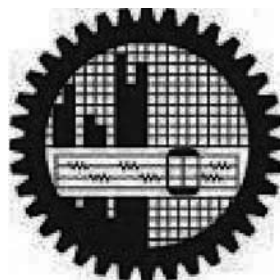


**FACTORS INFLUENCING THE LOCATION AND DISTRIBUTION OF SMALL-
SCALE INFORMAL INDUSTRIES IN DHAKA CITY**

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BANGLADESH**

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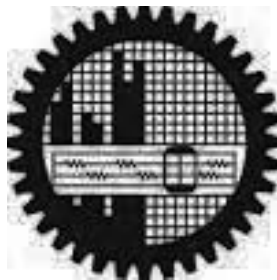
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SCALE INFORMAL INDUSTRIES IN DHAKA CITY**

Submitted to the Department of Urban and Regional Planning, Bangladesh University of
Engineering and Technology in partial fulfillment of the requirement of the degree of

MASTER OF URBAN AND REGIONAL PLANNING

By

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The thesis title **‘FACTORS INFLUENCING THE LOCATION AND DISTRIBUTION OF SMALL-SCALE INFORMAL INDUSTRIES IN DHAKA CITY’** submitted by **Muhammad Arif Robbani**, Student No. 100615030F, Session: October 2006 has been accepted as satisfactory in partial fulfillment of the requirements for the degree of **Master of Urban and Regional Planning (MURP)** by coursework and thesis on 21 December 2011.

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It is hereby declared that this research or any part/s of it has not been submitted elsewhere for award of any degree or diploma.

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Session: October 2006

Dedicated to

My parents who inspired me always to accomplish this research work

ABSTRACT

Small-scale informal industry is the most significant component of all type of industries in both urban and rural areas of Bangladesh because it contributes significantly in the national economy of the country. In Dhaka city, these industries are mainly involved in the production of different items which are used for official and domestic purposes. The study has identified 08 (eight) categories of small-scale industries namely weaving workshop (banaroshi/zamdani), karchupi workshop, shoe factory, tailoring, wooden industry, automobile engineering/repairing workshop, welding workshop, engineering/lathe machine workshop. These industries are located at the study area of Dhaka city like Sutrapur, Shyampur, Lalbagh and Pallabi Thana. These 08 (eight) categories of small industries have the most concentration at those 04 (four) Thanas of Dhaka due to some factors and reasons.

The specific objectives of this research are- to study the distribution and characteristics of small-scale industries; to identify the factors influencing the location and distribution of small-scale industries and to provide some policies and recommendations for the development of small-scale industrial sector of Dhaka. In this research process, 4 (four) Thanas are randomly selected as study area from the total 21 (twenty one) Thanas of Dhaka city. Here, 08 (eight) categories of small industries (total 775) are also identified randomly which covered above 5 per cent of 1,769 different categories of small industries located in Dhaka. These 08 (eight) categories of small industries are located at these 04 (four) Thanas. In both cases, the simple random sampling technique is used with 95 per cent confidence level. However, the simple random sampling technique is used for selecting the 170 respondents to conduct the structured questionnaire survey who are 22 percent of the total 775 eight categories of small industries and 17 (seventeen) another respondents who are 10 per cent of 170 respondents for AHP analysis.

In Dhaka, most of the small industries were established at the end of the year 2000 and few industries were established before liberation war, 1971. Around half (49.4 per cent) of these industries are established on government owned land or space. The important aspect is that most of the small industries are located at Thanas of south part in Dhaka city. But the major concentration is found at 04 (four) Thanas like Sutrapur, Shyampur, Lalbagh and Pallabi among the 21 (twenty one) Thanas of Dhaka. Again, the highest concentration is found at the Pallabi Thana. In the study area, 59.4 per cent industries are occupying semi-pucca structures and 66.5 per cent industries have plot size of below 1 katha and only 3.5 per cent have above 02 (two) katha of plot size. One of the important characteristics is that except 1.8 per cent, all industries operate 06 to 12 months of the year. The small industry owners are not well educated. Nevertheless, the workers have no technical education or in some cases, they have no working knowledge of daily production process from any institution. Another aspect is that, the surrounding environment of 21.2 per cent industries is polluted by emissions produced by these industries.

The 08 (eight) factors which influence small industries to locate and distribute at these four Thanas of Dhaka are identified based on the opinion of industry owners. These factors are- availability of skilled workers in the area; low cost of workers in the area; industry located near to the raw material/s; low transport cost to supply the finished products; low house rent or land cost in the area; easy access to roads to go market; linked to other similar industry in the area; tax free government land. A priority ranking among these 8 (eight) factors was made following the Analytical Hierarchy Process (AHP) analysis in ascending order based on the industry owners' preference of choice to these factors. According to this AHP analysis, the rank 01 factor is 'availability of skilled workers in the area' which is more preferable than the other seven factors by the industry owners. However, the identified 06 (six) reasons for locating these industries at these 04 (four) Thanas are- owner/s practice this work from heritage; raw materials are close to industry; market is close to the industry; availability of skilled worker; availability of transport to carry the raw material and finished product; wholesalers buy from this place. In this research, it has also identified some problems and constraints regarding operation of the industries. These are - mismanagement of production process; less technical knowhow of laborers; insufficient supply of raw materials; low infrastructural facility; less market accessibility; availability of unskilled laborers etc. Finally, a set of recommendations were drawn for further development of this sector.

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LIST OF ACRONYMS

ADB	Asian Development Bank
AHP	Analytical Hierarchy Process
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BEIOA	Bangladesh Engineering Industry Owners Association
BIDS	Bangladesh Institute of Development Studies
BITAC	Bangladesh Institute of Technical Assistance Centre
BRTC	Bangladesh Road Transport Corporation
BSCIC	Bangladesh Small and Cottage Industries Corporation
BUET	Bangladesh University of Engineering and Technology
CIDA	Canadian International Development Agency
CNG	Compressed Natural Gas
DAP	Detailed Area Plan
DCC	Dhaka City Corporation
DFID	Department for International Development
DMDP	Dhaka Metropolitan Development Plan
EPSCIC	East Pakistan Small and Cottage Industries Corporation
FDI	Foreign Direct Investment
GDP	Gross Development Product
GMP	Gross Municipal Product
GNP	Gross National Product
GoB	Government of Bangladesh
IAT	Institute of Appropriate Technology
ICT	Information and Communication Technology
IFC	International Finance Corporation
ILO	International Labour Organization
MTBF	Medium Term Budgetary Framework
SCI	Small and Cottage Industries
SCITI	Small and Cottage Industries Training Institute
SEDF	SothAsia Enterprise Development Facility
SFC	Skill Flourishing Centers
SME	Small and Medium Enterprise
SMDF	Small and Medium Development Foundation
SPSS	Statistical Package for Social Science

SSI	Small-scale Industries
SSII	Small-scale Informal Industries
UIU	United International University
UK	United Kingdom
UNDP	United Nation Development Programme
URP	Urban and Regional Planning
USAID	United States Agency for International Development
USD	United States Dollar
WASA	Water Supply and Sewerage Authority
i.e.	That is
e.g.	For Example
\$	Dollar

CHAPTER ONE: INTRODUCTION

1.1. Background

Small-scale informal industry refers to independent business owned and operated by single or more than one individual for income generation, as well as micro enterprises at different points with 2 (two) to 20 (twenty) workers [17]. In some cases, a number of these industries have no registration from the municipal corporation and do not follow the urban planning regulations. According to International Labor Organization (ILO) Bangladesh, it was found that these small-scale informal industries/workshops are mainly involved in the production of automobile repairing and servicing tools, textile and weaving products, various machine tools, different plastic-rubber items, plasto-metal equipments, different leather items, battery and tin equipments, aluminum and steel items for office and domestic purposes, carpenter and wooden furniture etc. in Dhaka city. In order to manufacture the products these industries use very common production methods like cutting, breaking, cleaning, molding, screening and recycling. In Dhaka, these industries are seen mainly by the road side and having a house of one or two rooms in confined place of unhealthy environment [19]. These industries use small number of machineries, few amounts of raw materials and local technologies for their daily production purposes in Dhaka. Up to December 2008, 1,787 small-scale industries have been found in Bangladesh and total number of workers under these industries are 2,51,320 [6]. Usually, in Bangladesh, every small-scale industry recruits a small number of workers and most of the workers are below eighteen years of ages [4].

There may be differences in the nature of activity of the informal sector in both developed and developing countries, yet, it is evident that this sector is contributing economically anywhere in the world, irrespective of a country's economic system. To some extent, employment in the informal sector is more of a necessity than a choice, as the demand for labor in the formal sector is low and people seem to move into this sector due to push, rather than pull factors. From the last decade, employment opportunities in rural areas became limited in Bangladesh. That is why; poor people are migrated from rural to urban areas for employment. In this respect, these small informal industries play an important role to create the employment opportunities in urban areas and Dhaka city as well. In Bangladesh, over 80 per cent of the labor forces are found in informal sector and in Dhaka Metropolitan area over 60 per cent of all employments is in the informal sector [9]. As a result, this sector plays a significant role in national economy and Gross Development Product (GDP) of the country and contribution of this sector is increasing day by day. The contribution of this sector in GDP is 6.59 per cent for the year 2009, whereas in 2008 it was 5.16 per cent [13].

Nowadays, small-scale industries are playing a significant role in many developing countries. In India, various factors are influencing the growth of small-scale industries. The important factors are mainly the technology, quality of service, scope of export of products, availability of raw materials, marketing opportunity, infrastructure support from government etc. [21]. The major factors influencing the location and distribution of small-scale industries of Dhaka city are namely rapid population growth, supply of raw materials, easy access to market and plenty of market value of products, availability of

labour force, infrastructure facility, less transport cost for carrying out raw materials and finished products etc. [19]. At present, different categories of small-scale informal industries had been set up due to various locational advantages of the respective areas in Dhaka city.

It was found that until early 1960s, many economists attributed the relatively small size of many industries in less developed countries to the scarcity of capital and administrative experience [16]. In Dhaka, it has lots of problems and constraints in relation to operational planning, locational development and distribution pattern of small-scale industries. These problems are playing a vast role in underdevelopment of small-scale industries. The most significant problems are namely mismanagement of production process, less technical knowhow of laborers, insufficient supply of raw materials, low infrastructural facilities, less market access, unskilled laborers, most concentration of small industries in specific areas and so on [2]. Besides, surrounding land use quality and utility services like water supply, sanitation, electricity gas etc. are not in good condition. As a result, the production cost increases and the ultimate wage rate of labourers become low in this sector in Dhaka. In addition to these, the environment of surrounding areas of these small industries is not suitable for regular productions and deliver to outside as well.

In Dhaka, small-scale industries are distributed at different Thanas due to different factors and reasons. But in some specific areas of Dhaka, these industries have most concentration. In this study, eight categories of small-scale industries were selected in four Thanas. These eight categories of small industries have the most concentration in these four Thanas because some factors and reasons are responsible for distributing and locating these industries at those locations. Information of small industries, distribution and location factors, environment, linkages, problems etc. were being found based on the primary and secondary information with some specific recommendations in this study.

1.2. Objectives

Specific objectives of the study have been stated below:

- To study the distribution and characteristics of small-scale informal industries in Dhaka city
- To identify the factors influencing the location and distribution of small-scale informal industries in Dhaka city
- To provide some policies and recommendations in support of development of small-scale industries in Dhaka city

1.3. Methodology

In order to achieve the objectives of the study, the methodology has been developed following the steps stated below-

1.3.1. Literature Review

At first, a number of books, research and survey reports, national and international articles and journals were studied to acquire the preliminary knowledge on small-scale informal industries located in the metropolitan cities including their characteristics and categories. Moreover, it has been studied the locations and distributions of small industries, lots of factors which influence their location and distribution in the city area, policies and logics of small industry owners behind the establishment and operations of these small industries in metropolitan cities in country like Bangladesh etc. for additional enhancement of knowledge. These works have been mainly done for preliminary concept development for industrial theories, factors which affect these small industries to locate and distribute at different locations within the city area.

1.3.2. Selection of Small-scale Industries and Study Area

The Urban Informal Economy (UIE) program of International Labor Organization (ILO) Bangladesh, 2001 has stated different categories of small-scale informal industries and their numbers/frequencies of Dhaka city. The total number of small industries identified by them is 1,769. In this report, it also demonstrated the most concentrated Thanas/areas of these small industries in Dhaka. According to this report, eight categories of small industries were identified which were covered above 5 per cent of the total 1,769 different categories of small industries of Dhaka. These eight categories of small industries are weaving workshop (banaroshi/zamdani), karchupi workshop, shoe factory, tailoring workshop, wooden industry, auto-mobile engineering/repairing workshop, welding workshop, engineering/lathe machine workshop.

However, 4 (four) Thanas were selected as study area in Dhaka City which are Pallabi, Lalbagh Shyampur and Sutrapur. These eight categories of small industries have the highest concentration in these four Thanas.

1.3.3. Sampling Technique and Sample Size Selection

1.3.3.1. Sampling Technique

In this study, the simple random sampling technique is used to select the respondents for data collection and Analytical Hierarchy Process (AHP) method is used for data analysis. Here, it is considered the 95% confidence level for the selection of sample size using this simple random sampling technique.

1.3.3.2. Sample Size

The sample size from the total number of respondents stated in ILO Bangladesh UIE-program was found with the following calculation -

Table 1.1. Sample size of respondents from each selected Thana and their total numbers

Sl. #	Thana	Category of Small-scale Industries	Frequency (according to ILO Bangladesh, 2001)	% of Total	Sample size for the study (frequency)
a)	Pallabi	Weaving workshop (banaroshi/zamdani)	120	15	26
		Karchupi workshop	263	34	57
b)	Lalbagh	Shoe factory	78	10	17
		Tailoring	40	5	9
c)	Shyampur	Wooden industry	68	9	15
d)	Sutrapur	Auto-mobile engineering/repairing workshop	76	10	17
		Welding workshop	31	4	7
		Engineering/lathe machine workshop	99	13	22
Total			775	100	170

Source: Calculated by author on December 2010 based on the information of UIE-program, ILO Bangladesh (2001)

In Urban Informal Economy (UIE) program report of ILO Bangladesh, 1769 small industries of different kinds were stated. From those these eight categories of small industries were identified which were covered above 5 per cent of the total 1,769 and these eight categories of small industries comprise 775 numbers.

In this way, 170 respondents (industry owners and managers) were selected from 775 numbers of eight categories of small industries randomly considering the same (95%) confidence interval for questionnaire survey [26].

However, for prioritizing or ranking of factors which influence the small industries for their locations and distribution at different Thanas/areas in Dhaka, 10 per cent of 170 sampled respondents were again selected. In this way, 17 respondents were found randomly using the same technique to conduct interview with these 10 respondents under the Analytical Hierarchy Process (AHP) method.

1.3.4. Data Collection

This study has been conducted based on the primary and secondary data which were collected from field and different institutions using tools.

1.3.4.1. Primary Data

The primary data which were collected from the study area are - ownership of small industry, year of establishment, plot size/area of the small industry, operational time in a day and the year, types of products and its marketing areas, raw materials, modes of transport to carry the raw and finished products, investment, working hour, environment pollution caused by the industry, utility services, factors and reasons of establishment at different areas, forward linkages, problems faced by the small industries etc.

These primary data and information were collected through the filed survey using a field pre-tested questionnaire format before going to final collection of data from the selected 170 respondents of 8 (eight) categories of small industries at the study areas. However, to identify the factors and to make their ranking or preference of choice by the small industry owners using the AHP method, primary data also collected using another questionnaire format with 17 respondents of these small industry owners at the study area.

1.3.4.2. Secondary Data

An important issue of this study is distribution and location of small industries at various areas/Thanas of Dhaka city and a series of factors are responsible for this. So, to find the information regarding these, it has been communicated and collected lots of secondary information from different personnel and institutions in Dhaka city. The main sources of the secondary data and information were different organizations and institutions namely Bangladesh Small and Cottage Industry Corporation (BSCIC), ILO-Dhaka, Rajdhani Unnayan Kartripokho (RAJUK), Bangladesh Engineering Industry Owners' Association (BEIOA), Dhaka City Corporation (DCC), Bangladesh University of Engineering and Technology (BUET), Institute of Appropriate Technology (IAT) of BUET, Sheltech (Pvt.) Ltd., Small and Medium Enterprise (SME) Foundation, different books, reports, journals and websites etc.

1.3.5. Data Analysis and Report Generation

After collection of all the data from primary and secondary sources, those were accumulated and analyzed using the computerized software MS-Excel, Statistical Package for Social Science (SPSS) and ArcGIS 9.3. Then, a draft report was produced for necessary correction. Lastly, after required correction from relevant personnel, the final report was produced for presentation and submission.

1.4. Rationale and Scope of the Study

In Dhaka, small industries are distributed spontaneously at all locations within the city boundary. But at some special areas or Thanas, these industries has the most concentration for their grown up. As well as, these industries are also located in every Thana or area of the city in unregulated way. The distribution and location of these industries had been taken place in an unplanned way also because of irrational demand of local consumers and businessmen of that Area/Thana. However, a number of factors and reasons are responsible for the distribution and location of these small industries in Dhaka. But it has difference among these factors and reasons in terms of the magnitude of influence by those factors and reasons to distribute and locate these small industries at different locations or areas in Dhaka. That is why, to identity the factors and reasons which influence the distribution of small industries at different locations of Dhaka city the study had been done. Moreover, this type of study considering the study area of Dhaka city had not been conducted earlier. Therefore, this study will provide the new dimension for the new researchers for further study related to this issue next.

In country like Bangladesh, small-scale informal industries are generating a number of informal and formal employments at the metropolitan areas as well as in Dhaka city. Again, these industries are contributing a portion of national economy and GDP of the country as well. These industries are distributing and locating spontaneously at all Thanas/areas within Dhaka city. But some industries have the most concentration at some

areas/Thanas because a number of factors and reasons influence behind their distribution and location at different Thanas/areas. It can be identified the factors and reasons which are more responsible for distribution and location of these small industries in Dhaka by this study. However, very limited number of industrial researches on Dhaka city were performed by the earlier researchers except the research on light and plastic recycling industry in Dhaka city. That is why, it has much more scope to conduct this type of research work on factors influence the locations and distribution of small-scale informal industries in Dhaka city.

1.5. Limitations of the Study

Small-scale industries established spontaneously without plan and regulation in every Thana/area of Dhaka city. This UIE-Program of ILO Bangladesh only calculated the Thana wise number of different types of small industries but they did not have any exact data of the location of these small industries at each particular Thana/location. So, the major difficulty was to find out the exact locations of these small industries for data collection within every Thana boundary. Again, due to not conducting any study related to this issue earlier in Dhaka, information on exact locations and other information of small industries for this study during data collection period was not found properly. So, it took much time and created some difficulties in data collection process from these small industries by searching those at every Thana.

However, during data collection period, it was faces some difficulties like most of the entrepreneurs of these small industries were less educated and some of them were illiterate as well. Sometimes, it was very hard to find the actual information from them to collect actual information from them. Because, they had no clear understanding about their works and could not give accurate answers regarding the information needed for the research purposes. They did not show any willingness to provide information because they felt that the surveyors were government personnel and collecting information for additional harassment to them. On the other hand, the industry owners were not available at all over the day in the industry to deliver the available information. The survey team found the respondents at very limited times during the survey period. Moreover, the industry owners sometimes thought that the survey team was the media personnel or human rights activists who work in support of the children who are engaged with the hazardous works in these small industries of the study area. All these are limitations of this research work.

Nevertheless, for smoothly accomplishment of this study, available secondary materials were not found because of limited conduction of this type of research on Dhaka city in earlier. Another limitation of this research was inadequate books and relevant papers on Dhaka city and other larger metropolitan cities were ready focus on this type of study.

1.6. Organization of the Thesis

Chapter one reveals the background of the study and present state of the problems on small-scale industrial sector and related issues of the study area in Dhaka including Bangladesh. The specific objectives of the study; methodology comprising the sampling technique, sample size of respondents, data and source of data, data analysis process, report generation and presentation; rationale and scope of the study; limitations etc. had been also described thoroughly here.

In chapter two, it is tried to describe the literature review in which the background and general information of small-scale industrial sector of Dhaka and Bangladesh, their role in the national economy etc. were described in details. As well as, industrial location theory, various literatures of related national and international studies, scenario of small-scale in global and national context had also been illustrated here. Moreover, government's policies, programs, facilities and finance were described in a befitting manner in this chapter. Industrial policy, 2010; current (2010) and past programs and financial incentives are illustrated in details herewith. Nevertheless, technical and institutional facilities for small industries and future plan of the government for the development of this sector were also described in this chapter elaborately.

Chapter three mainly reveals the study area and profile of the industry owners. Here, it had been stated Dhaka city's geography and demography, economy, transportation system etc. in brief. Meanwhile, the study locations of four Thanas like Pallabi, Lalbagh, Shyampur and Sutrapur were also described in a brief focusing their locations, area, population, land use and major small-scale industries located in these areas. However, the profile of industry owners comprising their age and sex structure, socio-economic characteristics and ownership of small industries etc. were described in this chapter based on the primary and secondary information.

Chapter four expresses the small-scale industries' distribution, locations and characteristics in details. Here, it was showed total number of different categories of small industries which were distributed at different Thanas of Dhaka city. Besides, distribution and location of small industries in four Thanas separately and in residential, commercial and mixed use areas was showed in this chapter. Moreover, the plot size and physical structures of small industries, their establishment period, duration of operation in a day and in the year separately, production and sell per day etc. were described in details here. The source of raw materials, finished products and modes of transport to carry these raw materials and finished products, their forward linkages etc. are explained in details here. On the other hand, the status of utility services like water supply, electricity, gas, sewerage, drainage was illustrated distinctly. Nevertheless, the investment/costs of small industries like fixed/capital investment/cost for utility services; operational and maintenance costs were described based on the survey findings here. In addition to these, the information of environmental pollution, status of employment and workers' technical knowledge on daily production etc. were stated in this chapter in a simple manner.

In chapter five, all the factors and reasons which affect these industries to concentrate mostly in some specific areas of Dhaka city are described on the basis of respondents' views and also by doing the Analytical Hierarchy Process (AHP) analysis. The factors are made the prioritization and ranking by doing the AHP analysis in ascending order based on the industry owners' preference. As well as, the problems is faced by the small industries are illustrated in this chapter.

Chapter six reveals the major findings of the research addressing the objectives. However, some recommendations were developed in this chapter in support of small industrial sector's development in Dhaka as well as Bangladesh. Finally, a brief conclusion had been drawn hereafter.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The development of small-scale industries is one of the key factors for sustainable economic growth and development policies and plans [7]. In global, regional and national context, small-scale industrial sector has the common features. However, according to the characteristics of regional, national and local circumstances, it may differ in their distinctiveness. In this connection, the study has given a typical understanding of the categories, features and natures of small industries; their scenario at global, regional and national context and Bangladesh government's policies and programs in this section.

2.2. Background of Small-scale Informal Industry

2.2.1. Definition/Meaning

This category of industry can define in the following ways:

a) In earlier it was said that small-scale informal industry refers to independent business owned and operated by single or more than one individual for income generation, as well as micro enterprises at different points with 2 to 20 workers [17]. In some cases, a number of those industries have no registration from the municipal authority or any urban local government authority and do not follow urban planning rules and regulations.

b) Small-scale industries are those which run in a small place with a little amount of money and with a few numbers of workers. The industries are organized on a small-scale and produce goods with the help of small machines, hired labors and power are called as small-scale industries.

c) These industries, not in the regular, usual or established form; not according to official, conventional, prescribed or customary forms or rules; irregular; hence, without ceremony; as an informal writing, proceeding or visit.

2.2.2. Criteria of Small-scale Informal Sector (industries)

Following are the criteria of informal sector small industries -

- ✓ Small capital
- ✓ Small in operation/Small size of production
- ✓ Number of workers between 2 to 20
- ✓ Mostly unregistered in many cases
- ✓ Mostly not paying the tax
- ✓ Not monitored by a government prescribed ministry/department
- ✓ Mostly weak physical structure
- ✓ Has no ToR/any contract between workers and industry/employer [17]

2.2.3. Salient Features

- The minimum paid up capital of a small-scale industry is Tk. 5 lakhs.
- Small-scale industries are differentiated from the former by the techniques of production process.
- They use modern power driven machines and employ labor as well.
- The raw materials are also obtained from outside, if not available locally.
- These industries are larger in size than cottage industries at all over.
- Their products are sold through traders beyond local markets [5].

2.2.4. Sectors/Product Line of Small-scale Industries

Table 2.1. The identified major sectors and sub-sectors of small-scale industries in Dhaka

Sl #	Sectors/Product Line	Sub-Sectors
1	Garage Activity	Automobile Engineering (repairing and servicing)
		Car painting (cleaning, rubbing, spraying and polishing)
		Vulcanizing
2	Engineering	Engineering/Lathe machine Workshop (cutting and melting iron bars, shaping iron pieces using their moulds, producing of different parts for different kinds of machines)
		Iron/Net/Screw/Volt Factory (produce nut and volt by lathe machines and iron nets)
		Welding Shop (Cutting and shaping of iron rods/steels/sheets, produce house grill, windows, gates, car and machines' parts etc.)
3	Metal Works	Tin Factories (cutting and shaping of tin sheets, production of tin sheets, painting)
		Aluminum Factories (production and recycling of aluminum products)
		Metal casting, Metal Paining
		Steel Furniture (cutting and shaping of iron rods and pipe, welding and painting to furniture)
4	Plastic Works	Plasto-rubber factories (melting plastic and rubber, using moulds to produce plastic rubber items)
		Plastic recycling (screening, cleaning, smashing and melting plastic items)
		Plasto-metal (Melting, Shaping and producing different plasto-metal items using moulds and machineries)
5	Wood Works	Wooden Industry (wood cutting, shaping, polishing and burnishing of different wooden items and furniture)
6	Tailoring-Weaving	Tailoring (cutting and sewing of different apparels)
		Zamdani (Dying and weaving)
		Karchupi (stitch works and spangled)
7	Food Related Works	Bread and biscuit factories (mixing the flour, sugar, baking powder and using moulds in the ovens)
		Flour Mill (cleaning, screening and grinding wheat in the mill)
		Spice Mill (cleaning, screening and grinding spice in the mill)

Sl #	Sectors/Product Line	Sub-Sectors
		Salt Factories (mixing iodine with raw salt, weighing and packaging salt)
8	Skill Work	Goldsmith (cleaning, melting and shaping gold using different dies and acid) Blacksmith (cleaning, melting and shaping iron by hammering to produce different iron goods) Printing and Book Binding (cutting paper and shaping, stitching, pasting paints and inks in the printing forma etc.)
9	Leather Work	Leather by Products (cleaning, cutting, shaping and sewing leather to produce different leather items) Shoe Factories (cleaning, cutting, shaping, polishing and sewing leather to produce different types of shoes)
10	Chemical Works	Battery Breaking (breaking, cleaning and collecting carbon rods from different old and used batteries) Soap Factory (mixing animal fat, carbolic acid and glycerin, shaping, packing etc.) Chemical Factory (packing, weighing and selling of different chemical items)
11	Scavenger	Scavenging workshop (collecting of waste plastic, paper, glasses, jars, toys, rubber items, food items, steel items, tin items etc.)
12	Glass Works	Glass production (cleaning and smashing of waste glass pieces, melting and putting melted glass into moulds to produce different)

Source: UIE- Program Report, ILO Bangladesh, 2001

2.2.5. Production Process in Small Industries

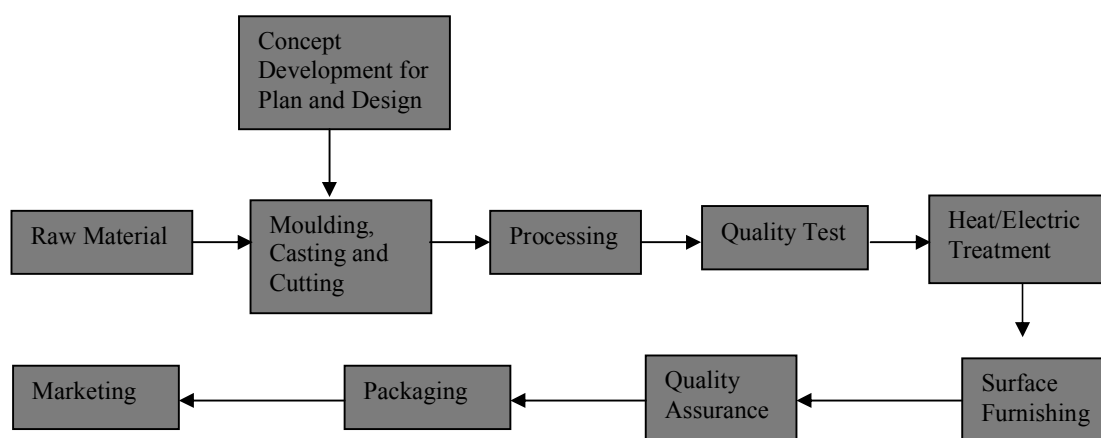


Figure 2.1. A typical production process of small-scale industries

Source: Bangladesh Engineering Industry Owners Association (BEIOA), 2010

2.2.6. Advantages Associated with Small-scale Industries

- Small-scale industry is especially specialized in the production of consumer commodities.
- These industries can be characterized with the special feature of adopting the labor intensive approach for commodity production. As these industries lack capital, so they utilize the labor power for the production of goods. The main advantage of such a process lies in the absorption of the surplus amount of labor in the economy that was not being absorbed by the large and capital intensive industries. This, in turn, helps the system in scaling down the extent of unemployment as well as poverty.
- It has been empirically proved all over the world that small-scale industries are adept in distributing national income in more efficient and equitable manner among the various participants in the process of good production than their medium or larger counterparts.
- This industry helps the economy in promoting balanced development of industries across all the regions of the economy.
- This industry also helps the various sections of the society to hone their skills required for entrepreneurship.
- Small-scale industries act as an essential medium for the efficient utilization of the skills as well as resources available locally.

2.3. Role of Small-scale Industries in Economy

Its role is to provide competitive prices and assist in promoting the growth of the country's economy. It's a means of economic development and a veritable means of solving problems, a seedbed of innovations, inventions and employment. Bangladesh is one of the least developed countries in the world. Still, its industrialization is not strong but is more furnished than the period immediate after the liberation. Small and Medium Enterprise (SME) foundation is the authorized government institution and also the Bangladesh Small and Cottage Industries Corporation (BSCIC) and though these institutions small and cottage industries are playing a portion of role in the Gross Development Product (GDP) and Gross National Product (GNP) of the country. Nowadays, these government agencies are running a number programs and interventions in the SME sectors which highlights the small, light and cottage industries to their productions and income of the country through employment generation and manufacture as well.

2.3.1. Place of Small and Medium Enterprises (SMEs) in National Economy

Any precise quantitative estimate of the importance of SMEs in Bangladesh economy is precluded by non-availability of comprehensive statistical information about these industries at the national level. The latest Bangladesh Small and Cottage Industries Corporation (BSCIC) estimates suggest that there are currently 55,916 small industries and 5,11,612 cottage industries excluding handlooms. Including handlooms, the number of cottage units shoots up to 6,00,000 units indicating numerical superabundance of the Small and Cottage Industries (SCIs) in Bangladesh. Quoting informal planning commission estimates, the Small and Medium Development Foundation (SMDF) puts the number of medium enterprises (undefined) to be around 20,000 and that of SCIs to be

between 1,00,000 to 1,50,000. This wide variation in the BSCIC and planning commission estimates of the numerical, size of the SMEs might be due to at least two reasons: (a) different set of definitions of the SMEs and (b) different coverage of SME families. This strongly suggests the need for adopting and using a uniform set of definitions for SMEs by all government agencies to help formulation of pro-active SME promotion policies. Whatever, the correct magnitude, the SMEs is undoubtedly quite predominant in the industrial structure of Bangladesh comprising over 90 per cent of all industrial units. This numerical predominance of the SMEs in Bangladesh's industrial sector becomes visible in all available sources of statistics on them [2].

Together, the various categories of SMEs are reported to contribute between 80 to 85 per cent of industrial employment and 23 per cent of total civilian employment. However, serious controversies surround their relative contribution to Bangladesh's industrial output due to paucity of reliable information and different methods used to estimate the magnitude. The most commonly quoted figure by different sources like Asian Development Bank (ADB), World Bank, Planning Commission of Bangladesh Government and Bangladesh Institute of Development Studies (BIDS) relating to value added contributions of the SMEs is seen to vary between 45 to 50 per cent of the total manufacturing value added. While the SMEs are characteristically highly diverse and heterogeneous, their traditional dominance is in a few industrial sub-sectors such as food, textiles and light engineering and wood, care and bamboo products. According to South Asia Enterprise Development facility (SEDF) sources quoted from ADB (2003), food and textile units including garments account for over 60 per cent of the registered SMEs. However, as identified by various recent studies, the SMEs had undergone significant structural changes in terms of product composition, degree of capitalization and market penetration in order to adjust to changes in technology, market demand and market access brought by globalization and market liberalization [2].

2.4. Location of Industry: Theory and Practice

Production involves the use of inputs-factors of production-to produce output-goods and services-as efficiently as possible. The location of the unit of production, the firm, will obviously be determined in relation to the source of the inputs and the market for the output. The various factors of production-land, labor, capital and enterprise-plus the market factor, thus constitute primary determinants of location. These factors can of course be refined into more specific determinants such as the quality and quantity of labor, the geographical location of a site and the availability of the necessary infrastructure. Other determinants such as central and local government policy and behavioral factors can also be added. There have been two main approaches to the study of these factors of industrial location - one is theoretical and another is empirical. This divergence reflects the difference of approach between the economist with his love of abstract theories and the geographer with his concern for empirical study and generalization from real world situations.

The theoretical approach attempts to abstract from reality, constructing an all-embracing system of 'pure' rules. The search is for a general theory of industrial location, which can explain the existing structure of industrial location and changes in that structure.

The empirical approach involves the listing of factor which might be important, together with examples of situations where they have in fact been important, in the location of

particular industries. There is usually little or no attempt to formulate such factors into a general theory, and hence this approach is generally limited to the provision of a descriptive picture. Unfortunately these two approaches have developed independently with little attempt at reconciliation [12].

However, three factors were considered as determinants for industrial location. These are (i) transport cost (ii) labor cost and (iii) agglomerative or degglomerative factors, Hoover (1946) emphasized on industrial factors and confined to least cost approach. Losch (1954) realized that optimum location is the place of maximum profit and considered (i) no spatial variation in the distribution of factor inputs (ii) uniform population densities and constant tastes and (iii) no locational interdependency of firms. John Glasson (1974) stated that mobile firms seeking to identify the major location factors are as follows:

- (a) Labor quality and quantity
- (b) Transport and communication
- (c) Sites and premises
- (d) Government aid
- (e) Environment factors in the wider sense

But John Glasson did not consider other important factors of industrial location decisions like (i) services (ii) utilities (iii) taxes (iv) chance (v) management (vi) training and consultancy and (vii) political instability [19].

2.5. Related National and International Studies

A limited number of studies conducted on the issue ‘factors influencing the location of textile and dyeing industries and light engineering industries’ but no research conducted yet on this topic ‘factor influencing the location and distribution of small-scale informal industries in Dhaka’. In this section, a review is done related to these issues which are different studies, literatures, evaluations conducted by national and international scholars and organizations.

‘Factors influencing the location and growth of light engineering industries in Dhaka City’ is an unpublished research work by Khan, 1996. The main purposes of this study were to identify the factors influencing location and growth of light engineering industries and their problems and constraints. The factors demonstrated here is mainly the access to market, access to raw materials, concentration of same types of industries, availability of skilled and technically trained labor etc. As well as, the problems of these industries are mainly financial and technical related to raw materials, labor and management. In this research, it also found three types of theories on location of industry and these are classical, neo-classical and behavioral theory. The author also demonstrated light engineering industries developed in two ways in Dhaka metropolitan area e.g. i) Concentrated development and ii) Scattered development. Considering factors, problems and government’s existing industrial policies, author suggested some recommendations in favor of the location and growth of light engineering industries of Bangladesh.

‘Information Technology: A Growth Navigator for Small Scale Industries in India’ is a published paper in ‘Journal of Cases on Information Technology’. In the paper, Sahu and Dwivedi, 2008, investigated various factors influencing the growth of small scale industries in India. The important factors are mainly the technology, quality service, scope of export, support raw materials, marketing opportunity, infrastructure support from

government etc. But information technology is one of the significant factors, which is, in general, not used by the small-scale industries in India for their production and business process, in the growth of small-scale industries in India. The main thing of this study is that factors influencing the growth of small-scale industries are analyzed through personal interviews of entrepreneurs of West Uttar Pradesh in India. Besides, the study expressed some challenges/problems of Indian small-scale industries to the entrepreneurs and governments. These challenges can be categorized as i) the internal facilities are developed by the organizations ii) underdeveloped infrastructure facility of government iii) less government policies for small-scale industry development etc.

In the study ‘problem and prospects of informal plastic recycling industries in Dhaka city’ by Ahmed, 2001, it was found that in Dhaka city a greater portion of plastic industries are located among the residential areas and these cause harm to soil, human health and drainage system of the residential area. Author also tried to inform that informal plastic recycling industries not only provide employment to a large number of urban poor but also produce wide ranges of goods from recycled plastic waste that are supposed to be left to cause environmental degradation of Dhaka city. This study also provided brief ideas about the location, technology, recycling, trade chain, uses of raw materials, employees, backward and forward linkages, outputs and factors etc. which all are influencing the establishment of this type of industry in Dhaka city. From this report it also identified the problems of the informal plastic recycling industries and priority ranked to draw the policy guidelines.

In the study ‘Factors influencing the location of textile dyeing and printing industries in Bangladesh’ by Hossain, 1992, it was said that different types of textile industries, namely spinning mill, weaving mill, textile dyeing and printing industries are located in Bangladesh. From the study it also found that the development of textile dyeing and printing industries in this country is a recent phenomenon and started in this country mainly after the independence of 1971. The distribution pattern of this industry is not uniform; rather it is concentrated at certain locations. Various locational factors like access to market, access to raw materials, transportation cost of raw materials and finished product, nearness to highway, infrastructural facilities etc. play a significant role in its locational pattern. Finally, some recommendations are made for solving present problems of those industries and guidelines were presented for disposal of those industries to different parts of the country.

‘Small-Scale Manufacturing in Kenya’ by Gray, Cooley and Lutabingwa, 1997, is an article of ‘Journal of Small Business Management, volume-35’. From this article, it was found that until early 1960s, many economists attributed the relatively small size of many industries in less developed countries to the scarcity of capital and administrative experience. In order to ensure an orderly transition, small industries were seen to deserve support but mainly in sectors where modern production methods could not be immediately applied. The paper also illustrated that the emergence of wholly modern small-scale and medium-scale Kenyan industries is likely to be a prerequisite for any enduring industrialization in that country. However, despite government efforts in Kenya to promote informal sector activity, not much progress seems to have been achieved, judging by the performance of the informal sector. But recent research suggests that government policy should be more narrowly targeted to sub sectors within the informal sector.

Basem M. Lozi, in the article ‘Small-Scale Industries in the Globalization Era: The case of Jordan’ under the journal ‘Business and Public Affairs’ tried to inform that the role of Small-scale Industries (SSI) in the economic development of Jordan by showing the effects of the SSI on the unemployment rate, production, and sales. Besides, here, it has also described the policy recommendations to ensure the sustained and competitive growth of small-scale industries in Jordan. As well as, the growth of SSI in Jordan in terms of employment, production and sales has increased due to globalization and domestic liberalization. However, it is still not as significant as planned. The SSI sector should be encouraged to make a sustainable contribution to the national income, employment and exports in Jordan.

2.6. Scenario of Small-scale Industries in Global and National Context

2.6.1. Global Context

The role played by the small-scale industry in the economic activity of advanced industrialized countries like Japan, Germany, Great Britain and the United States of America is significant. Many Nations, both developed and developing exteriorized that the small industrial sector is a useful vehicle for growth, in the later for the creation of new employment opportunities on a wide scale in the shortest possible time.

In America, Europe and Africa

Despite having a great portion of gross national product of the country, small-scale industries faces a tremendous harms due loss of economy in United Sates of America.

Historical facts show that prior to the late 19th century, cottage industries, mostly small and medium scale businesses controlled the economy of Europe. The industrial revolution changed the status quo and introduced mass production. The twin oil shocks during the 1970s undermined the mass production model, which triggered an unexpected reappraisal of the role and importance of small and medium sized enterprises in the global economy. Findings by economists over the years show that small firms and entrepreneurship play a much more important role in economic growth and development.

The economy of the Africa gets it flavor from the small and medium enterprises of African countries. Nigeria plays a significant role to stabilize the market and economy of Africa by giving priorities on small-scale industries in that country. Nigerian economy depends on the recognition of Small and Medium Enterprises (SMEs).

In Asia

Japan:

Small and Medium enterprises account for approximately 80 percent of the private sector industrial workers and hence occupy an important position in the industrial structure of Japan. The employment creating capacity of the small and medium enterprises in Japan has been seen to be larger than that in Germany or United States.

Small and Medium enterprises play in extraordinarily important role as muscles for regional economic development. In the development of sparsely populated areas such as Hokkaido Island in the North they have been a valuable tool for development. In the first

half of the sixties the small and medium enterprises accounted for more than 50 per cent of Japanese exports. Such business was mostly labor intensive and not dependent on imports or raw materials and hence, its net contribution to foreign exchange was very high.

India:

Indian economy is an under developed economy. Its vast resources are either unutilized or under utilized. A major section of man power is lying idle. The per capita income is low. Capital is shy and scarce and investment is lean. Production is traditional and the technique is outdated. The out put is insufficient and the basic needs of the people remain unfulfilled. Industrialization is the only answer to this present state of disrupted economy. The problem is of the approach which should be direct, utilitarian and pragmatic. Such industries do not require huge capital and hence suitable for a country like India. The small scale industries have a talent of dispersal. They can be accessible to the remote rural areas of the country and do not lead to regional imbalances and concentration of industries at one place, which is responsible for many economic resources such as entrepreneurship and capital.

The planners and the economists in India took recourse to small scale industry because most of these industries existed in the traditional form, which symbolize our heritage and past glory. These still serve as the back bone of our economy, which is mostly rural. It is with this view that an assessment of growth, development and working of small scale industries in the specific region is attempted in this research study. However, before entering into an analytical study of this project, it is necessary to examine the concept of small-scale industry as it has come to be, today, in India.

Prof. K.T. Sash was the first Indian economist, who realizing the importance of Small scale industries in India, tried to give a workable definition of these industries. He defined "A small scale or cottage industry may be defined as an enterprise or series of operations carried on by a workman skilled in the craft on his responsibility, the finished product of which, he markets himself"⁶. He works in his home with his own tools and materials and provides his own labor or at most the labor of such members of his family, as are able to assist. These workers work mostly by hand labor and personal skill, with little or no aid from modern power driven machinery, and in accordance with traditional technique. Such supplementary energy as is provided by animal power may add to the economy and efficiency of the industry. He works, finally, for a market in the immediate neighborhood that is to say in response to known demand with reference to quality as well as quantity.

During the three decades of planned development there has been an impressive development of large scale industries, but India still remains predominantly a country of village and small industries. Cottage and small scale industries are scattered over the whole country and they cover a wide range of traditional and modern small-scale industries. Cottage and small-scale industries include four categories of industries, viz. (a) village industries, (b) cottage industries, (c) tiny-industries, and (d) small-scale industries. The village industries are closely connected with agriculture and are mainly concerned with the processing of local raw-materials with simple techniques. The cottage industries are carried on by the artisans in their own cottages with their own family workers. Cottage industries do not use power and employ a small amount of capital. Tiny industries are those industries in which capital investment is not more than Rs. 2 Lakhs. Small-scale industries are localized in. urban and semi urban areas.

Small-scale and cottage industries have a great capacity to generate a large volume of employment. In India, capital is scarce, but cheap labor is abundantly available. Unemployment, underemployment and seasonal unemployment are rampant on a mass scale. The employment capacity of small industries being at least eight times that of the large industries, they can substantially help in solving this problem. The process of decentralization accelerated by small-scale industries, in addition to exploiting local resources, helps to reduce regional imbalances and the imbalances between rural and urban growth. Large-scale and small scale industries also complement each other, large scale industries; the emphasis is on the production of capital goods. But small enterprises concentrate on producing consumer goods. In India, Small-scale and cottage industries are faced with the following problems at present:

- (1) Problem of Raw-material - due to their limited resources, the owners of these industries cannot afford to purchase raw-material in bulk. That is why they get low quality materials at high rates.
- (2) Problem of finance - cheap and easy finance is not available to these industries. The financing system of government institutions and banks is such that these industries have to complete many formalities and there are so many complications which can be followed by these less educated entrepreneurs.
- (3) Marketing problems - these industries mainly exist in villages and due to lack of transport and communication facilities they are handicapped in finding suitable markets for their products,
- (4) Lack of Managerial Talent Cottage and small scale industries are mostly run by the small businessmen having no training of management and organization. How these industries, therefore, can stand before the large scale industries which are managed and organized by the specialists of that field?
- (5) Competition with large-scale industries - the main problem before these industries is that they are unable to compete with large-scale industries. The economies of large-scale production are not available to them and therefore they fail to compete with large-scale industries.

However, the small-scale sector has acquired a prominent position in the economic structure of India. The contribution of the sector both towards economic development and removal of economic disparities among the cross section of society has been tremendous. This sector owes its definition to industries (development & regulation) Act 1951. The sector is defined in terms of investment limits in plant & machinery (original values) up to a prescribed limit. This sector in India comprises of a widely divergent spectrum of industries, ranging from the micro and rural enterprises - using rudimentary technology, on the one hand - to modern units using sophisticated technology, on the other.

The sector, as of today comprises of 3.4 million industrial units spread throughout the country providing employment to over 19.2 million people. Its contribution to the socio-economic development of the nation is therefore significant. Over 7500 different products for domestic as well as international markets are produced in these units. Even in the phase of strict and difficult economic environment and other constraints, the sector has been able to register an impressive growth rate. The small-scale sector today contributes

about 40 per cent of the value added in manufacturing sector and 6.75 per cent of GDP of India. Its share in the national exports stands at over 34 per cent. The sector accounts for about 95 per cent of the industrial units in the country and thus is rightly called the growth engine of the Indian economy. Industrial output is increasingly becoming knowledge driven. By developing new ideas and products, based on a strong research-the small-scale industries could make a substantial contribution, provided they are able to develop a good marketing network.

2.6.2. National Context (in Bangladesh)

BSCIC started a survey of small industries in Bangladesh in 1987 which was completed in 1991. This survey of small industries reveals that there are 38,294 units in Bangladesh among those 5,119 units in Dhaka, 4,292 units Chittagong and 1,359 units at Comilla. The numbers of small industries in other remaining districts in Bangladesh are comparatively less. The average number of units per square kilometer in Bangladesh is 258 [7].

According to the survey result of BSCIC conducted in 1991, in Bangladesh, 197 types of small industries are operating at all over. But at this stage, this amount is highly increased at all place including Dhaka.

Table 2.2. Growth of Small-scale industries (excluding handlooms) in Bangladesh

Year	No. of Units		Employment		Value Added (Tk.) Small and Cottage Combined
	Small	Cottage	Small	Cottage	
1981	24590	321743	322110	855200	17987
1991	38294	405476	523472	1331032	21154
2001	55916	511621	808959	66724	29323
Average Annual Growth Rate	6.36	2.95	7.55	4.73	3.15

Source: Ahmed, 2001

2.7. Government's Policies, Programs, Facilities and Finance

After the independence of the country in 1971, government introduced some policies for industrial development throughout the country. Some monetary and fiscal incentives were provided to those industries in less developed areas other than the industrial zones of Dhaka, Narayanganj, Chittagong and Khulna [19]. Bangladesh government adopted an industrial policy in 2005 through the ministry of industry. Here, small and medium industry's development policy is described and recently ministry of industry adopted a new industrial policy, 2010 wherein small and medium enterprise and others are included partially. Small cottage and medium enterprise policy is attached partially in this section which represent the small and medium industrial policy of Bangladesh.

BSCIC under the ministry of industry implemented a lots of industrial development programs for long run in the earlier and presently is implementing many small and cottage industrial development programs considering the decentralized regional development of the country. As well as, government takes some steps through the SME foundation to

develop the small and medium enterprise sector economically. Therefore, SME foundation has been adopted number of programs to reach government's vision of small and medium industrial sectors' development.

2.7.1. Industrial Policy 2010

From the Pakistan period, the industrial policies adopted by the governments had been inadequate and insufficient. Though the policies had been gradually upgraded to some extent, yet it is necessary to make them more convenient for entrepreneurs of both small and large-scale industries both in urban and rural areas.

2.7.1.1. Promoting Small, Medium, Micro and Cottage Industries

Still there has been not developed a separate policy in support of small-scale industries in Bangladesh. But the Government adopted a separate SME policy titled "Policy Strategies for Development of Small & Medium Enterprises (SME)" which accelerate the development of small-scale industrial sector. The policy of the Government with respect to SME will be detailed out in that policy document. Small and cottage industry development activities under the direction of BSCIC will grow to continue besides strengthening and accelerating the growth of micro industry.

2.7.1.2. Government Policy

The Government recognizes SMEs as vehicles for enhancing the standard of life, economic growth and poverty alleviation of the common people. The primary role of the Government shall firstly, be that of a facilitator removing policy obstacles and neutralizing market failures and secondly, providing necessary promotional support of various kinds like -

- (a) Government will accentuate and sustain SME activities through motivation, loan allocation and training of the entrepreneurs.
- (b) Refinancing the SME sector through the 3 (three) funds created by Bangladesh Bank will continue.
- (c) Women Entrepreneurs will be given priority in the SME sector. At least 15 per cent of total sanction will be held in reserve in favour of the women entrepreneurs and the interest rate will be 10 per cent only.
- (d) Special preferences will be provided to the development of the industries dealing with Information and Communication Technology.

2.7.1.3. Objectives of the SME Policy

The broad objectives of the policy shall be to

- 1) Acknowledge the importance of SMEs as an indispensable player in growth acceleration and poverty reduction.
- 2) The SME policy strategies shall be embedded, in a broad-based and integrated manner, in the Government's Medium Term Budgetary Framework (MTBF).
- 3) Encourage and induce private sector development and promote the growth of Foreign Direct Investment (FDI), develop a code of ethics and establish good

governance, Information and Communication Technology (ICT)-based knowledge managements and customer supremacy in the markets.

- 4) Identify and establish an appropriate physical and Information and Communication Technology (ICT) network of infrastructure and institutional delivery mechanism that facilitate the promotion of SMEs.
- 5) Re-orient the existing fiscal and regulatory framework and government support institutions towards facilitating achievement of the goals of SME policy.
- 6) Nurture and partner civil-society institution(s) having credible management teams in terms of the delivery of needed services, leadership, initiation, counselling etc.
- 7) Create innovative but meritocratic arrangements so that promising and potential small enterprises with desired entrepreneurial track record and/or promise can be offered financial incentives.
- 8) Help implement dispute settlement procedures that proactively shield small enterprises especially from high legal costs and insidious harassment, if any.
- 9) Take measures to create avenues of mobilizing debt without collaterals to match in order to assist small enterprises in dealing with their pervasive lack of access to finance.
- 10) Systematically accord precedence to small *versus* medium enterprises, within the limitations of government's resources; and
- 11) Harness information & communications technologies, Internet Protocol (IP)-based infrastructure, and electronic-governance etc. in an effort to parlay regulatory services, all kinds of useful information and mentoring inputs, with an accent on increasing the viability of SMEs in all sectors of the economy.
- 12) (a) Enhancing the opportunities for marketing of SME products (b) Enhancing sub-contracting facilities and (c) Diversification of export

2.7.2. Government's Programs and Services

Small-scale industrial sector is one of the thrust sectors in country like Bangladesh. In Bangladesh, small and medium industry sectors are showing their performance following some rules and strategies through some government agencies like BSCIC, SME foundation and others. This sector occupies a unique position in the economy of Bangladesh. It discreetly acts as support industries to all other industries and plays a vital role in the socio-economic development of the country.

These industries have potentials to make significant contribution towards the technological and economic development along with wide opportunities for employment generation. These small-scale industries had made substantial contribution to country's GDP during the last few decades and created appreciable employment opportunities [5].

2.7.2.1. Past Major Programs and Services

The major programs implemented through different agencies are given as follows in a befitting manner:

A. Program/s and Service/s of BSCIC

Bangladesh Small and Cottage Industries Corporation (BSCIC) is the prime mover organization entrusted with the responsibility of development of Small and Cottage Industries (SCI) in Bangladesh. It is an autonomous corporation under the Ministry of Industries and was established by an Act of the parliament in 1957. It is the successor organization of East Pakistan Small and Cottage Industries Corporation (EPSCIC).

Earlier BSCIC provided and also presently provides the following services for the development of small industries in Bangladesh -

- Pre-investment counseling
- Post-investment extension services
- Technical information
- Design and prototype of handicrafts
- Industrial profiles and fact sheets
- Marketing information
- Infrastructural facilities
- Skill development training
- Entrepreneurship development training
- In-plant advisory services

Besides, for the development and expansion of SCI, BSCIC had been given the responsibility for the registration, determination of import entitlement of raw materials and packing materials, issue of import pass book, recommendation for local raw materials, allotments of land in its own industrial zones and also for providing assistance in other matters.

However, BSCIC had been given the responsibility to provide financial and credit facilities in cases of some special types of small and cottage industries. However, small and cottage industries which had been granted credits by financial institutions had been stated to be registered with BSCIC.

B. Program/s and Service/s of SME Foundation

Implementation of the SME policy strategies adopted by the Government of Bangladesh is one of the main responsibilities of SME Foundation. SME Foundation continuously assist the government in core issues mentioned in the policy strategy like: recommend rational budget structure for SMEs, advice on fiscal and financial issues, assist to ensure quality of SME products, assist in capacity development, techno-entrepreneurship development, information support through web portal, establishment of virtual SME front office etc.

- ***Capacity Building & Skill Development***

SME Foundation organize training program in public-private partnership module to enhance the skill of SME entrepreneurs as well as to create new entrepreneur. Training programs like entrepreneurship development, SME cluster wise skill based, technology based, ICT based, ToT, productivity and quality improvement, marketing, management, financial management etc. are conducted by signing a MoU between training institute or

SME related association. Besides, SME Foundation also assists trade bodies/associations as an important part of capacity building to develop their skills.

- ***Policy Advocacy & Research***

Policy advocacy & research is one of the most important mandates of SME Foundation aims to sustainable SME development in the country. The Foundation is very much keen to extend their policy supports for creating better environment on credit lending in SME sectors. The regulatory barriers appear as challenges for the growth of SME sectors and therefore, SME Foundation works to identify and resolve the challenges on legal and administrative regimes like regulatory barriers on trade license, patent and trademark, product certification, environmental issues of small industries.

- ***Credit Wholesaling Program***

Credit wholesaling is one of the major activities of SME Foundation to ensure easy access to finance for the SME entrepreneurs. SME Foundation has already taken credit wholesaling program as pilot scheme with its own fund. SME Foundation helps the SME entrepreneurs by providing collateral free loan at 09 per cent interest rate to the technology based potential SME manufacturing industries along with agro-based industries.

- ***Access to Information***

SME Foundation provide update information and data through its own web portal to the government, planner, decision maker, executive, researcher, investor, policy maker and to the SME entrepreneurs to establish new business or run business in a profitable manner. Establishment of a data bank with different information, data, findings and strategy for the development of SMEs at local and international level is an important activity of SME Foundation. The entrepreneurs of urban and rural areas can know the information adopted by this institution for the development of small industrial sector and can take part in those programs and events

- ***Business Support Service***

SME Foundation provides different kinds of business support service for entrepreneurship development. These are: promotion and market, expansion of SME product, establish linkage between buyer and seller of small industries' finished products, provide advice and guideline with information support for new business development, publish SME business manual, organize SME product fair where local and national level small industries attend.

C. Others Program/s and Services:

- ***SouthAsia Enterprise Development Facility:***

The IFC-SEDF is a multi-donor funded facility, managed and operated by IFC. IFC-SEDF is funded by IFC, the government of Netherlands and Norway, the European Commission, DFID (UK), CIDA (Canada) and the Asian Development Bank. It set up to promote the growth of SMEs in south Asia, also facilitates increased access to finance and provides quality business development services to projects in Bangladesh, Bhutan, Northeast India, The Maldives, Nepal and Srilanka. IFC-SEDF also works to create a business enabling

environment which is supportive of SMEs and assists in the value addition to firms through sector development, organization-specific advisory services, capacity building programs, training and research. The IFC-SEDF's ultimate goal is to assist in private sector development to create market opportunities for SMEs and promote pro-poor economic growth in the region [5].

- ***Light Engineering Product Business Promotion Council***

To promote the light engineering sector of the country, Ministry of commerce formed a council on March 04, 2004 titled 'Light Engineering Product Business Promotion Council' with the partnership of public and private sector. The prime objective of the council is to promote the sector to achieve competency in the local and global context as well as to help the industry in building capacities in the fields of human resources and acquiring technology. The specific objectives of the council are -

- a) To promote and facilitate export of light engineering products and services
- b) To encourage and assist in sustainable development of light engineering product and services in Bangladesh.
- c) To set up a common facility center for testing, training, standardization and certification of light engineering products and services.
- d) To create positive attitude among the policy planners, decision makers and stakeholders regarding the light engineering sector.
- e) To promote market survey, export, joint ventures and collaborations, studies and any other allied matters.
- f) To develop linkage with different institutions/enterprises involved in promoting participation both national and international and to help in the development of human resources required by the light engineering industries [5].

2.7.2.2. Present Major Programs and Services

Bangladesh Small & Cottage Industries Corporation (BSCIC) is one of the pioneer organizations in Bangladesh which is implementing presently various programs and function including training and research. Design centre is one of the important departments of BSCIC was started in 1960. Since 1960 BSCIC had been disseminating services to the young peoples, unemployed artisans, craftsmen, small industry workers and entrepreneurs.

- ***Training Programme of BSCIC***

Design centre arranges the training courses on skill development programmes for the unemployed people to create self earning capacity. It also train up the artisans, craftsmen, entrepreneurs and crafts and cottage level products relevant peoples for development of designs, prototypes and technical knowledge countrywide.

Design centre works through the 13 subjective departments and also conducts 12 training courses; the training courses are as follows: (1) Batik (2) Block (3) Screen printing (4) Cane and Bamboo products (5) Ceramics (clay pottery) (6) Metal crafts (7) Leather crafts (8) Weaving (9) packaging (Leaves and Straw) (10) Jute Crafts (11) Doll making (12) Fashion Design (13) Another one department is General Design. This department is for providing technical help and design distribution.

BSCIC has 15 (fifteen) Skill Development Centers (SDC) in different parts of the country. The SDCs arrange training courses in the following trades: Electrical house wearing and motor winding, Refrigerator and Air-conditioner repairing, Radio and Television Repairing, Garments manufacturing: Fitting cum machine shop practices and welding computer word processing shallow machine repairing.

Table 2.3. Status of small industries at present in Bangladesh

Small Industry	Year 2010-11 (unit)	
	Target	Achievement
New	2232	303
Existing	1550	114
Total	3782	417

Source: BSCIC, August, 2010

- **Small & Cottage Industries Training Institute (SCITI)**

BSCIC has a training institute with residential facilities at Uttara, Dhaka called Small & Cottage Industries Training Institute (SCITI). The (SCITI) has the following faculties to conduct training courses and research in the SCI sector:

- Entrepreneurship Development Management Faculty
- Industrial Management Faculty
- Financial Management Faculty
- Marketing Management Faculty
- General Management Faculty
- Research and Consultancy Faculty

2.7.3. Technical/Institutional Facilities

2.7.3.1. Skill Development Program by BSCIC

Small industries are as like as the light engineering industries and plays a great role in overall industrial sector. Effort had been made to develop the skills of workers, technicians, owners and entrepreneurs of private and public sector small and cottage industries. In this regard, following programmes of BSCIC had been mentioned for the light engineering as well as the small and cottage industries.

- Provision had been kept for technical training of the laborers through Skill Flourishing Centers (SFC) of BSCIC at various places in the country.
- Provision had been kept for training of the entrepreneurs or skilled laborers on technology through SCITI of BSCIC and other technical institute like BUET, Bangladesh Institute of Technical Assistance Centre (BITAC) etc. [19].

2.7.3.2. Research and Development

It had been stated that the public sector corporation shall spend on research and development not less than 1.1 per cent of their annual gross profit or development budget. In this regard, research and development by technology department of BSCIC for design development of light engineering products may be mentioned [19].

2.7.4. Financial Incentives

Various donor agencies like ADB, World Bank and others are responsible for paying foreign aid and grants for the development of small and medium industrial sector in Bangladesh in partnership with Bangladesh government. Here, it had been discussed some information of foreign agencies fund to strengthen this one of the significant thrust sector in Bangladesh. The total fixed investment in these units is Tk. 2,882 million which shows the average fixed investment per unit is Tk. 0.75 million. This figure does not include the value of land and structures in case of rented premises. The total investment in machineries and equipment is Tk. 1,519 million and the average investment per unit is Tk. 0.40 million which is about 53 per cent of the total fixed investment made for machinery. The total value of raw materials consumed is Tk. 1,705 million (both local and imported) and the average imported figure per unit is Tk. 0.45 million. This figure does not include the raw materials for servicing industries. However, the total value of annual production is Tk. 2,352 million. On an average each unit produced goods worth Tk. 0.61 million per annum [7].

2.7.4.1. Past Financial Incentives (public sector)

Table 2.4. Annual Development Plan (ADP) wise allocations and implemented projects

Sl. #	Plan Period	Fund Allocated by ADP (Tk. in Crore)	Number of projects implemented
1	1 st five year plan (1973-78)	24.25	3
2	2 years plan (1978-80)	12.57	1
3	2 nd five year plan (1980-85)	53.53	11
4	3 rd five year plan (1985-90)	280.00	27
5	4 th five year plan (1990-95)	253.69	31
6	Perspective plan (1995-2009) including 5 th five year plan (1995-2001)	573.86	26
Total		1197.90	99

Source: BSCIC, November, 2009

2.7.4.2. Present Financial Incentives (public sector)

Table 2.5. Target Vs Achievement of financial investment and employments

Small industry	Year 2010 – 11			
	Target		Achievement	
	Investment (Tk. in Crore)	Number of Employment (persons)	Investment (Tk. in Crore)	Number of Employment (persons)
New	875	75,000	39.29	3,525
Existing	240	29,200	8.96	952
Total	1115	1,04,200	48.25	4,447

Source: BSCIC, August, 2010

2.8. Government's Plan to Enhance and Develop Small Industrial Sector

2.8.1. Proposal for Development of Small Industries in 6th Five Year Plan (2011-2015)

Table 2.6. Small, medium and cottage industries' investment and employments

Sector	Number of projects proposed	Proposed ADP allocation for projects (Tk.)	Investment by entrepreneurs and BSCIC (Tk.)	Total investment (Tk.)	Small, medium and cottage industries to be established (unit)	Employment generation (numbers)
Public sector	27	2874.80	0	2874.80	514284	1015000
Private sector	0	0	6665.00	6665.00	136333	1020002
Total	27	2874.80	6665.00	9539.80	650617	2035002

Source: BSCIC, November, 2009

2.8.2. Plan for Development Programmes in 2010-2021

- Direct programmes to alleviate the poverty (04 poverty reduction programmes)
- Training and others programmes
- Scope of entrepreneurship through sub-contracting management
- List of possible small and medium entrepreneur industries in the private sector
- Possible list of public private partnership project

CHAPTER THREE: STUDY AREA AND PROFILE OF INDUSTRY OWNERS

3.1. Introduction

Dhaka is one of the fast growing metropolitan cities of the world. The small-scale informal industries had been established at all over the city area but in some specific Thanas these are much more concentrated due to some factors. In this research, 08 (eight) categories of significant small-scale industries among 31 (thirty one) categories of those industries were selected on the basis of information of the baseline report of “Profile of the Urban Informal Economy”, under the UIE-Program of International Labor Organization (ILO) Bangladesh, 2001. On the other hand, the 04 (four) specific Thanas of Dhaka city having the highest concentration of these 08 (eight) categories of small industries were selected as study area which are Shyampur, Sutrapur, Lalbagh and Pallabi. In this chapter, the salient features of Dhaka city and these four Thanas had been discussed in a brief which include geographical coverage, population, economy, small industry, land use and transportation system. However, the profile of the industry owners are described here.

3.2. Profile of Dhaka City

3.2.1. Geography and Population

Dhaka is located in central Bangladesh at 23°42'0"N 90°22'30" east, on the eastern banks of the Buriganga River. It consists of twenty two Thanas namely-Lalbagh, Kotwali, Sutrapur, Ramna, Motijheel, Paltan, Dhanmondi, Mohammadpur, Tejgaon, Gulshan, Mirpur, Pallabi, Sabujbagh, Cantonment, Demra, Hazaribagh, Shyampur, Badda, Kafrul, Kamrangir char, Khilgaon and Uttara and it has 90 wards [11].

The city, in combination with localities forming the wider metropolitan area, is estimated 14.6 million as of 2010. The population is growing by an estimated 4.2 per cent per year, one of the highest rates amongst Asian cities. The continuing growth reflects ongoing migration from rural areas to the Dhaka urban region, which accounted for 60 per cent of the city's growth in the 1960s and 1970s. More recently, the city's population has also grown with the expansion of city boundaries, a process that added more than a million people to the city in the 1980s. According to the ‘Far Eastern Economic Review’, Dhaka will become a home of 25 million different categories of people by the year 2025 [20].

The most critical need for a city is a civilized means of addressing and sorting out these differences. The city ought to be a place where one may find one's personal and spiritual fulfillment in the company of others and in the light of human dignity.

There appears to be no coherent vision for addressing Dhaka's current fractures and impending futures. What passes for a master plan is a jumble of outdated and uninspiring zoning regulations and building by-laws. The destiny of the city has been given over to bursts of ad-hoc and uncoordinated decisions. There is simply nothing in place that guarantees the art, science, and business of city-building [27].

3.2.2. Economy: Employment and Industrial Sector

Dhaka is a place of various employment generations for the people of different classes. People search their employment opportunities according to their skill and willingness at this city. In terms of employment, the Dhaka has historically attracted a large number of migrant workers like hawkers, peddlers, small shopkeepers, rickshaw pullers, transport workers and roadside vendors etc. Half of the workforce is employed in household and unorganized labor, while about 8,00,000 work in the textile/garment industry.

The main sector of employment is services, which employs more than two-thirds of the city's population, substantially higher than the country as a whole (25 per cent). The labor force in Dhaka grew twice as fast as the country as a whole in the late nineties largely due to continuing migration and increasing female labor force participation. Between 1996 and 2000, Dhaka's labor force grew by 15 percent as compared with 7 percent for the country as a whole. There were an estimated 3.5 million people in the Dhaka in the year 2000. As of 2009, Dhaka's Gross Municipal Product (GMP) is registered at \$ 85 billion. With an annual growth rate of 6.2 per cent, the GMP is projected to rise to \$ 215 billion by 2025. The annual per capita income of Dhaka is estimated at \$ 1,350 with 34 per cent of households living below the poverty line, including a large segment of the population coming from the villages for employment, with most surviving on less than \$ 5 a day.

The small-scale informal industries, garments industries, cottage and light engineering industries, heavy weight industries comprise the industrial sector of Dhaka which create the opportunities of employment here. The main commercial as well as the industrial areas of the city include Sutrapur, Motijheel, New market, Gulshan and Farmgate, while Tejgaon and Hazaribagh are the major industrial areas. Growth has been especially strong in the finance, banking, manufacturing, telecommunications and small traders, while tourism, hotels and restaurants continue as important elements in the economy of Dhaka city [10].

3.2.3. Transportation System

Dhaka has 1,868 kilometers (1,161 mile) of paved roads. It is connected to the other parts of the country through strong highway and railway links. Dhaka city has only 220 km primary roads. The city is suffering serious growing pains. There is hardly any single decent sidewalk or pavement for people to walk on. However, the Kamalapur Railway Station, Airport (Biman Bandar) Railway Station and the Cantonment Railway Station are the main railway stations providing trains on suburban & national routes. The Sadarghat Port on the banks of the Buriganga River serves the transportation of goods and passengers upriver and to other ports in Bangladesh [27].

Now, there are as many as 3.5 lakhs mechanized vehicles plying on the city streets, choking the city in blue noxious fumes that are highly hazardous to health [27]. Besides, Cycle rickshaws and auto rickshaws are the main mode of transport, with close to 4,00,000 rickshaws running each day, the largest number for any city in the world. On the other hand, public buses are operated by the state-run Bangladesh Road Transport Corporation (BRTC) and by private companies and operators. The government has overseen the replacement of two-stroke engine taxis with "Green taxis" locally called Compressed Natural Gas (CNG), which run on Compressed Natural Gas [4].

3.3. Profile of Study Area (Four Thanas)

In Dhaka city, total number of Thana is 21 (twenty one). The northern Thana is Uttara and the southern Thana is Shyampur of the city. The Uttara Thana is not high densely populated area and here the number of small industries are not high. But the Shyampur Thana is most densely populated area in Dhaka and a significant number of different small industries are located there. However, the Badda Thana is located at the east side of Dhaka city. This Thana is not so high densely populated area and the number of small industries are less there. On the other hand, Mohammadpur Thana is located at the west side of Dhaka city which is most densely populated area and a huge number of small industries of different categories are located there [11].

Pallabi Thana

Pallabi Thana/Area under Dhaka City Corporation is bounded by Uttara Thana on the north, Mirpur and Kafrul Thanas on the south, Cantonment Thana on the east, Mirpur Thana and Savar Upazila on the west. Its area is 17 sq km and total population is 3,64,000.

The land use of this Thana is mainly the residential and mixed use area. Textile mill, chemical factory, dyeing and other small industries like weaving (zamdani and karchupi), potteries, handicraft, bamboo and cane works are the major small-scale informal industries at this area/Thana.

Lalbagh Thana

Lalbagh Thana/Area under Dhaka City Corporation is bounded by Dhanmondi and Ramna Thanas on the north, Kamrangirchar Thana/Area and Keraniganj upazila on the south, Kotowali and Ramna Thanas on the east, Kamrangirchar and Hazaribagh Thanas on the west. The area of this Thana is 5.74 sq km and total population is 3,65,323.

The Land use are residential area 30 per cent, commercial area 30 per cent, Government of Bangladesh (GoB) area 15 per cent, educational centers 10 per cent, public use area 10 per cent and slum area 5 per cent. The main small industries in these Thanas/areas are plastic factory, aluminum industry, foot ware/shoe factory, machineries and welding workshops, lathe machine, tailoring and handicrafts, toy making etc.

Shyampur Thana

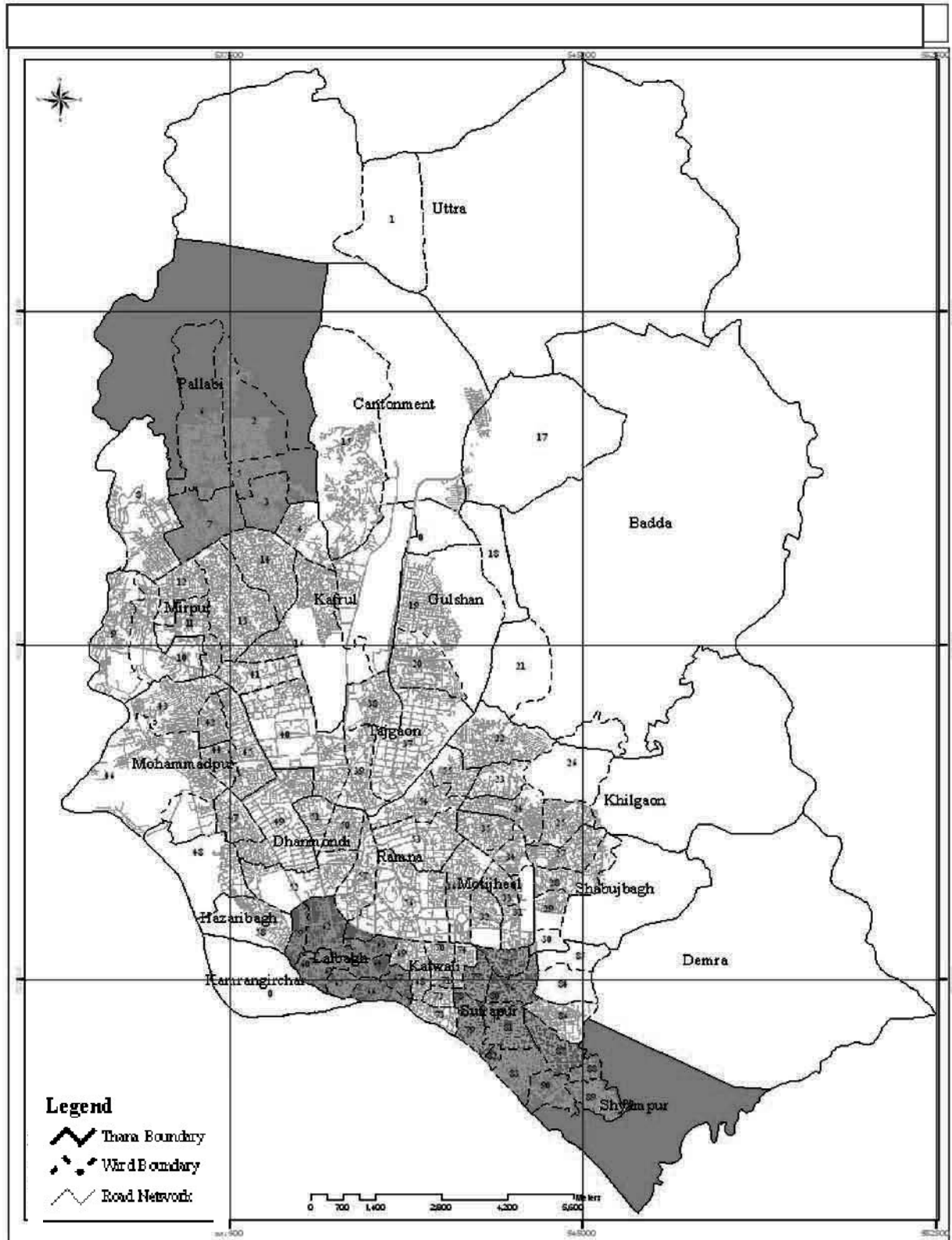
Shyampur Thana is bounded by Demra Thana on the north, Narayanganj Sadar and Keraniganj upazilas on the south, Narayanganj Sadar upazila on the east, Sutrapur Thana and Keraniganj upazila on the west. This is a major neighborhood of Dhaka, the capital of Bangladesh. The area of this Thana is 2.31 sq km with the total population of 60,152.

According to the Detailed Area Plan of Dhaka 2006, the major land uses of this area are commercial and mixed use area (This area is famous for its small-scale industries like the cotton works in weaving workshops and handicrafts carpenter and wooden furniture, saw mill, small garments industry, ice cream factory and bakery etc.

Sutrapur Thana

Sutrapur Thana under the Dhaka district is situated at the southern part of Dhaka metropolitan area is bounded by Motijheel Thana on the north, Keraniganj upazila on the south, Demra Thana on the east, Kotwali Thana on the west. It is very near to the river Buriganga. The area of this Thana is 4.38 sq. km. It has 49,286 households and 3,07,483 population as of 1991 Bangladesh census.

The major land uses of this area are commercial and mixed use because this area is very near to the Motijheel Thana of the city. In Sutrapur, the residential area is only 32 per cent, office area is 5 per cent, commercial area is 18 per cent, market & business centre is 37 per cent, public use 5 per cent, low lying marshy land 0.8 per cent, fallow land 0.9 per cent, others 1.3 per cent. The major small-scale informal industries at this area are engineering or lathe machine workshops, welding workshops and auto mobile engineering workshops etc. [18].



Map 3.1. Study Area: Pallabi, Labagh, Sutrapur and Shyampur Thana
 Source: Prepared by author according to the information on the map of Sheltech (Pvt.) Ltd. and the information of ILO Bangladesh

3.4. Profile of Industry Owners

The general profile of the industry owners and managers of different categories of these small industries are being described in this section that was collected from the owners and managers during survey period at the study area.

3.4.1. Age and Sex Structure

Small-scale industry is a type of business based on manufacturing products, run by person/s. From the study, it had been found that highest number (41.8 per cent) of industry owners' age is in the range of 30-39 years (Table 3.1). Again, the Table 3.1 reveals that the second highest numbers of industry owners (33.5 per cent) are in the range of ages 40-49 years. So, it can easily be said that most of the industry owners are middle ages peoples. Besides, from the study findings it can easily understood that the peoples under the ages of 50 and above years are the lowest in numbers (only 6.5 per cent) who are the small-scale industry owners of the study area in Dhaka.

Table 3.1. Age structure of the industry owners/managers

Age Limit	Frequency	Percentage
Below 30	31	18.2
30 to 39	71	41.8
40 to 49	57	33.5
50 and above	11	6.5
Total	170	100.0

Source: Field Survey December, 2010

However, from the study, it was also found that most of the industry owners (98.8 per cent) are male. Only 1.2 per cent of them are owned by female (field survey, December, 2010).

3.4.2. Socio-economic Characteristics

According to the survey result, from the Table 3.2, it is clearly understood that industry owners having the education level of below Secondary School Certificate (SSC) are the highest numbers (70.6 per cent). However, the Table 3.2 also disclosed that a great portion of industry owners (25.3 per cent) have obtained the educational degree of SSC level and only 0.6 per cent of them are degree and masters level educated. So, it was found that most of them are below Higher Secondary Certificate (HSC) level in their educational status. Therefore, it can easily be said that the educational status of the industry owners and managers in the study area of Dhaka is not so high.

Table 3.2. Education level of small-scale industry owners

Level of Education	Frequency	Percentage
Below SSC	120	70.6
SSC	43	25.3
HSC	3	1.8
Bachelor	1	0.6
Masters	1	0.6
Others	2	1.2
Total	170	100.0

Source: Field Survey December, 2010

On the other hand, the regular income from small industries is an important issue in the study area of Dhaka. Monthly income of small-scale industry owners is not so high in the study area of Dhaka. Considering the owner's investment and other costs in the industry, monthly income of most of the industry owners is not enough. According to the study result, Table 3.3 depicts that the highest numbers i.e. 28.2 per cent of industry owners' monthly income is in the range of Tk. 10,001-15,000 and the second and third highest income range of them is in the range of Tk. 5,001-10,000 and Tk. 15,001-20,000 respectively excluding other costs. So, it can easily be seen that the income or earning of the owners varies from Tk 5,001 to 20,000 in a month in the study area. But very little number of industries (only 5.3 per cent) has the income of Tk. below & equal to 5,000 in a month.

Table. 3.3. Monthly income of small-scale industry owners

Range of Income (Tk.)	Frequency	Percentage
Below & Equal 5,000	9	5.3
5,001-10,000	47	27.6
10,001-15,000	48	28.2
15,001-20,000	46	27.1
Above 20,000	20	11.8
Total	170	100.0

Source: Field Survey December, 2010

3.4.3. Ownership Status of the Industry

Usually, a small industry is being established by one or two or multiple owners but in some cases, these industries are rented house or in some cases these are treated as others. According to the views of the industry owners, it was found that 96.5 per cent industries are owned by person/s, these are not rented house (field survey, December, 2010).

Moreover, according to the survey result, Figure 3.1 reveals that the highest numbers of ownership (89.6 per cent) of small industries belong to 01 person and the lowest numbers of ownership of small industries belong to 2 persons or above 2 persons (8.5 per cent and 1.8 per cent respectively) in the study area of Dhaka city.

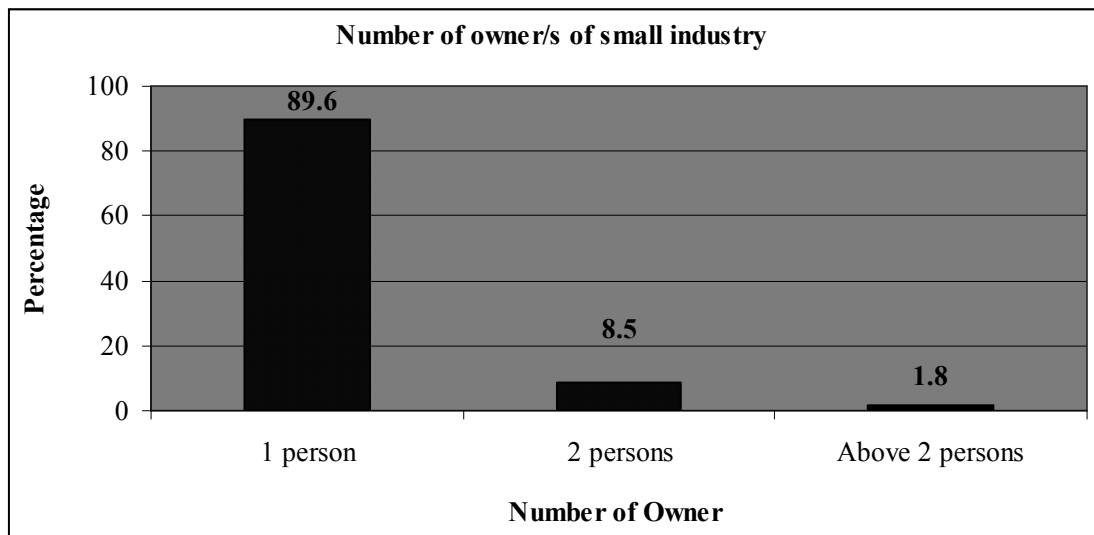


Figure 3.1. Number of owner/s of small-scale industry in the study area
 Source: Field Survey December, 2010

The profile of Dhaka, study area and industry owners are showed elaborately here. It is evident from the data that most of the owners are young male with low education level of SSC and below SSC. However, the ranges of income of the small industry owners in every month does not exceeds Tk. 20,000 and most of them are single owner of the industry. All the information of industry owners has been described here based on the statement given by themselves. But the information of Dhaka city and study areas itself has been stated here based on the secondary sources.

CHAPTER FOUR: SMALL-SCALE INDUSTRIES: DISTRIBUTION, LOCATIONS AND CHARACTERISTICS

4.1. Introduction

Small-scale industries are unequally distributed and located at different Thanas of Dhaka city which are showed in this chapter. However, the plot size of small industries, types of structure and their establishment period are also stated here. The duration of operation of small industries both in the year and in a day; their daily productions and sells; raw materials and finished products; forward linkage etc. are also illustrated in this section. The status of utility services; investment of small industries both capital and operational are also described here. Nevertheless, environmental pollution caused by these small industries in Dhaka, employment opportunity of workers and their technical knowledge etc. are illustrated in this chapter.

4.2. Distribution and Locations

Small-scale industries are distributed at different Thanas of Dhaka as well as different locations within those Thanas of Dhaka. Each category of these small industries has specific concentration at the individual Thana/area of the study area in Dhaka.

The distribution of 8 (eight) categories of selected small-scale industries at different Thanas of Dhaka city is shown in the following table:

Table 4.1. Thana wise distribution of 8 (eight) categories of small industries of Dhaka

Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
1	Badda	Weaving workshop (banaroshi/zamdani)	0	23
		Karchupi workshop	1	
		Shoe factory	0	
		Tailoring	6	
		Wooden industry	6	
		Auto-mobile engineering/repairing	7	
		Welding workshop	0	
		Engineering/Lathe machine workshop	3	
2	Cantonment	Weaving workshop (banaroshi/zamdani)	6	12
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	0	
		Wooden industry	2	
		Auto-mobile	1	

Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
		engineering/repairing		
		Welding workshop	3	
		Engineering/Lathe machine workshop	0	
3	Demra	Weaving workshop (banaroshi/zamdani)	0	62
		Karchupi workshop	0	
		Shoe factory	1	
		Tailoring	8	
		Wooden industry	10	
		Auto-mobile engineering/repairing	23	
		Welding workshop	10	
		Engineering/Lathe machine workshop	10	
4	Dhanmondi	Weaving workshop (banaroshi/zamdani)	0	72
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	30	
		Wooden industry	9	
		Auto-mobile engineering/repairing	24	
		Welding workshop	7	
		Engineering/Lathe machine workshop	2	
5	Gulshan	Weaving workshop (banaroshi/zamdani)	0	26
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	0	
		Wooden industry	4	
		Auto-mobile engineering/repairing	20	
		Welding workshop	0	
		Engineering/Lathe machine workshop	2	
6	Hazaribagh	Weaving workshop (banaroshi/zamdani)	0	27
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	11	
		Wooden industry	7	
		Auto-mobile engineering/repairing	6	
		Welding workshop	0	

Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
		Engineering/Lathe machine workshop	3	
7	Kafrul	Weaving workshop (banaroshi/zamdani)	0	46
		Karchupi workshop	0	
		Shoe factory	1	
		Tailoring	21	
		Wooden industry	5	
		Auto-mobile engineering/repairing	13	
		Welding workshop	1	
		Engineering/Lathe machine workshop	5	
8	Kamrangirchar	Weaving workshop (banaroshi/zamdani)	0	25
		Karchupi workshop	0	
		Shoe factory	3	
		Tailoring	15	
		Wooden industry	0	
		Auto-mobile engineering/repairing	1	
		Welding workshop	5	
		Engineering/Lathe machine workshop	1	
9	Khilgaon	Weaving workshop (banaroshi/zamdani)	0	54
		Karchupi workshop	0	
		Shoe factory	1	
		Tailoring	7	
		Wooden industry	6	
		Auto-mobile engineering/repairing	33	
		Welding workshop	9	
		Engineering/Lathe machine workshop	8	
10	Kotwali	Weaving workshop (banaroshi/zamdani)	3	88
		Karchupi workshop	0	
		Shoe factory	36	
		Tailoring	4	
		Wooden industry	6	
		Auto-mobile engineering/repairing	16	
		Welding workshop	10	
		Engineering/Lathe machine workshop	13	

Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
11	Lalbagh	Weaving workshop (banaroshi/zamdani)	0	184
		Karchupi workshop	1	
		Shoe factory	78	
		Tailoring	40	
		Wooden industry	6	
		Auto-mobile engineering/repairing	17	
		Welding workshop	10	
		Engineering/Lathe machine workshop	32	
12	Mirpur	Weaving workshop (banaroshi/zamdani)	0	70
		Karchupi workshop	0	
		Shoe factory	2	
		Tailoring	7	
		Wooden industry	10	
		Auto-mobile engineering/repairing	26	
		Welding workshop	11	
		Engineering/Lathe machine workshop	14	
13	Mohammadpur	Weaving workshop (banaroshi/zamdani)	0	99
		Karchupi workshop	44	
		Shoe factory	1	
		Tailoring	4	
		Wooden industry	10	
		Auto-mobile engineering/repairing	32	
		Welding workshop	5	
		Engineering/Lathe machine workshop	3	
14	Motijheel	Weaving workshop (banaroshi/zamdani)	0	56
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	1	
		Wooden industry	4	
		Auto-mobile engineering/repairing	50	
		Welding workshop	0	
		Engineering/Lathe machine workshop	1	
15	Pallabi	Weaving workshop (banaroshi/zamdani)	120	420

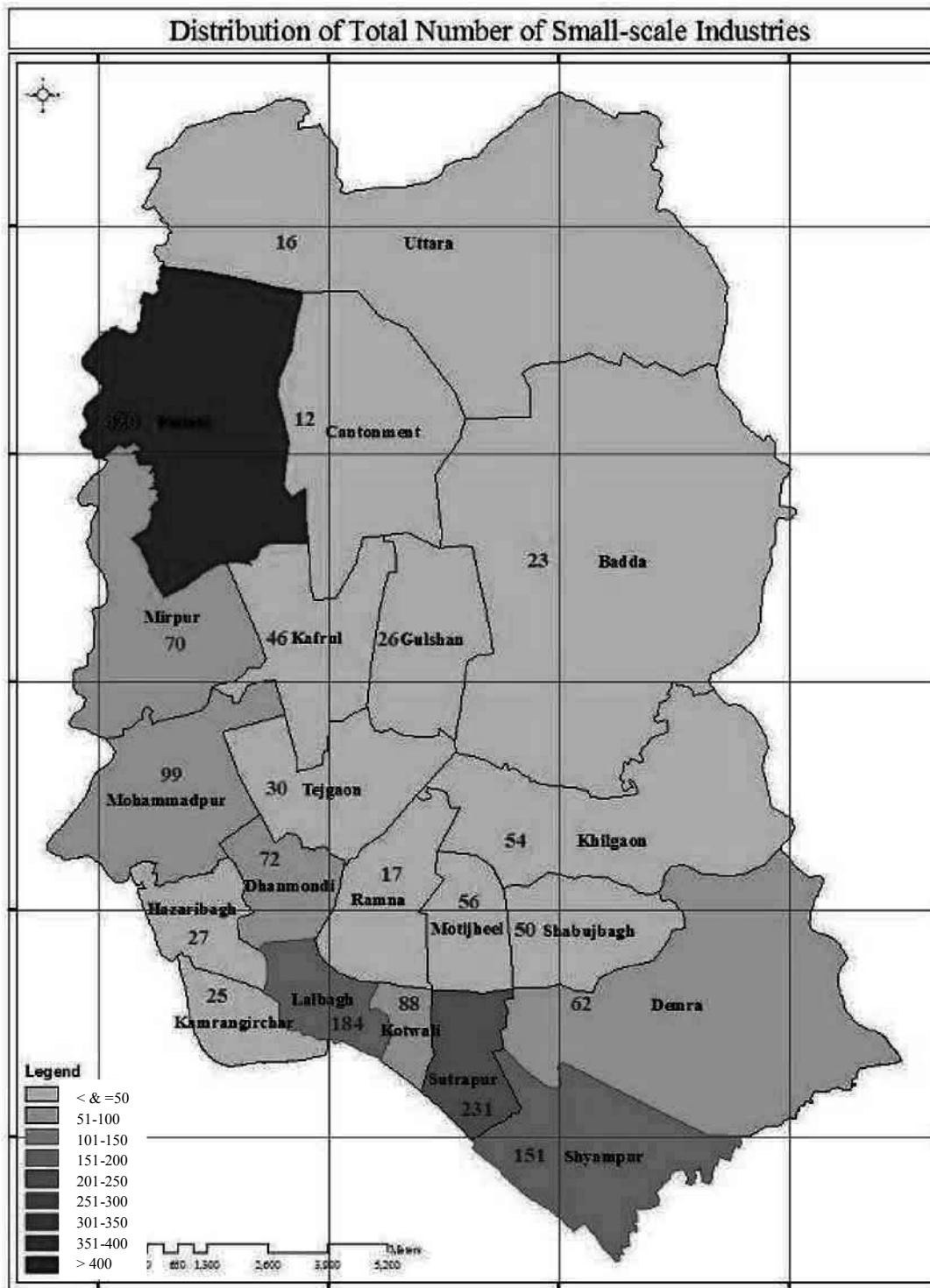
Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
		Karchupi workshop	263	
		Shoe factory	3	
		Tailoring	11	
		Wooden industry	4	
		Auto-mobile engineering/repairing	8	
		Welding workshop	7	
		Engineering/Lathe machine workshop	4	
16	Ramna	Weaving workshop (banaroshi/zamdani)	0	17
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	11	
		Wooden industry	0	
		Auto-mobile engineering/repairing	4	
		Welding workshop	1	
		Engineering/Lathe machine workshop	1	
17	Sobujbagh	Weaving workshop (banaroshi/zamdani)	0	50
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	1	
		Wooden industry	4	
		Auto-mobile engineering/repairing	21	
		Welding workshop	14	
		Engineering/Lathe machine workshop	10	
18	Shyampur	Weaving workshop (banaroshi/zamdani)	5	151
		Karchupi workshop	6	
		Shoe factory	1	
		Tailoring	14	
		Wooden industry	68	
		Auto-mobile engineering/repairing	13	
		Welding workshop	10	
		Engineering/Lathe machine workshop	34	
19	Sutrapur	Weaving workshop (banaroshi/zamdani)	0	231
		Karchupi workshop	0	
		Shoe factory	3	

Sl #	Thana Name	Category of Small-scale Industry	Frequency	Total (Thana wise)
		Tailoring	4	
		Wooden industry	18	
		Auto-mobile engineering/repairing	76	
		Welding workshop	31	
		Engineering/Lathe machine workshop	99	
20	Tejgaon	Weaving workshop (banaroshi/zamdani)	0	30
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	2	
		Wooden industry	1	
		Auto-mobile engineering/repairing	20	
		Welding workshop	1	
		Engineering/Lathe machine workshop	6	
21	Uttara	Weaving workshop (banaroshi/zamdani)	0	16
		Karchupi workshop	0	
		Shoe factory	0	
		Tailoring	2	
		Wooden industry	1	
		Auto-mobile engineering/repairing	6	
		Welding workshop	4	
		Engineering/Lathe machine workshop	3	
Total			1769	1769

Source: International Labor Organization (ILO) Bangladesh, 2001

In Dhaka, near about 24 categories of small-scale industries are distributed at different Thanas. Here, map 4.1 shows 08 (eight) categories of major small industries which are distributed at different Thanas of Dhaka city. However, the distribution of these industries is classified into 9 (nine) classes according to number of industries among 21 (twenty one) Thanas of Dhaka city. Following information can be summarized from the map 4.1:

- Small industries of below and equal to 50 are the highest numbers which are distributed at most of the Thanas in the study area.
- The second highest number of small industries are 51-100 in numbers which are distributed at some of the Thanas at the study area.
- Again, it is found that most of the small industries are concentrated at the western and southern parts of Dhaka city.

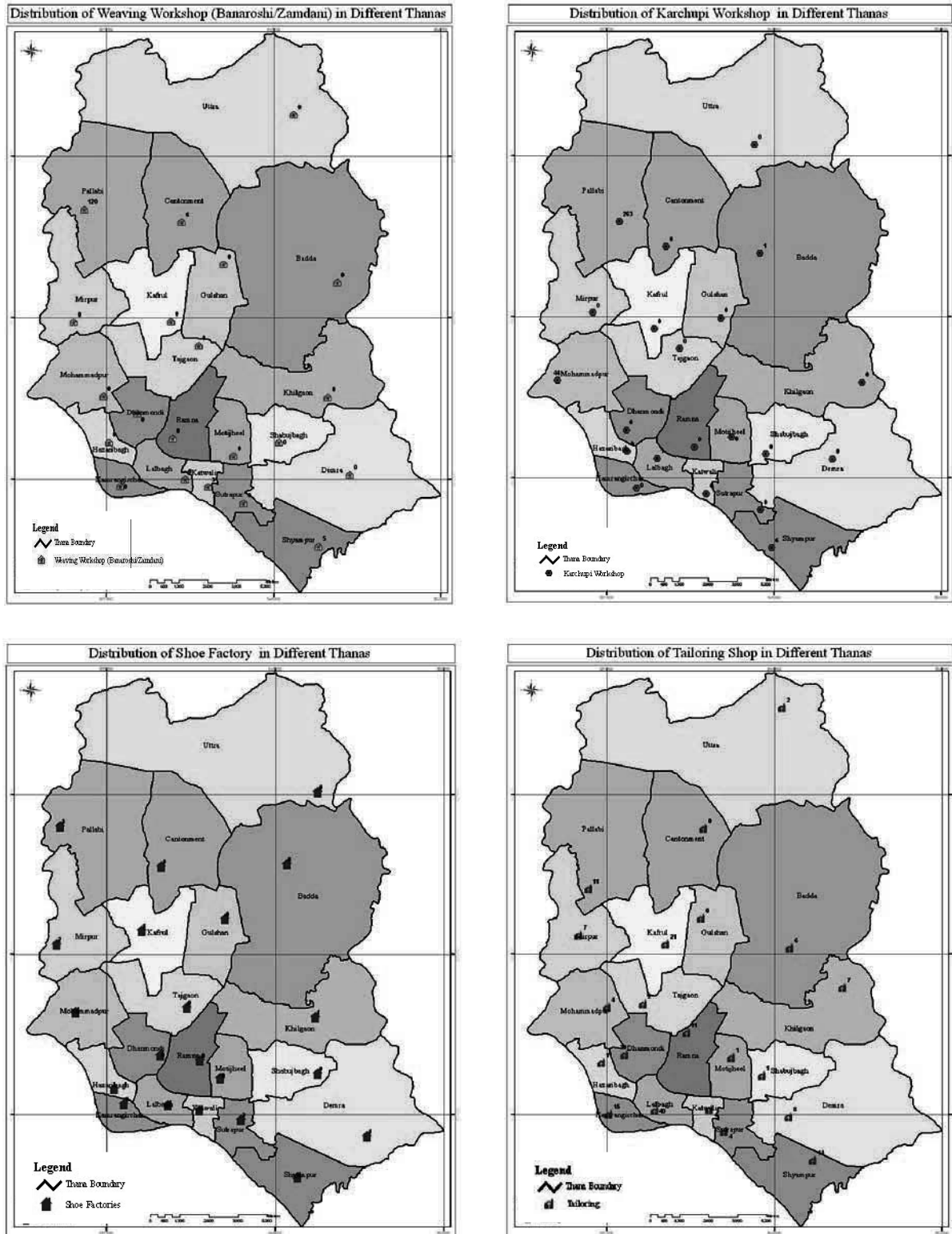


Map 4.1. Small-scale industries of different ranges at different Thanas in Dhaka
 Source: Based on ILO Bangladesh (2001), Sheltech (Pvt.) Ltd. (2010)

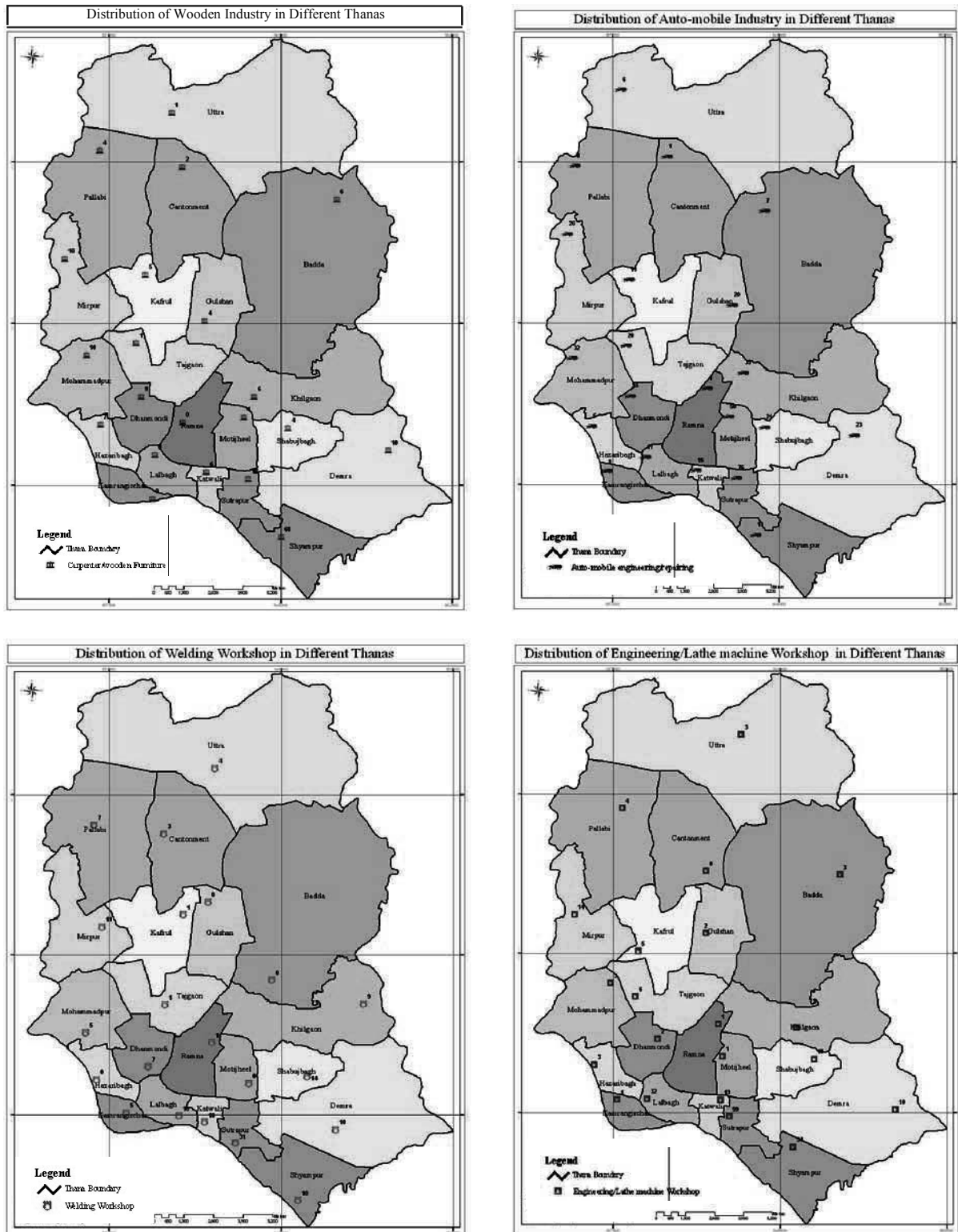
In this study, the major 8 (eight) categories of selected small-scale industries are distributed at every Thana of Dhaka city but these industries are not equally distributed in their numbers at every Thana. There is a difference in their numbers of each category of industries at 21 (twenty one) Thanas of Dhaka.

The map 4.2 shows the number of each type of eight categories of small industries separately distributed at every Thana of Dhaka. Here, every Thana distribute these 8 (eight) different categories of small industries with their individual numbers. Hence, from this map, it is easily seen the the number of each type of these 8 (eight) categories of industries which are distributed at 21 (twenty one) Thanas of Dhaka distinctly.

On the other hand, the map 4.3 and 4.4 represents the number of weaving workshops, karchupi workshops, shoe factories, tailoring shops, wooden industries, auto-mobile workshops, welding workshops and engineering/lathe machine industries/workshops which are distributed individually at every Thana of Dhaka city.



Map 4.3. Number of weaving workshops, karchupi workshops, shoe factories and tailoring shops at every Thana;
 Source: Based on ILO Bangladesh (2001), Sheltech (Pvt.) Ltd. (2010)

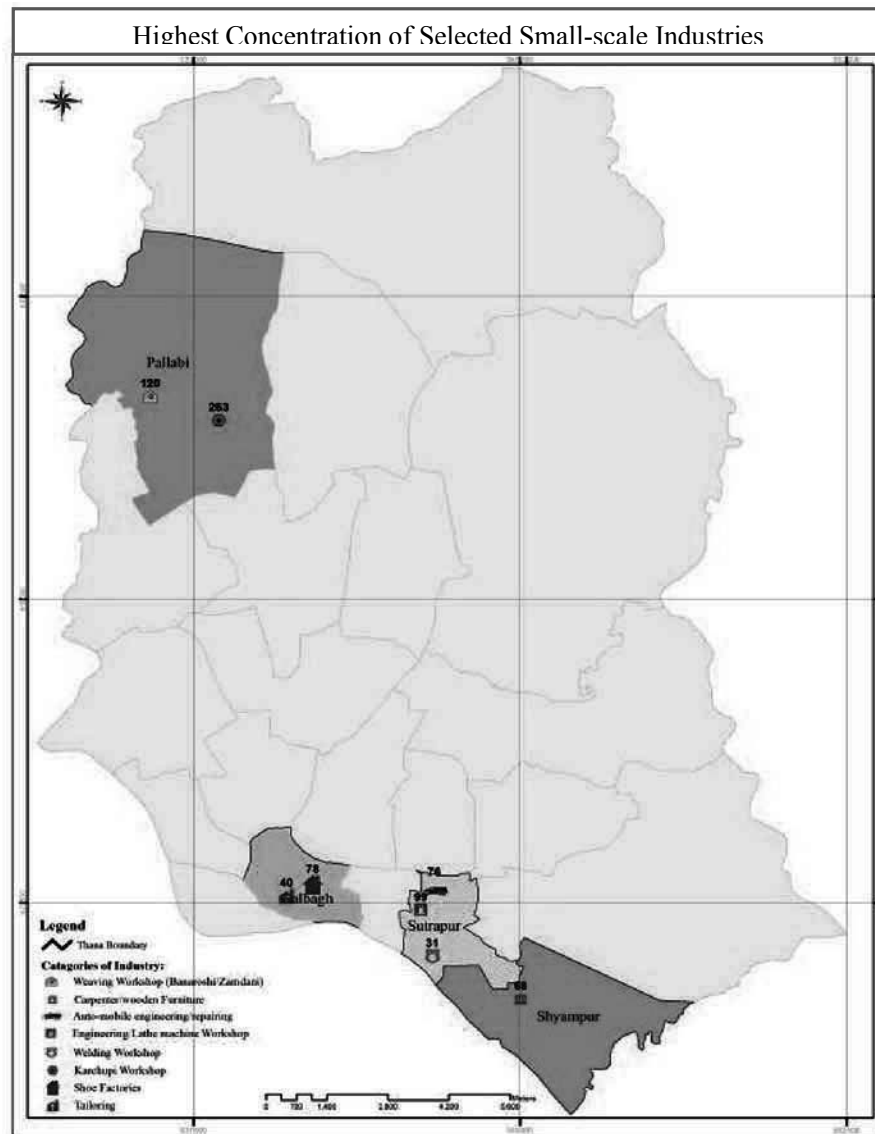


Map 4.4. Number of wooden, auto-mobile, welding, engineering/lathe machine workshops at every Thana

Source: Based on ILO Bangladesh (2001), Sheltech (Pvt.) Ltd. (2010)

Map 4.5 represents Pallabi, Lalbagh, Shyampur and Sutrapur Thana of Dhaka city in which the selected 8 (eight) categories of small-scale industries are located with their highest numbers. This map also shows the Thanas those have the highest concentration of these small industries among the total 21 (twenty one) Thanas of Dhaka city. The weaving workshops (banaroshi and zamdani) and karchupi workshops are the highest numbers than the others are located at Pallabi.

The map 4.5 also shows that the highest concentration of weaving workshops (banaroshi and zamdani) (120 numbers) and karchupi workshops (263 numbers) is in the Pallabi Thana; shoe factories (78 numbers) and tailoring (40 numbers) is in the Lalbagh Thana; auto-mobile engineering/repairing (76 numbers), engineering/lathe machine (99 numbers) and welding workshops (31 numbers) is in the Sutrapur Thana and wooden workshops (68 numbers) is in the Shyampur Thana of Dhaka city.



Map 4.5. Highest concentration of 08 categories of small industries at 04 Thanas in Dhaka
 Source: Based on ILO Bangladesh (2001), Sheltech (Pvt.) Ltd. (2010)

In the study area, these small industries are not equally distributed at each Thana. Here, the Figure 4.1 depicts that Shyampur Thana includes very small number (only 9 per cent) of small industries because area of this Thana is small and only carpenter/wooden furniture workshop is found there. However, the second lowest numbers of small industries (15 per cent) are distributed at Lalbagh Thana because its area is also small and only tailoring and shoe factories are located there. The highest numbers of small industries are located at Pallabi Thana (49 per cent) and Sutrapur Thana (27 per cent) of Dhaka because huge weaving and karchupi shops are found at Pallabi and Sutrapur Thana as well as lots of engineering and automobile workshops is also located there.

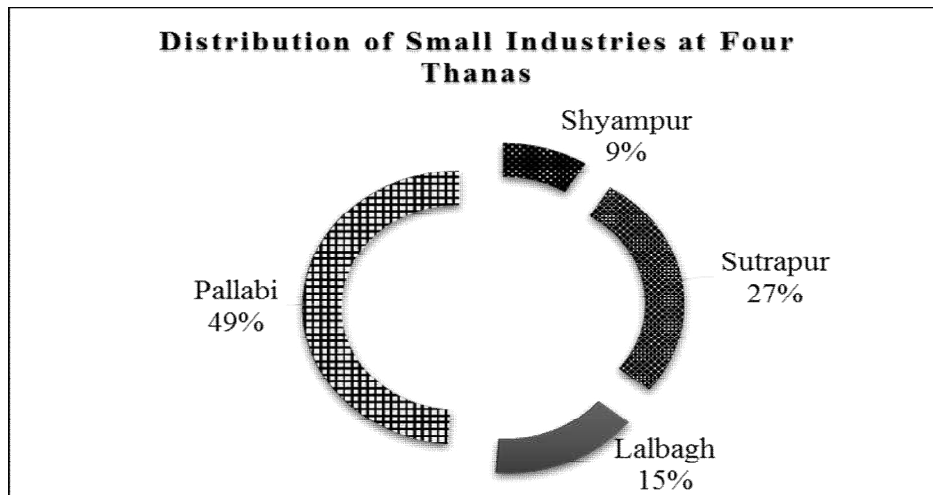


Figure 4.1: Distribution of small-scale industries in the study area
Source: Based on ILO Bangladesh, 2001

4.3. Plot Size/Area of Small Industries

Usually, the size of plot of a small industry is not big. Figure 4.2 shows that the size of the plot of a small number of industries (only 3.5 per cent) is above 2 katha. Survey result reveals that the highest number of industries (66.5 per cent) occupy less than 1 katha of land.

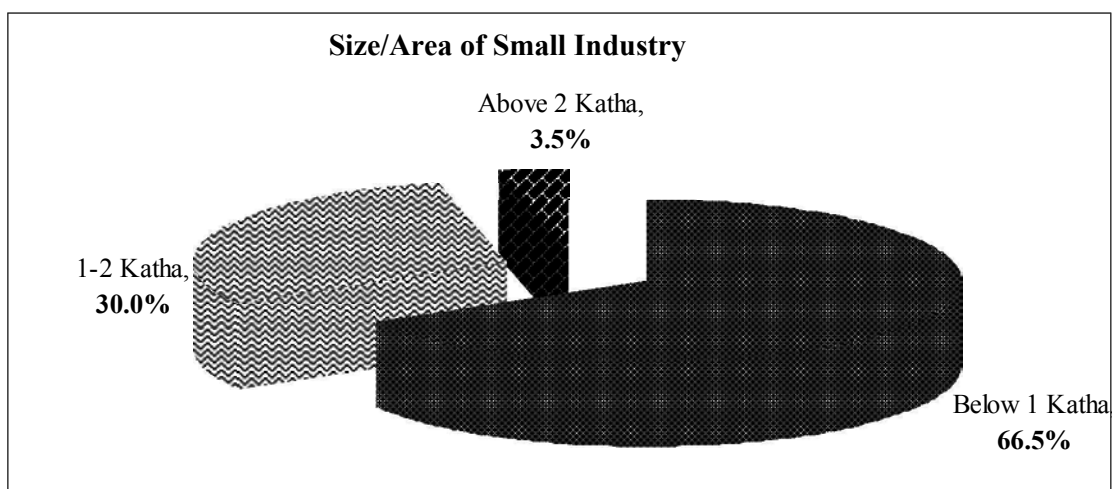


Figure 4.2. Plot size of small-scale industries in the study area
Source: Field Survey December, 2010



Photograph 4.1. Workers are working in the small space of the industry



Photograph 4.2. Concentration of small industries along the road at Sutrapur area

4.4. Types of Structure of Small Industries

In the study locations, small industries are operating in different types of structures. Table 4.2 reveals that most of the small industries (59.4 per cent) are semi-pucca structure and 38.8 per cent are pucca structure. Only a small number of industries (1.8 per cent) are kutcha structure.

Table 4.2. Distribution of small-scale industries according to structure types

Types of structure	No. of Industry	Percentage
Kutcha	03	1.8
Semi-pucca	101	59.4
Pucca	66	38.8
Total	170	100.0

Source: Field Survey December, 2010



Photograph 4.3: Semi-pucca structured small industry at Lalbagh area



Photograph 4.4: Kutcha structured small industry at Sutrapur Thana

4.5. Establishment Period of Small Industries

In Dhaka, small industries were established at different periods. Before the liberation year 1971, the rate of establishment of these industries was very low. After liberation war 1971, Dhaka was started to build as a new arena of employment prospects and also developed its infrastructural facilities and different institutions.

Based on the study findings, Figure 4.3 shows that the highest numbers of small industries (39.4 per cent) were established during the period of 1991 to 2000 and the second highest (22.9 per cent) were established from 1981 to 1990 because a lot of income generation scopes were created at that periods in Dhaka. On the other hand, Figure 4.3 shows that before the liberation year 1971, very few number (2.4 per cent) of small industries were established in Dhaka due to low population density and less employment opportunity. Moreover, from 2001 to 2010, a number of small industries (18.8 per cent) were established in Dhaka. But in the Dhaka Metropolitan Development Plan-DMDP (1995-2015), it was stated that industries cannot be established at highly concentrated places and residential, commercial and mixed use areas in Dhaka city. Despite having this planning regulation, a number of different categories of small industries were being set up in Dhaka.

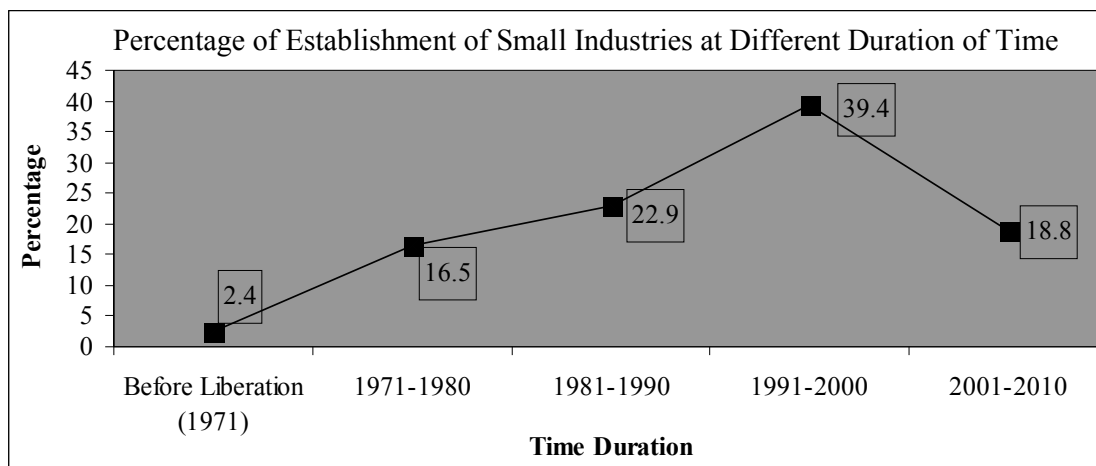


Figure 4.3. Trend of establishment of small-scale industries in Dhaka
Source: Field Survey December, 2010

4.6. Duration of Operation

Some of the small industry owners do not operate their industries around the year due to some disasters and other problems (field survey 2010). These industries produce seasonal products or goods during the specific seasons of the year. According to the views of industry owners, it was found that except few industries (1.8 per cent) most of those (98.2 per cent) operate 06-12 months of the year for their daily production purposes (Table 4.3).

On the other hand, the survey result reveals that most of the industries (91.2 per cent) operate 09-12 hours of the day (Table 4.4) which violates the labor law, 2006 of Bangladesh, because the labor law, 2006 describes that no adult worker shall ordinarily be required or allowed to work in an establishment for more than 08 (eight) hours in any day (Bangladesh Labour Law, 2006). In this table, it is found that a very small percentage of industries (only 4.1 per cent) operate 06-08 hours of the day which follow the labor act, 2006 of the country. Besides, a number of industries (4.7 per cent) operate above 12 hours of the day due to meet the market demand.

Table 4.3. Duration of operation of small industry in a year

Operation period	No.	Percentage
Below 6 months	3	1.8
6-12 months	167	98.2
Total	170	100.0

Source: Field Survey December, 2010

Table 4.4. Duration of operation of small industry in a day

Operation time	No.	Percentage
6-8 hours	7	4.1
9-12 hours	155	91.2
Above 12 hours	8	4.7
Total	170	100.0

Source: Field Survey December, 2010

4.7. Production and Sell of Goods/Products

Different categories of small industries at the study area produce different types of goods and those are sold in and outside Dhaka. Due to their characteristics, small industries make variation in their daily productions. Based on the study result, the highest number of industries (59.4 per cent) produce and sell below 10 units of goods in a day. On the other hand, the lowest number of industries (1.2 per cent) produce and sell 40-49 units of goods in a day (field survey, 2010). The daily rate of productions of these small industries is not so high because their daily target of sell is low. The daily sell of goods mostly matches with their daily productions.



Photograph 4.5. Goods are processing for final production in weaving industry



Photograph 4.6. Finished goods/products of shoe factory is ready to sell at outside.

4.8. Raw Materials

Different categories of these small industries use various raw materials to manufacture goods. These raw materials usually are collected both from in and outside of Dhaka. These raw materials are carried out by different modes of transport based on their availability at the locations.

4.8.1. Source of Raw Materials

The nature of raw materials of different categories of these small industries are different and production mechanism is also different. Based on the survey findings, Figure 4.4 shows that 95.9 per cent of industry owners told that they bring their raw materials from the source 'from any person/shop in Dhaka city' which is near to the places of industry's locations. Here, the Figure 4.4 also reveals that a little portion of industry owners (only 1.8

per cent) collect their raw materials from the source 'from any district outside Dhaka' due to unavailability of these types of raw materials in Dhaka.

Beside these, another little portion of industry owners (only 2.4 per cent) told that they carry out raw materials from the source 'from any person/shop both in and outside Dhaka' for their daily production purposes because these raw materials are available both in and outside of Dhaka. So, it can easily understand that raw materials of all categories of these small industries had been brought from different areas both in and outside of Dhaka city.

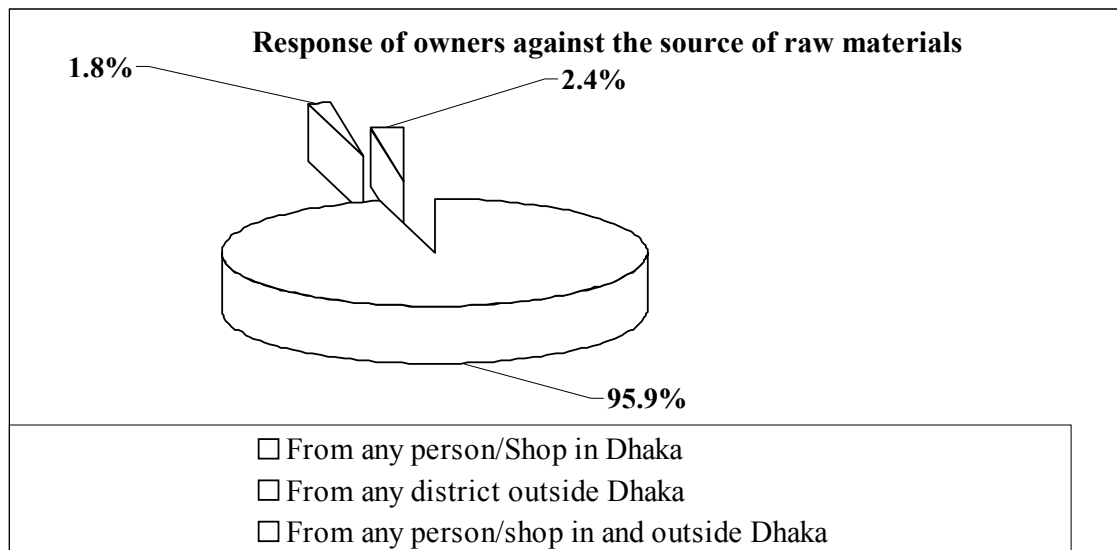


Figure 4.4. Sources of raw materials of small industries

Source: Field Survey December, 2010

4.8.2. Name of Raw Materials

Different categories of these small-scale industries use different types of raw materials by different names for their daily production purposes. During the field survey at the study area these name of the raw materials were found from discussion with the industry owners. Here, the Table 4.5 shows that weaving and karchupi workshop use 'cotton, jari, chumki, color, cloth, reshom, silk, puthi and stone' as the raw materials for their daily production purposes. However, the owners use the 'cotton and cloth' for tailoring purpose as their raw materials.

Table 4.5 also reveals that Auto-mobile engineering/repairing workshop uses 'iron, copper, aluminum, steel, color' as their raw materials; the show factory uses 'plastic, rubber, color, gum' as raw materials; wooden industry uses 'Wood, perak, color' as raw materials; welding workshop uses 'plain tin, steel, iron' as raw materials and the engineering/lathe machine workshop uses 'iron, lead, steel, screw, bolt' as their raw materials in the study area.

Table. 4.5. Raw materials used by different categories of small industries

Sl #	Name of different raw materials	Different industries which use these raw materials
1	Cotton, jari, chumki, color	Weaving workshop
2	Cloth, reshom, cotton, silk, puthi, stone	Karchupi workshop
3	Cloth, cotton	Tailoring
4	Iron, copper, aluminum, steel, color	Auto-mobile engineering/repairing
5	Plastic, rubber, color, gum	Shoe factory
6	Wood, perak, color	Wooden industry
7	Plain tin, steel, iron	Welding workshop
8	Iron, lead, steel, screw	Engineering/lathe machine workshop

Source: Field Survey December, 2010

4.8.3. Mode of Transport to Carry the Raw Materials

Small-scale industries use different types of modes of transport to carry their raw materials according to the characters of raw materials and distance of the sources of raw materials. Industry owners usually use those transports which have comparatively a less fare to carry the raw materials in and outside of Dhaka. Based on the study findings, Table 4.6 reveals that ‘rickshaw/van’ is the mode which is mostly used (76.5 per cent) by the owners to carry the raw materials in Dhaka. The main reason of using this mode is that industry owners bring their raw materials from the places which are very near to the industries and the fare of this mode is lower than the others.

However, Table 4.6 shows that a large portion of industries (10.6 per cent) use ‘bus’ as their mode of transport to carry the raw materials because the fare of bus is not higher than the others also. From the Table 4.6, it is also cleared that very lowest number of industries (only 1.2 per cent and 1.8 per cent) use truck and ship respectively to carry the raw materials due to long distance of the sources of raw materials from the industries’ location.

Table. 4.6. Mode of transport to carry the raw materials in small industries

Mode of transport	Percent of use
Rickshaw/van	76.5
Push-cart	6.5
CNG	1.8
Bus	10.6
Truck	1.2
Ship	1.8
On foot	1.8
Total	100.0

Source: Field Survey December, 2010

4.9. Finished Products

Finished product is the final output of any manufacturing industry as well as small-scale industry. These finished products are delivered to different markets, shops and other places for selling and marketing purposes. Therefore, to carry all these finished products at markets, shopping malls, business industries or companies and other places in and outside of Dhaka, various modes of transport both motorized and non-motorized are used by the industry owners.

4.9.1. Market of Finished Products

Different finished products are sold at different places in and outside of Dhaka. Figure 4.5 exposes that the highest number (80.6 per cent) of finished products of these small industries are sold to any person/shop in Dhaka due to a huge number of buyers of these products in Dhaka than the outside. On the other hand, Figure 4.5 shows that a small amount of finished products (only 2.9 per cent) are sold to any person/shop of outside Dhaka at different districts due to high demand. Besides, the Figure 4.5 reveals that 16.5 per cent products are sold both in and outside of Dhaka to any person/shop.

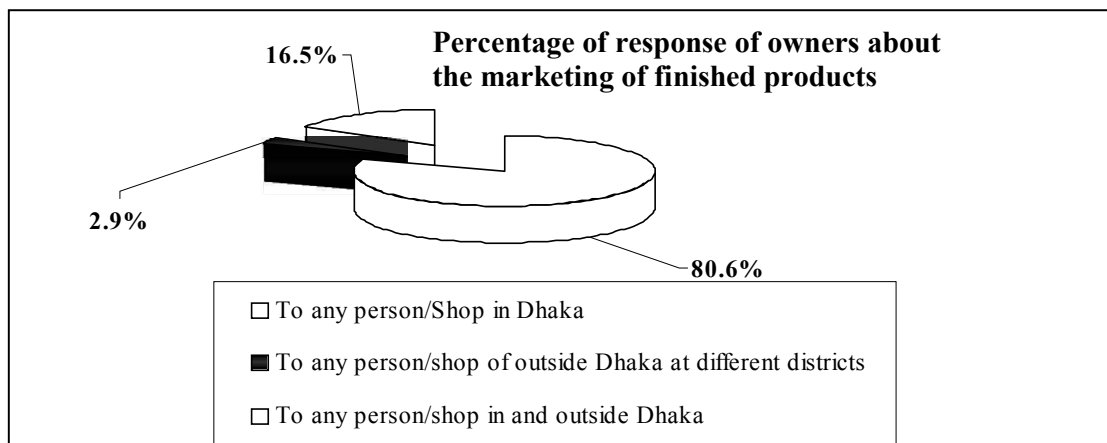


Figure 4.5. Market of finished products of the small industries
Source: Field Survey December, 2010

4.9.2. Mode of Transport to Carry the Finished Products

To sell and to buy the finished products, the industry owners and buyers carry these goods at different locations in and outside of Dhaka. For this purpose, different types of modes of transport are used by them. According to the survey result, Table 4.7 reveals that 'rickshaw/van' is only the mode which is mostly used by these small industries to carry the finished products which is stated by the highest number of industry owners (42.4 per cent). The industry owners sell their finished products to the nearest places due to usage of this mode of transport (rickshaw/van) in Dhaka. Moreover, this mode of transport is convenient to carry the goods by the owners and the fare is also less.

On the other hand, 'bus' is another key mode of transport to carry the finished products at different locations within and outside of Dhaka and the study reveals that 21.2 per cent small industries are using 'bus' as their mode of transport (Table 4.7). This table also

reveals that ‘trucks and CNGs’ are used by these industries very few (2.4 per cent and 2.9 per cent) to carry finished products due to unavailability of these modes at the study location.

Table. 4.7. Mode of transport to carry out finished products for marketing

Mode of Transport	Percent of use
Rickshaw/van	42.4
Push-cart	3.5
Truck	2.4
Pick-up	17.0
Bus	21.2
CNG	2.9
Car	6.5
On foot	4.1
Total	100.0

Source: Field Survey December, 2010

4.10. Forward Linkage

To make and maintain the relation of one business to other entrepreneurs who are mostly related to this business is treated as forward linkage of that particular one industry. This forward linkage runs and becomes stable on the purpose of both side’s benefit like selling and marketing of their goods. With a view to accelerate business and maintain good networking with others for marketing purpose, small industries should maintain forward linkages with other similar industries, institutions, markets and commercial shopkeepers. Besides, in order to maintain the equilibrium among demands, supply and market price of products of the small industries, forward linkage is significantly needed.

Most of the small industries are mainly the informal sector business occupier in Dhaka city should exist the forward linkage. But this study reveals that only a little portion of these small industries (18.8 per cent) have the forward linkages with other industries, shops and markets in Dhaka (field survey, 2010). The significant small industries are weaving and karchupi workshop, shoe factory, welding workshop, engineering/lathe machine workshop in Dhaka. Because for selling and marketing purpose, these industries have to make linkage with their partners.

4.11. Status of Utility Services

Supply of all utility services is needed at small-scale industries in Dhaka because those services accelerate and enhance daily productions of industries. These services are gas, electricity, water, sewerage facility which are provided by different agencies of Dhaka.

4.11.1. Water Supply

Despite having the importance of water supply at every small industry, the study reveals that only 26.5 per cent industries have the water supply connection and the rests have no connection (Table 4.8).

However, the time duration of the availability of water in small industries is not satisfactory to the industry owners. From the Table 4.9, it is clearly understood that in Dhaka, around one fourth i.e. 24.4 per cent small industries (which have the water supply line) get water for the time of below and equal to 6 hours in a day. Besides, the Table 4.9 shows that the lowest number of industry owners (13.3 per cent) told that the duration of availability of water at their industries is 19-24 hours in a day. On the other hand, the highest number (35.6 per cent) of industries get the water for 13-18 hours in a day. Therefore, it is found that water supply connection in small-scale industries of Dhaka is available but the duration of availability of water is not satisfactory.

Table 4.8. Existence of water supply in small industries

Respondent's Answer	Frequency	Percentage
Yes	45	26.5
No	125	73.5
Total	170	100.0

Source: Field Survey December, 2010

Table 4.9. Duration of availability of water in small industries in a day

Time duration	Frequency	Percentage
Below and equal to 6	11	24.4
7-12 hours	12	26.7
13 - 18 hours	16	35.6
19-24 hours	6	13.3
Total	45	100.0

Source: Field Survey December, 2010

4.11.2. Sewerage Facility

Despite having the need of sewerage facility at small industries, Table 4.10 reveals that 82.4 per cent industry owners told that their industries have no connection of sewerage line provided by the WASA in Dhaka.

Table 4.10. Existence of sewerage facility in the industries

Respondent's Answer	No. of Respondent	Percentage
Yes	30	17.6
No	140	82.4
Total	170	100.0

Source: Field Survey December, 2010

4.11.3. Drainage Facility

Not only for domestic purposes but also for industries' usage, the drainage connection with small industries is needed. Again, the flow of water and sewerage into the drain is also needed to active or run to dispose the solid and liquid wastes generated by these small industries of Dhaka. On the other hand, Dhaka City Corporation (DCC) and WASA both have the clear direction for removal of any kind of industrial wastes from the industries' locations through these drainage system in order to reduce the environmental degradation of Dhaka city (Ahmed, 2001). Here, according to study findings, Table 4.11 reveals that the most of the small industry owners (77.6 per cent) told that their industries have the connection of drainage facility.

Table 4.11. Existence of drainage facility in the industries

Respondent's Answer	No. of Respondent	Percentage
Yes	132	77.6
No	38	22.4
Total	170	100.0

Source: Field Survey December, 2010



Photograph 4.7. Small industries along the rail line and pucca road without having water supply, sewerage and drainage facilities in Dhaka.

4.11.4. Electricity Supply

To ensure the maximum production in a small industry, supply of electricity and the time duration of availability of electricity into industry is important because daily production depends on this. But the availability of electricity in small-scale industries of Dhaka is a problem and thus, the ultimate production of small industries is declined.

In the study area, 98.8 per cent small industries have electricity supply line (field survey, 2010). However, despite having the requirement of 24 hours of availability of electricity in small industries, Table 4.12 shows that 72.6 per cent industry owners told that the duration of availability of electricity is 7-12 hours in a day into their industries. This table also shows that only 1.2 per cent owners told that the duration of availability of electricity is 19-24 hours in a day. So, it is cleared that the duration of availability of electricity into small industries is not satisfactory to small industry owners.

Table 4.12. Duration of availability of electricity in a day

Duration	No. of Owners	Percentage
Below & Equal 6 hours	3	1.8
7-12 hours	122	72.6
13 - 18 hours	41	24.4
19-24 hours	2	1.2
Total	168	100.0

Source: Field Survey December, 2010

4.11.5. Gas Supply

Gas supply is also needed at most of the small industries to run their daily functions with maximum production. Besides, to cook workers' daily food, it is needed at those industries. But in reality, most of the small industries at the study area of Dhaka have no gas supply connection.

This study found that only 4.1 per cent small industries have the gas line connection with their spaces of structures and the rest 95.9 per cent do not have the gas line connection (field survey 2010).

4.11.6. Others Facility

According to the field survey 2010, it was found that except the water supply, sewerage facility, drainage facility, electricity supply and gas supply; all of the small-scale industries (100 per cent) do not have others facility which was described by the industry owners (field survey 2010).



Photograph 4.8. Gas supply exists in very less number and others facility is absent into the all small-scale industries of Dhaka.

4.12. Investment/Costs of Small Industries

4.12.1. Fixed/Capital Investment

In small-scale industries, the fixed cost/investment is the total cost of land, structures, machines, equipment etc. This fixed/capital cost is spent for the production purposes of the small industries.

Nevertheless, the industry owners have to bear these fixed costs in monthly and daily basis which are attached with their final expenditure. The cost for land of these industries make variation according to the location/area of the industries in Dhaka. In Dhaka, these small industries are located on the government owned land (field survey, 2010).

The industry owners found the government owned land for running their small industry as lease who are the local small and medium level enterprisers (field survey, 2010). According to the study result, Table 4.13 reveals that around half of the small industries (49.4 per cent) are located at the government owned land and the owners do not know the actual land price of the industries located there. These government owned land are located at Shyampur, Sutrapur and Pallabi Thana areas of Dhaka city. Besides, these industries

had been grown along the railway line of government owned land located at Shyampur Thana of Dhaka. Again, a number of small industries like welding and lathe machines are established near the DCC market boundary at Shyampur area. The industry owners had been found these places near to the DCC market as lease from DCC authority. In Pallabi area, weaving and karchupi workshops were grown in the Bihari Camp that are also located under the government owned land in Dhaka.

Here, Table 4.13 shows that 14.7 per cent small industry owners had given their statement that land price of their industries is in the range of Tk. 5,00,001-10,00,000 and 13.5 per cent of them had given the information that land price of their industries is above Tk. 20,00,000. From this table, it is also found that only 2.9 per cent industry owners told about the price of land occupied by their industries is Tk. below and equal to 5,00,000 in the study area.

Table 4.13. Cost/Investment for land occupied by small industries

Price (Tk.)	Frequency	Percent of responses
Govt. Owned Land	84	49.4
Below & Equal to 500000	5	2.9
500001-1000000	25	14.7
1000001-1500000	19	11.2
1500001-2000000	14	8.2
Above 2000000	23	13.5
Total	170	100.0

Source: Field Survey December, 2010

On the other hand, industry owners have to bear the costs for physical structures of the small industries attached to the total costs. According to the study result, the market prices of the industries' structures at different locations of the study area are different. Table 4.14 shows that most of the industry owners (39.4 per cent) told about the market price of their industries' structures is under the range of Tk. 1,00,001-2,00,000 in the study area. Then, the second highest number of industry owners (35.3 per cent) had given the information about the market price of the spaces of their industries is Tk. below & equal to 1,00,000. Again, according to the Table 4.14 about 2.4 per cent of industry owners told that market prices of their industries' structures is Tk. above 5,00,000 in the study area.

Table 4.14. Cost/Investment for structure of small industry

Price (Tk.)	Frequency	Percent of responses
Below & Equal to 1,00,000	60	35.3
100001-200000	67	39.4
200001-300000	12	7.1
300001-400000	11	6.5
400001-500000	11	6.5
Above 500000	4	2.4
Government Structure	5	2.9
Total	170	100.0

Source: Field Survey December, 2010

In addition to all these, the machines and equipment of a small industry increases the amount of its fixed cost. According to the nature and categories of small industries and their productions process, machines and equipment are different. The market price of those machines and equipment is also different according to the nature and category of small industry. Usually, these small industries use inferior quality and less costly equipment for their daily operation in Dhaka city. Therefore, in discussion with the small industry owners during the survey period, it was found that 68.2 per cent of them had given the information about the market price of machines and equipments is Tk. below and equal to 1,00,000 (Table 4.15). However, a few of them (0.6 per cent) told about the market price of machines and equipment is Tk. 4,00,001-5,00,000 among the total fixed costs (Table 4.15).

Table 4.15. Cost/Investment for machines and equipment

Price (Tk.)	Frequency	Percent of responses
No Cost	8	4.7
Below & Equal to 100000	116	68.2
100001-200000	28	16.5
200001-300000	8	4.7
300001-400000	2	1.2
400001-500000	1	0.6
Above 500000	7	4.1
Total	170	100.0

Source: Field Survey December, 2010

In Dhaka city, small industries not only have the cost for land, structure and machineries purposes but also have some other fixed costs. From the Table 4.16, it is found that 65.3 per cent small industries do not have the costs for other purposes as fixed cost. On the other hand, a portion of them (31.8 per cent) told that their fixed cost as other purpose is Tk. below & equal to 1,00,000. Only a few number (0.6 per cent) told that their other fixed/capital cost is Tk. above 5,00,000 among the total costs of the industry (Table 4.16).

Table 4.16. Cost/Investment for other purposes

Price (Tk.)	Frequency	Percent of responses
No Cost	111	65.3
Below & Equal to 100000	54	31.8
100001-200000	2	1.2
200001-300000	2	1.2
300001-400000	0	0.0
400001-500000	0	0.0
Above 500000	1	0.6
Total	170	100.0

Source: Field Survey December, 2010

4.12.2. Operational and Maintenance Cost

In every month, an industry owner has to spend a portion of its total costs as the operational and maintenance cost. The daily operational cost of small industries is high based on the information of field survey at the study area. These industries are established on own land, rent space and government's lease land. That is why, in the case of rent or lease, industry owners pay money as monthly or yearly basis.

According to the study result, Table 4.17 shows that due to rent of spaces of industries, 60.6 per cent industry owners have to pay Tk. below and equal to 4,000 per month as their operational cost. Only a few industry owners (2.9 per cent) and (1.2 per cent) told that their cost for rent of spaces is Tk. 8,001-12,000 and Tk. above 12,000 respectively in every month (Table 4.17). However, 23.5 per cent industry owners do not have costs for rent of spaces because industries were established on their own land.

Table 4.17. Industries' cost for rent of spaces

Monthly rent (Tk.)	Frequency	Percent of response
No Cost	40	23.5
Below & Equal to 4000	103	60.6
4001-8000	20	11.8
8001-12000	5	2.9
Above 12000	2	1.2
Total	170	100.0

Source: Field Survey December, 2010

On the other hand, different types of raw materials are used by these small-scale industries for daily production purposes and those raw materials are collected from different places within and outside of Dhaka. That is why; the operational cost include the cost of purchasing the raw materials by these industries.

According to the survey findings, Table 4.18 shows that the highest number of industry owners (25.9 per cent) told that their monthly operational costs for raw materials purchase is Tk. below and equal to 10,000. Nevertheless, a large number of industries (22.9 per cent) have to spend Tk. above 50,000 in every month for raw materials purchase (Table 4.18). Therefore, this is cleared to understand that a big portion of industry owners' monthly costs for purchasing the raw materials is high amount.

Table 4.18. Cost of raw materials used in small industries

Monthly cost (Tk.)	Frequency	Percent of response
No Cost	1	0.6
Below & Equal to 10,000	44	25.9
10,001-20,000	35	20.6
20,001-30,000	21	12.4
30,001-40,000	18	10.6
40,001-50,000	12	7.1
Above 50,000	39	22.9
Total	170	100.0

Source: Field Survey December, 2010

Again, a big portion of operational cost goes to workers' salary purpose in small industries. From the study result, Table 4.19 reveals that the highest number (24.7 per cent) of industry owners' monthly operational cost for workers' salary purpose is Tk. above 30,000. On the other hand, only 5.3 per cent of industry owners' monthly cost for workers' salary purpose is Tk. below and equal to 5,000 (Table 4.19).

Table 4.19. Industries' operational cost for salary of the workers

Monthly cost (Tk.)	Frequency	Percent of response
Below & Equal to 5000	9	5.3
5001-10000	21	12.4
10001-15000	24	14.1
15001-20000	28	16.5
20001-25000	27	15.9
25001-30000	19	11.2
Above 30000	42	24.7
Total	170	100.0

Source: Field Survey December, 2010

Beside these, another major operational and maintenance cost of small industries is the repairing and maintenance of machineries and equipment. According to the survey findings, Table 4.20 demonstrates that 48.8 per cent small industries do not have repairing and maintenance cost and another big portion (45.3 per cent) have this cost of Tk. below and equal to 5,000 in every month. Again, this table shows that only 1.8 per cent industries have repairing and maintenance cost of Tk. above 10,000 for every month.

Table 4.20. Repairing and maintenance cost of small industries

Monthly cost (Tk.)	Frequency	Percent of response
No cost	83	48.8
Below and equal to 5,000	77	45.3
5001-10,000	7	4.1
Above 10,000	3	1.8
Total	170	100.0

Source: Field Survey December, 2010

4.12.3. Investment/Cost for Utility Services

Utility service of small industries in Dhaka city is another important issue. According to the survey result, utility services are not available at all categories of small industries located at the study area. Therefore, small industries having these utility services have to pay bill in monthly basis for this purpose.

Water supply facility in small industries is more significant than the others utility services provided by the WASA of Dhaka city. For availing this service, industry owners have to pay money as monthly bill to WASA of Dhaka city. But from the Table 4.21, this is cleared that the majority industry owners (81.2 per cent) do not pay the bill for water supply usage because either they have no water supply connection to their industries or

they have illegal water supply connection. However, this table also reveals that only 12.9 per cent industry owners pay their bill of Tk. 300 in monthly basis for usage of water supply connection of WASA of Dhaka city. Here, only a few portion of industry owners (2.4 per cent and 3.5 per cent) pay their monthly bill of Tk. 400 and Tk. 600 respectively for this purpose in the study area (Table 21).

Table 4.21. Cost for water supply connection to the industries

Monthly cost (Tk.)	Frequency	Per cent of response
No cost	138	81.2
300	22	12.9
400	4	2.4
600	6	3.5
Total	170	100.0

Source: Field Survey December, 2010

On the other hand, sewerage facility is another important utility service for small industries which is also provided by WASA of Dhaka. A number of small industries at the study area are attached with sewerage line and they have to pay money for this in monthly basis. From the study, it was found that 90.6 per cent industry owners do not have to pay bill for using this sewerage facility into their industries (Table 4.22) because neither their industries have sewerage line connection nor those have the illegal connection of sewerage. Here, only 7.6 per cent of them have to pay the bill of Tk. 200 in a month to have this sewerage line facility into their industries. Again, a very few number of industry owners (0.6 per cent) have to pay the bill of Tk. 300, Tk 400 and Tk. above 400 respectively in every month for this purpose (Table 4.22).

Table 4.22. Cost for sewerage line connection to the industries

Monthly cost (Tk.)	Frequency	Per cent of response
No Cost	154	90.6
200	13	7.6
300	1	0.6
400	1	0.6
Above 400	1	0.6
Total	170	100.0

Source: Field Survey December, 2010

Nevertheless, natural gas is another significant utility service and a few number of small-scale industries use gas to cook daily food and other purposes. As well as, some small industries i.e. welding, engineering or lathe machine use this gas as fuel for their daily production purposes. In the section 4.11.5, it is stated that 95.9 percent small industries do not have gas line connection and only 4.1 per cent have this connection in the study area. Therefore, the cost for this purpose in small industries is low. That is why, the Table 4.23 shows that 94.1 per cent industry owners do not have to pay bill for usage of gas in their industries because they do not have gas supply connection to their industries. Only 5.9 per cent of them have to pay bill for having the gas supply connection to their industries in the study area.

Table 4.23. Cost for using natural gas to the industries

Monthly cost (Tk.)	Frequency	Per cent of response
No Cost	160	94.1
450	10	5.9
Total	170	100.0

Source: Field Survey December, 2010

Electricity is number one requirement to run small industries in Dhaka among all the utility services because productions depend on this. If the load shading of electricity becomes very high, productions deteriorate and cost for production increases with high market prices of products simultaneously. From the study, it was found that most of the industries have the electricity supply but the duration of availability of electricity in a day is not satisfactory to the industry owners (field survey, 2010).

Besides, according to the study findings, Table 4.24 reveals that despite having the connection of electricity line into these small industries at the study area, 12.9 per cent industry owners do not pay bill for electricity consumption because they have illegal electricity connection with their industries. In some cases, monthly electricity bill is attached with the bill of monthly rent of spaces in which the electricity connection is present. Again, less than half of the industry owners (42.4 per cent) pay the electricity bill of Tk. below and equal to 500 in a month. Here, the Table 4.24 also shows that very less number of industry owners (only 3.5 per cent) spend their money for paying the electricity bill of Tk. 2,001-2,500 in a month in the study area.

Table 4.24. Cost of usage of electricity to the industries

Monthly cost (Tk.)	Frequency	Percent of response
No Cost	22	12.9
Below and equal to 500	72	42.4
501-1000	27	15.9
1001-1500	17	10.0
1501-2000	12	7.1
2001-2500	6	3.5
Above 2500	14	8.2
Total	170	100.0

Source: Field Survey December, 2010

4.13. Environment Pollution Caused by the Small Industries

Due to concentration of both small and large scale industries in Dhaka city, environmental pollution is a continuous and regular phenomenon. But the study area namely Sutrapur, Shyampur, Labagh and Pallabi thana areas are significantly concentrated with these small industries in Dhaka.



Photograph 4.9. Environment pollution occurred due to use of chemicals in small industries of Dhaka



Photograph 4.10. Pollution occurred due to many organic matters used in small industries of Dhaka

Small-scale industries discharged large amount of emissions and the surrounding environment was deteriorated by the effect of this discharged emissions at the study area. According to the study result, 21.2 per cent industry owners had given their statement that surrounding environment of small industries is polluted due to regular emissions of effluent and 78.8 per cent told that surrounding environment is not polluted by the effluents of small industries in the study area (field survey, 2014). Four types of environmental pollutions are caused by these small industries due to removal of small industries' effluents in the study area (field survey, 2010).

Therefore, according to the views of industry owners, Figure 4.6 reveals that 'Too much noise' causes major environmental pollution (63.6 per cent i.e. 108 responses) at the surrounding areas of small industries. Then, the second highest (57.6 per cent i.e. 98 responses) environmental pollution is the 'polluting air' caused by these industries due to excessive use of various chemical particles for production purposes. Again, the Figure 4.6 shows that only 9.1 per cent or 16 multiple responses had come from the respondents on 'Polluting water' caused by these industries in the study area.

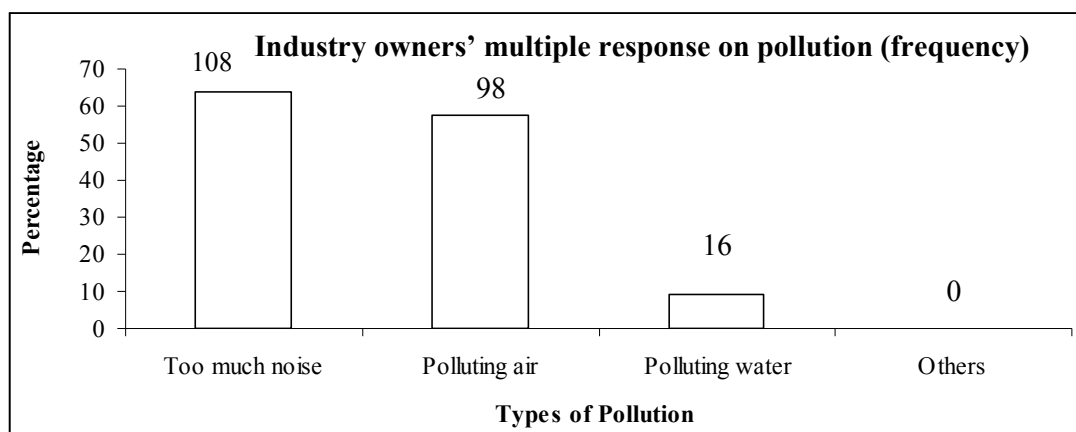
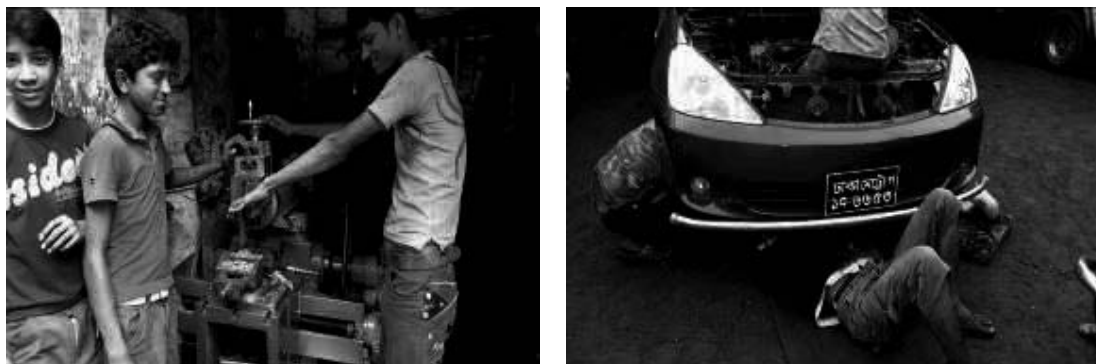


Figure 4.6. Response on environmental pollution at surrounding areas of small industries
Source: Field Survey December 2010

4.14. Employment Opportunity and Workers' Technical Knowledge

In Bangladesh, 523,472 workers are engaged in 38,294 small industries. Therefore, the average number of workers per unit of industry is 13.67 in 1994. Small industries in Dhaka and Chittagong divisions got 69 per cent of the sectoral employment. Dhaka district absorbed approximately 71,000 workers and on average, each district employed 12,000 workers in Dhaka division (BSCIC, 1994).



Photograph 4.11. Workers are working in small industries without getting education and training institutionally

The number of workers in small-scale industry is not enough as well as their technical knowledge for quality working at those small industries in Dhaka (field survey, 2010). They are working on the basis of their practical knowledge which they had acquired from their senior workers who are engaged at these industries. Here, Table 4.25 express that the workers of below and equal to 5 in numbers are the highest (48.2 per cent) in these small industries who are engaged for daily production works. Moreover, 38.2 per cent of the workers are in the range of 6-10 in numbers who are also working in these industries for production purposes. Here, it is also cleared from the Table 4.25 that only a small number of these industries (0.6 per cent) have workers of above 20 in numbers for their daily production purposes.

Table 4.25. Volume of workers engaged in daily production in small industries

Range of number of workers	Frequency	Percentage
No Workers	1	0.6
Below & Equal 5	82	48.2
6-10	65	38.2
11-15	19	11.2
16-20	2	1.2
Above 20	1	0.6
Total	170	100.0

Source: Field Survey December, 2010

Again, to increase production and to ensure the quality of finished products, adequate facilities like education and vocational training for workers is needed. Based on the study findings, only 15.3 per cent owners told that workers have technical education or training on the production process and rest 84.7 per cent do not have any technical education or training due to unavailability of this scope and usage of indigenous technology by them in the study area (field survey, 2010).

CHAPTER FIVE: FACTORS INFLUENCING THE LOCATIONS AND DISTRIBUTION OF SMALL-SCALE INDUSTRIES

5.1. Introduction

According to the baseline survey report of Urban Informal Economy (UIE)-program of International Labor Organization (ILO) Bangladesh on December 2001, it was found that small-scale industries are located and distributed at all over the Dhaka city. But these industries are not equally distributed at every Thana of the city. A number of factors are responsible for distribution and location of these industries at some specific Thanas of Dhaka. The factors which are responsible for distribution and location of these small industries and prioritize or ranking of these factors are discussed elaborately here. However, the reasons which are also responsible for distributing these industries at different locations in Dhaka and a number of problems faced by the small industry owners are stated in this chapter.

5.2. Identified Factors Responsible for Location Choice

At the initial stage of the study, the factors which influence the location and distribution of small-scale industries were recognized by accumulating knowledge and information from different research reports; as well as in consultation with the industry owners of the study area and relevant academic experts. Therefore, through literature review and interview with 20 industrial owners, these 8 (eight) major factors were identified which are-

- a) Availability of skilled workers in the area
- b) Low cost of workers in the area
- c) Industry located near to the raw material/s
- d) Low transport cost to supply the finished products
- e) Low space rent or land cost in the area
- f) Easy access to roads to go market
- g) Linked to other similar industry in the area
- h) Tax free government land

5.2.1. Prioritize or Ranking of Factors by Industry Owners

These 08 (eight) factors are not equal in terms of their magnitude of influence to locate the small industries in Dhaka. That is why; according to their magnitude of influence, this study had made the ranking of the factors in ascending order based on the statement of industry owners through the in-depth interview. Industry owners had given their opinion on the ranking of these factors considering the degree of influences of these factors to locate the small industries at the study area.

The Table 5.1 shows that large number of industry owners (60.0 per cent) identified the factor 'Availability of skilled workers in this area' as the most influencing factor towards the location choice and gave it Rank 01. On the other hand, 44.7 per cent industry owners identified the factor 'Low cost of workers in this area' as the second most influencing

factor and gave it Rank 02. Due to availability of labor and poor living cost the labor cost is less at those areas.

Again 21.8 per cent industry owners identified the factor ‘Low house rent or land cost in this area’ as the most significant among all the factors and gave it Rank 03 which influence to locate the small industries. On the other hand, 17.6 per cent industry owners had given Rank 04 to the factor ‘Easy access to roads to go market’ among all the factors. Besides, 17.6 per cent owners identified the factor ‘Linked to other similar industry in this area’ to give it the Rank 05.

Table 5.1. Eight categories of factors and their ranks which influenced the locations of these eight categories of small industries

Eight different factors	Ranking No. against each category of Factor (%)								
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Total
Availability of skilled workers in this area	60.0	10.0	8.8	8.2	7.6	2.4	2.4	0.6	100.0
Low cost of workers in this area	13.5	44.7	10.0	14.1	5.9	9.4	1.8	0.6	100.0
Industry located near to the raw material/s	8.2	17.1	15.3	16.5	14.1	17.1	10.0	1.8	100.0
Low transport cost to supply the finished products	1.8	6.5	10.6	7.1	14.1	21.8	23.5	14.7	100.0
Low house rent or land cost in this area	1.8	10.6	21.8	11.2	13.5	11.8	16.5	12.9	100.0
Easy access to roads to go market	14.7	7.6	18.2	17.6	15.3	10.0	5.9	10.6	100.0
Linked to other similar industry in this area	0.0	1.2	4.7	12.4	17.6	18.2	27.6	18.2	100.0
Tax free government land	0.6	2.4	11.2	12.9	10.6	10.6	11.8	40.0	100.0

Source: Field Survey December, 2010

However, to give the Rank 06, 21.8 per cent industry owners identified the factor ‘Low transport cost to supply the finished products’ as one of the influencing factors. Moreover, 27.6 per cent industry owners showed their declaration on the factor ‘Linked to other similar industry in this area’ and gave it Rank 07. Nevertheless, 40.0 per cent industry

owners give the Rank 08 to the factor 'Tax free government land' after its identification as an influencing factor.

5.2.2. Prioritize or Ranking of Factors Using Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process (AHP) was developed by Thomas Saaty, 1990 which provides a proven, effective means to deal with complex decision making and can assist with identifying and weighting selection criteria, analyzing the data collected for the criteria and expediting the decision making process [22]. It is a multi criteria decision making method to derive the ratio scales from paired comparisons.

The main purpose of the AHP model is to investigate the respondents' considerations on their preference or choice to make the ranking towards the factors. AHP allows some small inconsistency in judgment because human is not always consistent. So, for more authentic and acceptable analysis of the preference or priority of industry owners towards the factors which influence the locations and distribution of small industries at specific area/location of the study area in Dhaka city, the AHP model had been applied in this part.

170 industry owners and managers are the respondents of the study for primary data collection at field. To get the preference or ranking of all the factors through the AHP analysis, 10 per cent from total respondents i.e. 17 respondents were selected in which each category of industry owners were incorporated. Then, a separate questionnaire was developed for these 17 industry owners to collect information from them to accomplish this AHP analysis after pre-testing. Then, those 17 respondents were performed in an interview process and a comparison with one factor to others separately and in this way the information was found which was illustrated in this section.

5.2.2.1. Analysis of Factors According to Ranks

From the Table 5.2, it is understood that 'Availability of skilled workers in the area' is more preferable factor than the other seven factors. But the factor 'Low cost of workers in the area' is less preferable compared to the factor 'Availability of skilled workers in the area' and more preferable than other six factors. Again, the factor 'Industry located near to the raw material/s' gets less preference than the factor 'Availability of skilled workers in the area' and 'Low cost of workers in the area' but gets more preference than other five factors. Once more, the factor 'Low transport cost to supply the finished products' is less preferable compared to the factor 'Availability of skilled workers in the area', 'Low cost of workers in the area' and 'Industry located near to the raw material/s' but get more preference than other four factors.

However, the factor 'Low house rent or land cost in the area' is more preferable than the factor 'Easy access to roads to go market', 'Linked to other similar industry in the area' and 'Tax free government land' but less preferable than the other four factors. Meanwhile, the factor 'Easy access to roads to go market' is more preferable than the factor 'Linked to other similar industry in the area' and 'Tax free government land' but less preferable than the others. As well as, the factor 'Linked to other similar industry in the area' is more preferable than the factor 'Tax free government land' and gets less preference or ranking than the others. Nevertheless, the factor 'Tax free government land' is always less preferable than all the factors.

Table 5.2. Pair wise comparison matrix of the factors influencing the location and distribution of small-scale industries

Factors	1	2	3	4	5	6	7	8
Availability of skilled workers in the area	1.00	1.87	1.52	4.86	1.87	3.52	6.67	4.86
Low cost of workers in the area	0.53	1.00	1.87	4.67	3.19	3.20	5.00	5.87
Industry located near to the raw material/s	0.66	0.53	1.00	5.00	3.20	3.22	4.67	2.19
Low transport cost to supply the finished products	0.21	0.21	0.20	1.00	1.52	0.74	1.22	1.07
Low house rent or land cost in the area	0.53	0.31	0.31	0.66	1.00	1.86	1.53	1.86
Easy access to roads to go market	0.28	0.31	0.31	1.35	0.54	1.00	3.22	3.52
Linked to other similar industry in the area	0.15	0.20	0.21	0.82	0.65	0.31	1.00	1.52
Tax free government land	0.21	0.21	0.46	0.93	0.54	0.24	0.66	1.00
Total	3.57	4.64	5.88	19.29	12.51	14.09	23.97	21.89

Source: Field Survey December, 2010
(Please see the Appendix-C, Table C3)

On the other hand, in terms of relative weight among the factors, Table 5.3 reveals that factor ‘Availability of skilled workers in the area’ has the highest (26 per cent) relative weight or importance of preference than the others. Again, the factor ‘Low cost of workers in the area’ has the second highest (24 per cent) relative weight of preference among all factors. The Table 5.3 also shows that factor ‘Linked to other similar industry in the area’ is the lowest (only 4 per cent) preferable factor than the others to the industry owners. And all these statement were found from the industry owners’ opinion.

Table 5.3. Relative weight of the factors influencing the location and distribution of small-scale industries

Factors	1	2	3	4	5	6	7	8	Principal Eigen /Priority Vector
Availability of skilled workers in the area	0.28	0.40	0.26	0.25	0.15	0.25	0.28	0.22	0.26 (26%)
Low cost of workers in the area	0.15	0.22	0.32	0.24	0.25	0.23	0.21	0.27	0.24 (24%)
Industry located near to the raw material/s	0.18	0.11	0.17	0.26	0.26	0.23	0.19	0.10	0.19 (19%)
Low transport cost to supply the finished products	0.06	0.05	0.03	0.05	0.12	0.05	0.05	0.05	0.06 (6%)

Factors	1	2	3	4	5	6	7	8	Principal Eigen /Priority Vector
Low house rent or land cost in the area	0.15	0.07	0.05	0.03	0.08	0.13	0.06	0.08	0.08 (8%)
Easy access to roads to go market	0.08	0.07	0.05	0.07	0.04	0.07	0.13	0.16	0.08 (8%)
Linked to other similar industry in the area	0.04	0.04	0.04	0.04	0.05	0.02	0.04	0.07	0.04 (4%)
Tax free government land	0.06	0.05	0.08	0.05	0.04	0.02	0.03	0.05	0.05 (5%)
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 (100%)

Source: Field Survey December, 2010
(Please see the Appendix-C, Table C4)

According to the industry owners' views for judgment or preference against the factors using Saaty's AHP model, Figure 5.1 depicts that the factor 'Availability of skilled workers in the area' is 6.5 times prior (26/4) than the factor 'Linked to other similar industry in the area', 5.2 times (26/5) than the factor 'Tax free government land', 4.3 times (26/6) than the factor 'Low transport cost to supply the finished products' and 3.3 times (26/8) than the factor 'Low house rent or land cost in the area' and 'Easy access to roads to go market' influencing the location and distribution of small industries at the study area of Dhaka. As well as, the factor 'Low cost of workers in the area' and 'Industry located near to the raw material/s' are much more prior than the others which influence the location and distribution of small industries at various locations within the study area of Dhaka.

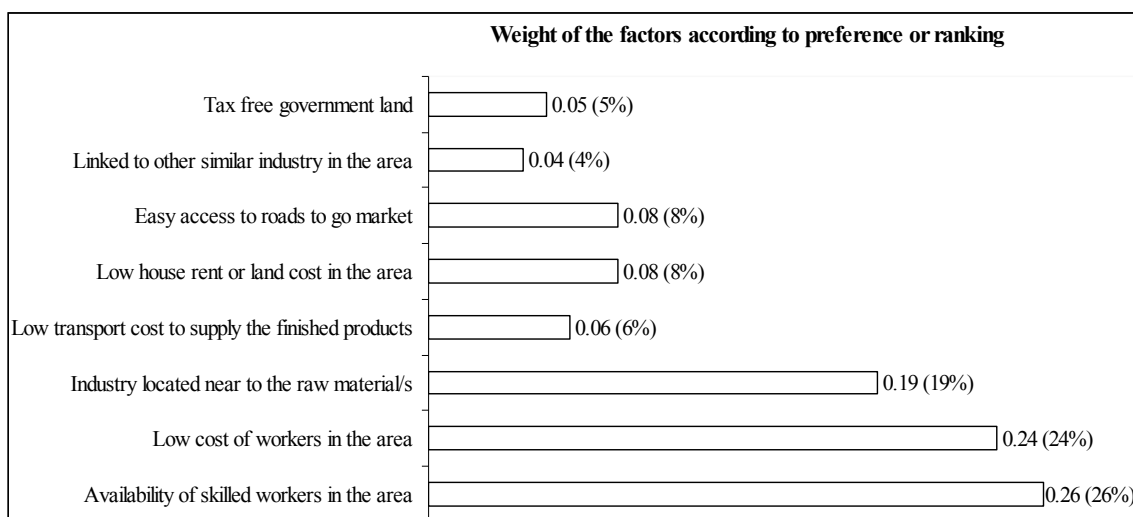


Figure 5.1. Relative weight of the factors according to the preference or ranking given by the industry owners

Source: Field Survey December, 2010

5.2.2.2. Consistency Check of the Responses

Aside from the relative weight, it would be justified if the responses of the respondents are consistent. If the value of Consistency Ratio is similar or equal to 10 per cent, the inconsistency is acceptable and if Consistency Ratio is greater than 10 per cent, it is needed to revise the subjective judgment [22].

$$\text{As per Saaty, we know the Consistency Ratio, CR} = \frac{\text{CI}}{\text{RI}} = \frac{\frac{\lambda_{\max} - n}{n - 1}}{\text{RI}}$$

Where,

CI = Consistency Index (deviation of degree of consistency);

RI = Random Consistency Index which depends on the number of attributes (here, n=8) among which it is compared (Please See Annex C, Table C5);

λ_{\max} = Principal (largest) Eigen Value. It is obtained from summation of multiplying the sum of columns of the Complete Comparison Matrix (Annex C, Table C3) with each element of Principal Eigen or Priority Vector of the factors (Please See Annex C, Table C4);

n = Number of attributes to be compared.

Here,

$$\lambda_{\max} = \{(3.57*0.26)+(4.64*0.24)+(5.88*0.19)+(19.29*0.06)+(12.51*0.08)+(14.09*0.08)+(23.97*0.04)+(21.89*0.05)\} = 8.4977$$

$$n = 8$$

$$\text{RI} = 1.41 \text{ (Annex C, Table C5).}$$

$$\text{So, CR} = 0.050 \text{ or } 5\%$$

According to Saaty's statement the responses are accepted. From the above calculation, it can understand that the evaluation on factors' priority or ranking as per industry owners' views is consistent.

5.3. Reasons to Distribute Industries at Different Locations of Study Area

The study has found 6 (six) specific reasons which influence the distribution of small industries within the study area. The influence of these reasons are not same to distribute small industries at different locations of the study area. That is why; these 6 (six) reasons were selected to make the ranking in ascending order according to the highest rate of their influences to distribute the small industries at different Thanas/areas of the study area. This was done following the statement of industry owners through in-depth questionnaire survey.

That is why, based on the study's survey result, Table 5.4 reveals that the highest number of industry owners (27.1 per cent) gave Rank 01 to the reason 'Availability of skilled workers' which influence the distribution of small industries at different locations of Dhaka. So, it is comprehensible that this reason is very important for influencing the distribution of small industries. Nevertheless, 27.6 per cent industry owners gave Rank 02

to the reason ‘Availability of skilled workers’ identifying it as an important influencing factor to distribute the small industries at different locations of Dhaka.

On the other hand, 25.9 per cent owners gave Rank 03 to the reason ‘Availability of skilled workers’ which influences the distribution of small industries. Again, 29.4 per cent industry owners identified the reason ‘Availability of transport to carry out raw material and finished product’ and gave it Rank 04 which influence the small industries to distribute at different locations of Dhaka.

Table 5.4. Six reasons influence the locations of small industries at the study area

Selected Six Reasons	Ranking No. Against Reason (%)						
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Total
Owner/s practices this work from heritage	17.6	3.5	4.7	2.4	7.6	64.1	100.0
Raw materials are close to industry	22.4	18.8	16.5	21.8	16.5	4.1	100.0
Market is close to the industry	17.6	24.7	18.8	14.7	20.0	4.1	100.0
Availability of skilled worker	27.1	27.6	25.9	11.2	8.2	0.0	100.0
Availability of transport to carry out raw material and finished product	5.3	7.6	11.8	29.4	25.3	20.6	100.0
Wholesalers buy from this place	10.0	17.6	23.5	21.8	21.8	5.3	100.0

Source: Field Survey December, 2010

However, 25.3 per cent industry owners identified the reason ‘Availability of transport to carry out raw material and finished product’ as an important influencing factor and gave it Rank 05. Again, 64.1 per cent industry owners gave Rank 06 to the reason ‘Owner/s practices this work from heritage’ which influences the small industries to distribute at different locations of Dhaka.

5.4. Problems Faced by the Industries

Small-scale informal industries have enormous role to generate employment opportunities in Dhaka city which directly and indirectly force the country’s Gross Development Product (GDP) and Gross National Product (GNP). But these industries do not get necessary supports and services from relevant service provider institutions of the government. Dhaka City Corporation (DCC) has no effective initiative to enrich the capacity of these small-scale industries for enhancing their productions. As well as, Bangladesh Engineering Industry Owners Association (BEIOA) has no updated proposal to advocate with government, donors and others in support of small-scale industries’ development earlier. However, it has no schemes or projects in favor of the development of small-scale industries of Dhaka except some steps taken in support of development of the light engineering sector.

These small industries are running for a long time and facing lots of problems and hassles. This study tried to collect some specific problems in discussion with the industry owners and managers during the time of field survey, 2010. The identified problems that are faced by these small industries to run their industries for daily production purposes are as follows-

- a) Low supply of electricity
- b) Unavailability of sewerage facility
- c) Unavailability of drainage facility
- d) Unavailability of gas
- e) Less price of the finished product
- f) Low investment in the industry
- g) Lack of assistance (technical and financial)
- h) Others

The identified factors which are responsible to distribute these small industries at different locations are used here to make their ranks by the owners in terms of their rate of influence. However, it is analyzed these factors according to their ranks given by the owners by using the AHP model. It is also done the pair wise comparison matrix of the factors and thus, the preference of a factor comparing to others is found here. In this section, it is also found the relative weight or importance of preference of a factor than the other/s is found which denote the significance of that factor to the owner. Nevertheless, the reasons which are also responsible for distributing these small industries at different locations are stated by giving their ranks from industry owners. A number problems which are facing by these small industries during their daily operations are also described in brief.

CHAPTER SIX: SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

6.1. Introduction

Small-scale informal industries in urban areas of Bangladesh play a vital role among all types of industries for the country's economic development. This study has an important role for the development of small-scale industrial sector in Dhaka as well as in Bangladesh. This study had found a number of significant findings based on its objectives which are described here. Finally, a set of recommendations is made in this chapter based on the findings which focus the objectives of the study and concentrate the policy implementers of the government to take further initiatives in support of this sector.

6.2. Major Findings

All findings had come through field survey addressing the specific objectives of the study which are illustrated in previous chapters. Here, only the key findings are stated.

6.2.1. Industry Owner's Profile

Age and Sex Structure:

- Most of the small industry owners are young and 41.8 per cent are in the age of 30-39 years old. However, 33.5 per cent of them are in the age of 40-49 years old. But industry owners of 50 and above years old are the lowest numbers (only 6.5 per cent) in study area because the people under this age cannot spend most of the time for this type of hard working business.
- Due to industrious work in small industries, the owners are usually male people and 98.8 per cent industry owners are male in the study area.

Socio-economic Characteristics:

- The owners of small industries are not well educated and 70.6 per cent of them are below SSC level educated and 25.3 per cent have SSC level education.
- Monthly income of a small industry owner from this source is not enough. In Dhaka, 28.2 per cent industry owners' monthly income is in the range of Tk. 10,001-15,000 and 5.3 per cent industry owners' monthly income is Tk. below and equal to 5,000 because investment is not high amount.

Ownership Status:

- In Dhaka, 96.5 per cent small-scale industries are self-owned by the owners.
- The highest number of ownership (89.6 per cent) of these industries are of 01 person. But the ownership of 02 persons and above 02 persons in each industry is very less numbers in Dhaka.

6.2.2. Distribution, Location and Characteristics

Distribution and Location:

- Most of the Thanas of Dhaka city have less than 50 (fifty) industries of each category but the industries of 51 to 100 in numbers are the second highest which are distributed at few Thanas of Dhaka. Again, there have no small industries of 101 to 150 in numbers and 251 to 400 in numbers in any Thanas of Dhaka.
- Most of the small industries are located at southern Thanas of Dhaka city. But major concentration is found in Sutrapur, Shyampur, Lalbagha and Pallabi Thana areas among the total 21 (twenty one) Thanas in Dhaka. Out of these 04 (four) Thanas, the highest concentration of distribution of small industries is found at Pallabi Thana area.

Plot Size/Area of Small Industries:

- The plot size of only 3.5 per cent small industries is above 2 katha in the study area. On the other hand, most of the small industries occupy a little space and their daily production is also less and 66.5 per cent of those occupy less than 1 katha of land.

Types of Structure of Small Industries:

- Most of the industries (59.4 per cent) are made of semi-pucca structure. But a great portion of those (38.8 per cent) are made of pucca structure and only a few number of those (1.8 per cent) are made of kutchha structure in the study area.

Establishment Period:

- Before the liberation war in 1971, only 2.4 per cent small industries were established in Dhaka city due to unavailability of supports and services to this sector. But most of the small industries (39.4 per cent) were established during the period of 1991 to 2000 because Dhaka was started to build up as a new arena of employment prospects with developed infrastructural facilities.

Duration of Operation and Unit of Production Vs Sell of Goods:

- Only a few small industries (1.8 per cent) operates below six months of the year and rests of those operate 6-12 months of the year for their production purposes. Again, in a day, only 4.1 per cent operates above 12 hours and rest 95.3 per cent operates 6-12 hours for their daily productions.
- Due to fewer investment and other support and services, productions and sells in small industries are very low and 59.4 per cent industries produce and sell below 10 units of goods in a day.

Raw Materials and Finished Products:

- Most of the small industry owners (95.9 per cent) bring their raw materials for goods production from any person or shop within Dhaka city due to availability of raw materials here. Only 1.8 per cent industries collect their raw materials 'from any district outside Dhaka'.
- The weaving and karchupi workshop use 'cotton, jari, chumki, color, cloth, reshom, silk, puthi and stone' and the tailoring shops use 'cotton and cloth' as raw materials for daily production.
- On the other hand, the auto-mobile engineering/repairing workshop uses 'iron, copper, aluminum, steel, color'; the show factory uses 'plastic, rubber, color, gum'; wooden industry uses 'Wood, perak, color'; welding workshop uses 'plain tin, steel, iron' and

the engineering/lathe machine workshop uses 'iron, lead, steel, screw, bolt' as their raw materials in the study area.

- 80.6 per cent finished products are sold to any person/shop in Dhaka due to a huge number of buyers of these products here and only 2.9 per cent finished products are sold to any person/shop located at outside of Dhaka.

Forward Linkage:

- Only 18.8 per cent small industries have forward linkages with other similar industries, shops and markets in Dhaka to accelerate their marketing of finished products.

Status of Utility Services:

- Only 26.5 per cent small industries have water supply connection and the rests do not have this supply connection.
- The time duration of availability of water in industries is not satisfactory to owners in Dhaka. Around one fourth i.e. 24.4 per cent of the industries (which have water supply line) get water for a period of below and equal to 6 hours in a day.
- Again, 82.4 per cent small industries do not have any sewerage line connection but 77.6 per cent industry owners told that their industries have drainage facility.
- In the study area, 98.8 per cent small industries have the connection of electricity line. The duration of availability of electricity is 7-12 hours in a day into 72.6 per cent small industries which have this facility due to high load shading.
- Beside these, a less number of small industries (only 4.1 per cent) have gas supply connection due to less usage of this service by the owners.

Investment/Costs of Small Industries:

- In the study area, small industry owners had found government owned land as lease to make this business and these people are local small and medium level entrepreneurs.
- 49.4 per cent industry owners do not know the market price of government owned land where their industries are located but 39.4 per cent told about the market price of their industries' spaces is Tk. 1,00,001-2,00,000.
- 68.2 per cent owners had given their information about the market price of machines and equipment of these industries is Tk. below and equal to 1,00,000.
- However, 60.6 per cent owners have to pay Tk. below & equal to 4,000 in every month for rent of space.
- 25.9 per cent small industry owners' monthly operational cost for raw materials purchase is Tk. below & equal to 10,000.
- 24.7 per cent industry owners' operational costs for workers' wage is above Tk. 30,000 in a month.
- Again, due to having the illegal water supply connection, 81.2 per cent industry owners do not have to pay the bill. Similarly, a great portion of small industry owners (90.6 per cent) do not have to pay the bill for connecting the sewerage line into their industries due to having the illegal connection.
- Again, 94.1 per cent owners do not have to pay bill for gas usage purpose because they do not have the gas supply connection to their industries.
- 12.9 per cent industry owners do not have to pay the bill for electricity due to illegal electricity connection to the industries but in some cases, their monthly electricity bill is attached with the bill of rent of spaces.

Environmental Pollution Caused by Industries:

- In the study area, 21.2 per cent industry owners gave the information that surrounding environment of small industries is polluted by their discharged pollutants.
- Due to excess performance of machineries, 63.6 per cent environmental pollution is ‘Too much noise’ that caused by these industries. Only 9.1 per cent pollution is ‘water pollution’ due to usage of various chemicals by these industries for their production.

Employment Opportunity and Workers’ Technical Knowledge:

- In the study area, 48.2 per cent small industries have workers of below and equal to 5 and only 0.6 per cent have workers of above 20 in numbers because daily production is not big here.
- 84.7 per cent workers do not have the technical or vocational education or training on their production process due to unavailability of vocational training or education facility in the study area.

6.2.3. Factors and Reasons Influence to Distribute Industries and Problems***Factors and Reasons:***

- The identified 08 (eight) factors which are responsible for maximum concentration of these small industries at each Thana of Dhaka are-
 - a) Availability of skilled workers in the area
 - b) Low cost of workers in the area
 - c) Industry located near to the raw material/s
 - d) Low transport cost to supply the finished products
 - e) Low space rent or land cost in the area
 - f) Easy access to roads to go market
 - g) Linked to other similar industry in the area
 - h) Tax free government land
- By using the AHP model, the factor ‘Availability of skilled workers in the area’ is more preferable than the other seven factors. The factor ‘Tax free government land’ is always less preferable than all the factors by the industry owners which influence to distribute the small industries in the study area.
- Again, in terms of relative weight of all factors, the factor ‘Availability of skilled workers in the area’ has the highest (26 per cent) relative weight or importance of preference than the others to the industry owners. Here, the second highest (24 per cent) relative weight of preference of factor is ‘Low cost of workers in the area’ and the lowest (only 4 per cent) preferable factor is ‘Linked to other similar industry in the area’ than the others to the industry owners.
- According to views of the owners for judgment or preference against these factors using the AHP model, the factor ‘Availability of skilled workers in the area’ is 6.5 times prior than the factor ‘Linked to other similar industry in the area’, 5.2 times than the factor ‘Tax free government land’, 4.3 times than the factor ‘Low transport cost to supply the finished products’ and 3.3 times than the factor ‘Low house rent or land cost in the area’ and ‘Easy access to roads to go market’.
- Nevertheless, 27.1 per cent industry owners had given Rank 01 to the reason ‘Availability of skilled workers’ and 27.6 per cent had given Rank 02 to the reason ‘Availability of skilled workers’ which influence small industries to distribute at different locations in Dhaka.

Problems Faced by Small Industries:

- Small industries faces the following problems in their daily production processes which were identified in this research:
 - a) Low supply of electricity
 - b) Unavailability of sewerage facility
 - c) Unavailability of drainage facility
 - d) Unavailability of gas
 - e) Less price of the finished product
 - f) Low investment in the industry
 - g) Lack of assistance (technical and financial)
 - h) Others

6.3. Recommendations/Suggestions

Considering the findings on distribution, location, characteristics and factors affecting the small industries to distribute and locate; problems faced by these industries as well as the existing industrial policy, a set of recommendations had been drawn which may come in consideration with future development of small-scale industrial sector in Dhaka and outside. The recommendations are stated below:

- Following the legal aspects of industrial policy, labor law and urban planning act, government should take initiatives to distribute and operate this sector newly;
- Government should make an effective plan and guideline to apply the rules and regulation on small-scale industries for their further development;
- Government with its development partners will ensure adequate services and improve physical environment of small industries by increasing credit and technical supports;
- A specific department linking with relevant ministries can be established by the government to make a control mechanism of internal and external issues of this sector;

6.4. Conclusion

Small-scale informal industries have enormous contribution in the market economy of Dhaka as well as Bangladesh. These are spontaneously distributed all over the city but most concentration is found at the southern Thana areas of the city. A number of factors are responsible to distribute and locate these industries at some specific Thanas/areas in Dhaka by creating their most concentration. In Dhaka, these small industries were increased extremely at the end of the year 2000 with the single ownership of less income. Most of the small industries are small in size with semi-pucca structures in Dhaka. The sources of raw materials and market of finished products of these industries is both Dhaka and its outside. A large portion of low income people are engaged by creating their own employment in this sector in Dhaka.

This sector is more deprive than the others in spite of its significant contribution in per capita income. Therefore, by minimizing some problems and properly distributing these industries at different Thanas of Dhaka city, it may create a vast income generation sector and make their locational balance all over the city. Moreover, government with its development partners can allocate adequate fund and ensure policy supports for further distribute and development of this as one of the major thrust sectors in Bangladesh. This had ever not been conducted any research or project focusing this issue on Dhaka or other major city in Bangladesh yet. That is why, there has a scope to do this type of further study by getting information and ideas form this study next.

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Appendix-A

Questionnaire for Filed Survey

FACTORS INFLUENCING THE LOCATION AND DISTRIBUTION OF SMALL-SCALE INFORMAL INDUSTRIES IN DHAKA CITY

(This questionnaire is only for academic research purpose)

Master of Urban and Regional Planning, BUET, Dhaka

Thana/Area	Type of Small Scale Informal Industry	Give (√)
Pallabi	Weaving workshop (Banaroshi/Zamdani)	
	Karchupi workshop	
Lalbagh	Shoe factory	
	Tailoring	
Shyampur	Wooden industry	
Sutrapur	Auto-mobile engineering/repairing	
	Welding workshop	
	Engineering/Lathe machine workshop	

1. Socio-economic status of the respondent

Name of respondent	Age	Sex	Education level	Monthly income (Tk.)

Age: Below 30 = 1, 30-39 = 2, 40-49 = 3, 50 and above = 4

Sex: Male = 1, Female = 2

Education: Below SSC= 1, SSC= 2, HSC= 3, Degree= 4, Honors= 5, Masters= 6, Other= 7

2. Size/Area of the industry (in Katha)

3. Structure type of the industry {Give (√)}

a) Kutcha b) Semi-pucca c) Pucca

4. Year of establishment.....

5. Ownership pattern {Give (√) and put number in right column}

a) Owned		b) Not owned	
Number of owner	Rented	
		Others (Specify)	

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6. Duration of operation of the industry in a year months

7. Duration of operation in a day hours

8. Production/repairing per day unit

9. Sell per day unit

10. Number of workers of the industry (Put number)

Male:	Female:	Total:
-------	---------	--------

11. Do the workers have the technical education/training for this work?

a) Yes b) No

12. Fixed/Capital cost of this industry

Sl. #	Item name	Cost (Tk.)
a)	Land	
b)	House/structure	
c)	Machine	
d)	Other	

13. Operating cost of this industry

Sl. #	Item name	Cost (Tk.)/month)
a)	Rent for space	
b)	Raw materials	
c)	Wage/Salary of Workers	
d)	Repairing and maintenance (House, machineries and others)	
e)	Utility services:	
	For water	
	For sewerage	
	For gas	
	For electricity	

14. Why did you establish this industry in this area/Thana?

Sl. #	Reasons of establishment	Ranking No.
a)	You practice this work from heritage	
b)	Raw materials are close to the industry	

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c)	Market is close the industry	
d)	Availability of skilled worker	
e)	Availability of transport to carry out raw material and finished product	
f)	Wholesaler buy from this place	

(Interviewer will make priority ranking from high to low in last column)

15. Does the industry pollute surrounding environment?

a) Yes b) No

16. If yes what type of environmental pollution occurred?

Sl. #	Pollution type	Give (√)
a)	Too much noise	
b)	Polluting air	
c)	Polluting water	
d)	Other	

17. Status of existence of utility services in the industry?

Sl. # (a)	Name of utility service (b)	Yes / No (c)	If yes, duration (hours/day) (d)
i)	Water supply		
ii)	Sewerage facility		
iii)	Drainage facility		
iv)	Electricity		
v)	Gas		
vi)	Other		

If yes, give (√) in column (c) and put duration in column (d). If no, give (×) in Column (c)

18. Raw materials of the industry

Sl. #	Source of raw materials	Name of raw material/s	Mode of transport to carry raw materials in the industry
a)	From any person/shop in Dhaka		
b)	From any person/shop outside Dhaka		
c)	From any person/shop in and outside Dhaka		

Appendix-A

19. Market of the finished product of this industry

Sl. #	Finished products sent to market	Mode of transport to carry out the finished product/s for marketing
a)	To any person/s inside Dhaka	
b)	To any person/shop outside Dhaka	
c)	To any person/shop in and outside Dhaka	

20. Name of the factors to distribute the industry in this Area/Thana

Sl. #	Factors	Ranking No.
a)	Availability of skilled worker in this area	
b)	Low cost of worker in this area	
c)	Industry located near to the raw material/s	
d)	Low transport cost to supply the finished products	
e)	Low house rent or land cost in this area	
f)	Easy access to roads to go market	
g)	Linked to other similar industry in this area	
h)	Tax free government land	

(Interviewer will make priority ranking from high to low in last column)

21. Has there any forward linkage with this industry?

- a. Yes..... b. No.....

22. Problems faced by this industry

Sl. #	Name of problems	Give (√)
a)	Low supply of electricity	
b)	Unavailability of sewerage facility	
c)	Unavailability of drainage facility	
d)	Unavailability of gas	
e)	Less price of the finished product	
f)	Low investment in the industry	
g)	Lack of any assistance (technical and financial)	
h)	Other	

.....
Name of the Interviewer

.....
Date

Questionnaire for AHP Model

FACTORS INFLUENCING THE LOCATION AND DISTRIBUTION OF SMALL-SCALE
INFORMAL INDUSTRIES IN DHAKA CITY

Master of Urban and Regional Planning, BUET, Dhaka

(Please give tick mark in proper place considering factor which influence more comparing to other)

	Extreme	Very Strong	Strong	Moderate	Equal	Moderate	Strong	Very Strong	Extreme	
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Low cost of worker
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Industry located near to the raw material/s
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Low transport cost to supply the finished products
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Low house rent or land cost
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Easy access to roads to go market
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Availability of skilled worker	9	7	5	3	1	3	5	7	9	Tax free government land
Low cost of worker	9	7	5	3	1	3	5	7	9	Industry located near to the raw material/s
Low cost of worker	9	7	5	3	1	3	5	7	9	Low transport cost to supply the finished products
Low cost of worker	9	7	5	3	1	3	5	7	9	Low house rent or land cost
Low cost of worker	9	7	5	3	1	3	5	7	9	Easy access to roads to go market
Low cost of worker	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Low cost of worker	9	7	5	3	1	3	5	7	9	Tax free government land
Industry located near to the raw material/s	9	7	5	3	1	3	5	7	9	Low transport cost to supply the finished products
Industry located near to the raw material/s	9	7	5	3	1	3	5	7	9	Low house rent or land cost
Industry located near to the raw material/s	9	7	5	3	1	3	5	7	9	Easy access to roads to go market
Industry located near to the raw material/s	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Industry located near to the raw material/s	9	7	5	3	1	3	5	7	9	Tax free government land
Low transport cost to supply the finished products	9	7	5	3	1	3	5	7	9	Low house rent or land cost
Low transport cost to supply the finished products	9	7	5	3	1	3	5	7	9	Easy access to roads to go market
Low transport cost to supply the finished products	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Low transport cost to supply the finished products	9	7	5	3	1	3	5	7	9	Tax free government land
Low house rent or land cost	9	7	5	3	1	3	5	7	9	Easy access to roads to go market
Low house rent or land cost	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Low house rent or land cost	9	7	5	3	1	3	5	7	9	Tax free government land
Easy access to roads to go market	9	7	5	3	1	3	5	7	9	Linked to other similar industry
Easy access to roads to go market	9	7	5	3	1	3	5	7	9	Tax free government land
Linked to other similar industry	9	7	5	3	1	3	5	7	9	Tax free government land

Appendix-C

Table C1: Pair wise evaluation of the factors influencing the location and distribution of small industries

			R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	a (smallest)	b (median)	c (largest)	(a+4b+c)/6
Availability of skilled worker	Vs	Low cost of worker	1	0.2	0.2	1	1	0.33	1	5	5	5	5	0.2	5	7	0.2	5	0.2	0.2	1	7	1.87
Availability of skilled worker	Vs	Industry located near to the raw material/s	3	5	1	5	5	0.14	0.14	0.2	0.14	5	0.2	0.33	0.2	5	0.2	0.14	0.14	0.14	1	5	1.52
Availability of skilled worker	Vs	Low transport cost to supply the finished products	5	7	5	7	7	5	3	5	0.14	5	5	5	5	9	5	7	9	0.14	5	9	4.86
Availability of skilled worker	Vs	Low house rent or land cost	1	5	0.2	5	5	0.2	0.33	0.2	0.2	0.33	5	5	0.33	5	5	7	1	0.2	1	7	1.87
Availability of skilled worker	Vs	Easy access to roads to go market	3	5	5	9	9	0.2	1	0.2	0.14	7	0.2	3	0.14	9	0.2	5	3	0.14	3	9	3.52
Availability of skilled worker	Vs	Linked to other similar industry	5	7	3	5	5	3	5	5	7	5	7	3	7	3	7	9	7	3	7	9	6.67
Availability of skilled worker	Vs	Tax free government land	1	3	0.14	1	3	9	7	7	3	1	5	5	9	9	1	5	1	0.14	5	9	4.86
Low cost of worker	Vs	Industry located near to the raw material/s	3	5	5	3	5	1	0.2	7	1	3	0.14	1	1	5	5	0.14	0.33	0.14	1	7	1.86
Low cost of worker	Vs	Low transport cost to supply the finished products	3	7	5	7	7	3	3	5	3	3	5	1	1	3	5	5	1	1	5	7	4.67
Low cost of worker	Vs	Low house rent or land cost	3	1	1	1	3	0.2	1	3	1	3	5	7	1	1	7	7	0.14	0.14	3	7	3.19
Low cost of worker	Vs	Easy access to roads to go market	5	5	5	7	5	0.33	0.33	3	0.2	5	0.2	1	0.2	1	1	5	0.33	0.2	3	7	3.20

Appendix-C

			R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	a (smallest)	b (median)	c (largest)	(a+4b+c)/6	
Low cost of worker	Vs	Linked to other similar industry	3	7	5	5	5	3	3	7	5	5	5	3	5	5	5	7	3	3	5	7	5.00	
Low cost of worker	Vs	Tax free government land	5	3	0.2	1	1	7	7	9	3	1	5	3	5	7	3	5	0.2	0.2	5	9	4.87	
Industry located near to the raw material/s	Vs	Low transport cost to supply the finished products	3	3	3	3	3	7	7	3	5	3	3	3	1	5	9	5	5	1	5	9	5.00	
Industry located near to the raw material/s	Vs	Low house rent or land cost	3	0.33	0.33	0.33	3	3	3	1	0.2	0.2	5	5	1	1	5	7	3	0.2	3	7	3.20	
Industry located near to the raw material/s	Vs	Easy access to roads to go market	5	3	3	3	5	1	7	3	0.33	3	0.33	3	1	3	5	3	5	0.33	3	7	3.22	
Industry located near to the raw material/s	Vs	Linked to other similar industry	5	1	1	3	5	5	7	5	5	3	3	3	5	1	7	7	5	1	5	7	4.67	
Industry located near to the raw material/s	Vs	Tax free government land	1	0.2	0.2	0.14	1	9	9	7	5	0.33	7	5	7	7	1	7	0.33	0.14	1	9	2.19	
Low transport cost to supply the finished products	Vs	Low house rent or land cost	0.2	0.2	0.33	0.2	0.2	0.33	3	0.33	0.33	0.2	0.2	5	1	0.2	0.14	1	0.14	0.14	1	5	1.52	
Low transport cost to supply the finished products	Vs	Easy access to roads to go market	0.33	0.2	3	1	0.2	0.14	0.33	3	0.33	1	0.2	3	0.2	1	0.33	0.33	0.11	0.11	0.33	3	0.74	
Low transport cost to supply the finished products	Vs	Linked to other similar industry	1	0.33	1	0.33	0.33	1	3	3	1	1	1	1	1	3	1	1	3	0.33	0.33	1	3	1.22

Appendix-C

			R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	a (smallest)	b (median)	c (largest)	(a+4b+c)/6
Low transport cost to supply the finished products	Vs	Tax free government land	0.14	0.2	0.2	0.11	0.14	3	3	5	0.33	0.33	3	3	3	3	0.14	3	0.11	0.11	0.33	5	1.07
Low house rent or land cost	Vs	Easy access to roads to go market	5	5	3	5	7	3	1	5	1	3	1	0.2	0.33	7	0.14	0.33	0.33	0.14	1	7	1.86
Low house rent or land cost	Vs	Linked to other similar industry	5	0.33	3	3	5	5	3	5	5	1	5	0.2	3	5	1	0.2	1	0.2	1	5	1.53
Low house rent or land cost	Vs	Tax free government land	0.2	1	0.14	0.2	1	7	7	7	3	0.33	7	0.33	5	7	0.14	1	0.2	0.14	1	7	1.86
Easy access to roads to go market	Vs	Linked to other similar industry	3	1	3	0.33	0.33	5	3	1	5	1	5	1	7	1	5	5	0.33	0.33	3	7	3.22
Easy access to roads to go market	Vs	Tax free government land	0.2	0.2	0.14	0.14	0.14	5	5	3	5	0.33	5	3	9	5	0.33	3	0.2	0.14	3	9	3.52
Linked to other similar industry	Vs	Tax free government land	0.2	0.2	0.14	0.2	0.14	3	3	5	0.33	0.2	1	5	3	3	0.2	1	0.14	0.14	1	5	1.52

Appendix-C

Table C2: Pair wise reciprocal matrix of the factors influencing the location and distribution of small-scale industries

	1	2	3	4	5	6	7	8
1 Availability of skilled workers in this area	1.00	1.87	1.52	4.86	1.87	3.52	6.67	4.86
2 Low cost of workers in this area		1.00	1.87	4.67	3.19	3.20	5.00	5.87
3 Industry located near to the raw material/s			1.00	5.00	3.20	3.22	4.67	2.19
4 Low transport cost to supply the finished products				1.00	1.52	0.74	1.22	1.07
5 Low house rent or land cost in this area					1.00	1.86	1.53	1.86
6 Easy access to roads to go market						1.00	3.22	3.52
7 Linked to other similar industry in this area							1.00	1.52
8 Tax free government land								1.00

Table C3: Pair wise complete comparison matrix

	1	2	3	4	5	6	7	8
1 Availability of skilled workers in this area	1.00	1.87	1.52	4.86	1.87	3.52	6.67	4.86
2 Low cost of workers in this area	0.53	1.00	1.87	4.67	3.19	3.20	5.00	5.87
3 Industry located near to the raw material/s	0.66	0.53	1.00	5.00	3.20	3.22	4.67	2.19
4 Low transport cost to supply the finished products	0.21	0.21	0.20	1.00	1.52	0.74	1.22	1.07
5 Low house rent or land cost in this area	0.53	0.31	0.31	0.66	1.00	1.86	1.53	1.86
6 Easy access to roads to go market	0.28	0.31	0.31	1.35	0.54	1.00	3.22	3.52
7 Linked to other similar industry in this area	0.15	0.20	0.21	0.82	0.65	0.31	1.00	1.52
8 Tax free government land	0.21	0.21	0.46	0.93	0.54	0.24	0.66	1.00
Total	3.57	4.64	5.88	19.29	12.51	14.09	23.97	21.89

Table C4: Estimated/Normalized relative weight

Factors		1	2	3	4	5	6	7	8	Principal Eigen /Priority Vector
1	Availability of skilled workers in this area	0.28	0.40	0.26	0.25	0.15	0.25	0.28	0.22	0.26
2	Low cost of workers in this area	0.15	0.22	0.32	0.24	0.25	0.23	0.21	0.27	0.24
3	Industry located near to the raw material/s	0.18	0.11	0.17	0.26	0.26	0.23	0.19	0.10	0.19
4	Low transport cost to supply the finished products	0.06	0.05	0.03	0.05	0.12	0.05	0.05	0.05	0.06
5	Low house rent or land cost in this area	0.15	0.07	0.05	0.03	0.08	0.13	0.06	0.08	0.08
6	Easy access to roads to go market	0.08	0.07	0.05	0.07	0.04	0.07	0.13	0.16	0.08
7	Linked to other similar industry in this area	0.04	0.04	0.04	0.04	0.05	0.02	0.04	0.07	0.04
8	Tax free government land	0.06	0.05	0.08	0.05	0.04	0.02	0.03	0.05	0.05
Total		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table C5: Random Consistency Index (RI)

N	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49