CHAPTER IV
FACTORs OF LOCATION

4.1. Introduction

The relative advantage of one area over others and the combined production cost difference between the places is the essence of any locational study.

The basic factor that determines the location of any manufacturing unit is the positive cost-benefit ratio. The preferences and relative advantages of a particular place over the others is also guided by minimum production cost (Smith, 1981). In this chapter we shall focus on the locational factors of rice milling industry, which is the largest one among all the agro-processing units. Some specific factors led to the concentration and growth of rice mills in eastern part of Burdwan district especially in Burdwan urban centre and its surrounding rural-urban fringe areas (Figure 4.1). These factors, in general, were the availability of sufficient agro-based raw materials like paddy, abundant supply of cheap labour, good communication system, adequate supply of power and above all the availability of capital from the local farming based entrepreneurs. If profit maximization is the chief objective of the entrepreneur, automatically 'least cost' location will be preferred for industrial location. These factors are discussed in detail in this chapter.

We have categorized the factors governing the location of a rice mill into two broad groups. This was done purely for convenience and does not mean that these two groups are not interrelated. These groups are: physical geographical factors and socio-economic factors

Let us first try to take a look back at the past and briefly examine the historical growth of the industry in Burdwan region before discussing various factors governing the location of rice mills.

4.2. Past as a Key to Present?

Once developed on the ruins of age-old cottage industries, the rice milling industry gradually started gaining economic and social significance during the last 4-5 decades. The agro-based industries served as vehicles for providing rural employment, drawing excess labour out of agriculture, contributing materially in solving problems of seasonal unemployment, provide outlet for investment of local capital formed from agricultural surplus. These units serve as a source of employment especially of the female workers and act as a special help to the marginal farmers as they could sell their marginal surplus produce at a fair price to the rice mills. The other direct beneficiaries of the industry are the paddy merchants and brokers, their agents and sub-agents for raw material as well as finished products, chira and muri processing units, soap factories, fodder producing units and manufacturers and suppliers of milling machinery and their different parts.
RICE MILLS
BURDWAN DISTRICT, 2001

Figure 4.1

Source: Data collected from the office of Burdwan Town Rice Mill Owners Association.
PLATE 1: INDUSTRIAL SKYLINE OF A RURBAN AREA – THE PERIPHERY OF BURDWAN CITY

PLATE 2: A BIRDS EYE VIEW OF A RICE MILL (MIXED TYPE) CHATAL, DRYER, BOILER, MACHINE ROOM
As production of paddy increased remarkably in the district, the age-old hand pounding system of processing was found to be inadequate to cope with increased demands of a larger population. Thus, a favourable situation was created for the growth of rice mills leading to an increase in their number to 179 at the end of 1989 (Samanta, 1994) and to 268 in the year 1998. Of these mills, as many as 256 are operating now. The gradual increase in the number of rice mills up to 1998 in the adjoining areas of Burdwan city as well as in the district presupposes a high degree of profitability of the industry up to that period.

The history of rice milling industry is diverse. The period between 1920 and 1938 should be treated as landmark years in the history of the rice milling industry in the Burdwan region. The continued success of rice mills in Tollygunj-Chetla and Pandua-Mogra belts inspired the big jotdars and paddy merchants of Burdwan to establish rice mills of their own. At that time there was no official restriction on rice mills, no dearth of the supply of raw materials, and labour and initial capital investment requirements for the industry was not of a very high order. The years between 1938 and 1948 were the years of slight depression for the industry and the factors that contributed to that were: (i) the war and its impact on the total economy, (ii) restrictions on the import of machinery from abroad, and (iii) the delegation of the power to control the necessities of life to the provincial government by the central government and following that adoption of a number of regulatory measures by the provincial government of Bengal on the maximum price of rice, its export to other states, its procurement and hoarding etc.

Just after the independence of India, the government announced the ‘decontrol of food grains’ policy. This new development led the new investors to enter into the rice milling business, especially the sub-agents who were appointed earlier for procurement of paddy. As against this, the existing rice mill owners in other areas started to confront some serious problems. One of these problems was the cessation of paddy supply from East Bengal and marketing of rice in that market due to the partition of Bengal. The other one was controlling the movement of food grains into Calcutta and its industrial area etc. These brought a lot of insecurities as to the future of rice mills. In consequence, many mills in those areas were closed. The paddy merchants of Burdwan who hitherto had been supplying paddy to the rice mills of Tollygunj-Chetla belt were in search of a new market for their paddy. In the meantime, some merchants of Burdwan like late Mr Atul Krishna Dutta who also had rice mills in Tollygunj and Barrackpore area tried to shift their mills to different parts of the
district of Burdwan considering it a prospective place for the same. Mr. Dutta not only took
the initiative himself as an investor he also inspired many prospective businessman and big
landowners to enter into this business (Samanta, 1994). In the meantime, there occurred some
changes at the policy level of the governments, both of the centre and state. For example (i)
with effect from 1st January, 1953 the rice mills were required to sell only one-third of their
produce to government instead of their entire produce, (ii) inter-district and intra-district
cordons were lifted with effect from 1st January, 1953, (iii) from October, 14th the levy
system of procurement covering producers as well as rice mills was given up and the
procurement continued only on a voluntary basis, (iv) the West Bengal government
decontrolled rice in 1954 and Statutory Rationing was withdrawn throughout the state, effect
from 10th July, 1954, (v) the ban on inter-state movement of rice was also withdrawn by the
government of India, (vi) the abolition of zamindari by passing the Zamindari Abolition Act
in 1954 and the Land Reforms policy of government; both central and state, had some impact
on the growth of rice mills.

Due to the cumulative effects of these, the rice mills became free to a great extent from
restrictions imposed by the government except for obtaining a license from the District
controller of food and supplies. During this period, the jotdars and big landowners of the
region began to sell their land and mostly invested their capitals in rice mills. Though the
large market was lost due to partition of Bengal, the huge influx of refugees from East Bengal
created some extra demand in the local market. The age-old indigenous method of hand
pounding system failed to cope up with the growing demand. Again, the emphasis on
agriculture in the first five-year plan had some remarkable impact on the paddy production in
the district of Burdwan. Abundant supply of paddy, better prospect of profitability (compared
to other types of business and trade) absence of banking facilities in the rural areas for safe
custody of surplus funds of zamindars and jotdars also created the necessity for investment
in the rice mill industry. Due to the above circumstances, the number of rice mills in the
district increased to 87 at the end of 1960 (Chaudhury and Sen, 1973) and 112 in the year
1964 (The Statesman, 8th August, 1989). The important feature during this particular period
had been that the new mills were not localized in the Burdwan city proper but the adjoining
areas of the city as well as the different parts of the districts mainly in Seharabazar, Memari,
Saktigarh, Galsi, Gushkara and Mankar. Thus there was large scale dispersal of rice mills
within the district during the period. After 1964, another golden opportunity for the growth of
the rice mills in the district came when Calcutta and its industrial fringes were brought under
statutory rationing on January 5, 1965 and the movement of rice and paddy into Calcutta Rationing areas was banned, which served as a deathblow for the rice mills of Tollygunj-Chetla belt. The increase in the number of rice mills since 1964 has often been disturbed by the changes in the Government policy regarding the procurement of paddy from farmers, free movements of rice within the districts, and authority of the rice mills for direct milling of rice from paddy. Not only that, there had been even years when many rice mills were closed down and the mill-owners surrendered their licenses to the authority due to too much government control. The food policy of the first and second United Front Government in 1967 and 1969 respectively could not pull out the rice mills of the district from the distress, though in the Amending Act of 1968 of the Rice Mills Industries (Regulation) Act, 1958, provisions were made for subsidies from the State and Central Governments for the modernization of the rice mills. Clearly, the government played a significant role in rice milling industry – whether in its localization or otherwise. As we will see later, the role of the government has now shrunk to a minimum, and in an industry used to hating such control surprisingly the impacts have not been very positive.

The period between 1964 and 1974 is considered to be the period of negative growth of the rice mills in the district of Burdwan. There was, however, one redeeming feature as during this period, many husking mills were established in interior parts of the district for processing rice from paddy. To regulate and control the activities of the husking mills, the Government imposed levy on them under Rice Milling Industry Regulation (West Bengal Second Amendment) Ordinance, 1974. But the Government Order imposing that levy was challenged in the court of law and by a court order the same was repealed.

The period since 1977 may be called the golden era in the history of the rice mills in Burdwan. In 1977, there was a change in the government of West Bengal and Left Front came to power. The LFG deleted many of the irksome regulations and control of the rice mills in the state. As for example, the government lifted the cordonning system barring full rationing areas of Calcutta, Durgapur and Asansol, imposed proportionate levy on the rice mills, allowed the rice mills to procure paddy from elsewhere in the state and sell levy-free rice at any place in the state with a prior permission from the Food and Supply Department. There was also change in the Industrial Policy at the centre in 1977 giving importance to small and cottage industries as an instrument of economic development. Advances by the banks to the rice mills were brought under the purview of priority sector. Lending provisions
was also made for the supply of machinery from National Small Industries Corporation under hire purchase system at a concession rate. The cumulative effect of these measures had been the boosting up of the morale of rice mill owners, so much so that since 1977 even the closed and abandoned mills of the study region as well as the district reopened the door and started operating again. Since this period the trend of modernization of rice mills began to start slowly. Due to modernization of rice mills, rice bran – an important by-product came into the market helping to increase the profitability of the rice mills. Modernization also increased input-output ratio, the production capacity of the rice mills and also helped in pulling out the industry from its seasonal character. Machinery for the rice mills also started being produced indigenously, thus making it available within the country. Other infrastructural facilities such as power supply (though not sufficient), transport facilities also developed into the interior rural areas. Industrial Policy Resolutions of 1980 and 1985, which broadened the definition of small-scale sector by increasing the level of investment in plant and machinery to Rs 20 lakhs and Rs 35 lakhs respectively as a criterion for Small Scale Industry (S.S.I) units provided filling for the industry. All these factors encouraged many prospective investors including many educated unemployed youths to enter into the arena of rice milling industry and as a consequence the number of rice mills started to increase.

The growth of the rice mills in this period has been characterized by the two features: first, though the number of rice mills increased in the district, their growth did not commensurate with the rate of increase in the production of paddy. Whereas production of paddy increased by three times, the number of mills increased by less than two times. Second, there has been a change in the pattern of ownership of the rice mills in the district with its impacts on the form and structure of organization.

The following section describes the various factors responsible for the location of rice mills in Burdwan city and its surrounding areas.

4.3. Physical Geographical Factors

4.3.1. Availability of Land

Land is a prime requisite for any industrial establishment, whatever the process, technique or volume of the raw material or the product. Rice mills are no exception to this requirement. Apart from availability, the quality of land (flat, undulating, or steep slope) also influences the choice of location. The eastern part of Burdwan district is flat land, situated on the northern bank of Damodar favouring the location of rice mills. This flat land itself has encouraged the cultivation of paddy since time immemorial.
PLATE 3: FULLY DRYER BASED MILL (NO USE OF CHATAL)

PLATE 4: ROAD TRANSPORT PLAYS A SIGNIFICANT ROLE IN RICE MILLING INDUSTRY
The cost of the land has undergone a number of abrupt increases in Burdwan and adjoining areas. This riverine plain has been densely populated since ancient times but since the late 1970s, its population has grown by leaps and bounds leading to a great increase in land values.

Rice mills equipped with modern machinery but still using sun-drying chatals requires a minimum of 5 bighas of plain land or nearly 70,000 square feet for drying the paddy. In addition, there is the need of land for an office building, at least three spacious store rooms or warehouse one for rice-bran, one big machine-room and one boiler plant place, keeping place for a chimney. The area of sun-drying yard is determined generally according to the availability of other inputs like capital, manpower, machines and materials. One bigha (14,400 square feet) of sun-drying yard can dry 60 quintals or six metric tons of boiled paddy in summer, whereas the same land can dry only 36 to 40 quintals of boiled paddy in winter. Further, land is now required compulsorily (under the provision of the Factones Act of 1948) to construct living quarters of the employees and labourers. Finally, above these average requirements, the rice mills intend to acquire more adjacent land for their future expansion. Our study reveals that most of the rice mills in Burdwan have seven bighas or more of plain land. In some cases, however, rice mills may have between 5 to 25 bighas of land. Examples are Jessoria rice mill at Sadarghat road covering 15 bighas and Jagatberh rice mill occupying 25 bighas, whereas Bisalakshmi rice mill at Sadharghat is on only five bighas of land. The land requirement, therefore, is related to the size of operation as well as to the level of technology used in the processing. We shall come to the aspects of processing later on.

Constraints on land acquisition for rice milling include:

- Conversion of agricultural land to industrial in the government records in the periphery of Burdwan;
- The mutation (conversion of land's characteristics in government records) process of the Land and Land Revenue Department of the Government of West Bengal. The process is a rigid one, often requiring a lot of time delaying the entire process of setting up of a mill. The legal formalities in this connection are also cumbersome;
- Objection of local residents at the time of land acquisition for industrial uses. In the case of rice mills, this is because mainly of pollution from the chimneys, noise
and the smell of boiling paddy. In fact a new law now ensures that polluting industries such as rice mills are established away from residential localities;

- The high prices of land having road frontage, particularly near the city and Burdwan-North area, have also affected mill location;
- Multiple cropping of agricultural land due to the extension of irrigation facilities has led to the tremendous increase in the value of such land creating reluctance among farmers to the sale of such land.

These constraints on the site selection are an important attribute of the locational analysis of rice mills in Burdwan.

The high price and non-availability of land in densely populated old residential areas within Burdwan (such as in Alamganj area, once the urban-industrial focus of the city), have resulted in a tendency of rice mills to migrate from these populated areas of the old urban core to the sparsely populated peripheral regions like Nandra, Bajepratappur and Talit etc.

4.3.2. Raw material

The second most important factor for the localization of industry is raw material. Commonly the commodity, which is introduced as the main input of the industry for processing purposes and is converted into a new product, is the raw material. The basic function of an industry is to increase the value of raw material by processing and converting its form into finished products. This form utility creation through transformation of raw material adds value to a primary material and is the fundamental objective of any manufacturing. The quantum of profit from this activity is based on the nature, quality, cost and availability of that raw material at a desirable price (Smith, 1981).

For rice mills of Burdwan, the nature, quality and availability factors of paddy are important. However, these factors all combined together may not necessarily result in the growth of a rice mill. Further, these inputs do not always play the same role in the establishment of a rice mill in all the places. There are many rice mills in Burdwan, which do not enjoy the facilities of the presence of all these inputs simultaneously. This clearly establishes that the presence of one or two of the inputs have played pivotal roles in locating these mills. In some cases, for example, the availability of plenty of raw material has played a major role as illustrated
by the localization of rice mills at Galsi, Ausgram and Burdwan North areas. These locations also enjoy good transportation facilities and power. Similarly, an improved transportation system played a vital role for concentration of rice mills in our study region and Trans-Damodar area (Raina and Khandaghosh thanas). The rice mills situated within the Burdwan municipality area depend mainly upon the availability of power supply, local markets and an easy transport system. As stated above, there is no uniformity in respect of inputs exerting influence on the localization of rice mills. Their relative importance varies according the area where they have been localized.

The raw material of the rice milling industry is paddy, which is the main crop of West Bengal. Burdwan district, is now producing 1.53 crore metric tons (2001) of paddy per year. Most of this paddy is produced in the eastern parts of the district throughout the year. The peak period of paddy production is November and December, which is the harvesting season of aman paddy (khariff crop). April and May is the harvesting reason of boro paddy, and August and September is the harvesting reason of aus paddy. Naturally, the constant flow of paddy in the market throughout the year eliminates seasonal dependence, which was a special feature of this industry even up to the 1970s. Improvements in the field of paddy production in Burdwan district due to introduction of high yielding variety seeds and multiple cropping systems have played a vital role in Burdwan region and also in the district. Nearness to the raw material has reduced the cost of transportation has ensured a steady supply of raw materials.

Yet, local paddy supplies are supplemented by imports from nearby districts of West Bengal and neighbouring states. This is due to the ever-increasing demands of the growing number of rice mills, which have concentrated in and around Burdwan city.

Till 1985-'86, supply of paddy from other states such as Andhra Pradesh and Punjab was being obtained to meet the requirements of the rice mills of Burdwan. From 1990 this practice has been abandoned due to the increased cost of transportation, increase in purchase price of paddy in these states and some prohibitory and restrictive measures adopted by these states. It is evident, therefore, that availability of paddy as raw material is not a major problem for the rice milling industry in the region. Though there is no problem of the shortage of paddy supply there are however, other problems associated with it (see the chapter IX, on problems of rice milling industry).
4.3.3. Climate
The effect of climate on the growth of a particular industry cannot be ignored. It has direct influence on certain industries like flour-milling industry, cotton textile industry, chemical and oil refinery industry etc. and indirect influence in many others. The rice milling industry in the district of Burdwan too is influenced by the climate. A few years back, this industry was a seasonal one and during the rainy season the operation would remain suspended absolutely. At present though the industry has been capable of eliminating the seasonality in its operation by introducing newly innovated modern technology in this field. However, the climate of Burdwan region favours three seasons paddy cultivation helping in the constant supply of paddy in the rice mills. In spite of the introduction of modern machinery during the rainy season, the milling work is hampered to a great extent as the sun drying of paddy gets affected. As such, regular production of rice is disturbed due to the absence of proper sunshine. Not only that, the moisture content in both rice and bran also becomes higher as a result, and the quality of both rice and bran deteriorates. The procurement of raw paddy also gets affected due to the dislocation of transport in rural roads and floods in rivers. In winter season, due to foggy weather and low temperature, the sun-drying process gets affected and productivity becomes low. A steady supply of water is essential for steaming and boiling of paddy and also for drinking and domestic purposes of the labourers. For this reason, most rice mills have their own ponds, wells and tube wells adjacent to or within the complex of the mills. During summer, ponds get dry and water level goes down to such an extent that the tube wells also become dry. This problem is more acute in areas adjacent to agricultural fields where there is widespread use of deep and shallow tube wells for irrigation purposes.

4.3.4. Water Resources
Availability of plenty of water is a pre-requisite for the rice milling industry. In rice mills, a huge amount of water is required for filling the house where raw paddy is soaked. This water is lifted through mechanized pumps (submersibles 71 percent and shallow tube wells 29 percent). Water is also required for steaming of paddy and for smooth operation of the mill. Apart from the direct uses of water to the plant for drinking, drainage of industrial effluent, cooling of boiler etc., water is regarded as an ingredient of rice milling industry. In almost all the rice mills of Burdwan, drinking water is generally supplied by own tube wells or wells. The rice mills of Burdwan city use the Banka nullah for the drainage of industrial effluents. These problems are discussed in chapter IX.
4.3.5. Energy

Energy is an essential force in any industry whether it is big or small. Many industrial zones in the world have sprung up purely on the basis of availability of power. Three types of power or energy sources are generally used in the industry – coal, petroleum and electricity. Though coal and petroleum play significant roles in setting large-scale industries, they have hardly had any impact on the establishment of small scale and cottage industries of the district. Rice mills, being small scale ones, are also dependent on electricity as the source of energy. In the early days of rice milling, paddy husk and firewood were the main sources of energy. With the passage of time, widespread economic and technological developments in all spheres the entire complex of rice milling has changed. Rice milling industry has now adopted modern technological know how. Consequently, the old and obsolete operations changed their character and accepted electricity replacing the husk and firewood as sources of energy. Though husk is still used for ignition of the boiler plants, electricity is now the main energy source for driving machines and other purposes. The district of Burdwan is more or less rich in electricity availability and 68 towns (including 20 urban outgrowth) and little over 2,000 villages in the district have been electrified (State Electricity Board, Key Statistics of the District of Burdwan, 1987). Electricity is supplied from Damodar Valley Corporation, Durgapur Projects Limited and National Grid System.

Currently, the state of West Bengal is experiencing a serious shortage of power supply. This could not but affect the rice milling industry of the district. Almost all the rice mills covered by the present study expressed their grievances against the frequent disruption in the supply of electricity, which has led to rice production being severely hampered. Frequent power failures affect the production, as at the time of load shedding, a large section of labourers become idle and production remains suspended. The quality of rice and bran also becomes degraded as both quality and output ratio of rice and bran depend greatly upon the moisture content of the boiled paddy. If the load shedding continues for over 6 hours the boiled paddy is heaped, waiting further drying, the output diminishes to some extent. According to majority of rice mill owners, the period between 15th February and 15th May is the best for the rice mills in all respects. During this period, the moisture content of procured paddy is comparatively low. The boiled paddy is dried quickly and the quality of both rice and bran improves. Unfortunately, during this period the power crises become acute due to the high summer temperatures. As a result, the milling operations may be suspended for up to 2 days.
at a stretch. To alleviate this problem, the mill owners drew the attention of the authorities both civil and electrical to this problem either individually or through their association. There was, however, no result to their appeal. The prevailing situation compelled many rice mill owners to adopt alternative measures such as investments in high-powered diesel-driven generator sets. This has proved to be costly one for a number of reasons – first of all, a good amount of capital is blocked, and secondly, the recurring and maintenance costs of the generator have been found to be three times more than the cost of electricity. The situation is aggravated further due to the present political situation in the oil producing countries of the Middle East and consequent supply shortage in India in respect of oil.

4.4. Socio-Economic Factors

4.4.1. Capital

The capital or investment is the basic requirement for the establishment of a manufacturing unit. The amount of financial investment discerns the magnitude or scale of the unit (Roy and Mukherjee, 1995). The financial resources mobilized by a firm, remain committed to 2 types of assets – the fixed assets representing the fixed capital and the current assets representing the working capital. Another type of asset is known as investment, a surplus fund of a firm, which cannot profitably use either for the acquisition of fixed assets or current assets. Instead of being kept idle, this amount is invested in the stock and share of other companies (Samanta, 1994).

The amount of capital that would be needed to be invested in the fixed assets depends upon a number of factors. One such factor is the nature of the industry itself – whether the industry has to produce costly products like automobiles, vehicles or it is marketing concern not a manufacturing one. In the first case, huge amount of money investment is necessary but in the second case, there will hardly need any investment in fixed assets. A second important factor influencing investment in the fixed assets is the size of the firm. A large-scale unit whether manufacturing or service enterprise, for obvious reasons requires huge investment in fixed assets. A third factor is the technological process used in the production. If the technology used in production is highly sophisticated, investment in fixed assets tends to be high. Similarly, if the industry has future growth prospects, the individual firms in the industry are started on a large scale to get the benefit of scale of production, experience shows that firms engaged in marketing activities only requires lesser amount of investment in fixed assets.
The analysis further reveals that the financial requirements for fixed or block capital in the rice mills are mainly for meeting the need/requirements of (a) the acquisition of land; (b) construction of buildings; (c) purchase and installation of plant and machinery; (d) furniture and fixture; (e) purchase of vehicle; and (f) for proper replacement of plant and machinery and vehicles which were worn out by depreciation and obsolescence etc.

The 18 rice mills, which have been taken as a sample in the present study, have had many changes and the transformation of ownership. This might be due to the fact that the actual transfer of ownership of many rice mills through sale occurs under severe economic distress. In case of transfer of ownership through succession, there is no question of making any payment.

The analysis of the data in the financial statements of the rice mills further reveals that the most important item among the fixed assets is plant and machinery. Lower percentage of investment for plant and machinery is found in cases of relatively newly established rice mills. For examples, Bardhamaneshwar rice mill was started in 1986. In this mill, investment in plant and machinery had been 23.5 per cent of the total investment in fixed assets. Another example is Durgamata rice mill, Rathtala started in 1986. In this rice mill, the share of plant and machinery in the total fixed assets had been 35.45 per cent. Jessoria rice mill at Sadharghat started in 1937 is another example. In this mill, 71.67 per cent of the total investment in fixed assets had been in favour of plant and machinery.

Another important item of fixed assets in the rice milling industry after plant and machinery is the land and buildings. The industry's average investment in the land and buildings had been near about 30 per cent of the total fixed assets with the minimum of 0.2 per cent (Sridhar rice mill, Saraitikar) and a maximum of about 59 per cent (Sri Shyam rice mill, Alamganj). The sample survey reveals some interesting aspects regarding the share of land and buildings. One such revelation is that when the building has been valued at cost of less depreciation, the value of land in most cases remains undervalued. Secondly, none of the surveyed rice mills did go for the revaluation of their land and building despite manifold increase in the prices of the same. Thirdly, in the case of some of the old rice mills, the value of building has come down to zero as a sequel of charging normal depreciation. But, despite the fact that the buildings is in good condition and the normal operation process of the rice
mills is carried on in the same building, there has been no revaluation of building for accounting purposes. In this situation, the capital employed in these rice mills remains unadjusted with its impact on Return on Investment (ROI). If the owners of these rice mills would revalue their land and buildings at their current market prices, not only there would have been correct measurement of capital employed but also a correct estimation of ROI as an index of efficiency of their performances. But because of the tax hazards, the rice mills did not go for it. Examples on the point are Jagatberh rice mill at Berhampore started in 1929-30 and this mill is on 22 bighas of land with buildings situated on it.

The position of newly established rice mills is quite different. The Durgamata rice mill at Rathtala having 6 bighas of land and Bardhamaneshwar rice mill at Alamganj having about 7 bighas of land, both established in 1986, reported about 51 per cent and about 59 per cent respectively of their total fixed asset investment under the head 'land and building'. Further, the higher percentage share of land and building in the total fixed assets of the newly formed rice mills has been due to increase in the costs of both land and building under the inflationary spiral in India since 1970-71.

Another common fixed assets in the rice mill is furniture and fixture. In fact, all the rice mills have certain furniture and fixture. However, in the financial reports of rice mills, some mills include them under fixed assets, others do not. The firm in the samples which did not report any amount in respect of furniture and fixture as fixed asset item are Kshetranath rice mill, Sri Shyam rice mill, Bhubaneswar rice mill etc.

It is true that the rice mill in the Burdwan city as well as the district in most of the cases have no sophisticated offices requiring the use of sophisticated furniture and fixture in arranging their office layout. However, total omission of the same in the list of fixed assets impairs correct assessment of the fixed capital used in the operation of the rice mills.

The next important fixed asset in the industry is the vehicle. All rice mills use motor vehicles as their means of transport both for the acquisition of raw materials, that is raw paddy and marketing of finished products that is rice. But the survey result reveals that all the rice mills in the city do not have motor vehicles of their own. For instance out of the 18 sample firms selected for the present study only 7 of them have motor vehicles of their own and these are Bardhamaneswar rice mill, Shanti rice mill, Laxmishree rice mill, Bharatlaxmi rice mill at
Alamganj, Jessoria rice mill at Sankharipukur, Annapurna rice mill at Nababhat and Durgamath rice mill at Rathtala. Taking the industry as a whole, out of the total investment in fixed assets, the share of the motor vehicles as an item of fixed asset had been only about 4 per cent.

The other fixed asset item of the rice mill in some cases is the investment in certain securities such as National Savings Certificate, fixed deposits with banks etc. But it is very uncommon feature.

4.4.2. Labour

Like other industries the availability of labour is an essential pre-requisite for the location of rice mills. Our present study reveals/discloses that despite technological improvement, that is, improvement of the machinery of the mills, the industry continues to be labour intensive.

The rice milling industry requires a good number of labour for its various activities such as for loading and unloading of paddy and rice, for boiling of paddy at boiler plant, for drying of boiled paddy at sun-drying yard and machine shramik and coolies. Our investigation reveals an important feature that besides a few, most of the labourers required for a rice mill are unskilled and semi skilled. Only machine shramik, boilerman, yard-conductor locally called Math Babu or Math Sarkar and accountant are skilled or conversant/well-acquainted with the procedure. The other labourers engaged in sun-drying yard or for loading and unloading of paddy and rice and go-down labourers used for clearance and replacement of husk and bran are mostly unskilled or semi-skilled.

Sources of unskilled labourers are mostly surplus landless agricultural labourers of the rural-urban fringe of Burdwan city and to some extent maximum number of immigrants from Dumka district of Jharkhand, Ganjam district of Orissa, and Purulia of West Bengal. Labourers also came from other districts of West Bengal, like North and South 24 Parganas, Midnapore, Bankura, Birbhum. From within the home district labourers also came from Katwa, Borsul, Guskara, Gotan etc. who are also landless people. In some cases, though some of them are landowners, but their individual share of land is so small and the productivity of land is so low that they cannot earn their livelihood from that particular land. So those people were compelled to leave their own homeland. There is more discussion on the original home of workers in chapter VI.
After questioning the rice mill owner, it is known that there is no problem of getting unskilled labourers for the operation of the mill. As there is less job opportunities in rural urban fringe area for unskilled labourer, these rice mills are the only absorbers of these labourers. But in getting skilled machine-man repairing and maintenance staff often they face some problems. Maximum number of labourers engaged in the rice mills varies between 30 and 80 depending on the size that is the capacity and the type of mechanization of the rice mills. Further, when the numbers of permanent labourers are a few namely 2 to 10 per mill, the number of mostly casual labourers are quite large varying between 18 to 70. The reasons for the dominance of casual labourers are non-technical nature of this task, benefits of daily wage payment system or no work no pay system, easy replacement and predominance of women labourers who are mostly needed at sun-drying yard who after maintaining their household duties engage themselves in working for the rice mills to supplement their family income. Gradually, however, the benefits of employing casual labourers are fading out, as the casual labourers are to be given the same facilities to which a permanent worker is generally entitled. Progressive mechanization has given a new meaning to the labour factor. At present skill and experience are more important than number of labourers and a low wage scale.

4.4.3. Transport

Other conditions remaining equal, transport cost makes a huge difference in locational advantage creation. Transportation system of a region may be compared with the arteries of the bodies of an organism, as both systems help in the circulation of essential inputs and outputs. The hauling of bulky and weight-losing raw material from the source to plant and finished goods from plant to consumers involve huge amounts of charge. Rice milling industry, though principally a raw material based industry, depends largely upon an efficient transportation system as both paddies as raw material and rice as finished product are bulky in nature. In fact, transportation had played the crucial role at the early stages of the rice milling industry when the rice mills of Bengal were concentrated in Tollygunj-Chetla and Pandua-Mogra area of Greater Calcutta region. Both railways and roadways and the facility of Calcutta port and the Hooghly river played vital role for their concentration. Though rice milling has now become virtually a raw material based industry, it was initially based on transportation facilities, and the availability of urban amenities like power and market.

Burdwan region offers excellent transport facilities. The city as well as the district of Burdwan is well-connected with other parts of the state and country through Eastern Railway.
and the historic Grant Trunk Road passes through the heart of the district and runs from entry at Debipur under Memari Police Station to Saktigarh, Burdwan city, Galsi, Panagarh, Durgapur, Raniganj and Asansol (Figure 4.2). The total length of the railways tract in the district would be only approximately 612 kilometres including metre gaugelines.

The total metalled road and un-metalled road in the district was about 3,060 and 1,940 kilometres respectively in the year 1997-'98 (District Statistical Handbook, Burdwan, 1998). The total metalled road within the jurisdiction of Burdwan Municipality is 177 kilometres, which is of reasonable quality. The length of total un-metalled road in the city is 45 kilometres (according to a 2001 data given by the Municipality).

The interesting feature, however, is that railways played an important role in providing transport requirement of the industry up to 1985-'86, the time up to which the rice mill owners use to bring some paddy from Andhra Pradesh and Punjab. The practice has been abandoned since then and consequently the railway transport has lost much of its importance. Since 1985-'86, the roadway transportation has been playing the absolute role in the city as well as the district in transporting both paddy and rice to and from the rice mills. Motor trucks are mostly used for such purposes.

The other means of transport used for this purpose are bullock carts especially in the remote villages owned by local farmers and paddy producers. These bullock carts are used for convey paddy to the agents at the procurement points. However, the use of this very old/traditional vehicle is gradually declining because of their limited capacity and slowness on the one hand and development of roads on the other

The tractors are now being used widely in the rural areas for the purpose, as the tractor can ply through unmetalled and rough road and can carry a substantial quantity of paddy at a time at a cheaper rate.

Figure 4.2
Out of 18 surveyed rice mills selected as sample for the purpose of present study, owner of 7 mills stated that they have their own vehicles, and the rest/remaining had been using hired trucks. An interesting revelation in respect of transport arrangement of the rice mills is that the trucks that these mills hired and engaged for the transportation of paddy as raw material and rice as finished products had actually been under their ownership but purchased and registered with the transport authority not in their own names but in the names of their relatives. This had the distinct advantage of siphoning off a part of profit of the rice mills as the transportation expenses with the advantages of admissibility as an expense for the purpose of taxation of business income. The mills particularly which are in rural areas confront transportation problems mainly in rainy season. Because during this season, unmetalled roads become muddy and virtually unusable not only by the trucks and tractors and even by bullock carts.

4.4.4. Demand and Supply

Demand of a particular commodity determines the very existence or survival of the industry. Demand is, in reality, the reflection of market condition. Initially the demand of rice in the eastern part as well as in the district and the state and supply of enormous quantity of paddy in adjoining /surrounding region of Burdwan lead to the mushrooming of rice mills at the Burdwan city and its surroundings.

Demand of rice determines the price and the increasing price due to high demand brings higher rate of profit initially.

Demand of rice on the other hand, determines the magnitude of production. As production increased, at the surveyed area, so the mills also expand. New mills also venture to establish another mill.

4.4.5. Market

The general importance of access to the market as a factor affecting industrial location has been recognized for a long time. Market reflects consumer's behaviour which entrepreneur monitors carefully to plan production and investment in business concerns. A change in the market demand may be the result of change in either one or a change in the combination of factors.
There is a ready market for rice in the state and in eastern India, and this home demand is sufficient enough to absorb the entire produce of the industry. In this respect, rice-milling industry is fortunate enough as it does not require any special effort to create market demand through advertisements or other means. A large, concentrated and relatively affluent body of consumers found in Burdwan city and its surroundings. This large market is one of the reasons for the relatively rapid growth of mills in and around the Burdwan urban area. This aspect has been discussed in detail in chapter VI.

4.4.6. Government Control

Government control is at the same time an important factor of location and a problem. It is a factor, because of some regulatory and restrictive provisions of the Government of West Bengal, which curb the liberty of the rice mill owners to sell their produce at their own discretion thus imposing a locational constraint indirectly. For example, the rice mill owners were not allowed to sell their levy free rice to Greater Calcutta, Asansol and Durgapur which were under Statutory Rationing Areas. This means that the biggest urban markets cannot be exploited by the rice millers. Thus, government control has caused more problems for the industry.

Further under the provision of Sec. 3 of the Essential Commodities Act., 1955 and under section 3 of the West Bengal Rice Mills (control and levy) order, 1988, dated 9.11.1988, the rice mill owners are compulsorily to pay a levy to government. The amount of this levy is now 50 per cent of their total production of rice and the rate is far below the actual cost of production.

The procurement price on levy rice to be paid by the government of West Bengal was Rs. 251.60 for common rice per quintal. But the rice mill owners had to purchase the paddy from open market at much higher rates than those prescribed by the Government of West Bengal, such as Rs. 160 for common paddy per quintal. Realizing this difficulty faced by rice millers, the procurement price on levy rice to be paid by the government has now been raised to Rs. 827 for common rice per quintal, and at the same time the government has fixed a rate for purchasing the raw paddy from farmers' cooperative for rice mill owner is Rs. 530 per quintal.
After paying the levy, the rest half of their production can be sold in the open market. Even in this respect there is an indirect restriction from the government. The levy-free rice can now be sold anywhere in West Bengal excepting in the Statutory Rationing Areas with a prior permission of the District Controller of Food and Supplies. The market prices of rice are generally at a much higher rate than the procurement prices fixed by the government. Thus the rice mills of the Burdwan are unable to fully exploit the existing markets in the Calcutta metropolis and other industrial towns and cities.

As the situation has begun to change during the last few years of economic liberalization in Government of India’s policy, it will be interesting to see how much effective control actually remains on the industry in the not so distant future. With imported rice beginning to flood the markets of every nook and corner of India, what role the government plays is yet to be fully appreciated.

4.4.7. Exemption of License

In a federal state, like India, each state government has its own tax policy. This creation of a revenue base through industrial establishments played an important role in the five-year plan in India. The ‘license raj’ enshrined this way actually posed more difficulties for industrial entrepreneurs than empowering them. As present, licensing has been exempted to attract industrialists for fresh investment in rice milling. This opportunity attracts entrepreneurs to settle in the Burdwan city and now especially in the rural-urban fringe like Nandra, Kalna gate, Saktigarh and Talit railway station where there is sufficient space for the establishment of new rice mills in uncongested localities where space and pollution problem does not impose severe locational constraints.

4.4.8. Management

The spectacular development and specialization of particular products in a single area naturally develops a traditional skill and managerial ability among the local people (Roy and Mukherjee, 1995). In our case of study, it has been observed that traditionally the rice milling industry had been well managed by an indigenous cast of the district. The caste bound managerial skills of Ugrakhatriyas has been nearly wiped out and now the mills are owned and operated by locals as well as, persons from other districts and states. However, the industry is yet to employ professional managers with business degrees (except in the large solvent plants which are capital intensive).
4.4.9. Factors of Agglomeration

The high degree of industrial development of a region as its necessary corollary exerts certain amount of influence on the setting up of other industries (Roy and Mukherjee, 1995). The agglomeration of rice mills in the older parts of Burdwan city especially in Alamganj, gives certain advantages to the establishment of new mills as well as other units like rice mill machinery manufacturing units, chemical supplier units etc. Among these advantages are latest information, contemporary technology, sound administrative set up, easy access with sister organizations and day to day direct contact with consumers are very important.

Though industrial location in the private sector is ultimately determined by the entrepreneur, it is always influenced by the trends of the contemporary locational pattern. The prime objective of ‘profit maximization’ may not always influence the location decision entirely.

The industries, either private or government owned, always show the tendency to grow in the region where sustained development is possible. This is a prime requisite for the ultimate existence of any kind of industrial establishment.

4.4.10. Trade Unions

The Centre for Indian Trade Unions (CITU) has had a leading role in removing exploitation of rice mill workers. The strong union presence helps to maintain good relation between rice mill owners and workers, and to preserve a reasonably safe and healthy environment within the mills. This factor is very important for the long run existence and smooth operation of a rice mill, and the mill owners too have come to accept that fact.

4.4.11. Improved Technology

Technology of the rice milling industry is dynamic. Improved techniques of beneficiation have definite effects on location (Chaudhuri, 1975). The introduction of sheller-cum-polisher-cum-separator system in the rice mill, has been helped in generating interest to establish new rice mills as this modern machinery increase the production manifold with minimum number of workers and minimum time.

4.4.12. Size of Plant

The size of the plant must also be regarded as an important factor to attain efficiency in production. Size of plants has witnessed tremendous changes in most areas of production.
Increase in size of rice mills has led to much greater efficiency in assembling materials and production; the amount of raw paddy required to produce rice has been reduced greatly. Increase in size through establishment of solvent plant also promotes greater efficiency in distribution to markets and in general management of business.

But, 'the fact remains that the optimum size is very large and this limits the number of significant locations' (Estall and Buchanan, 1961, reprint on third revised edition 1977). The aim of scientific location is to maximize efficiency by minimum cost. Integration of processes, and other units like solvent plant, may help to attain maximum efficiency. Integration of processes in a modern rice mill demands production on a very large scale, in order that each separate unit of production is kept operating economically.

4.5. Summary

In this chapter we have discussed various physical geographical factors like availability of land and raw material, climate, water resources, and energy etc. and socio-economic factors like capital, labour, transport facility, demand and supply, market, government control, exemption of license, management, agglomeration, trade unions, improved technology, and size of plant, for the large-scale localization of rice mills in and around Burdwan city as well as within the district. The problem of regional location of rice milling industry is not basically different from that in other industries, because the desired site is one at which costs of production plus marketing costs will be at a minimum.

In Burdwan, the physical factors have certainly been highly favourable for the growth of agro-processing industry. The first and foremost requirement for establishing a rice mill is the flat open space, which was available in plenty in Burdwan region during the early days of rice milling industry, enhancing rapid industrialization. The huge supply of raw paddy from the home district as well as from other districts of West Bengal and neighbouring states meets the demand of this industry. Without constant flow/supply of paddy this very industry could not be survived smoothly. The climate of this region is favourable year round except the three monsoon months. The summer temperature helps in rapid drying of wet boiled paddy, thus reducing the partial energy cost for running the mill. Traditional suspensions of milling operation during rainy season have now been overcome with the use of mechanical dryer. The supply of plenty of water has also been helped for thriving of this industry. The
availability of electricity (though insufficient) and constant supply of husk for running the boiler favoured the mushrooming of rice mills in Burdwan region. The non-bengalies and local huge land owners (once zamindars) invest huge capital for the establishment of rice mills. The constant supply of unskilled and semi skilled labourer from the nearby villages as well as contract labourer from mainly Purulia and other states like Bihar, Jharkhand, and Orissa etc. help in continuing the milling operation in this region. The excellent road and railway transport facilities favours in rapid hauling of raw paddy as well as finished rice. Most of all the demand for finished rice of this region from the home land as well as abroad helps in further establishment of rice mills and also helps in growing interest of the miller to invest more for increasing the production capacity of the existing rice mills. The government regulates the rice milling industry time to time, sometimes inspiring the entry of fresher (through exemption of license) and also sometimes create problem (by imposing 50 per cent of total produced rice as levy at considerably lower price than open market). The agglomeration of rice mills in the Burdwan region attracts the entry of newer ones. The managerial skill of indigenous rice millers and their adoption of improved technology and the large size of existing rice mills attracts new investors. Lastly, the trade union (CITU) have played important role in maintaining good relation between rice mill owners and workers and also preserving the healthy and safe environment within the mills.

It must be admitted that raw paddy, demand, market, economic utilization of by-products, availability of open space without locality have been the 5 major regional factors which determine the geographical pattern of rice production. Among the 5 factors, the influence of market is very vital. This is because at present, the rice milling industry of Burdwan has begun to face from stiff competition with the good quality cheap rice coming from abroad. This situation hampers the demand of local medium-quality high-cost rice due to the fluctuating raw paddy market. Many other circumstances, however, have influenced the actual choice of location or have caused the nature of the optimum location to change over the years.

It is indeed difficult to find the ideal location and if it exists at any point of time, it would not remain the ‘ideal’ for long, given the continuous technical advance (Chaudhuri, 1975). The best location of rice mills is a matter of compromise and depends on the particular conditions at the time and place concerned, physical, technical, economic, social and political. In Burdwan, a wonderful combination of physical and socio-economic factors has interacted to
give rise to the agro-processing industry, especially rice milling. How this industry will fare in view of changing economic situation of India, especially the various economic reforms that are opening up the Indian economy to foreign competition, is a matter of concern. We have discussed the current problems in chapter IX.

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1 Calcutta and its industrial fringes were brought under Statutory Rationing on the 5th January, 1965 and Statutory Rationing was introduced in the Asansol group of towns and Siliguri on 22.2.66 (vide A.K. Sen, Op cit., pp. 834-35)