CHAPTER - VI

COST ANALYSIS

In the discussion of the cost of production of brick industry the concept of money cost of production has been employed primarily because the financial data are relatively easily available. The difficulty of obtaining relevant information from both the primary and secondary sources has constrained us to abandon the concept of opportunity or real cost of production. While employing this concept of cost of production we have excluded certain cost items (implicit cost of production) which would have helped us to draw a picture nearest to the reality. We have not included in the cost of production of the brick the following cost components:

(a) Wages for the work performed by the owner of the producing unit,

(b) Interest on Capital supplied by him,

(c) Rent of land and building belonging to him and used in production and in conducting the business.

We are conscious that the exclusion of these items of implicit cost marginally vitiates the findings attempted in this paper yet for certain immediate but imponderable considerations this has been risked.

As usual cost elements involved in brick production have been classified into variable cost and fixed cost. Variable cost subsumes cost of clay, fuel and consumables,

and wages to direct labourers. Fixed cost includes repairs and maintenance expenses, depreciation, salary to staff, and other overheads. As both the fixed and variable costs are affected by the production volume, it seems necessary that the average production volume of the industry and of units be considered at the very outset. Table No.5.1 gives a picture of the average production volume. The overall impression that this table gives is that the units with the lowest Capital produced the heighest number of bricks and vice-versa.

Fixed Cost

Components of Brick Production:

Fixed components of brick production comprises of repairse and maintenance, establishment, depreciation and other items of overhead cost. Repairs to and maintenance of kiln, chimney pugmill are made annually and as and when necessary. These equipments and facilities are not sophisticated ones and do not involve large expenses for their repairs & maintenance. Establishment includes wages & salaries to Night watchman, Durwan, Office Clerk, Supervisor and/or Manager, electricity charges, trade licence fees, etc. In brick industry, equipments and facilities and office building (usually a one room building) are depreciable as usual. Other items include, for example, medical care provided to all categories of employees, temporary shelter (huts) to be provided for the

upcountry labourers, litigation expenses, corporation or municipal taxes and similar other items that can not be subsumed under any other categories. And individual fixed cost item does not itself constitutes a large part of the total cost of brick production but never the less they together form about one fourth of the total cost. From that perspective it is obligatory on our part to throw some light on this aspect of the total cost. The fixed cost component of the industry over the period of our study is shown in the following table.

Analysis of Fixed Cost:

The ten years average Fixed cost for 1,000 bricks for the industry as a whole is shown as Rs.25.42 in Table No. 6.1. The lowest such cost viz. Rs.13.43 was achieved by units belonging to size category IV and the highest viz. Rs.44.85 by units under size category I. Ten years industry average and that of modal category III were almost same i.e. Rs.25.42 and Rs.24.99 respectively. The units included in larger size categories in terms of capital and labour, namely, categories I & II incurred higher fixed cost and units belonging to smaller size categories of IV & V experienced lower fixed cost viz. Rs.13.43 and Rs.16.92 respectively. The fixed cost per one thousand bricks if read in conjunction with production volume (shown in chapter 5., Table No. 5) shows that smaller units belonging to categories IV or V could utilise the fixed

Table - 6.1

Statement Showing Fixed Cost/1000 Bricks in Rupees Related to Different Categories

size category	1970-71 Rs.	1971-72 Rs.	1972-73 Rs.	1973-74 Rs.	1974-75 Rs.	1975-76 Rs.	1976-77 Rs.	1977-78 Rs.	1978-79 Rs.	1979-80 Rs.	Average Rs.
I	39.80	35.16	36.24	41.85	37.94	45.58	48.35	53.17	56.23	54.26	44.85
II	24.42	23.38	24.48	23.27	26.36	25.84	28.78	30.12	31.85	30.76	26.93
III	21.73	21.55	22.13	22.23	23.78	23.63	25.73	29.05	29.47	30.63	24.99
IV	12.63	9.97	12.07	15.41	11.94	15.95	11.33	18.20	11.56	15.28	13.43
V	13.85	14.66	17.36	17.73	18.36	16.27	18.51	17.47	17.43	17.56	16.92
Industry Average	22.48	20.94	22.45	24.09	23.67	25.45	26.54	29.60	29.30	29.69	25.42

production facilities in some economic ways than the first two categories (viz. I or II) and modal category (viz. category III).

Variable Cost Analysis:

Let us now have a look in to the variable cost of the industry. Following Table shows the Average variable cost per one thousand bricks.

The ten years average variable cost was lowest in units belonging to category V and was highest in respect of units under category II, the same for other three categories varied between these two extremes. Read with Table No. 3.2 and 5.1 interesting remarks can be made. Units belonging to category V with minimum capital and employment could produce maximum output at the lowest variable cost of Rs.48.23 per 1,000 bricks (10 years average production cost) and units belonging to category I with highest capital volume, number of employees and production volume could produce at a much higher average variable cost of Rs.79.25 per 1,000 bricks, which is higher than industry's 10 years average. One special feature that comes to our notice from the study of the above table is that units belonging to category II could produce at the highest average variable cost of Rs.88.39 though in terms of capital, production volume and number of employees it comes next to category I. One quick conclusion that can be drawn from the features noted

Table - 6.2

Statement Showing Variable Cost/1000 Bricks in Rupees Related to Different Size Categories

size category	1970-71 Rs.	1971-72 Rs.	1972-73 Rs.	1973-74 Rs.	1974-75 Rs.	1975-76 Rs.	1976-77 Rs.	1977-78 Rs.	1978-79 Rs.	1979-80 Rs.	Average Rs.
I	64.76	71.46	71.19	63.75	71.79	71.16	81.82	89.08	101.66	105.90	79.25
II	67.98	70.26	70.94	74.57	80.22	94.47	92.11	101.98	114.02	117.38	88.39
III	57.53	61.04	61.79	62.67	68.18	73.85	88.32	91.44	99.65	103.70	76.81
IV	54.46	59.85	58.75	55.94	60.00	70.00	77.91	80.04	91.64	93.04	70.16
V	38.06	39.04	36.86	46.97	50.90	53.76	48.62	51.14	56.65	60.34	48.23
Industry Average	56.55	60.33	59.90	60.78	66.21	72.64	77.75	82.73	92.72	96.07	72.56

above in respect of average variable cost is that the smaller units are more efficient than the bigger units, at least in respect of economical use of the variable cost items.

For lack of objective information, it is difficult to pin-point the specific reasons for the variation in efficiency/ inefficiency of the units under 5 different size categories. It has been noticed at the time of survey of the industry that in case of smaller units mainely those belonging to categories IV & V, the owner-manager supervise their units, while units belonging to categories I & II are supervised by the paid managers. The paid managers are neither professionally skilled nor do they have any serious stake in the success or failure of the units they are conducting. On the other hand, the owner-managers of the smaller units have higher stake in the success of the units as these units are the only sources of family income. The owner-managers have neither the professional skill nor can they shift fast from present business to new ones. Probably the owner-managers for self interest put more time, energy and effort in the supervision of the units and which may result in better utilisation of the variable inputs. On the other hand the paid managers may loosen their grips of control over the utilisation of inputs. One thing that can be said with little certainty is that because of loose control a good amount of fuel meant for kiln is stolen and used by the labour force for cooking their meals.

Another possible cause of higher variable cost of bigger units may be inefficient utilisation of labour force. The inefficiency of utilisation of labour force is possible only when supervision over them is not complete and effective. In an earlier chapter we have noted that the Sardar contracts simultaneously with a number of units for the supply of working hands. It has come to the notice of the present researcher, some time Sardar withdraws the entire labour force or a part of it from one unit and puts it into another unit when prospect of higher income is there. In brick industry there is a prime time as well a lean time. If a part of labour force is withdrawn during prime time and brought back during the lean time, there is a possibility that unburnt brick may get damaged owing to early precipitation during the later part of brick season. Furthermore, loose nature of supervision by paid managers, may potentially create opportunity for production of lower number of bricks than a labourer can normally produce or for producing bricks of lewer quality a large part of which has to be rejected after burning. Both are at least hypothetically potential reasons for inefficient utilisation of labour force in the concerned brick-field. Hopefully, this seems to be the reasons for variation in the average variable cost among the 5 size categories. Optimality of unit size might be another cause of variation in variable cost among the size categories.

In an unorganised industry like brick, determination of optimum size is difficult. However, it is guessed that size of the kiln helps, to some degree, to determine the optimum size. A kiln is divided into a number of chambers and firing of the kiln starts from one end and sequentially proceeds. The burning of the green bricks from the start chamber to the end chamber takes a time period. The time period varies on the basis of number of chambers of the kiln. The period required for start to finish can be considered as necessary for the completion of a production run. The burning is a continuous process.

As soon as the burning is complete in a chamber the burnt bricks should be taken out and green bricks be put in it. If for some reasons the replacement is delayed the next production run will take longer time period. This is a potential source of diseconomy of brick production. In a poorly supervised unit this kind of incident is a distinct possibility.

In such a misfunctioning firm the Fireman may leave the kiln to fire and tender the kiln of a nearby unit to earn extra money, and the task of firing is left to a worker. In that event there is a strong possibility that the replacement of burnt brick by green brick may not be done as soon as firing in a particular chamber has been completed. In the process the production run period covers a longer time period than is necessary. We guess that units with larger capital and more

Working hands supervised by salaried managers take unnecessarily longer production run, consequent of which, as we may guess, is higher average variable cost.

Total Cost:

In conformity with previous discussion relating to fixed and variable cost, the total cost structure for the brick industry in the region shows the same pattern of behaviour as is revealed by the above table. The average total cost per 1,000 bricks was Rs.97.98. The average total cost per 1,000 bricks of units belonging to categories IV and V was lower than the industry's total average cost and those categories III, IV and V were higher than that of the industry. Accepting category III as the modal one the total cost of brick production was lower in respect of category IV and V and was higher in respect of categories I and II. Again, units under category V could produced 1,000 bricks at an average cost of Rs.65.15 and units belonging category IV at Rs.83.59. It appears that units belonging to category V were most efficient than category IV. Similarly, units belonging to category II produce 1,000 bricks at Rs.115.32 and those belonging to category I at Rs.124.10. From the Table No. 6.3 it transpires that units belonging to category V were more efficient and those belonging to category I were the least efficient in utilising the inputs throughout the 10 years period. This state of affairs continue without any break.

TABLE - 6.3

STATEMENT SHOWING COMBINED (FIXED AND VARIABLE) COST/1000 BRICKS RELATED TO DIFFERENT CATAGORIES

size category	Cost	1970-71 Rs.	1971-72 Rs.	1972-73 Rs.	1973-74 Rs.	1974-75 Rs.	1975-76 Rs.	1976-77 Rs.	1977-78 Rs.	1978-79 Rs.	1979-80 Rs.	Average Rs.
I	Fixed	39.80	35.16	36.24	41.85	37.94	45.58	48.35	53.17	56.23	54.26	44.85
	Variable	64.76	71.46	71.19	63.75	71.79	71.16	81.82	89.08	101.66	105.90	79.25
	Total	104.56	106.62	107.43	105.60	109.73	116.74	130.17	142.25	157.89	160.16	124.10
II	Fixed	24.42	23.38	24.48	23.27	26.36	25.84	28.78	30.12	31.85	30.76	26.93
	Variable	67.98	70.26	70.94	74.57	80.22	94.47	92.11	101.98	114.02	117.38	88.39
	Total	92.40	93.64	95.42	97.84	106.58	120.31	120.89	132.10	145.87	148.14	115.32
III	Fixed	21.73	21.55	22.55	22.23	23.78	23.63	25.73	29.05	29.47	30.63	24.99
	Variable	57.53	61.04	61.79	62.67	68.18	73.85	88.32	91.44	99.65	103.70	76.81
	Total	79.26	82.59	83.92	84.90	91.96	97.48	114.05	120.49	129.12	134.33	101.80
IV	Fixed	12.63	9.97	12.07	15.41	11.94	15.95	11.33	18.20	11.56	15.28	13.43
	Variable	54.46	59.85	58.75	55.94	60.00	70.00	77.91	80.04	91.64	93.04	70.16
	Total	67.09	69.82	70.82	71.35	71.94	85.95	89.24	98.24	103.20	108.32	83.59
V	Fixed	13.85	14.66	17.36	17.73	18.36	16.27	18.51	17.47	17.43	17.56	16.92
	Variable	38.06	39.04	36.86	46.97	50.90	58.76	48.62	51.14	56.65	60.34	48.23
	Total	51.91	53.70	54.22	64.70	69.26	75.03	67.13	68.61	74.08	77.90	65.15
Industry Average	Fixed	22.48	20.94	22.45	24.09	23.67	25.45	26.54	29.60	29.30	29.69	25.42
	Variable	56.55	60.33	59.90	60.78	66.21	72.64	77.75	82.73	92.72	96.07	72.56
	Total	79.03	81.27	82.35	84.87	89.88	98.09	104.29	112.33	122.02	125.76	97.98

The explanations given earlier as regard to fixed cost and variable cost also hold good for the total cost. Summarily, it can now be firmly concluded that smaller units are more efficient than the bigger units. The efficiency in utilising inputs varies inversely with the size of the units.

Fixed-Variable Cost Ratio:

In order to cross check the validity of the statement made earlier in this chapter regarding efficient use of both fixed and variable items of cost we now embark on examine the fixed variable cost ratio. For the purpose Table No. 6.4 has been constructed.

From the table it will be seen that the ratio of fixed to variable inregard to the industry as a whole over the 10 years period was on the higher side of 1:3 and that of the modal category III was on the lower side of 1:3. The implication of this phenomenon is that the relative to the industry as a whole units belonging to category III could utilise fixed production facilities better than other categories of the industry as a whole. It as a statutory point 1:3 of fixed to variable cost is accepted as ideal one in the given situation than it can be said that units under category IV are the most cost effective one, units under category II are the next best, units under category V come next and units under size category I are the least cost effective ones. In the earlier paragraphes of this

TABLE - 6.4

STATEMENT SHOWING (FIXED AND VARIABLE COST RATIO)/1,000 BRICKS RELATED TO DIFFERENT CATEGORIES

size category	Cost	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
I	Fixed	38.00	33.00	34.00	40.00	35.00	40.00	37.00	37.00	36.00	34.00
	Variable	62.00	67.00	66.00	60.00	65.00	60.00	63.00	63.00	64.00	66.00
	Production Volume	42.00	41.00	42.00	40.00	39.00	43.00	44.00	44.00	42.00	44.00
II	Fixed	26.00	25.00	26.00	24.00	25.00	21.00	24.00	23.00	22.00	21.00
	Variable	74.00	75.00	74.00	76.00	75.00	79.00	76.00	77.00	78.00	79.00
	Production Volume	71.50	72.00	72.00	73.00	71.00	73.00	74.00	74.00	72.00	74.00
III	Fixed	27.00	26.00	26.00	26.00	26.00	24.00	23.00	24.00	23.00	23.00
	Variable	73.00	74.00	74.00	74.00	74.00	76.00	77.00	76.00	77.00	77.00
	Producton Variable	189.50	190.00	191.00	192.00	187.00	190.00	191.00	190.00	189.00	191.00
IV	Fixed	19.00	14.00	17.00	22.00	16.00	18.00	13.00	19.00	11.00	14.00
	Variable	81.00	86.00	83.00	78.00	84.00	82.00	87.00	81.00	89.00	86.00
	Production Volume	48.00	44.00	45.00	45.00	44.00	49.00	48.00	50.00	57.00	50.00
V	Fixed	27.00	27.00	32.00	27.00	27.00	23.00	28.00	25.00	23.00	23.00
	Variable	73.00	73.00	68.00	73.00	73.00	77.00	72.00	75.00	77.00	77.00
	Production Volume	45.00	42.00	45.00	45.00	44.00	45.00	46.00	45.00	46.00	46.00
Industry	Fixed	28.00	26.00	27.00	28.00	26.00	26.00	25.00	26.00	24.00	24.00
	Variable	72.00	74.00	73.00	72.00	74.00	74.00	75.00	74.00	76.00	76.00

chapter, we identify that units under category IV and V were most cost effective than those under category I & II. Fixed-variable cost ratio does not support this conclusion into since units under category II claim to the second best cost effective unit in terms of fixed-variable cost ratio.

It is a matter of common knowledge that as efficiency of unit increases the fixed cost part of the total cost decreases and the variable cost part increases inproportion to the production volume. On this basis it can be asserted that interms of cost effectiveness units under category IV and II were better than other units belonging to remaining III categories.

A perusal of the Table No. 6.4 shows that none of the size categories could maintain a constant fixed-variable cost ratio for the same volume of production. As for example, category I units produced 42 lakhs of bricks in each of the years 1970-71, 1972-73, and 1978-79, but fixed-variable cost ratios during these three years were 38:62. 34:66 and 36:64 respectively. Another example, size category IV produced 45 lakhs of bricks during 1972-73 and 1973-74 at fixed-variable ratios of 17:83 and 22:78 respectively. Further, category V units produced 45 lakhs of bricks during 1970-71, 1972-73, 1973-74, 1975-76 and 1977-78 and their fixed variable cost ratios were 27:73, 32:68, 27:73, 23:77 and 25:75 respectively.

Fluctuations in the fixed-variable cost ratios over the years, at least, indicate non-controlability of the cost components by the individual firm of the industry. With a stress of imagination, it can be said that fixed part of the cost also could not be efficiently handled by any one belonging to the five categories.

A detailed study of fixed and variable cost components of each size category is perhaps necessary. From the Table No.6.4, it is observed that fixed cost of brick production inrespect of category I over the ten years period varied between two extreems, of 33 and 40 and variable cost between 60 and 67. Inregard to both the components range within which variation occured was almost same, namely 7 points. In respect of this category, the fixed cost components started with high note but gradually over 10 years period it decreased. In case of units under category IV the fixed cost component varied between 11 and 22 points and variable cost component varied between 78 and 89 points. Both components varied within the same range namely 11 points. In respect of this category, cost components of both types indicate discrete rise or fall. The fixed cost components of category V aver the 10 years period varied between 23 and 32 points i.e. the difference of 9 points and variable cost components varied between 68 and 77 that is a variation of 9 points. Here also limiting range of variation

in respect of both the components were same viz. 9 points. The fixed cost of category II units varied between 21 and 26 points and variable cost thereof varied between 74 and 79 i.e., the variation remained limited within 5 points range.

A close look into the ratios would show that no fixed pattern of relationship existed between them. Both the fixed and variable cost either rose or fell discretely. It means that degree of control over the cost components varied from year to year. The variations with production volume was perhaps the cause of this kind of phenomenon but nothing definite can be said in this regard.