CHAPTER - VIII
SUMMARY AND CONCLUSION

Introduction:

Brick industry is as old as the human civilization but it remains till date localised, unorganised small scale one. Its basic inputs are available almost everywhere excepting in hills and deserts. The industry is labour intensive and its working period fits well with the agricultural cycle. Farm hands during lean season when there is no work migrate to brick fields and thus make them available at low wage rates to the industry. The small scale brick firm functions within a narrow market that spreads over an area of 10 kms. Since the demand for brick is of derived nature the industry is drawn to the area where economic activities like erection of factory buildings, housing etc. are feverish. Once this kind of activities is completed there is little demand for brick. So during the period of upcoming economic activities the industry is not required to bother about the demand but during the down swing it has little scope to stabilise the market. The industry is closely linked with the civil construction activities of the locality.

Unfortunately, till date this industry pregnant with high employment potentiality, and catalyst of industrialisation and urbanisation has not drawn the active attention of the scholars of the state. In the present study attempts have
been made to unravel the various dimensions of the industry. For the purpose Uttarpara-Kotrung-Makhla complex of Hooghly district of West Bengal has been chosen. The rationale of the choice lies in the fact that this is the area where the corporation of Calcutta started brick making as early as 1856 to meet its requirements for construction of the city's civic infrastructure. Soon after, the area became vibrant with the construction activities associated with industrialisation. Urbanisation did not lag behind the industrialisation process. The brick industry of Uttarpara-Kotrung-Makhla complex got fillip to be localised here and has been functioning since then.

56 brick producing units are operating in the area as family business. They are run by people with little professional skill. In terms of capital, employment and production volume they are of different sizes. Though the technology used, production and marketing processes adopted are similar, all the units functioning here are not equally efficient in utilising the inputs. It has been hypothesised that this efficiency-difference is caused by certain objective factors operating within each unit.

The present study has made an attempt to analyse the nature and multidimensions of the problem of efficiency-difference among the 56 units operating in the area. Endeavour has also been made to locate the sources of the problem.
For an indepth study of the problem a combination of survey and interview methods has been resorted to. The total population has been surveyed through an unstructured questionnaire. Where the survey method failed to illuminate interview method has been adopted. For certain purposes books of account have been consulted to dig areas that the two methods could not encompass. We believe and hope that a combination of methods has yielded variable information to rely upon.

**History of the Industry:**

At this point it seems necessary to trace the history of the use of bricks. This history of brick use is intertwined with the growth and fall of the urban civilisations. Archaeological findings prove beyond and iota of doubt that bricks as a building material was popular in Mesopotamia, Sumer, Egypt, Mexico, South America and India. Both sun dried and kiln fired bricks were used in these civilisations. Bricks were used in constructing dynastic palaces and graves including Pyramids. Public buildings, ramps, towers, city ramparts arched roofs, shrines and monasteries, altars, inlet and spill channels dockyard and dwelling houses. Besides the bricks of usual shape Planoconvex bricks (kish of Sumer or in the ramparts of Kausambi) were in use in ancient civilisations. Mud was invariably used as a cementing compound in these constructions.
Over the centuries beginning with the urban civilisations of the Indus valley Indian civilisation went through a tortuous course. As soon as the urban civilisation was succeeded by the Pastoral civilisation of the Vedic Aryans brick as a building material came in disuse. The vedic Aryans used to live in huts made of bamboo poles, straws, leaves of trees and mud. People of those days changed to these building materials as they realised that brick burning denuded the forest around the cities of the Indus valley that paved the way for the advent of desert.

Stone replaced mud and straw. In the sixth century B.C. stone was extensively used in building royal palaces and protective walls of the capital city. During the third and second century B.C. stone was replaced by timber. Megasthenes claimed that in Patali Putra, the capital of Mauryas, royal places and city walls were made of timber. This city also had wooden watch towers and wooden gates. Archaeological findings tell that since Ashoka, the great Mauryan King, stones forced a come back. The palaces during his reign were constructed with stones. The use of stones was perfected as is born out by Ashokan Pillars and lions which are great specimens of art. However, it should be pointed out that during the Mauryan period and afterwards outside the city area mud and straw remained the principal building materials. For some times during the post-Maurya period stone was in use gradually bricks
came into use. It is believed that during the reign of the Gupta emperors bricks were used as construction material but little archaeological findings are available. Post Gupta period witnessed the large use of bricks in constructing palaces and city dwellings.

Muslim rulers during the medieval age used both stones and bricks as building materials. Forts like Chunar or Agra or memorials like Taj were constructed with stones but many private residences with bricks. During the modern period since the death of Aurangzeb bricks occupied the prime position in constructions. During the modern period, particularly since the establishment of British rule brick as building material assumed the greatest importance.

The brick industry of the area of our study has a long and rich history. The area is richly endowed with resources that are considered essential for the brick industry. The area is located on the bank of the river Bhagirathi and is connected with Calcutta and the neighbouring industrial area with a network of rails and roads. The first brick field was established in Uttarpara by one Mr. Bull, the builder of Bull's kiln, (also known as Trench kiln) probably to meet the demand from the railways. When the drainage system in Calcutta was being laid the Corporation of Calcutta set its own brick field in Kotrung in 1858 over 275 bigha of land. The establishment comprised of an engine house, a boiler house, a
83 feet high chimney, two machine sheds to house a 25 H.P. steam engine, a Soorki Mill with drying sheds, two workshops barracks that could accommodate 600 coolies, 6000 feet tramways inside the field for carrying mud, coal, etc, a bridge over the canal, and a ship for carrying bricks across the river to Calcutta.

When the drainage works were on the verge of completion the Corporation decided to dispose of the works. In 1868 it was first leased out to Messrs. Burn & Co. and then in 1882 to Messrs Mitchell & Co. and again in 1884 to Messrs Milkmal Mitter & Sons and then in 1892 to Messrs T. C. Mukherjee & Co. In 1916 when the lease expired the Corporation of Calcutta apportioned the field and leased it to several local people.

In Makhla locality the first brickfield was established in 1880 by three local Bengalee young men. Others developed interest and set their brick fields. In 1910 about 20 fields were working. With the break out of the first world war people from outside the state and European business houses started setting brick fields. By 1940 business houses left the business leaving it to people, both local and outside.

Characteristic Features of the Industry of Uttarpara-Makhla-Kotrung Area:

The characteristics of the units of the industry operating in our area can be studied on the bases of ownership pattern and
size. Analysis of data collected by the present researcher shows that 76.8% of the total number of units are sole proprietorship firms, 19.6% are partnership firms and 3.6% are Private Limited Companies. During the period of study no public limited company or co-operative organisation was sighted. While retracing the history of the industry of the area it was pointed out that at the beginning it was dominated by the corporate bodies. This shift from the public limited company to sole proprietorship form can be explained by taking resort to brick production technology and socio-political-economic changes in the country. The core technology of brick production has remained more or less unaltered during past few hundred years. The traditional technology demands a small amount of capital and little skill. Any individual endowed with the attribute of entrepreneurship and a small capital can start and run a brick field.

Since the permanent settlement introduced by the colonial authority in the last part of the eighteenth century living by rents from land was easy and socially prestigious in Bengal. The elite people of our area of study was Brahmin by caste and land-renting by occupation. Sporadic peasant movements, nascent political struggle preceeded by social reform movements that followed the Renaissance in Bengal gradually made living by land-renting difficult. The emerging economic and social situation motivated a few enterprising individuals from the
landholding families of the locality to enter into the industry. Character of the brick market also provided the fillip. Earlier the Corporation of Calcutta was the biggest, if not the sole, buyer of the product. By the time the Corporation totally withdrew from the market the growing industrial units of the neighbourhood entered it. Sole proprietorship ruled over partnership and public companies to meet the demand for the product and this state of affairs continued up to the beginning of the second world war. The entry of the Defence Department in the market after the break of the war created a condition in which the public limited companies thought it fit to enter the market. They withdrew from the market again as soon as the war ceased. This intermittent entry and withdrawal from the brick industry by the organised sector was perhaps due to the presents or absence of the prospect of higher revenue. The buyers like industrial units, Defence Department could offer higher prices that would cover various overhead costs that an organised unit was required to meet. The sole proprietorship units may skip many of the legal and social norms which the large firms can ill-afford. It can be concluded that preponderance of sole proprietorship or company forms of business was determined by the type of customer functioning in the market. As at the present moment, the majority of the buyers are small, the sole proprietorship units rule the roost.
The volume of investment of a brick manufacturing unit characterises it in a sort of way. The discernable impact of capital volume is manifested in terms of volume of production and employment. The investment varies between 2 and 2½ lakhs of rupees in case of 50% or 27 units of the total (56) units operating in the area and are levelled as category III units. In 18 units, higher investment and in 11 units lower investment are found. Among the 18 units with higher investment 7 units are working with an investment of more than 3½ lakhs (levelled as category I units) and 11 with about 3 lakhs (levelled as category II units). Of the 11 units operating with less investment 6 units are found to have about 2 lakhs of rupees (to be exact Rs.1.82 lakhs) investment (levelled as category IV units, and 5 units with about 1½ lakhs (levelled as category V units).

Thus accepting category III units as the median class two categories above it and two categories below it are found. The obvious economic consequences of the variation in investment are differing volume of production and employment - higher investment is discerned to result in higher production volume and larger work-force, and lower investment in lower production and smaller work-force. But the interesting Phenomenon worthy to note is that the rates of rise or fall in production and employment are not in proportion to rise or fall in investment. For example, in comparision with category III units, units
units belonging to category II with 19.76% higher investment could produce and employ 6.48$ and 6.15$ more respectively, and units constituting category I with 45.16% higher investment could produce and engage 17.22$ and 9.23$ more respectively. Again relative to the median category III, units subsumed under category IV with 2.6% lower Capital could produce and employ 16.6% and 15.3% less, and units included in category V with 50% less investment produced 21.3% and employed 38.46% less. The interesting point that comes out of the phenomenon is that the rates of rise or fall in production and employment volumes are not in pari passu with the rates of rise or fall in Capital investment. Further point to note is that the rates of fall in production and employment are sharper in firms where total investment diminishes than the rates of rise in production and employment in firms where the investment rises. The proof to this phenomenon can be adduced from the intermittent entry and desertation of the industry by the big size Corporate organisation.

The flat nature of the organisation structure makes the process aspect of the organisational design simple as well as effective. Most of the communications that flows within an organisation belonging to this industry is direct and simple. The people involved are atuned to similar believe and value systems and so there is little difficulty in coding and decoding the message. The decision making process in such an organisation
improve only the owner-manager and none-else; so it remains as simple as anything. Simplicity or complexity of decision making process depends on the nature of the State of certainty or uncertainty - under which decisions are made. Brick industry as a whole and units operating in Uttarpara, Kotrong, Makhlā, Bhadrakali area in particular make decision under certainty. Thus decisions assumed a determined characteristics in the Brick making organisation.

Another feature of the industry arises out of the organisational design of the units. Organisational designs is determined by five factors, viz. ownership, size, technology used, social change and human aspect and environment. Family ownership factory conjoined with the traditional technology has kept the size of the units small. The smallness of the size is also the outcome of the narrowness of the market in which the units operate. The largest firm in our area employs on our average 142 hands and the smallest one 80 hands, of them majority is associated with actual production and a very small number of persons perform the managerial functions. The environmental changes that have occurred in the area are not radical enough to impinge upon the organisational design. Social changes during the four decades since independence of the country have brought attitudinal changes among the people associated with the industry. They are more conscious of their rights, more assertive and more democratic. But the impact of
the attitudinal changes have little impact on the organisational design of the Indian organisations as a whole, not to speak of the brick industry. In the final analysis it can be conclusively said that ownership pattern is the most, if not the sole, determinant of the organisational design in this industry.

In the perspective of the above facts the structural and process aspects of the organisation found in the industry simple; the need for differentiation and integration is also not acute. The total production activities in an unit are performed by a contractor who brings the workers from outside within the bound of the plan prepared by the owner-manager. The contractor works for one season only. The remaining tasks, for example, purchasing, selling, various odd jobs are performed by an accountant who is a wholetime employee of the unit. In such scheme of things there is little need for a cohesive and integrated structure. Two levels of hierarchy actually are found in such an organisation - owner-manager and contractor, and owner-manager and accountant Owner manager oversees the activities of the contractor and the accountant. The contractor and the accountant are at the same level put laterally. Interestingly the contractor enjoys almost full autonomy in his sphere of activities while the accountant is rigidly supervised. This permanence-impermanence nature of superior-subordinate relationship and the high-low degree of authority decentralisation lend a peculiarity to the structure.
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In the context of such an organisation design the structure and process can be reflected in the visualisation and is difficult to portray in form of boxes arranged in hierarchy.

The Nature of Job and the Employment Pattern

(i) Employment Pattern:

Brick making is a simple craft and labour-intensive industry which fits well into the existing pattern of rural life. Being a seasonal industry, it can not afford to recruit a
permanent work force and so resorts to a system of contracting labour through a system known as 'Sardari'. The workers that are to be brought in needs to have a simple acquaintance with the nature of the job or be intelligent enough to acquire the necessary skill quickly. They should be physically strong and stout. The recruiting agent known as 'Sardar' undertakes to supply the required number of hands for one season and to supervise the force they bring in. They themselves also work as skill hands. One important thing to be noted here is that the Sardar during a particular season takes this kind of responsibility simultaneously for a number of brick making units during one single season. This fact has great implication on the productivity of the brick making unit. The labour contractor enters into two sets of contracts independently one with the labourers and the other with the owner-manager of the field.

Three systems of labour contracts are prevalent in our area of study - the Sardar of Bihar, Sardar of Uttar Pradesh and Commissioned Person from West Bengal. Bihari Sardar brings labour force suitable for brick making. These labourers are of tribal origin, possess robust physique. Each gang includes equal number of male and female who are usually married couples. The Bihari Sardar is labelled as 'Contractor I'. The gangs report to the field either at the end of the October or in the month of November and return back at the
beginning of rainy season. **Contractor I** supervises the activities of his gangs and sometimes also work with them. The Uttarpradeshi Sardar brings a set of four workers for each brick field who are specialised in burning the kiln. This skill is of vital importance to the brickfields as the quality of product depends much on it. They are labelled as 'Contractor II'. In addition to supervision work, Contractor II also works as fireman. The Commissioned Persons bring labour force for soil excavation. The excavated soil is used by working hands brought in by Contractor I and is transformed into green bricks. A Commissioned Person brings a number of gang for different brickfields. The Commissioned Person hails either from the South 24 Parganas or Midnapore District and brings people from his area of residence. This work force comes to the fields by the end of February or at the beginning of March.

(ii) **Work Process:**

The brick making process involves the following categories:

(a) Planning of season's total work that involves general supervision of brick fields, quality assessment, kiln construction and selling. This tasks is overseen by the owner manager himself or by his whole time employee.

(b) The production task that starts with soil excavation and with delivery of the bricks to the customers.
This category of task can be divided again, on the basis of who supervises them. For example, the soil excavation task before the brick season start is an independent job supervise by the owner manager or his whole-time employee. Another independent task under this category is making green bricks which is supervise by Contractor I.

The third subcategory of task includes stacking the sundried bricks for burning known as loading the kiln and unloading the burnt bricks from kiln is supervised by Contractor I.

The fourth subcategory involves assorting the burnt bricks into grades which is normally supervised by the full time employee of the assistant of Contractor II and/or his men.

(c) The third broad category of task includes construction, fitting and shifting, when necessary, of the chimney. The Contractor II supervises this task which is done by the supplier of the chimney.

Above categorisation of task is based on the production process involved in the industry. Again, in terms of the task performed by different personnel, they can be grouped in the following way:

(A) The task of the owner manager or his whole-time employee, known as supervisor:

(i) Preparing the annual plan for the brick field and making arrangement for construction of the kiln.
(ii) Supervising soil excavation and the total process of production which is performed under the guidance of Contractor I.

(iii) Assessing the quality of burnt bricks and grading and assorting them into different classes.

(iv) Looking after the process of burning in the kiln.

(B) Task of Contractor I:

The job of Contractor 'I' includes the supervision of task related to preparation of the soil, carrying it to pugmill, making of the bricks, arranging for sundrying in a manner that eases the task of carrying them to the kiln and counting of them.

Under the supervision and instructions of the Contractor I his men prepare the soil and add water to make the clay suitable for production. He has also the task of instructing the process of adding sand to the mould box for the production of bricks and directing how much pressure to be exerted over the soft clay after it has been inserted into the mould box so that a perfect brick is produced.

The counting of green bricks is also done by him in the presence of the Supervisor. The work of drying the green brick in bright sunlight is also guided by him. He gives
suggestion about the time period for drying up of each side and arranging the bricks in a row when the drying is complete. The duty of Contractor I ends with the drying up of the bricks.

(C) Task of Contractor II:

Contractor II performs his task under the overall supervision of Supervisor. The chimney is a crucial instrument in the brick making process. This instrument needs to be constructed in such a manner that smoke stays in the chimney the fire quality will deteriorate. So this job not only requires special skill but also keen observing ability.

The chimney construction undergoes a few stages:

(i) Manufactured chimney is received at the field from the manufacturer in knock-down condition in three parts;

(ii) According to the specific need of the kiln, the height of the chimney is determined and the three knock-down parts are assembled with the help of special plates and rivets;

(iii) Wrapwool is put along the innerwall of the chimney to stop the absorption of corrosive super heated water vapour leaking out through the joints of the chimney, that cause immense damage to the outer wall of the chimney. A single field for a single season requires four chimneys.
(D) Task of the Operatives:


The Bundh makers, during the rainy season, repair, clean and keep the channel between the silt pit and the river bed working so that silt can enter into the pit without obstruction. Soil excavators excavate the deposited alluvial silt from the pit and carry it deposit near the pugmill. The green brick producers prepare the soil, with spade and shovel and then by pugmill. With the prepare soil, they with the moulds the green bricks and put them for sundrying. The loaders carry the sundried bricks to the kiln. Thereafter, the Belders arrange them in kiln for burning. The chimney workers assists in setting the chimney. The job of the Fireman includes putting slack coal inside the kiln, firing the coal and putting additional coal when and where necessary. The Unloaders, the last category of operators, unload the burnt bricks from the kiln and arrange the bricks in rows after they have been graded.

Production Analysis:

Manufacturing of Bricks involves five basic processes namely, selection of site, preparation of clay, moulding, drying, and
burning. Each one of these processes are important for making a production unit economically viable. In our attempt to avoid inflicting burden on the reader we skip a detail description of this processes at this stage and review the practices that adopted by units in our area of study.

The Brick Industry of Uttarpara is dotted along the western bank of the Bhaghirathi. As the river silt is of high quality interm of chemical composition, the Industry does not bothered with the selection of site. The silt i.e. allowed to be deposited in the silt pit is collected before the onset of monsoon and heaped on the ground for the purpose of weathering. As soon as the production season starts the weathered clay pugged through animal driven pugmill. The production unit use wooden mould box and ground moulding. All the units were used Bull's kiln.

The Brick Industry of Uttarpara produces complete bricks alongwith Jhama and bats. Jhama and bats fetch lower price than complete bricks but the entrepreneur cannot avoid them. The complete brick can be classified into Brick, Picked Brick, Rainspotted Brick. Again, bricks are of four varities, namely, class I, II, III & IV and Picked Bricks are of three varities, namely, class I, II, III. Broadly, it can be said that a unit of the industry of this area produces 30% (20% + 10%) class I Bricks and Picked Bricks, 30% Jhama & Bats (15% each), 20% class III Bricks and class II Picked Bricks (10% each), 10% class III Bricks,
5% Rain spotted Bricks and 5% wastages. Level of price depends on the class to which one particular lot of bricks belongs.

Using the production ratio of various classes of Bricks produced by the industry, we attempted to compute the total production volume of the units operating in the Uttarpara, Kotrung, Bhadrakali and Makla area.

The average annual volume of production by the industry located in the area of our study was 396.1 lakh units of bricks. This volume was being produced by 56 units belonging to all the 5 size categories. Over the ten years period the actual annual total production of the industry as a whole varied between 385 lakhs and 403 lakhs. To average annual production (i.e., 396.1 lakhs) size category III contributed about 48% and remaining 52% by other 4 size categories. Among these 4 size categories share of category II was 18%, those of IV & V was almost equal (11.9% and 11.3% respectively) and that of category I as 10.6%. Category III produced about half of the total average annual production because it includes 27 unit which is about half of the total number of firms of the industry in the area. But in terms of average production per unit under different size categories a different picture emerges. It is noticed that units under Category I produced highest volume (6.01 lakhs per unit). It is concluded that unit with the lowest capital investment produced the highest number of bricks and units with highest capital investment produced the minimum volume.
Cost Analysis:

In estimating the cost of brick production we have been constrained by lack of relevant information, with great difficulty only the financial data could be collected. For this reason we have been par-forced to abandon the idea of using the concept of opportunity cost or the real cost of production.

In the present paper money cost of production has been used. The components of cost does not include (a) Wages for the work performed by the owner of the producing unit, (b) Interest on Capital supplied by him and (c) Rent of Land and Building belonging to him and used in production and in the conduct of the business., they do include fixed cost and variable 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 relevant overheads. These two components are now dealt separately.

Fixed Cost:

Fixed components of brick production comprises of repairs and maintenance, establishment, depreciation and other items of overhead cost. Repairs to and maintenance of kiln, chimney and 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 and maintenance. Establishment includes wages and salaries to night watchmen, darwan, 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 given to the upcountry labourers, litigation expenses, corporation or municipal taxes and similar other items that can not be subsumed under any other category. Any individual fixed cost item does not itself constitutes a large part of the total cost of brick production but nevertheless they together form about one fourth of the total cost.

Analysis of the fixed cost components shows that the Average Fixed Cost for 1,000 green bricks for the industry as a whole is Rs.25.42. The same for the units belonging to the different size categories is Rs.44.85 for category I, Rs.26.93 for category II, Rs.24.99 for category III, Rs.13.43 for category IV and Rs.16.92 for category V. Fixed cost of the modal category III is very close to industry average (i.e. Rs.24.99 and Rs.25.42 respectively). Interestingly, the larger units belonging to category I & II incurred more fixed cost for production of bricks, than the smaller units belonging to category IV & V. In ascending order the fixed cost per 1,000 bricks is Rs.13.43
for category IV, Rs.16.92 for category V, Rs.24.99 for category III, Rs.26.93 for category II and Rs.44.85 for category I. The category specific trend of fixed cost is contrary to general belief that larger the size lower the fixed cost per unit of production. This unusual behaviour of fixed cost demands a short of explanation that will be given later on.

Variable Cost:

The Industry Average Variable Cost per 1,000 bricks is Rs.72.56 which is close to that of the units belonging to modal category III, viz., Rs.76.81. The same for the other four categories are Rs.79.25, Rs.88.39, Rs.70.16 and Rs.48.23. Here also, it is seen that the smaller units belonging to category IV & V achieved more economically than the larger one. In short, it can be said that smaller unit could use both the fixed production facilities and direct inputs more economically than the larger units.

The reason for this kind of unconventional behaviour of both the fixed and variable cost can be identified in the nature of management and degree of involvement of manager of the units of production. Usually smaller units are supervised by the owner himself but bigger units by paid managers. The paid managers are namely neither professionally skilled nor they have any serious stake in the success or failure of the units under their supervision. On the other hand, the owners of the
smaller units have higher stakes in the success of the units as they are the only sources of family incomes. The owner-manager of the smaller units are equally not professionally skilled. The lower degree of involvement of the paid managers of the big firms results in soft supervision which in turn provides opportunity for misuse of resources. For example, sometime coal meant for kiln is used by the labourer for cooking their meals. There are instances where Sardar withdraws part of the labour force and puts them in another firm for earning extra money. Furthermore, loose nature of supervision by the paid managers may potentially create situation where poorer quality of brick in lower number can be produced. In other words, the labourers may not be used optimally. Hopefully, this seems to be the reasons for the variation in the average fixed and variable cost among the five size categories.

Another potential cause of variation in cost may be optimality of unit size. In an unorganised industry, like brick, determination of optimum size is difficult. In brick industry, it is suspected that the size of the kiln has significant impact on the size of the firm. 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 necessary for the completion of a production run. The burning is a continuous process. Unless the burnt bricks are immediately replaced by green bricks in the chamber, the production run will take longer time period. This is a potential source of diseconomy of brick-production. In a poorly supervise unit this sort of incidence is a strong possibility.

**Total Cost:**

Behaviour of the total cost is no way different from those of the fixed or variable cost. The average total cost per 1,000 bricks for the industry as a whole was Rs.97.98. That of units belonging to categories I, II, III, IV & V were Rs.124.10, Rs.115.32, Rs.101.80, Rs.83.59 and Rs.65.15 respectively. The average total cost of the industry and of units belonging to category III, modal category, were close to each other, viz., Rs.97.98 and Rs.101.80 respectively. The average total cost of units belonging to categories I and II was higher than the industry average as well as that of modal category average. That of units under category IV and V., was lower in comparison with the industry and modal category averages. In fine, it can be said that unit under category V were most efficient and those under category I were the least efficient in utilising all kinds of imputs.
Fixed-Variable Cost Ratio:

The analysis of fixed-variable cost ratio brings to the force the interesting fact the industry as a whole little control over the two cost components in producing the same volume of production indifferent years units belonging to various categories have used different proportion of fixed and variable cost. If l:3 is accepted as the ideal fixed-variable cost ratio the units belonging the category IV appear to be most cost effective and unit under category I as least cost effective units belonging to other three categories are inbetween this two extreem.

Revenue:

Faced with the problems of nonavailability of revenue figures, we have computed them adopting the following methodology the industry's output comprises whole bricks, Jhama, Bats and wastages. The Bengal Brick Field Owner's Association every year brings out a price list of all kinds of bricks. Price list also indicates the proportion of whole bricks, Jhama, Bats and wastages to the total production. Applying the prices shown in the Association's notification revenue figure have been obtained.

A look into the Table No. 7.1, will show that revenue of all categories registered a linear rise throughout the period. A further reference to Table No. 7.1 convince that units
belonging to categories IV and V could generate more revenue than the other three categories and category I and II units generated less revenue. The implication of this fact is that smaller units with less capital and labour earned more revenue than the units more capital and labour.

The final and the convincing conclusion that emerges from the study is that in all respects, namely, production volume, production cost and revenue earnings, the smaller units operating in Uttarparsa-Kotrung area are superior to larger units. It is suggested that to derive the benefits of small scale, the size of a unit of a brick industry should never to beyond the limit to which the owner himself can manage and is not required to take the assistant of salary manager.

Conclusion:

Inspite of eventful history of over a century the Brick Industry of Uttarparsa Industrial Belt still remains a traditional industry and uses a stagnant technology. It still remains a labour intensive industry and helplessly depends on up country sardars and labourers. It has little ability to counteract the whims of the seasonal labour force. This is so because entrepreneurs run their units as family business and are unwillingly to experiment with need technology of brick making and sky of
bringing in professionalism in the management of this industry. They run their firms for earning money. The entrepreneurs approach the industry with a traditional attitude. They remain satisfied with the annual surplus.

With the absence of professionalism the industry as fail to identify the optimal size of the unit. The study has conclusively proved that smaller units are in a better position to utilise the inputs most effectively than the larger units.