

# CHAPTER-1

## INTRODUCTION

### 1.1 BACKGROUND

Human nature is always curious to learn, understand, or investigate about the phenomenon. Million years ago our ancestors lived in caves. They used animal skin for clothing and they led community life in caves, then they learned to build huts using stones, rocks etc. With the development of human civilization, they invented uniform size of sun dried mud bricks.

It is generally believed that the art of brick making come in existence in about 6000 BC. Bricks dates 10000 years old were found in the Middle East, and the earliest mention of brick making was found in the Bible. The first sun-dried bricks were made in Mesopotamia, in the ancient city of Europe in about 4000 BC, although the arch used for drying the bricks was not actually found.

The Romans used fired bricks, and the Roman Legions, which operated mobile kilns, introduced bricks to many parts of the empire. Roman bricks are often stamped with the mark of the legion that supervised their production.

In pre-modern China, brick making was the job of a lowly and unskilled artisan, but a kiln master was respected more than the latter. Early traces of bricks were found in a ruin site in Xian in 2009, dated back about 3500 years ago. Before this discovery, it is widely believed that bricks appeared about 2800 years ago in the Western Zhou dynasty since the earliest bricks were found in Western Zhou runes. These bricks are the earliest bricks discovered that were made by a fire process.

Early descriptions of the production process and glazing techniques used for bricks can be found in the song Dynasty carpenter's manual Yingao Fashi, published in 1103 by the government official Li Jie, who was put in charge of overseeing public works for the central government's construction agency. The historian Timothy Book writes of the production process in Ming

Dynasty China (aided with visual illustrations from the Tiangong Kaiwa encyclopedic text published in 1637).

In the 12th century, brick from Northern-Western Italy were re-introduced to Northern Germany, where an independent tradition evolved. The trend of building upwards for offices that emerged towards the beginning of the 19th century displaced brick in favor of cast and wrought iron and later steel and concrete.

In the United States, modern bricks are usually about 8×4× 25 inches (203×102×57 mm). In the United Kingdom, the usual ("Work") size of a modern brick is 215×102.5× 65 mm (about 8.5×4×2.5 inches), which, with a nominal 10mm mortar joint, forms a "coordinating" or fitted size of 225×112.5×75mm, for a ratio of 6:3:2.

In Siraha district, brick industry is slow to adapt itself to the scientific revolution. Unlike a new industry created by change, the traditions of thousands of years seem to be hard to break in the brick industry. The first registered brick industry of Siraha district was Shree Aadhunik Brick Industry which was started from 2038/04/9 B.S. at Lahan, Siraha with Rs. 2,00,000 total capital and its annual capacity was 10,75,000 Bricks.

The early brick was worked in simply and then modified as Thadobatha (clamp kiln). In Nepal chimney (Bulls Trench) was introduced during the period of PM Chandra Shamshere Rana.

The ancient craft of Siraha district is brick making. The intricate bricks of various shapes and sizes in temples, colleges, schools and other buildings are constructed. Compared to cement block these bricks are considered strong, durable, and attractive too. Today, we can find uniform soil blocks which are baked in systematic way so as to get quality bricks.

Previously Chinese size bricks were more popular but currently it is replaced by local bricks. As the population increased in our country more clamp kilns were established and more bricks were produced. As the demand for construction grew, many contractors started launching their own temporary

kilns. But the bricks produced there were not as qualitative as produced in early days.

## **1.2 FOCUS OF THE STUDY**

The increase in overseas trading and advent of the industrial revolution heralded the start of new types of trading practice. The introduction of some of the processes which are part of marketing today is one of basic need of business which facilitates production and distribution of goods and services in the whole world and it help a lot in trade diversification. Initially, producers and manufacturers were concerned mainly with logistical issues-transporting and selling goods to widespread markets, often located far away from the point of production. Because of marketing and trade diversification nowadays people of the world are able to buy the goods of their choice among many. Simply, marketing is the process of production and distribution of goods and services.

According to **Prof. Dr. Govinda Ram Agrawal** "Marketing encompasses all activities aimed at satisfying the need of the customers through the exchange relationships to achieve organizational objectives with social responsibilities in a dynamic environment".

According to the **American Marketing Association-** "Marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfying individual and organizational objectives."

In Summary, marketing is the process of production and distribution of goods and services as per desire of customer and at the same time to take care of social welfare also. Four Ps product, price, promotion and place are the main components of marketing. Marketing is the backbone of economic growth because it increases ones economy and strengthens the firms. Marketing facilities play important role in both production and consumption.

For construction of buildings, rest-houses, temples, hotels etc. in traditional and modern way brick is the main element. So the obstacles and difficulties which are seen in both buying and selling as well as in production are the concern of research of this study.

We hear many complaints regarding production of brick by consumers and found their dissatisfaction on brick production, in their sizes, colors, and way of selling and the research is an attempt to show some of the barriers of brick with some advices.

While asking the consumers about the quality and satisfaction of brick it was found that finally they were not totally satisfied because of broken bricks, price fluctuation and also quality. Sometimes improper size bricks are found and they complain that they are not getting total satisfaction regarding quality of the brick where as they paid full amount for it. At the same time producer and seller opine that sometimes they have to deliver bad lot of brick in expensive price and sometimes they supply good quality due to seasonal variation. Sometimes they are able to deliver the good lot of bricks in low price.

Consumers are not getting easily the kind of brick they need. Even by paying high price consumers have to listen to seller's argument that they cannot deliver bricks without certain percent of broken bricks. Sales depots are constructed in certain places only. In early days people used to travel a long distance or to the factories to order bricks. Most of the consumers do not get the delivery in time.

### **1.3 STATEMENT OF THE PROBLEM**

At present, the marketing facilities and system are not satisfactory which have adversely affected industries and markets towards the bricks production. They are not getting good return from bricks production. So, the marketing arrangements should match with the bricks production.

Our country is developing country, so there is lack of technology, qualified manpower, lack of education and producers are not able to adopt new scientific method of manufacturing brick and new ideas for marketing.

### **Problems:**

- ) There is no any study done in the sector of brick marketing in Siraha district.
- ) Factory establishment procedure made by government is very impractical.
- ) No systematic calculation of production cost is done.
- ) There are many complaints regarding quality and regular supply of bricks in accurate quantity.
- ) There are more difficulties in the study of bricks in remote areas

### **1.4 NEED AND IMPORTANCE OF THE STUDY**

Competition is increasing day by day in Nepalese market where producers are not getting the target market share and face the problem of over stocking and tough competition.

In past, people in brick business were mostly uneducated. They used very traditional and old techniques of production. Nowadays many qualified persons are engaged in this business. This study will be helpful for future researchers and students to know about market situation of bricks in Siraha district.

### **1.5 OBJECTIVES OF THE STUDY**

The following are the major objectives of the study:

- ) To assess the satisfaction of consumers regarding bricks,
- ) To comprehend the production and distribution system of bricks,
- ) To know the market position of brick industries in Siraha district,
- ) To analyze the seasonal price fluctuation on brick and
- ) To know about the role of government regarding brick industry.

### **1.6 LIMITATIONS OF THE STUDY**

In the process of the study, the researcher has certain limitations. Such limitations are due to various circumstances. Following are the limitation regarding the preparation of this thesis:

- ) This study is concerned only with the brick production in Siraha District.
- ) Most of the data are used in this study through questionnaires.
- ) Data are based on sample surveys conducted in Siraha District.
- ) The study is limited to product attribute, price fluctuation, promotional tools and role of sales depots of local brick manufacturer.

## CHAPTER - 2

### REVIEW OF LITERATURE

#### 2.1 MARKETING

Marketing is a societal process which encompasses all activities aimed at satisfying customer's needs and wants through exchanging relationships to achieve organizational objectives in a dynamic environment.

This is the age of marketing. Marketing activities are part of everyday life. All types of organizations need marketing to achieve their objectives. Marketing has again a great deal of importance for the success of modern organizations.

Marketing is selling products. However, selling represents only part of marketing. Marketing consists of creating, promoting and delivering products to satisfy customer's needs. It creates values for customer. It delivers satisfactions to customers. It deals with customers.

According to **American Marketing Association**, "Marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange that satisfy individual and organizational goals".

According to **Philip Kotler**, marketing management, is "Marketing is a societal process by which individuals and groups obtain what they need and want through creating, offering, and freely exchanging products and services of value with others".

According to **Stanton, Etzel and walker**, "Marketing is a total system of business activities designed to plan price, promote and distribute want-satisfying products to target markets to achieve organizational objectives".

**William J. Stanton and Charles Futrel** in their book, *Fundamentals of Marketing*, writes, "In a business firm, marketing generates the revenues that are managed by the financial people and used by the production people in creating products and services". The challenge of marketing is to generate those

revenues by satisfying customer's wants at a profit and in a socially responsible manner.

They also elaborate marketing as a total system of business activities designed to plan, price, promote, and distribute want satisfying products, services and ideas to target markets in order to achieve organizational objectives in business dimensions of marketing.

### **2.1.1 Marketing Mix**

The marketing mix refers to the blend of ideas, concepts and features which marketing management puts together to best appeal to their target market segments. Each target segment will have a separate marketing mix, tailored to meet the specific needs of consumers in the individual segment.

Marketing mix can be classified into four parts;

1. Product mix
2. Price mix
3. Distribution mix ( Place mix)
4. Promotional mix

These are also known as major elements, four Ps or tools of marketing. While the marketing mix is largely controlled by company management, this mix still is constrained by external environmental forces.

All elements of marketing mix are essentially equally important and interdependent. Decision on the four elements must be taken simultaneously and they give us total marketing program. Customer's satisfaction can be achieved only by designing the marketing mix suitably for the customer's group.

**Product Mix:** - Product is the heart of marketing mix. Sales success is assured if a marketer offers a right product to a right customer at the right price, time and place. It consists of right product design (size, shape, color) product variety (line and items), quality (standardization and grading), features, branding,



trademarks, packing, services (before and after purchases) warranties etc. So, under product mix product line, product planning and development etc. are included.

**Price Mix:** - Pricing policy decisions will be directed by strategic objectives. If the objective is market penetration then prices must be set very competitively to appeal to the largest possible number of potential consumers. A firm is pursuing a niche strategy, catering for the luxury market in high value then prices should reflect this. Promotion and advertising can be used to differentiate the product on an exclusive basis and premium prices may be charged.

**Place Mix:** - Distribution management is concerned with two things; availability and accessibility. If marketing management is to be certain that their product and services are both available and accessible to the target market, they must design a channel strategy that will be effective. In order to do this, research must be undertaken to determine how and where potential customers prefer to buy products and services. Channels, which consist of all the intermediaries between the original services provider and consumer, must be chosen to maximum distribution effectiveness.

**Promotion Mix:** - The aims of the promotion fall into three main categories; to inform, to remind and to persuade. Consumers may need to be reminded about all types of issues, especially in the off-season. Promotion design to persuade consumers will be in line with specific objective, for example to encourage switching or to build preference. It is vitally important to recognize that promotion or marketing communications generally, may not always be aimed at the potential consumer or end-user of the product or service.

### **2.1.2 The Marketing Environment**

The marketing environment comprises all actors and forces influencing the company's ability to transact business effectively with the target market. This consists of the internal environment or micro-environment which relates to the organization itself and the external or macro-environment which will affect all organization.

The marketing must design a strategic marketing mix that enables the company to satisfy the wants of its target markets and to achieve its marketing goals. Environmental analysis plays a key role in strategic planning. The key steps involved are as follows:

- 1) Identify influences.
- 2) Control those which can be controlled.
- 3) Use those which can contribute to competitive advantage.
- 4) Overcome or defend against, potentially damaging influences.

Marketing environment forces are of external or internal to firm. The internal forces are located within the organization and consist of organizational activities. It is controllable by the organization and provides strengths and weaknesses to marketing. The external forces are located outside the organization and consist of political-legal, economic, socio-cultural and technological force. It cannot be controlled by the organization. It provides opportunities and threats to organization.

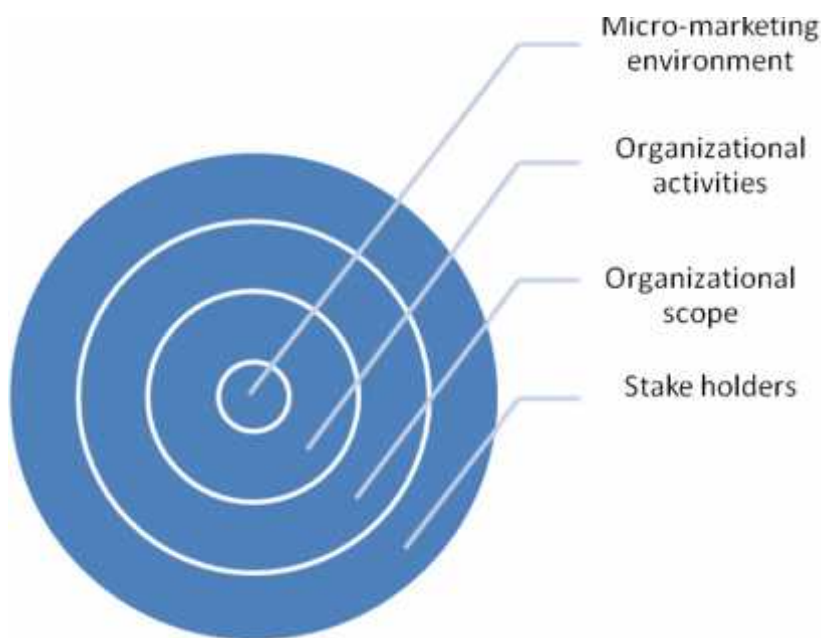


Fig:-2.1 Micro Environment of Marketing.

For successful and efficient marketing of the product right steps, plans program, policies and strategies should be appeared. Marketing research helps in getting the good and useful important information to make right choice on step or decision.

### **2.1.3 Marketing Research**

Marketing research is a systematic inquiry undertaken to help resolve a specific marketing problem. Its purpose is to guide marketing decision by generating information. It provide these attractive for marketing the choice. It is a tool for identifying market opportunities to formulate market strategic and to minimize threats. It is problem oriented.

According to **Philip Kotler** " marketing research is the systematic design, collection, analysis and reporting of data and finding relevant to a specific marketing situation facing the company."

**D. Slazenger and M. Stephenson** in the *Encyclopedia of social sciences* define research as ' The manipulation of things, concepts or symbols for the purpose of generalizing to extend correct verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art.'

*Advanced Learner's Dictionary of current English* defines research as 'a careful investigation or inquiry especially through search for new facts in any branch of knowledge'.

Marketing research specifies the information, manages and implements the data collection process, analyzes the result, and communicates the findings and their implications.

### **2.1.4 Marketing Information System**

MIS is simply a logical computer based extensions of marketing research. A marketing information system is a continuous and interacting structure of people equipment and procedure design together, sort, analyze, evaluate, and distribute pertinent timely and accurate information for the use by marketing decision maker to improve their marketing planning,

execution and control. So, an MIS is an ongoing, future oriented structure designed to generate, process, store and later retrieve information to aid decision making in an organization's marketing program. If a company has a formal MIS unit then the marketing research activity is probably treated as just one part of s information system.

## **2. 2 REVIEW OF RELATED STUDIES**

### **2.2.1 Product**

With all it inevitable imperfection, bricks and pattern begin with the preliminary observation of a renewed popularity of the architectural use of bricks. In the context of which, craftsman and artists have been able to construct walls with patterns derived from their creative minds and that these patterns are of different from those were used in the past eras.

Brick is generally of two types as following:

1. Chinese bricks
2. Nepali bricks

The production of Chinese bricks was started by Chinese Government collaboration in Harishidi in 1965. Chinese brick is qualitative and does not need to cover with plaster; it is smooth, attractive and stronger.

A Nepali brick which is the subject of this study is basic brick even when building is made of Chinese bricks. Chinese brick is only used for the outer side of the wall (facing). Also, quality of Chinese bricks is being diminishing and of less demand at present compared to past high demand. Therefore, at present scenario Nepali brick is becoming important factor in construction.

#### **a. Decoration**

##### **Sanded Surface**

Clay is available in most regions of the planet, providing the best building material, which all of the people soon put to good use. The inhabitants of the banks of Nile had noticed that the layer of alluvial deposits left behind every year by the tumultuous waters soon dried and cracked into

large and small ‘cakes’, about four to five centimeters thick, which could be used in construction of walls.

Thanks to the eagerness of man’s mind for progress and innovation, it was a first step in casting mud into regular shaped molds letting the blocks dry hard in the sun and utilizing the resulting bricks instead.

Searching means for making these more solid, cattle dung was mixed with the clay mud. Later on, in order to prevent the bricks from cracking, while losing their water contents, cut straw was added in about the same proportion as clay with its myriad blades acting as tiny “reinforcement rods” (the straw was first dipped in water, which softened in fibers, making the mixing process easier on skin).

Scholars unanimously believe that the undisputed master artisans in the field were from east. Those early architects faced an arduous task, when they came to adopt appropriate dimensions and proportions for the molds to be used. The alluvial “cakes” of the Nile banks had been used as such, roughly stacked atop one another, whereas in making bricks, whether raw or baked, thought was to be given to the proper alignment and interlocking of individual bricks, to their resistance under burden etc.

Raw material for structural clay products are cheap and in exhaustible and these conditions are not likely to change (it is quite possible that suitable clay deposits are forming on the earth as they are being used by this industry).

In technical changes, coal then gases and fuel oil is in use and electric energy is inevitable for drying and banking bricks. There will be automation and improvement in quality.

An unfortunate trend of covering the facade of buildings with stone slabs became popular all over world for a while, regardless of their low resistance to temperature variations, which exposed them to rapidly hot weather in summer and freezing cold in winter.

Lack of research is due to lack of wealth. Since small enterprises doing it, conservatism therefore resists change and innovations, no

government activities. Small enterprises should unite/merge to solve the problems in this field. Compatibility of baked phases to reduce micro cracks, improved face brick design to simplify wall construction, production of low cost partition and foundation bricks research recommended are still in developed country like USA.

### **b. Measurements of Bricks and Joints**

**Auroid Baillery** and **David Hancock** in their book *Brick work and associated studies* 2<sup>nd</sup> edition writes.

“A brick is defined as a walling unit not exceeding 337.5mm in length of a brick to equal twice width plus one joint and three times the height plus two joints”.

### **c. Qualities of Bricks**

**Auroid Backley** and **David Hanock** points out following requirement for a brick.

1. Brick should be well
2. Have good arises
3. Have an even color; all bricks simultaneously needed
4. Be easily cut
5. Have regular size
6. Be no time blows
7. Be salt free
8. Be unmarked ( due rough handling)
9. Have adequate strength and density below D.P.C need to be dense and well burnt. For manhole, construction should preferably be class B engineering and for brick on edge coping a smooth engineering is too preferred. Well burnt brick gives clear ringing sound when stuck with a trowel.

### **d. Classification of Bricks**

Bricks are classified as follows:

1. Mud bricks
2. Rail Kilns

3. Dry Pressed Bricks
4. Extruded Bricks
5. Calcium silicate Bricks

**Mud Bricks**: - The soft mud method is the most common, as it is the most economical. It starts with the raw clay, preferably in a mix with 25-30% sand to reduce shrinkage. The clay is first ground and mixed with water to the desired consistency. The clay is then pressed into steel moulds with a hydraulic press. The shaped clay is then fired ("burned") at 900-1000 °C to achieve strength.

**Rail Kilns**: - In modern brickworks, this is usually done in a continuously fired tunnel kiln, in which the bricks move slowly through the kiln on conveyors, rails or kiln cars to achieve consistency for all bricks. The bricks often have added lime, ash and organic matter to speed the burning.

**Dry Pressed Bricks**:-The dry press method is similar to mud brick but starts with a much thicker clay mix, so it forms more accurate, sharper-edged bricks. The greater force in pressing and the longer burn make this method more expensive.

**Extruded Bricks**: - With extruded bricks, the clay is mixed with 10-15% water or 20-25% water. This is forced through a die to create a long cable of material of the proper width and depth. This is then cut into bricks of the desired length by a wall of wires.

**Calcium Silicate Bricks**:- The raw materials for calcium silicate bricks include lime mixed with quartz, crushed flint or crushed siliceous rock together with mineral colorants. The materials are mixed and left until the lime is completely hydrated; the mixture is then pressed into moulds and cured in an autoclave for two or three hours to speed the chemical hardening. The finished bricks are very accurate and uniform.

Bricks may also be classified as solid (less than 25% perforation) by volume, although the brick may be "forged" having indentations on one of the longer faces, perforated ( containing a pattern of small holes through the brick removing no more than 25% of the volume). Similarly other classifications are cellular ( containing a pattern of holes removing more than

20% of the volume, but closed on one face), or hollow (containing a pattern of large holes removing more than 25% of the bricks' volume).

#### **e. Clay Bricks**

Clay bricks can be defined as an earth which forms sticky coherent mass when mixed with water. Clay is plastic and readily moldable when damp but if dried it becomes hard and brittle and will retain its shape. When it is heated to high temperature it becomes even harder, is no longer susceptible to the action of water by no known process can its plasticity be restored.

The chief constituents of clay are silica (60%) and alumina (20%) (average figures), in addition to which there are smaller proportions of non oxide, magnesia, lime etc. Silica (sand) produces hardness, resistance to heat, durability and prevents shrinkage, cracking and warping but excess to this constituent makes a brick brittle and porous. Alumina gives the plasticity which is necessary for proper molding, but this shrinks and warps become extremely hard when burnt. From these two qualities, it will be obvious that the chemical constituents of the clay will have a profound effect on the type of brick produced. Where the clay has an excess of either of these constituents it may be necessary to blend with clay from other district.

As cement did not make beautiful buildings, facing of brick, tile and stone were applied. Basic principles of mineralogy are extremely important in the production of high quality clay products.

Nepal National Building code says the brick should be of a standard rectangular shape, burnt red, hand formed or machine made and of crushing strength not less than  $3.5 \text{ N/mm}^2$ . The higher the density and strength, the better they will be. The standard brick size of  $240 \times 115 \times 57 \text{ mm}$  with 10mm thick horizontal and vertical mortar joints is preferable. Tolerances of -10mm on length, -5mm on width and  $\pm 3 \text{ mm}$  on thickness shall be acceptable for the purpose of thick walls in this market.

Brick is produced from October to April (seasonal production) since the producer has to pay less rent for land (i.e. wheat crops and remaining



period landlords could use this land for rice crops) and to avoid less damages in rainy season.

**Mr. Kimbell** in his book, “*Principles of Industrial Organization*”, (6<sup>th</sup> edition) writes, “The most advantageous location for brick production is that at which the cost of gathering materials and fabricating it plus the cost of distributing the finished products to the consumer will be minimum”.

Location governing factors are

1. Availability of fuel
2. Availability of raw material
3. Availability of cheap labor
4. Nearness to market for products

**Mr. Brownell** in his book *Structural Clay Production* classified bricks as following.

A. Facing

1. Extruded stiff mud process
  - a. Solid plain textured or glazed
  - b. Cored plain textured or glazed
  - c. Panel plain textured or glazed
2. Sand molded soft mud process
  - a. Sand textured
  - b. Glazed over sanded surface
3. Dry pressed
4. Height weight

B. Common

C. Paving

Each of these general types of bricks requires special properties suitable to their intended use and has different price. In Nepal, sand molded bricks made by the soft mud process are formed in damp wooden molds lined with sand to prevent stitching of the clay. Soil should contain 35% clay for extrusion bricks, 40 to 50

percent clay for sold mud bricks, more than 50 percent clay results to excessive shrinkage.

For better looks of bricks, some additional materials are used. Like there is no mould release problem in sanding a different column, grits with a narrow particle size range can be employed for special effects to add a flux to sand in order to promote adherence. Bricks are scratched/embossed for esthetic effects and strong plaster (mortar) banding.

In Siraha district, brick making is typically a manual process. The most common type of brick kiln in use there are Bull's Trench kiln (BTK). An oval or circular trench, 6-9 meters wide, 2-2.5 meters deep, and 100-150 meters in circumference is dug. A tall exhaust chimney is constructed in the centre. Half or more of the trench is filled with "green" (unfired) bricks which are stacked in an open lattice pattern to allow airflow. The lattice is capped with a roofing layer of finished brick.

The advantage of the BTK design is a much greater energy efficiency compared with clamp or score kilns. Sheet metal or boards are used to route the airflow through the brick lattice so that fresh air flows first through the recently burned bricks, heating the air, then through the active burning zone. The air continues through the green brick zone (preheating and drying them), and finally out of the chimney where the rising gases create suction which pulls air through the system. The reuse of heated air yields saving in fuel cost.

As with the rail process above, the BTK process says is continuous. A half dozen laborers working around the clock can fire approximately 15000-25000 bricks a day. Unlike the rail process, in the BTK process the bricks do not move. Instead, the locations at which the bricks are loaded, fired and unloaded gradually rotate through the trench.

### **2.2.2. Types of Kiln**

There are two types of kiln;

1. Hoffman Kiln
2. Bulls Trench Kiln

**Hoffman Kiln:** - Hoffman kilns in Siraha district are oval with chambers for setting up and removing bricks. In this kiln, combustion air is preheated by cooling bricks in some chambers and passes through fired zone. From which the exhaust gases preheat the green bricks. The cool bricks are removed from one side of the top through holes in permanent arched roof. The advantage of these kiln are, supply of bricks is continuous and regular, preheating is done by the hot gases before they escape into the atmosphere and considerable reduce fuel consumption and stack emission likewise bricks are baked evenly and quality of bricks are good, the height of chimney control particulates and fuel gases. The only disadvantage is the higher capital investment. These kilns use seasoned clay. Brick produced in these kilns are of bright color, smooth surface, and are used as wall material, without rendering.

**Bull's Trench Kiln:-** The Bull's trench kilns operate on the principal of Hoffman kiln, except that the expensive ached roof and dampers for drought control are omitted and the exhaust gases are drawn through about 16m high movable chimneys with a wide base. The movable sheet metal chimney mouth fill over the open able vent holes set in the brick and ash and rubble cover the top of the kiln. 12-15 persons move the chimney and at stationary, these are supported by steel and wire rope guys. In these kilns, reuse of heat is achieved by drawing exhaust combustion gases from being fired through to successive batches of bricks waiting burning. Draught is achieved by a pair of chimneys positioned ahead a fire, which sakes in the kilns gases from the entry point through fire and forward through the bricks. The cooled bricks are removed and green bricks set up in the kiln while brick firing is also in progress. The fuel generally a mixture of crossed coal and saw dust, is fed through the hole on the top. These kilns are of oval type. A trench is dug in and the walls constructed at dry elevated area and its size in the valley ranges between 23-32 feet wide and 6.5-7.5 feet deep. The production capacity of a kiln is directly dependent on cross sectioned area of the trench. Low capital investment compared to higher profits due to technology which does not require machines and permanent

structures, use of labor intensive brick making and firing process are the reasons for the operation of large number of these kilns.

### **2.2.3 Color of Fired Bricks**

Red colored bricks are generally preferred in Nepal and India. However, by altering the composition of the clay mix and kiln atmosphere it is possible to attain a wide variety of colors in fired product. In almost all instances, the color of fired bricks may be attributed to the presence of iron compounds in clay. Iron produces different coloration, depending mainly on its state of oxidation. In oxidant atmosphere (which is generally the case), non minerals are converted into ferric oxide by the beginning of the verifications period. The color of ferric oxide if temperature is increased darker reds are produced until the color is almost black at around 1300<sup>0</sup>c.

### **2.2.4 Process of Brick Making**

Process of bricks making are as follows;

1. Soil testing
2. Prepare the mold
3. Prepare the clay
4. Make the raw brick
5. Sun drying
6. Fire drying

#### **Soil Testing**

First, it needs to test the soil from which plan to prepare the brick. The proportion of sand to clay in the soil should not be more than 50 percent (minimum 30 percent). A simple method is to mix ten teaspoons of the soil to a glass of clean water, stir it completely, and keep it overnight. You will see two clear layers of clay and sand. From the size of each layer, you can find out the proportion.

#### **Prepare the Mold**

Wooden (ideally beach wood) planks and nails are used to prepare brick molds. The standard size of a brick is 14”×10”×4”.

### **Prepare the Clay**

Dig the required amount of soil and ship it to the brick making site. Test if the soils need to be mixed with some additional amount of sand. Remember the sand plays an important role for removing the brick from the mold. Mix a sufficient amount of water to the soil to make it clay. The clay should be soiled enough to hold its shape, but at a same time it should be liquid enough to fill in the mold.

### **Make the Raw Brick**

Pour the prepared clay into the mold and let it set for half an hour. After that it should easily come out from the mold as raw brick.

### **Sun Drying**

The raw brick should be kept on dry sand in the sun for drying by solar energy. This is an important step for making adobe brick. Leave the brick until all the exposed edges become white. After that turn them on their edges. This whole process may take at least three weeks. The final moisture content of the above clay brick will be around 10-15%. At this point, the adobe bricks will be ready to use.

### **Fire Drying**

In case you want to make fire red clay bricks, you need to cure the brick in an oven (kiln) under 1800 degrees Fahrenheit.

## **CHAPTER – 3**

### **RESEARCH METHODOLOGY**

#### **3.1 RESEARCH DESIGN**

Research design is a plan for the collection and analysis of data. It presents a series of guideposts to enable the researcher to progress in the right direction in order to achieve the goal.

The research design asks, what approach to the problem should be taken, what methods will be used, what strategies will be effective? etc. Identification, selection and formulation of a research problem may be considered as planning stage of a research and the remaining activities refer to the designs, operation and completion of the research study. It helps the researcher to fulfill its objectives within the available time and budget.

Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. This research is broadly, a systematic activity directed towards investigating managerial or business problems and result in an invention or discovery of marketing of bricks in Siraha district. It can be a detailed investigation of the existing problems, practices or processes, which will help consumers to get different kind of bricks they want and produce as desired by consumers.

Mostly, data are collected from consumers who came to brick factories and depots to buy the bricks and some neighbors who were building their houses. Here, some data are gathered, (mostly primary) and some available secondary data from producers and owners. Conclusions and recommendations are made.

#### **3.2 POPULATION AND SAMPLE**

In Siraha district, Ninety Three brick industries are registered and among them Twenty Five brick industries are closed. In Siraha district, many constructions start every year.

Population of this research is all the brick consumers, brick producers and brick dealers in Siraha district. Among them a sample of 50 consumers and 5 brick producers are consulted. During sampling, judgmental sampling method is used.

### **3.3 NATURE OF DATA**

Both primary and secondary data are used in the research. Primary data is related with market/field survey whereas secondary data is related with production and sales of bricks.

### **3.4 SOURCES OF DATA**

Both, primary and secondary data are used for this study. The sources of data are mentioned below:

- 1) Primary data is collected through questionnaire and interview which was conducted in factories, depots and with consumers.
- 2) Very few available secondary data is used in appropriate places.
- 3) Structure and unstructured questions were prepared for the collection of data and distributed to producers, depots and consumers. Questionnaire is presented in appendix.

## **CHAPTER - 4**

### **PRESENTATION AND ANALYSIS OF DATA**

#### **4.1 INTRODUCTION**

As the changing of time human civilization also went on developing their living standards or way of living was also changing. They learned to cultivate food and stopped to eat raw meat of animals for food and they looked for better durable and attractive place to live in. In early days, they carved stones and used them for building which was very difficult. Later, they used mud as building blocks. In the beginning, they used dried blocks of mud and later they learned to burn the bricks for durability.

As the changing of time brick producing technologies changed on. Developed countries are using almost 100 percent pollution free technology like gas chamber, electric cooking without firing technologies etc. But still today in our country, due to lack of proper technology, brick factories use traditional method bull's trench. It has been tried to present the present condition of bricks industries in Siraha district.

In Siraha district, there are total 94 bricks industries but only 69 are running and 25 industries are close. The Table No. 4.1 shows total production capacity of brick industries of Siraha district. Shree Aadhunik Brick tail Industry is the first registered brick industry of Siraha district which was registered in 2038/04/09 BS at Lahan Municipality. Production capacity of Shree Aadhunik Brick tail Industry is very low in comparison to other brick industries.



**Table No. - 4.1*****BRICKS INDUSTRIES REGISTERED IN SIRAHA DISTRICT***

<b>S.N.</b>	<b><i>Date of Registration</i></b>	<b><i>Name of Industry and Address</i></b>	<b><i>Annual Production Capacity(in piece)</i></b>	<b><i>Remark</i></b>
1)	2038/4/9	Shree Aadhunik Tail Industry, Lahan	1075000	
2)	2041/6/9	Shree Shiv Brick Tail Industry, Jamdah	4000000	
3)	2050/8/2	Shree Sagar Brick Industry, Ashanpur	1200000	
4)	2053/6/18	Shree Ujjyalo Brick Industry, Madar	150000	
5)	2055/8/9	Shree Nirjan Brick Industry, Belha	1485000	
6)	2055/8/9	Shree Pooja Brick Industry, Laxminiya	150000	
7)	2055/8/10	Shree Shree Janki Brick Industry, Narha Balkaba	1620000	
8)	2055/9/6	Shree Swami Brick Industry, Ashanpur	1350000	
9)	2055/9/30	Shree Maa Durga Indusry, Lahan	1440000	
10)	2055/10/13	Shree Om Shiv Brick Industry, Malhanya Khairi	1305000	
11)	2056/10/21	Shree Sagarmatha Brick Industry, Hanuman Nagar	1305000	
12)	2057/6/2	Shree Shankar Brick Ind., Arnama Parsha	1500000	
13)	2057/8/2	Shree Gold Brick Industry, Siraha	1350000	
14)	2057/8/27	Shree Shankar Brick Industry, Majhaura	2250000	
15)	2057/9/28	Shree Maa Durga Bricks Industry, Janki Nagar Kachnary	1350000	
16)	2057/12/14	Shree Five Star Bricks Industry, Gorchhary	2250000	
17)	2058/6/14	Shree Sarswati Bricks Industry, Bastipur	1350000	
18)	2058/7/5	Shree Shivam Brick Industry, Malhaniya Khori	1500000	
19)	2058/9/19	ShreeNew Shree Janki Brick Industry, Kusaha Laxminiya	2733000	
20)	2058/10/17	Shree Shambhu Brick Industry, Marha Rigol	2733000	
21)	2058/11/2	Shree Pashupati Brick Industry, Sonamati Majhaura	2730000	
22)	2058/11/17	Shree Sabnam Brick Industry, Inarwa	2733000	

Cont.....

<b>S.N.</b>	<b>Date of Registration</b>	<b>Name of Industry and Address</b>	<b>Annual Production Capacity(in piece)</b>	<b>Remark</b>
23)	2059/7/12	Shree Gulab Brick Industry, Khirauna	16200000	
24)	2059/8/25	Shyam Brick Industry, Madar	2733000	
25)	2059/10/22	Shree Tapshi Brick Industry, Belha	1620000	
26)	2059/11/13	Shree Sanyashi Brick Industry, Inarwa	1620000	
27)	2059/11/13	Shree Jay Kali Brick Industry, Matiyarwa	2733000	
28)	2060/6/11	Shree Ganpati Brick Industry, Hanuman Nagar	3110400	
29)	2060/7/6	Shree Gopal Brick Industry, Madar	3110400	
30)	2060/7/20	Shree Balaji Brick Industry, Gamhariya Maheshpur	1620000	
31)	2060/10/8	Shree New Mukati Brick Industry, Devipur	3500000	
32)	2061/9/11	Shree Sangam Brick Industry, Gorchhari	2733000	
33)	2061/9/23	Shree Damni Brick Industry, Ashanpur	2733000	
34)	2061/10/3	Shree Bhagbati Brick Industry, Chandralalpur	2733000	
35)	2062/6/20	Shree Chandra Brick Industry, Ashanpur	2633000	
36)	2062/8/21	Shree Laxmi Brick Industry, Dhangadhi	10430000	
37)	2062/9/21	Shree Kamla Brick Industry, Kishanpur	2633000	
38)	2062/10/10	Shree Mahendra Brick Industry, Pipra	3825000	
39)	2062/10/10	Shree Suman Saurav Brick Industry, Gaurshaha	2633000	
40)	2062/11/25	Shree Sankar Brick Industry, Asanpur	2633000	
41)	2062/12/14	Shree New Pashupati Brick Industry, Sonamati Majhaura	2633000	
42)	2063/4/18	Shree New Bajrang Brick Industry, Asanpuri	6880000	
43)	2063/5/14	Shree Shree Janki Brick Industry, Dhangadhi	10430000	
44)	2063/5/20	Shree Balaji Brick Industry, Maheshpur	6880000	

Cont.....

<i>S. N.</i>	<i>Date of Registration</i>	<i>Name of Industry and Address</i>	<i>Annual Production Capacity(in piece)</i>	<i>Remark</i>
45)	2063/9/26	Shree Satyadev Brick Industry, Itatar	2633000	
46)	2064/7/13	Shree HanumanBrick Industry, Hanuman Nagar	3500000	
47)	2064/10/18	Shree Shivam Brick Industry, Madar	3500000	
48)	2064/10/28	Shree Ganpati Brick Industry, Asanpur	10400000	
49)	2064/12/1	Shree ShivBrick Industry, Asanpur	10430000	
50)	2065/2/29	Shree Sagar Brick Industry, Asanpur	3500000	
51)	2065/7/6	Shree New Gopal Brick Industry, Madar	10430000	
52)	2065/8/9	Shree BikashBrick Industry, Madar	10430000	
53)	2065/8/9	Shree Maa Laxmi Brick Industry, Khirauna	10430000	
54)	2065/9/23	Shree Hari Brick Industry, Chandralalpur	10430000	
55)	2055/9/24	Shree JayMata Dee Brick Industry,Inarwa	10430000	
56)	2065/9/27	Shree Good Brick Industry, Asanpur Balkawa	10830000	
57)	2065/12/16	Shree Sita Brick Industry, Laxminiya	10430000	
58)	2066/5/8	Shree Om Shree Janki Brick Industry, Mohanpur, Kamalpur	10430000	
59)	2066/5/23	Shree Amar Brick Industry, Devipur	6000000	
60)	2066/6/6	Shree Kishan Brick Industry, Asanpur Balkawa	2600000	
61)	2066/8/3	Shree Jay Maa Bhagwati Brick Industry, Inarwa	10430000	
62)	2066/8/15	Shree Star Brick Industry, Nabrajpur	10430000	
63)	2066/8/15	Shree Jay MaaDurga Brick Industry, Laxmipur	10430000	
64)	2066/8/25	Shree Jay Laxmi Brick Industry, Devipur	10430000	
65)	2066/8/29	Shree Janki Brick Industry, Asanpur	2655000	
66)	2066/10/8	Shree Kabir Brick Industry, Asanpur	2655000	
67)	2066/11/10	Shree Ram Janki Brick Industry, Thalha Katti	3500000	
68)	2067/2/11	Shree Bishal Brick Industry, Asanpur	6000000	
69)	2067/10/23	Shree Jay Hanuman Brick Industry, Arnama	6000000	

Source: Register of Gharelu Thatha Sana Udyog Karyalaya, Lahan, Siraha District, 2069 B.S.

## Table No. - 4.2

### SHREE SHREE JANKI BRICK INDUSTRY, VDC - NARHA BALKABA - 6, SIRAHA

**Date of Registration:** 2055/08/10

Production (in thousands) in FY					Price (Rs. In ,000 in 2068/069)			No. of Labor
2064/ 065	2065/ 066	2066/ 067	2067/ 068	2068/ 069	First Grade	<i>Mitha Pak</i>	Second Grade	
1200	1200	1400	1500	1400	8500	6500	6000	20

Source: Field Survey

Shree Shree Janki Brick Industry is registered in Siraha district. The Table Number 4.2 shows that production of Shree Janki Brick Industry was 1200000 pieces in first Fiscal Years 2064/065 and 2065/066. In FY 2066/067 the production was 1400000 and in FY 2068/069 it increase to 1400000. According to data price of first grade was Rs. 8500 per thousand, price of *Mitha Pak* was Rs. 6500 per thousand and price of second grade was Rs. 6000 in the Fiscal Year 068/069. The data shows that 20 labors were working in Shree Janki Brick Industry.

## Table No. - 4.3

### SHRE NEW BAJRANG BRICK INDUSTRY, VDC - ASANPURI - 9, SIRAHA

**Date of Registration:** 2063/04/18

Production (in thousand) in FY					Price ( Rs. In ,000 in 2068/069)			No. of Labor
2064/ 065	2065/ 066	2066/ 067	2067/ 068	2068/ 069	First Grade	<i>Mitha Pak</i>	Second Grade	
1300	1400	1600	1500	1600	8500	6200	5500	23

Source : Field Survey

Table Number 4.3 shows that production of Shree New Bajrang Brick Industry was 13,00,000 pieces in Fiscal Year 2064/65. In FY 065/066 it was 14,00,000 and in FY 2066/067 the production was 16,00,000. Similarly in FY 2067/068 it decreases to 15,00,000 and in FY 068/069 the production was 16,00,000 pieces. According to data, price of first grade was rupees 8500 per thousand, price of *Mitha Pak* was rupees 6200 per thousand and price of second grade was Rs. 5500 per thousand in Fiscal Year 068/069. This data shows that 23 labors were working in Shree New Bajrang Brick Industry.

### Table No. - 4.4

#### SHREE SARSWATI BRICK INDUSTRY, VDC - BASTIPUR, SIRAHA

Date of Registration: 2058/06/14

Production (in thousands) in FY				Price ( Rs. In ,000 in 2068/069)			No. of Labor
2065/ 066	2066/ 067	2067/ 068	2068/ 069	First Grade	<i>Mitha Pak</i>	Second Grade	
2000	2000	2100	2200	8800	6300	5600	80

Source: Field Survey

Shree Sarswati Brick Industry was registered in Siraha district. The data shows that production of Shree Sarswati Brick Industry was 20,00,000 pieces in Fiscal Year 2065/066. In FY 2066/067 the production was again 20,00,000. In FY 067/068 it was 21,00,000 and in FY 068/069 total 22,00,000 bricks were produced. According to data price of brick of first grade was Rs. 8800 ,*Mitha Pak* was Rs. 6300 and second grade was Rs. 5600 per thousand in Fiscal Year 068/069. The data shows that 80 workers were working in Shree Sarswati Brick Industry, Siraha District.

## Table No. - 4.5

### SHREE JANKI BRICK INDUSTRY, VDC - ASANPUR - 4, SIRAHA

Date of Registration: 2066/08/29

Production (in thousands) in FY				Price ( Rs. In ,000 in 2068/069)			No. of Labor
2065/ 066	2066/ 067	2067 / 068	2068/ 069	First Grade	<i>Mitha Pak</i>	Second Grade	
2000	1800	2100	1900	8800	6200	5400	66

Source: Field Survey

Table Number 4.5 shows the production of Shree Janki Brick Industry. It was 20,00,000 pieces in FY 2065/066 and in FY 066/067 the production was 18,00,000. In FY 067/068 it was 21,00,000. In FY 068/069 it was 19, 00,000. According to data price of first grade was Rs. 8800, price of *Mitha Pak* was Rs. 6200 and price of second grade was Rs. 5400 per thousand in Fiscal Year 068/069. The table shows that 66 labors were working in Shree Janki Brick Industry.

## 4.2 BUYING PURPOSE OF BRICK

According to buying purpose, different types of buyers are found in the market. Some buyers buy bricks to fulfill the personal use while other buy bricks to complete their contract.

**Table No. - 4.6**

**BUYING PURPOSE OF BRICK**

<b>Purpose</b>	<b>Response</b>	<b>Percentage</b>
Personal use	45	90%
Contract work	5	10%
Total	50	100%

Source: Opinion Survey

Table Number 4.6 shows that 90 percent customers were agreed that they bought bricks for personal use and only 10 percent costumers bought bricks for contract work.

**4.3 PRICE OF BRICK**

**Table No. - 4.7**

**PRICE OF BRICK IN SIRAHA DISTRICT IN FISCAL YEAR 2068/69.**

<b>Grade</b>	<b>Price in Rs. Per Thousand</b>
First	8600
<i>Mitha Pak</i>	6500
Second	5200

Source: Field Survey

Table Number 4.7 shows that the price of brick of first grade was Rs. 8,600 per thousand, price of *Mitha Pak* was Rs. 6500 per thousand and price of second grade was Rs. 5200 per thousand in Siraha district during Fiscal Year 2068/69.

**Table No. - 4.8**

**CUSTOMERS' OPINION ON THE PRICE OF BRICK**

<b>Opinion</b>	<b>Response</b>	<b>Percentage</b>
Costly	35	70%
Cheap	5	10%
Reasonable	10	20%
Total	50	100%

Source: Opinion Survey

Table No. 4.8 shows the opinion of different customers on the price of brick. Customers' opinion generated from the sample respondents which showed that only 20 percent customers were satisfied with existing price of brick. The table shows 70 percent customers thought that the price of brick was costly. Only 10 percent respondents perceived that price of brick was cheap.

**4.4 ADVERTISEMENT OF BRICK**

The objective of advertisement practice is to increase the sales of a particular product under consideration. Brick is advertised by telecasting the brick industry's name and address under television screen.

**Table No. - 4.9**

**ADVERTISEMENT OF BRICK**

<b>Heard/Seen/Read</b>	<b>Response</b>	<b>Percentage</b>
Yes	40	80%
No	10	20%
Total	50	100%

Source: Opinion Survey

Table Number 4.9 shows the opinion of the respondents on advertisement of brick. From the table it can be concluded that 80 percent people read the advertisement of brick on the television screen, 20 percent people could not read or see the advertisement of brick.



#### 4.5 PLACE ( DISTRIBUTION AND TRANSPORTATION )

Customers require products in the right quantity at the right time from the right place. So, brick producers must try to provide better customer service and fast delivery at reasonable costs.

Consumers complained about late delivery and waste of time of their labor and mason.

In Siraha district, mostly brick producers used their own tractor to transport their product. In village area, people use personal bullock cart to carry bricks.

**Table No. - 4.10**  
**AVAILABILITY OF BRICK**

<b>Availability</b>	<b>Response</b>	<b>Percentage</b>
Yes	45	90%
No	5	10%
Total	50	100%

Source: - Opinion Survey

The Table Number 4.10 shows that 90 percent customers got brick easily but 10 percent customers did not get brick easily. Sometimes they had to wait for the delivery of bricks.

#### 4.6 PRICE

Every year production season starts in around *Mangsir*. During this period price of brick decreases. From *Baisakh* price starts to increase till *Bhadra*. Again, price starts to decrease from *Mangsir*. Price is an important element of marketing mix. It is the major determinant of customer choice. It is the only marketing mix element that produces revenue. It helps to determine the profit and loss.

After administering interviews with consumers about the price fluctuation of bricks, the information acquired is presented in Table No. 4.11.

**Table No. - 4.11**

**PRICE FLUCTUATION OF BRICK**

<b>Price fluctuation</b>	<b>Response</b>	<b>Percentage</b>
Yes	44	88%
No	6	12%
Total	50	100%

Source: Opinion Survey

The Table No. 4.11 shows that 12 percent consumers did not know about the price fluctuation of brick and 88 percent consumers accepted it. In production season, due to a lot of stock and sales competition, price decreases.

**4.6.1 Discount in Price**

Brick producers give discount when customers purchase in large quantity. Brick producers give transport facility in the same rate for 5 kilometers distance.

After administering interviews with consumers about the discount in price and other facility besides price discount, the information acquired is presented in Table No. 4.12.

**Table No. - 4.12**

**DISCOUNT IN PRICE WHEN BOUGHT IN LARGE QUANTITY OF BRICK**

<b>Discount</b>	<b>Response</b>	<b>Percentage</b>
Yes	8	16%
No	42	84%
Total	50	100%

Source: Opinion Survey

The Table Number 4.12 shows that only 16 percent customers got discount from brick producers when they bought a large quantity of brick. However, 84 percent customers did not get discount from brick producers as they purchased in small quantity.

#### **4.6.2 Other Facility besides Price Discount**

While asked about other facility besides price discount customers opined that they got free transport facility up to 5 kilometers distance.

#### **4.7 SUGGESTIONS ON IMPROVEMENT OF BRICK**

Brick is taken as a basic requirement of construction without which work of construction in remained as a dream only. So, improvement on its quality, finishing, breakage and delivery must be considered by producer.

**Table No. - 4.13**

**SUGGESTIONS ON IMPROVEMENT OF BRICK**

<b>Aspect</b>	<b>Response</b>	<b>Percentage</b>
Improvement in quality	35	70%
Lower breakage	5	10%
Improvement in finishing	6	12%
Exact quantity delivery	4	8%
Total	50	100%

Source: Opinion Survey

Table Number 4.13 shows that 70 percent customers complained about quality. Again, 10 percent had complaint about broken bricks. Among all respondents, 12 percent complained regarding bad finishing and 8 percent complained about delivery of less quantity bricks.

#### **4.8 KNOWING THE LOCATION OF BRICK PRODUCERS**

To know the location of brick producers, consumers used their friends, searched themselves, and did personal contact. Especially they preferred friends to get the information about qualitative goods. Consumers searched producers themselves to get the right producer who was ready to fulfill their wants like quality brick, delivery on fixed time etc.

**Table No. - 4.14**

**KNOWING THE LOCATION OF BRICK PRODUCERS**

<b>Medium</b>	<b>Response</b>	<b>Percentage</b>
Advertisement	2	4%
Through friends	25	50%
By searching	15	30%
Personal contact	8	16%
If others	-	-
Total	50	100%

Source: Opinion Survey

Table No. 4.14 shows that only 4 percent customers followed the advertisement to get bricks. 50 percent respondents got bricks through their friends' advice. 30 percent respondents knew about the brick by searching and 16 percent respondents knew about the brick through personal contact.

**4.9 DELIVERY OF BRICK**

Delivery of goods on time plays a very important role in the marketing of brick. After counting the bricks are loaded if drivers as well as tractor are in good condition, delivery is made on the same day. If driver is new, unknown about delivery site or due to other internal problem bricks are delivered on the second day, third day and some times more than three days later.

**Table No. - 4.15**

**DELIVERY OF BRICK**

<b>Delivery time</b>	<b>Response</b>	<b>Percentage</b>
Same day	30	60%
After one day	10	20%
After two days	6	12%
More than three days	4	8%
Total	50	100%

Source: Opinion Survey

The Table No. 4.15 shows that 60 percent consumers got delivery immediately. 20 percent consumers were of the view that they got delivery after one day. 12 percent consumers were delivered after two days. Some consumers found it difficult to get the brick at the right time. Eight percent consumers got delivery after more than 3 days from the date of order.

#### **4.10 PERCENTAGE OF BROKEN BRICK MIXED IN DELIVERY**

Many consumers had complaints on broken brick during delivery. Generally bricks were found broken during load and unload from tractor. Similarly, during production and shifting from one place to another bricks break. Table No. 4.16 shows the amount of broken bricks during delivery.

**Table No. - 4.16**

**PERCENTAGE OF BROKEN BRICK IN DELIVERY TIME**

<b>Number</b>	<b>Response</b>	<b>Percentage</b>
00 %	10	20%
Up to 20 %	30	60%
Up to 50 %	10	20%
More than 51 %	-	-
<b>Total</b>	<b>50</b>	<b>100%</b>

Source: Opinion Survey

Table No. 4.16 shows that 20 percent respondents opined that they did not get broken bricks at the time of delivery. 60 percent customers claimed that they got 20 percent broken bricks and 20 percent customers claimed that they got almost 50 percent broken brick at the time of delivery. In fact, producers did not want to get any complaints from their consumers but to minimize their loss they send few broken pieces of bricks.

**Table No. - 4.17**

**OPINION OF CONSUMERS REGARDING PRICE OF BRICKS**

<b>Opinion</b>	<b>Response</b>	<b>Percentage</b>
Fixed price	8	16%
High price	42	84%
Total	50	100%

Source: Opinion Survey

Table Number 4.17 shows that 84 percent respondents had comment on high price of brick and high profit margin taken by producers. 16 percent respondents opined about irregularities in price.

**4.11 SATISFACTION WITH THE QUALITY OF BRICK**

Customer satisfaction is the goal of the marketing concept. Satisfaction is a function of performance and expectations. Brick producers must try to satisfy the customers by delivery of good quality bricks.

**Table No. - 4.18**

**SATISFACTION WITH THE QUALITY OF BRICK**

<b>Satisfaction</b>	<b>Response</b>	<b>Percentage</b>
Yes	30	60%
No	20	40%
Total	50	100%

Source: Opinion Survey

The opinion survey conducted to know satisfaction with the quality of brick. Some respondents opined that they were satisfied but some were not satisfied with the quality of bricks. The Table No. 4.18 shows that 60 percent respondents were satisfied and 40 percentage respondents were not satisfied with the quality of bricks.

#### 4.12 BLACK MARKETING

Consumers of bricks said that in Siraha district there was no black marketing of bricks. They directly purchased brick with brick producer and there was always greater supply than demand. Therefore, there was no question of black-marketing of bricks.

#### 4.13 ACTUAL QUANTITY OF BRICK

**Table No. - 4.19**  
**ACTUAL QUANTITY SUPPLY OF BRICK**

<b>Actual Quantity Supply</b>	<b>Response</b>	<b>Percentage</b>
Yes	45	90%
No	5	10%
Total	50	100%

Source: Opinion Survey

Table No. 4.19 shows that 90 percent respondents opined that they got actual quantity of brick and only 10 percent opined that they did not get actual quantity of bricks at the time of delivery

#### 4.14 AVAILABILITY OF OTHER CONSTRUCTION MATERIAL

The respondents had the view that they did not get other construction material where they bought bricks. It means the brick manufactures dealt bricks only.

#### 4.15 FLUCTUATION OF PRICE

**Table No. - 4.20**  
**REASON FOR PRICE FLUCTUATION**

<b>Reason</b>	<b>Producer</b>	
	<b>Response</b>	<b>Percentage</b>
Due to demand	0/5	–
Need of capital	2/5	40%
Investment cost	2/5	40%
Seasonal production	4/5	80%
Competition	1/5	20%
Total	5	100%

Source: Opinion Survey

Table No. 4.20 shows reasons that contribute to price fluctuation. 80 percent producer pointed out that seasonal production was the main reason for price fluctuation. In production season, due to a lot of stock and sales competition, price decreases. Some producers opined that due to the need of capital and due to scarce of working capital in production season they were forced to sell their bricks in cheaper price. Some of them opined that inventory, double loading and unloading charges were the main reason for price fluctuation.

Table 4.20 shows that 40 percent producers were of the view that due to need of capital during production period, they sold bricks in low price. 40 percent opined that main reason for price fluctuation was investment cost and 20 percent producer had the view that due to competition price fluctuated.

#### **4.16 MOST EFFECTIVE PROMOTIONAL TOOL**

Promotion is the element in organizations marketing mix that is used to inform and persuade the market regarding the organizations' products and services.

To find out the most effective promotional tool among those practiced and to advice other prospective promotional activities the Table No. 4.21 gives some views of consumers of brick.

**Table No. - 4.21**

**MOST EFFECTIVE TOOL (PRODUCER)**

<b>Tools</b>	<b>Response</b>	<b>Percentage</b>
Advertisement	1	20%
Sales promotion	0	0
Personal selling	1	20%
Publicity	3	60%
Total	5	100%

Sources: Opinion Survey



Brick is such a material which is used to build house and house is one of the basic need of human beings. It saves their life from thieves, robbers, wild animals etc. For their long life or for their future generation too house is must. In case of brick market, advertisement and personal selling play important role.

According to view of producer, 60 percent of them accepted to sell their products in this competitive market due to their goodwill, public relation and publicity. 20 percent produces preferred advertisement and 20 percent producers preferred personal selling.

#### **4.17 DIFFICULT PART OF BUSINESS**

While asking about the most difficult part of the brick factory it was found that due to smoke, dust particles from kiln a lot of people were affected living around there. Other main problem was scarcity of coal.

**Table No. - 4.22**

**DIFFICULT PART OF THE BUSINESS**

<b>Reason</b>	<b>Response</b>	<b>Percentage</b>
Non-availability of raw materials	2/5	40%
Technology	3/5	60%
Finance	3/5	60%
Strict government rules and regulation	1/5	20%
Total	5	100%

Source: Opinion Survey

The Table No. 4.22 shows that 40 percent producers were agree with non-availability of raw materials required for brick production. Coal is basic fuel used in all brick industry. Similarly, wood, rice husk etc. are also used as raw materials for firing purpose.

Lack of proper technology was also an important cause. Brick industries are based on traditional method of producing brick. So, 60 percent producers opined that lack of proper technology was also one of the most difficult parts of their business. 60 percentage producers opined finance and 20 percent opined strict government rules and regulations.

#### **4.18 SUGGESTION TO SOLVE THE PROBLEMS**

To solve all above difficulties producers wanted amendment in government rules. They want to bring pollution less technology.

**Table No. - 4.23**  
**CUT THROAT COMPETITION**

<b>Answer</b>	<b>Response</b>	<b>Percentage</b>
Yes	3	60%
No	2	40%
Total	5	100%

Source: Opinion Survey

Cut throat competition is a challenge of business which was accepted by all producers.

Table No. 4.23 shows that 60 percent producers accepted that there was competition between producers and 40 percentages opined no more competition.

#### **4.19 EMPLOYMENT GENERATION**

This industry has been giving work for Nepali and Indian labors for their livelihood. Brick industry has been providing employment to uneducated rural poor people, paying taxes and manufacturing cheap building materials which ultimately help the economic development of the country.

#### **4.20 DELIVERY PROBLEM**

To get the publicity, increase goodwill and satisfy the consumer through delivery of brick at the spot as consumers want play very important role. To fulfill the need and wants of consumers is one of the successful score of producers. Providing good quality brick to consumer does not totally serve the consumers if the delivery is not made on proper spot as per the wish of consumers. Due to bad conditions of road, carelessness of driver, producers are not able to deliver bricks at proper site in proper time.

#### 4.21 CREDIT OR CASH TRANSACTIONS

**Table No. - 4.24**

##### CREDIT OR CASH TRANSACTIONS

Transactions	Response	Percentage
Credit	10	20%
Cash	10	20%
Both	30	60%
Total	50	100%

Source: Opinion Survey

Producers opined that cash and credit transactions both were done. Table No. 4.24 shows that 60 percent brick producers provided both, cash and credit. 20 percent brick producers dealt cash transaction and 20 percent brick producers dealt credit transaction.

#### 4.22 SUGGESTIONS FOR BRICK MARKETING

The last question was asked about suggestion for brick marketing. The answer is presented in the Table No. 4.25

**Table No. - 4.25**

##### SUGGESTIONS FOR BRICK MARKETING

Suggestion	Producers		Consumers	
	Response	Percentage	Response	Percentage
Reduce pollution	1	20%	3	6%
Should be organized and responsible	2	40%	20	40%
Quality should be improved	1	20%	10	20%
Have marketing spirit	1	20%	9	18%
Government monitoring	2	40%	8	16%
Total	5	100%	50	100%

Source: Opinion Survey

According to Table No. 4.25 it can be said that 40 percent of producers wanted the government's role to improve the brick business. 40 percent of them opined organized and responsible brick producers. 20 percent of them also suggested brick producers should have marketing spirit. 20 percent of them realized their failure to improve the quality of brick due to dependency on Indian technician in the factories and lack of knowledge.

40 percent of the consumers advised to keep brick marketing well. 20 percent of them advised to improve quality of brick and 18 percent suggested to create marketing spirit for good consumer service. Consumers complained that they did not get the required type of brick and service. However, they were ready to pay high price. 16 percent of them wanted that government should improve its role to control, monitor and guide brick producers.

## **CHAPTER – 5**

### **SUMMARY, CONCLUSION & RECOMMENDATION**

#### **5.1 SUMMARY**

If we turn our history from our ancestors period, soil brick was used to construct small hut to save their life from wild animals, enemies etc. As agricultural age started, they learned the use of soil. Then they slowly learned that fired bricks were stronger, water resistant, gave a good color and till today it has been used.

It is found that brick was manufactured five thousand years ago in Iraq, Pakistan etc. Firstly, they used sun dried bricks later they learned to produce brick by baking clay about four thousand years ago. In Nepal, we can trace bricks dating back about two thousand years, in our historical monuments. In Nepal, chimney was introduced during the period of PM Chandra Shamshe Rana.

In Siraha district, brick industry is slow to adopt the scientific revolution. The intricate bricks of various shapes and sizes were used in temples and other buildings. Brick can be classified according to quality, decoration, place of origin, method of manufacturing, uses, color, types, variety and content. Today, we can find uniform soil blocks which are baked in systematic way so as to get quality bricks.

As the population increase in our country, more clamp kilns are established and more bricks are produced. As the demand for construction grew, many contractors started launching their own temporary kilns. But the bricks produced here are not qualitative as produced in early days.

The research done is descriptive and analytical. Questionnaires were designed addressing problems of brick marketing and they were distributed in different factories and collected the opinion from consumers as well as producers.

While asking about the quality and satisfaction of brick to the consumer, it was found that they were not very satisfied because of broken

bricks, price fluctuation and quality. The study shows that consumers first preferred to check color of brick. If it is reddish, they take it as good and strong. Most of them know about big seasonal price fluctuation and most of them seem helpless about it. Publicity was found to be the most effective promotional tool. Majority of the consumers are positive about brick industry in Siraha district, even though they find lack of marketing spirit. Therefore, there is big scope for marketing of brick industry in Siraha district.

## **5.2 CONCLUSION**

From the very beginning of the human civilization place of living has been one of its essential needs. Brick has been most commonly used as construction material. It plays very important role in general people's life for the construction of their houses. It is also one of the main sources of income as the government collects different taxes and it also helps general people to get employment opportunities to improve their living standard.

The conclusion and findings of the study are given below according to the field based research activities:

- ) With the help of the study, it has been found that there were 94 brick industries in Siraha district and out of 94 brick industries 25 were closed.
- ) There were two kinds of consumers who visited brick factories. Among them 80 percent consumers went to brick factories to buy bricks for personal use. Only 20 percent responded were in favor of contract work. They visited brick factories to buy bricks for the purpose of completion of contract work for e.g. to build bridge, public buildings etc.

- ) Only 20 percent customers were satisfied with price of brick. 60 percent customers thought that price of brick was costly and 10 percent customers thought that the price of brick was cheap.
- ) 80 percent customers heard about the advertisement of brick and 20 percent customers could not hear about the advertisement of brick.
- ) Among consumers, 90 percent consumers opined that they got brick easily and 10 percent opined that they did not get bricks. Sometimes they had to wait for the delivery of bricks.
- ) Out of the total respondents 84 percent consumers knew about the high price fluctuation of brick and 16 percent consumers did not know about the price fluctuation of brick.
- ) Among consumers, 16 percent consumers got discount from brick producers when they purchased a large quantity of brick and 84 percent did not get discount from producers. Customers said that they got free transport facility for 5 kilometers distance.
- ) 70 percent customers complained about quality. 10 percent had complained about more broken brick. 12 percent had complained regarding bad finishing, 8 percent consumers had complained about cheating on quantity of bricks delivered to them. They found less quantity than invoice.
- ) Out of total customers 4 percent customers followed the advertisement to approach brick producers. 50 percent customers got bricks through their friend's advice. 30 percent customers knew about the brick by searching and 16 percent customers knew about the brick through personal contact.
- ) 60 percent customers got delivery immediately. 20 percent consumer opined that they got delivery of brick after one day and 12 percent consumers got delivery after two days. Some

consumers found it difficult to get the brick at right time. 8 percent consumer got delivery more than 3 days delay.

- ) During delivery of brick, about 60 percent consumers found up to 20 percent broken bricks. Consumers suggested the producer to minimize and control broken pieces of bricks during delivery. It will maintain their goodwill.
- ) 84 percent customers had comment on high price of brick, high margin taken by producers. 16 percent had the view about irregularities in price. They wanted the price to be the same everywhere.
- ) Some customers were satisfied with the quality of bricks but some were not satisfied with the quality of bricks. 60 percent consumers were satisfied and 40 percent consumers were not satisfied with the quality of brick.
- ) 90 percent customers opined that they got actual quantity of bricks and 10 percent had the view that they did not get actual quantity of bricks.
- ) Main reason for price fluctuation was due to the need of working capital, investment, cost and seasonal production.
- ) The most effective promotional tool was publicity.
- ) The major difficult part of brick business was non-availability of raw materials. Lack of technology was other difficult part of business. Till today due to lack of technologies, producers are not able to use advanced technique to minimize pollution and other way of production of brick.
- ) Out of total, 40 percent producers were in favor to improve government role in brick business.
- ) Among producers, all of them opined that they provided seasonal employment to the needy people, which was an important task of



the brick industry. Beyond this, they helped in the development of the nation.

### **5.3 RECOMMENDATION**

The following suggestions can be applied:

- ) Producers should concentrate their effort on good quality of brick rather than just price.
- ) Publicity and good will should be gained by supplying good quality of brick. Doing social works and product service facilities like timely delivery, cordial behavior etc. were the way to gain bigger market.
- ) In Siraha district, there was very less advertisement regarding brick. Advertisement may help to increase sale.
- ) Concentrate on delivering bricks as quickly as possible.
- ) Government has to announce clear and practical rule, regulations, and policies to regulate and manage brick industries and help them to enter new pollution less technologies.
- ) Development of appropriate and inexpensive method for proper clay preparation, fast and uniform molding and most important of all maximum efficiency is required. Government should encourage a good deal of research and provide necessary assistance to improve brick industry in Nepal.

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**APPENDIX - I**  
**QUESTIONNAIRE FOR CONSUMER**

Please tick in box on the right answer to a question to help to develop the good quality of brick as you desire:

Name: .....

Address: .....

Date ..... Phone No. ....

1. For what purpose do you buy brick?
  - a. Personal use
  - b. Contract for construction
2. How do you feel about the price of brick?
  - a. Costly
  - b. Cheap
  - c. Reasonable
3. Have you ever heard, seen or read the advertisement of brick?
  - a. Yes
  - b. No
4. Is brick available in the market easily?
  - a. Yes
  - b. No
5. Do you know seasonal fluctuations in the price of brick?
  - a. Yes
  - b. No
6. Do you get any discount in price when you buy large quantity of brick?
  - a. Yes
  - b. No

7. Is there any other facility besides price discount?
  - a. Yes
  - b. No
  
8. If yes, please specify the facility.
  
9. Do you have any suggestion for the improvement of quality of bricks?
  - a. Yes
  - b. No
  
10. How do you know about brick producers?
  - a. Advertisement
  - b. Through friends
  - c. By searching
  - d. Personal contact
  - e. If others
  
11. Which day you get the delivery of brick after order?
  - a. Same day
  - b. After one day
  - c. After two days
  - d. More than three days
  
12. What percent of broken bricks are supplied?
  - a. 00 Percent
  - b. Up to 20 percent
  - c. Up to 50 Percent
  - d. More than 51percent
  
13. Do you have any suggestion regarding price?
  
14. Are you satisfied with the quality of brick?
  - a. Yes

- b. No
15. Did you buy brick through black market?
- a. Yes
  - b. No
16. Did you get actual quantity of brick?
- a. Yes
  - b. No
17. Is there any other construction material available where you buy brick?
- a. Yes
  - b. No
18. If yes, which materials are found there?
19. What is your suggestion in brick marketing?
20. Do you get credit facility in purchase of bricks?
- a. Yes
  - b. No
  - c. Sometimes
21. Do you get the delivery facility of brick from producer?
- a. Yes
  - b. No
22. What is the rate of 1000 bricks?

**APPENDIX - II**  
**QUESTIONNAIRE FOR PRODUCERS**

Please tick in box on the right answer to a question to help to develop the good quality of brick as you desire.

Name : .....

Address : .....

Date ..... Phone No. ....

1. What is the reason for price fluctuation?
  - a. Due to demand
  - b. Need of capital
  - c. Investment cost
  - d. Seasonal production
  - e. Competition
  
2. Which is the most effective promotional tool used?
  - a. Advertisement
  - b. Sales promotion
  - c. Personal selling
  - d. Publicity
  
3. Which is the most difficult part of your business?
  - a. Unavailability of raw materials
  - b. Technology
  - c. Finance
  -

- d. Strict government rules and regulation
  - e. Unavailability of trained manpower
  - f. Unavailability of proper land for brick production
4. How it can be solved? Give suggestions.
5. Is there cut throat competition in this sector?
- a. Yes
  - b. No
6. Do you have any delivery problem?
- a. Yes
  - b. No
7. If yes, what types of problems you face?
8. Do you have credit transaction or cash transaction?
- a. Cash
  - b. Credit
  - c. Both
9. Do you provide home delivery service?
- a. Yes
  - b. No
10. Do you have covered major market share of bricks in Siraha district?
- a. Yes

b. No

11. Why did you select the bricks business?

a. For maximum profit

b. Perfect business

c. To get benefit of long experience

d. No external or internal competition

e. Less risky business

12. What is the preset rate of 1000 brick?

13. What is the monthly production of bricks?

14. How many workers are involved in bricks production?

15. When the bricks production starts?

16. What is the brand name of your brick?

17. What is the actual size of your brick?

18. Do you have different varieties of bricks? If yes, please specify.



**APPENDIX - II**  
**QUESTIONNAIRE FOR PRODUCERS**

Please tick in box on the right answer to a question to help to develop the good quality of brick as you desire.

Name : .....

Address : .....

Date ..... Phone No. ....

1. What is the reason for price fluctuation?
  - f. Due to demand
  - g. Need of capital
  - h. Investment cost
  - i. Seasonal production
  - j. Competition
  
2. Which is the most effective promotional tool used?
  - a. Advertisement
  - b. Sales promotion
  - c. Personal selling
  - d. Publicity
  
3. Which is the most difficult part of your business?
  - g. Unavailability of raw materials
  - h. Technology
  - i. Finance
  - j. Strict government rules and regulation
  - k. Unavailability of trained manpower
  - l. Unavailability of proper land for brick production

4. How it can be solved? Give suggestions.
5. Is there cut throat competition in this sector?
- c. Yes
- d. No
6. Do you have any delivery problem?
- c. Yes
- d. No
7. If yes, what types of problems you face?
8. Do you have credit transaction or cash transaction?
- d. Cash
- e. Credit
- f. Both
9. Do you provide home delivery service?
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