than division of labour and task oriented job.
Process orientation will inculcate creativity and innovation. Construction industry and companies should formulate a strategy of process oriented construction activities making decision making as a part of everyone's job, good use of bench markings of a well done company, the customer oriented thinking with a vision, which will fetch dividend in the form of more output in works and bagging new works globally, thereby generating employment. The concept of "Re-Engineering" should form as a long term strategy in the continuously changing environments of construction market.

iv) Marketing plan should form a core strategy in the construction company level by forecasting the potential market, establishing goals, strength and assets of the company with action plan to overcome the threats of the competitors in order to increase the job market share on the growth path. Employment generation in construction sector can grow only if the job market shows ascending trend. Otherwise, it will cost the adverse effects of retrenchment, seasonal works, causing miseries to the already employed workers.