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CHAPTER - IVLOCATION OF ENGINEERING UNITS.Introduction :

In the last chapter we have seen that some basic infrastructural facilities were provided by earlier rulers of Kolhapur and in post-independent period by the Government of Maharashtra. As a result the entrepreneurial ability in Kolhapur was nurtured and encouraged.

Locational decisions are taken by the entrepreneurs, influenced as they are by many considerations and limitations. The main consideration seems to be the market considerations and cost considerations following these. The entrepreneurs rarely foresee the difficulties and consequences of their --- decisions on industrial activity or the growth of the city.

It is here, that the Government comes in to provide land, space, site and other infrastructural facilities like power, water, transport in view of the future expansion.

In the light of this, the significance of some of the important factors relating to the light engineering units

in Kolhapur city will be studied.

Factors influencing the location. In Kolhapur however, it is not a problem. There is ample supply of labour from city, - nearby talukas, districts and outside Maharashtra. They find many jobs in various industries and in this way one of the objectives of 'employment creation is achieved by the --- industries.'

" The relative percentages of migrants to Kolhapur city are given below.

A) Migration from elsewhere of Kolhapur district - 55.31%.

B) Migrants from other districts of Maharashtra - 25.01%.

C) Migrants from other states of India 18.95%.

i) Migrants from outside India00.59%

ii) Migrants from place which are unclassifiable
.....00.14% 51

Ref : 51: -Interim report on Kolhapur city 1961 office of the suptt of census operations' Maharashtra State, Bombay. Page 61 " quoted in "Kolhapur, a study in urban geography " by Dr.P.T.Malashe on page 86.

Quality of the labour :

The workers here are hardworking and possess - - - initiative and imagination. They are skilled as well. In all the units, viz. Oil engines, castings, repairs, jobworking, assembling manufacturing of component parts, the number of - skilled persons is larger.e.g. In Oil engines the p.c. of skilled workers is 62.71%; in castings it is 46.66%; in - repairs and spares it is 56.25%, in jobworking and finishing it is 75.60%, in steel welding and fabrication 183.33% and in production of flywheel and others it is 153.33%. Thus in these engineering industry (small sector) the p.c. of skilled workers is 62.66%, (Ref. Table-23. Different categories of - personnel engaged in the factories). Besides these workers; the engineering units use the family labour also (See - Tables 5 - 6). In 35 small units surveyed the total number of workers employed is 300. Out of this 59% are employed in oil engines; 5% in castings; 16% repairs and spares, 14% in job working and finishing; 4% steel welding and fabrication; 2% in production of flywheel and others. (Table- 12). Labour is cheap also, as will be noted later that p.c. of costs - incurred on wages is small, in total cost of production. -

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Tables 13, shows that small unit paying wages above 4000 is 4 units falling in the category of 10 to 20,000 rs is 9 and 22 units pay wages below 10,000, Thus labour is cheap. See - table - 29 also. Engineering industry has utilized the --- plentiful supply of labour in its manufacturing assembling - and ancillary activities, which are labour intensive.

2. Site and space :

Location choice is perhaps as much avoiding all - seriously bad features as it is choosing the most good factors". "Uptill 1947 we find concentration of engineering units in - 'C' ward and in post independent period a shift to 'E' ward. The earlier entrepreneurs did not foresee the expansion needs!"

Among the major industries in Kolhapur we find a regional concentration of light engineering industry here. - In 1961 three types in light engineering namely 1) Basic - metal and their products, except machinery and transport - equipment 2) Machinery call kinds other than transport and - electrical equipment 3) manufacture and assembling of - - machinery (other than electrical except textile machinery,

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manufacture and assembly of prime movers and boilers, other than electrical equipment such as Diesel engines, road rollers etc) had 76% establishments and employed 4009. Out of these, 224 establishments and 2159 workers were concerned with Diesel engines and assembly of prime movers. The percentage of these (224) units and workers (2159) employed therein to the entire engineering sector in the city (i.e. 1+2+3) shows 53.85%. Workers employed in Diesel engine industry and 29.16% establishments in this Oil engine sector. Thus there is regional concentration ' of oil engines in Kolhapur city. The entire engineering sector (1+2+3) and the persons employed in it show that 7.93% of establishments and 20.32% Workers out of the total number of establishments and workers belonging to various in Kolhapur city during 1961 are employed in engineering sector.

Table Engineering Sector -15.

Group	Number of establishment	Number of persons employed.
1.	255	860
2.	224	2159
3.	289	990
	----- 768 -----	----- 4009 -----

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Industrial Sector

All units	Total employment
2822	10,624

Engineering Sector and Industrial sector compared.

If all (1+2+3) engineering units are considered we get the following results.

Engineering units.	Employment in engineering Units.	Units in industrial sector	Employment in industrial sector.
1	2	3	4
(1+2+3)			
768	4009	2822	10624
(27.21)	(37.72)	(100)	(100)

We find out of total industrial activity in -
Kolhapur city, engineering sector forms 27.21% (units) and 37.72% (employment) of total industrial activity. 2) Diesel engine sector forms 7.93% of establishments and 20.32% of employment of the entire industrial sector, but considered from the standpoint of engineering sector (1+2+3) only it forms 53.85% (workers) and 29.16 units. Besides this -- concentration of oil engines in Kolhapur city, we find --- ward-wise concentration of establishments relating to repair

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and servicing of motor vehicles.

Table - 16.

Name	Year	A Ward Units workers.	C Ward units workers	E Ward units work- -ers
Repair and	1926			
Servicing of	1947	2	19	1 23
motor vehicles	1961		286 877	305 2712

In 1947, there were 19 units in 'C' Ward and only 1 unit in E Ward'.⁵² In 1961 there were 286 establishment - and 877 workers in C Ward and 305 units and 2712 persons - - employed in E Ward comprising Udyamnagar and Vikram-nagar.⁵³ The shift towards 'E' ward is a post-1947 phenomena.

Shift in location -

In 'C' Ward the plants specialize in products other than diesel engines i.e. manufacture and assembling of machinery other than electrical and textile machinery. In - E Ward a greater concentration of diesel engine manufacture and assembling is found. The reasons behind this - - - -

Ref : 52 : Socia - economic review of Kolhapur city- N.V. Sovani.
: 53 : Kolhapur study in Urban Geography-Dr.T.P.Malashe

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specialization are to be found in the availability of space, selection of site.

In 'C' Ward i.e. Laxmipuri and Shanwar Peth and - part of E Ward i.e. west of jiti stream, the earlier units - were located, but the area in 'C' ward was limited (i.e. 294 acres) for further expansion. The units here were 100-200 sq. ft. but operations were compact. There was too much - - - concentration of population in 1961 (117.78). The engineering units need ample open space.

Table No. 16 reveals that out of Small units - - Surveyed, Oil engines units use 5752 area of land in Sq.mts, and job-working also need ample Space. These units do not - accomodate more workers per 100 Sq.mts.; because the nature of work is such, Oil engines use 3.08% workers per 100 Sq.mts; castings 5.32% and job working 2.62% Steel welding 5.34% per 100 Sq.mts. 'C' Ward was lacking and so units had to move to Shivaji Udyamnagar, the area of which was allotted during - Ch. Rajaram Maharaja regime. After 1947 the units started -- occupying this area in E ward. The area in E ward is 10,163 acres and density of population is 6.03. The units in - - - Udyamnagar are 3000 Sq.ft. in space.

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Shivaji Udyamnagar is an industrial estate - - - located in E Ward. It has ample open space for engineering units. The lands are rocky so it saves costs. Otherwise, if subsoils are found then the establishments have to spend several times a good site's cost on foundation. In Udyamnagar plots have been allotted to nearly 125 units, the built-up area varies according to the type of production. (Ref: Table No.33 and Table-1). This site is good from the standpoint of costs of transportation of finished products and raw - - - materials. The sum-total of freight costs should be small. From this standpoint the 'E' Ward units (Shivaji Udyamnagar) have the advantages of 1) National highways huge open space along highway 2) Railway line, whole sale market yard. Some - large units surveyed (14 units) reveal their locations in - the vicinity of highways, Railway Station, Bus Stand. (See - table 8). These places are in the radius of 1 to 5 - - - - Kilometres distance from the respective points of locations. Small units surveyed majority of the units have given - - - preference to Shiroli for location of new plants (See table-9).

3) The sales depot for supplying tools and raw materials -

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like pig iron, coal, scrap etc. have been opened up. - - - -
 Electricity, water supply is available. Tables 3, 5, 9, 10,
 4, 7, 14 reveal the availability, requirement of water and
 electricity; and the dependence of the engineering units,
 small and large on various sources of water 12 units(in
 large group of 14) demand more water,(Table 10) and small --
 units 31 out of 35 units think water is sufficient.(Table 8).

The units have some expansion programme also, Out
 of 35 units surveyed 24 units require additional land(Table 7).
 These small units need additional labour supply (Table 17) -
 also.

Thus we come to know the needs of the engineering
 units in respect of land, labour, water and electricity.

Proximity of ancillaries, producing components -
 such as centrifugal pumps, crankshafts etc. for the - - - -
 manufacturing and assembling of oil engines, horizontal and
 vertical, provide a good market to buy these parts. The --
 nearness to market for oil engines gives the units an - - - -
 opportunity to supply better services such as moulding, -
 machining, assembling, repairing to customers and save freight.

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As a result of all these facilities we find cluster of industrial units along both the sides of roads in - - - Udyamnagar. The mestris, the mechanics, the turners, fitters, welders, painters, moulders in their dark blue uniforms are busy in their respective mechanical work. Their lives are - dependent on these jobs. Udyamnagar has given ample scope to these skilled and unskilled workers, to " learn the job by doing it." As a result we find many a large number of units came into existence and they are trying to survive in all - ups and downs in this Udyamnagar.

The important units in this area belong to 'Pakco group ', ' Menon group ' and " Kulkarni group". The area - - belonging to M/S Pakco engineering Pvt.Ltd is 66,000 sq.ft., of united castings, Vikram nagar, 10 acre. These units are - close to railway, ample open space, cheap lands, transport facilities, nearness to main roads are important factors - behind these locations.

In view of the future expansion as mentioned behind, the qualities of good site are found in the new locations. The units there, are developing and manufacturing on large -

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scale, many sophisticated products having competitive - -
standards. The management of manufacture is carried on -
modern principles.

The area at Shirol, Uchagaon and Vikramnagar - -
" provide plenty of flat land for industrial expansion, - -
excellent rock foundation for large structures and freedom -
from deluging monsoon rains."⁵⁴

The land values are cheap electricity from Koyana,
Radhanagari, Water from Panchaganga is available. The area is
not away from main lines of transport and communication. The
industries here are likely to be extended along Kolhapur -
Miraj road via Shirol, to the East-North and not to South-
-east direction as the river turns to this direction.

Many units occupying the plots in ' Maharashtra
Industrial Development Corporation' at Shirol which does -
not come in Kolhapur corporations area have shifted from -

Ref : 54 : - Kolhapur a study in Urban Geography

Dr. T.P.Malashe.

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Udyamnagar and C Ward, with a view to start new plant for the manufacture of new products or components needed. Important - units consist of manufacturing, assembling and ancillary units.

1) The Maharashtra Co-Operative Engineering Society Ltd. has 20238 sqm. area, 2) Dutt Engineering Corporation, has =3795 sqm. area, 3) M/S Menon Diesels has 2000 sqm. area, 4) M/S Western forgr Co., has 4300 sqm. area. Besides these many more - - - promising units have shifted here. In Uchagaon also we find plants of Ghatage Patil and Co. Ltd., These units have adopted developed techniques of production in their plants. They have therefore to locate the plants away from the congested and - densely populated area in the city." Progressive assembly - lines, automatic machines, power trucks, conveyors have cut costs of moving materials around in a one floor plant. This makes one storey buildings less costly to operate now than - buildings with several floors. One storey buildings take lots of space, so moving out of the city is good "These units can keep inventories on hand for production runs, rather than - relying upon hand-to-mouth purchasing M I D C area consists of 1100 acres. All the facilities are found here.

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Thus we find a shift in location of production units from C Ward to E Ward and now to Shirolī, Uchagaon areas. With these shifts the space required increased and techniques of production became sophisticated. These facilities influenced the structure of industries (light engineering) in Kolhapur city. The large number of units surveyed pointed out comparatively less difficulty in getting electricity (3 of the ancillaries were in need of additional power, and power cuts affected the production). For these reasons Majority of units i.e. 54% have given preference for new locations at Shirolī, while 8% of the units preferred location for new units at Shivaji Udyamnagar and preference shown for 'C' ward is negligible i.e. 2.85%, while 34% units wanted other places in the city.

Significance of layout :

Efficient plant layout promotes economical working arrangements, efficient operation and high production. This emphasizes the fact that units should plan the plant layout. It is in the plant that internal economies are enjoyed by using external economies. Defective plant layouts result in

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wrong material maintenance, handling continuity in production cannot be maintained due to lack of inventories storage - space. Hence cost of production rises or plants remain - - - unutilized.

" The objective of plant layout is the organization of physical facilities including the arrangement - of machinery and equipment and the allocation of - space for the various plant activities,so as to - achieve an efficient out put of goods or services. In general equipment can be effectively selected - only when it is done in conjunction with the - - - development of plant layout."55 "Manufacturing - plants are constantly confronted with the need to create - additional output capacity, modify existing facilities to - produce new or redesigned models and reduce production - costs in order to meet competition and maintain profitable operations. The manufacturers are confronted with the - problem of planning and control of the supply of and movement of materials and components and the utilization of plant - and labour, so that the necessary resources are available - - - - -

Ref : 55 : Plant layout Shubin Madeheim page 7-

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at every stage in manufacture. It ensures the completion of a pre-determined delivery programme. This requires" the -
 right equipment being placed at the right position, to -
 work in the right manner, for completing manufacturing --
 processes, through the shortest possible distance, in the -
 shortest possible time."⁵⁶ For this raw material stores, --
 intermediate stores, work-places. Men and machines should be
 sited in such a way that production flow is continuous.⁵⁷ In
 Ghatage Patil, Menon and menon, we find that the layout is -
 managed according to the sequence of operations thus - - -
 reducing temporary storages and handling time and providing
 closer co-ordination of operations. In this "line production"
 a higher output per man-hour is possible.

In "jobbing " industry, small lots have to be made
 so similar machines are grouped together.

 Ref: 56 : Scientific management of small scale.

: 57 : Industries - Nanu Nihal singh page 55.
