CHAPTER 1

INTRODUCTION
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The term “Ceramic” is derived from the Greek word “Keramic”, which means the art of potter. At present the term generally denotes all articles developed by heat in which clays have been used. Ceramics basically means an art of making articles of clay and firing them to produce stone like products.

According to New Gem Dictionary – “Ceramics is an art of moulding, modelling, backing clay.”

W.D.Kingery defines – “Ceramics is an art and science of making and using solid articles which have as their essential component and are composed in large part of inorganic, non metallic, materials”.

Felix Singer and Sonja Singer have given different views: “The word ceramic is taken to cover those articles that are made from inorganic substances first shaped and then hardened by fire. In ancient times, this meant articles made from clay. In this century we have found out how to use ceramic methods for the physically and chemically different substances, but the ceramic industry is still founded on the working knowledge of clay.”

Keeping in view the technological advancement in the field of ceramics and the above definitions, one can define ceramics as an art and science of making articles of clay with or without the addition of other inorganic non-metallic materials which are first modeled when in plastic state, retain their shape and subsequently fired to the desired strength. Ceramic products satisfy the needs of man in the construction and decoration of buildings (bricks and tiles); they are used in manufacture of metals (refractory materials), as insulators in the electrical industry (porcelain and steatite), in the manufacture of chemical products (stoneware and porcelain), in sanitation (earthenware and vitreous china), in drainage of water and
sewage (stoneware). The pottery branch of the ceramic industry supplies the various domestic requirements from the kitchen to the dining room (porcelain, china, earthenware). In the production of art ware practically all types of ceramic materials are used from terra cotta to fine china.

Ceramic industry is one of the oldest and significant industries in India. It plays a vital role in India’s socio-economic development. In U.S.A. the cement, lime, glasses and enameled iron industries are included in the term ‘ceramic’. In India, ceramic, glass and potteries are grouped under one head by Stock Exchange Foundation, Mumbai. The art of pot making is the oldest of all human arts. Pottery was the first synthetic material discovered by man. It is an artificial stone produced by firing clay at a temperature sufficiently high to change the physical and chemical properties of the original clay into a new substance with many of the characteristics of stone. Pottery first appeared about 15,000 – 10,000 B.C. with the drawn of the Neolithic age. Pottery is a symbol of scientific development. Its appearance and development make an important stage in progress of man.

In prehistoric times, primeval man left his footprints in clay soil. These footprints were subsequently dried and hardened by the sun. Again, his primitive weapons would come in contact with the clay earth, clay would adhere, dry on, and be difficult to remove. Although he probably did not realise what was happening, primeval man witnessed, for the first time, the process of plastic clay being deprived of its plastic properties by the drying action of the sun, and its conversion into a hard substance.

Some 15,000 years elapsed before the scientific explanation was available, but probably only a thousand years passed before the first practical use was made of the discovery, when the first bricks were made of rough earth and were dried by exposure to the sun; and when wicker baskets were made temporarily waterproof by coating them with a clay layer.
The fact that the use of clay was known in very ancient times is handed down to us in the Bible, which tells us that God made the first man of clay. We do not know when the first clay was hardened by burning, but we may assume that the clay vessels came in contact with fire accidentally, and in this way the first fired ceramic article were produced. Burnt ceramic was found in excavations made in the Nile valley is estimated to have been made 13,000 years ago. The progressive yearly elevation of the soil (caused by the deposition of mud from the river) makes it possible to estimate the age of excavated pieces by noting the depth at which they are found below the present level of the valley. It is possible that the Indian races learned the manufacture of fired bodies and glazes from the Assyrians and Chaldaeans, but here again it is more likely that in prehistoric times they developed their own pottery art. Hand-modelled red terra-cotta vases from North-West India, made probably in the third millennium B.C., exhibits a high state of culture and refinement.

Glass is very popular item used for both business and household purposes. Glass containers are used for packaging food articles, medicines, ink etc. Borosilicate glass tubes are used for making ampoules in pharmaceutical industry. Glass tableware like tumblers, plates, cups, jugs etc. are used as household utensils. In our country, this industry has a historical significance too, because the first organized co-operative glass factory called Paisa Fund glass works was set up about 100 years ago by Bal Gangadhar Tilak. Tremendous growth and progress have been made by the glass industry since then. Before independence, India was manufacturing a mere 30,000 MT of glass per annum. Today Indian glass industry is manufacturing over 50 lakhs MT of glass per annum employing a work force of about 2 lakhs person.
The glass industry comprising about fifty units in the organised sector and about five hundred small scale units, produces a diverse range of products from marbles and mirror to glass containers, sheet glass, vacuum flasks, laboratory glassware and fiber glass. The units are located close to the raw material sources, namely sand and limestone. It is a labour intensive industry employing about two lakhs person today. The investment in the industry is estimated at about Rs. 150 crore and production about 50 lakhs MT. The industry's turnover is placed at about 500 crore per annum. The Government has for a good reason followed a favorable policy towards the glass industry. It contributes to the industrialisation of backward areas and to regional development. A major part of the industry's input could come from the recycling of waste. The industry was delicensed as early as March–April 1985. Initially the delicensing scheme was applicable to only the MRTP and non–FERA glass manufacturing companies but it was extended to include other companies in October 1987. Because of the unique economic and organizational characteristics, ceramic industry in India plays an important role in employment creation, resource utilization and income generation.

Objectives of the Study:

The study has the following objectives:

(i) To judge the liquidity of the selected companies in Indian Ceramic industry.
(ii) To evaluate the Capital structure of the companies under study.
(iii) To assess the profitability of the selected enterprises.
(iv) To measure the efficiency and effectiveness of managerial policies of the selected companies in different dimensions.
(v) To evaluate the overall financial performance of the companies under study by taking into consideration three important aspects of financial performance namely liquidity, profitability and managerial efficiency.
(vi) To analyse the uniformity and correlation between different financial performance measures.
Scope of the Study:

In the present study thirteen companies in Indian ceramic industry are covered. It is an attempt to analyse the complete financial performance of the selected companies in the Indian ceramic industry during the period under study, i.e., from 1990–91 to 1999–2000.

Research methodology of the study:

(i) Sample Design:
The study is based on thirteen companies in Indian Ceramic Industry. In this study purposive sampling procedure has been followed. In this study thirteen well known companies have been selected on the basis of their turnover and average capital employed. The companies selected for this study are:

1. SPL LTD. (SPL)
2. ORIENT CERAMICS & INDUSTRIES LTD. (OCIL)
3. MURUDESHWAR CERAMICS LTD. (MCL)
4. KAJARIA CERAMICS LTD. (KCL)
5. BOROSIL GLASS WORKS LTD. (BGWL)
6. ASAHI INDIA SAFETY GLASS LTD (AISGL)
7. ANANT RAJ INDUSTRIES LTD (ARIL)
8. HINDUSTAN SANITARY WARE & INDUSTRIES LTD. (HSWIL)
9. BELL CERAMICS LTD. (BCL)
10. REGENCY CERAMICS LTD. (RCL)
11. SPARTEK CERAMICS INDIA LTD. (SCIL)
12. NEYCER INDIA LTD. (NIL)
13. SUN EARTH CERAMICS LTD. (SECL)

(ii) Collection of Data:
The data have been collected from secondary sources such as the Stock Exchange Official Directory, The Mumbai Stock Exchange, Volume–6, Capitaline 2000, the official database of
Analysis of Data:
For analysing the data in this study, simple mathematical tools like percentage, averages, ratios etc., statistical techniques like Pearson’s simple correlation analysis, Spearman’s rank correlation analysis, multiple correlation analysis, analysis of Kendall’s coefficient of concordance, multiple regression analysis, measures of dispersion etc. and relevant statistical tests like t test, F test, Chi-square test etc. have been applied.

Organisation of the Study:
The study has been divided into eight chapters.

Chapter I is an introduction to the study which deals with objectives, scope, research methodology and organisation of the study as well as the economic importance of ceramic industry in India. Chapter II presents historical development and growth of ceramic industry in India. Chapter III throws light on the liquidity position of the selected companies. Chapter IV deals with the analysis of capital structure of the ceramic companies. Chapter V explains the profitability of the ceramic companies under study. Chapter VI explains the managerial efficiency of the selected companies. Chapter VII tests the uniformity and correlation between liquidity, profitability and efficiency. The final chapter makes a summary of the study and also shows the conclusions drawn from the study.

Economic importance of ceramic industry:
Ceramics is the most ancient industry which has gone through several stages and phases of development with the human civilisation. The ceramic industry which flourished as an art of potter for ages, has attained the higher
status of ceramic science. It has grown with civilisation and contributed substantially to the growth of national economy. Even at the stage of advanced technology, the labour intensive character of this industry has in no way diminished. Estimated figures show that nearly 7.2 million in the world are dependent directly or indirectly on the ceramic product manufacturing or trading. It has a singular distinction of being of equal importance to both developed and developing nations, because of its linkage with the development and economic welfare of human race. The main characteristics of economic importance of this industry in national economy are enumerated as under.

(a) Industry Founded on Sound Base:
There is a definite advantage to ceramic industry over other industries in the case of raw materials. Ceramic raw materials such as clays and other non metallic materials are available in large quantities in the crust of the earth. At present all the clays and rocks are not used. They constitute inexhaustible resources for exploitation. Till this time, only highest quality materials are being used in ceramics. Thus, the raw material supply for the ceramic industry is a never ending process of the nature. That is why, it is said that the ceramic industry is based on sound footings.

(b) Reveals The Ancient Economic History:
The ceramic remnants enable us to trace out the ancient history of human civilisation. In India prehistoric excavations furnished the evidences of the Vedic and Aryan cultures. Ceramic ruins depicted economic life of those days. Ruins of buildings, bathrooms, pots, minarets, floor-tiles, etc. tell the story of the
ceramic industry and its economic importance to those village people and city dwellers.

(c) Utility and Aesthetic Aspect in Modern Homes:
Ceramic industry has been brought to the level in modern time which could provide comfort at home to a common man with a provision of shelter, drinking, cooking and sanitation. The common house utility articles have been provided by the ceramic industry on the cheapest possible prices. In addition to this, aesthetic aspect of the life has not remained beyond the approach of this art. Decorative ceramic products give decency and sophistication to our modern homes. Even the personal decencies have been provided by the ceramic beads and costume jewelleries. They have proved good substitutes to gold and silver ornaments. Some of the ceramic products such as fine-china and bone-china are used as luxuries. In this way, ceramic products entered into modern life of a man from common house to places of importance. This is how ceramic industry grew and developed to the dimensions in the homes, but what it has done to change the face of industry at large is by far a huge contribution to the economic progress and welfare of a country.

(d) Serves the Key Industries:
Ceramics is a basic industry for the development and growth of various modern key industries and others e.g. iron and steel industry, nonferrous metal industries, nuclear power, steam power, glass, paper mills, gas, etc. in the form of refractory goods. The expansion of iron and steel industry depends upon
the vitally important refractories. Thus, it is the basic industry for economic and industrial development of a country.

(e) Economic Dependence of Other Industries:
Ceramic industry also contributes towards the development of many other industries. It is enormously using fuels such as coal, power, mineral oils, gas etc. Ceramic machine industry, chemical industry, gypsum or plaster of paris, cement, lime industry, mining and quarrying industry in general have been substantially getting economic advantage and help from the ceramic industry, as the outputs of these industries are inputs of ceramic industry.

(f) Health and Sanitation:
Sanitary wares are very important contributions of the modern ceramic industry. Sanitation and hospital articles contribute to our good health. Importance of these products over the other is that these are easy to wash and do not provide shelter to deadly germs to breed. After the first world war ceramic industry could develop in many respects. During the second world war various ceramic units were established in many warring countries to meet the demand of war hospitals which were established for the treatment of POWS and wounded soldiers. Sanitary wares and hospital equipments were largely required in India. A production center was established for the first time at Khurja for such supplies by Uttar Pradesh Government. In this way, ceramic industry is important in case of the emergency and for safety against health hazards.
(g) Scientific Development:
Ceramic products for physical and chemical laboratories are very essential. This is another aspect of ceramic industry which is responsible for the expansion of scientific researches and technological advancement. The requirement of physical and chemical laboratories has been met by the ceramic industry in the form of chemical ceramics. It shows the important contribution of the ceramic industry in scientific development and research.

(h) Electronic and Space Research:
In the field of electronics the most vital parts of the rockets, space-crafts and nuclear reactors which could resist heat or high thermal power to the extent of 4000° C. are the ceramic products. It is most important contribution of this industry. At this temperature the ceramic products are suitable which are used as rocket nozzles, safety valves, heat resisting part, plugs, etc. In space-crafts, outer cavity heat resisting coating are also done with ceramic materials where any other plastic or metallic material do not stand the test. As such, in this age of atomic science, ceramics has come to rescue of man in operating atomic power reactor, atomic power stations and space-crafts. It is the ceramic product which made it possible for the man to step on the moon. Highly technical ceramics have been developed which was beyond the approach of human mind before the beginning of this century.

(i) Power Generation and Its Utilisation:
The enhancement of electric power and its utilization have been made easy by the ceramic products. Electrical ceramic
insulators, fuse bushes, kit-kats, etc. have reduced hazards of electric power-house, overheads-lines, underground-lines and house connection lines. Ceramic products have made it possible to put electric power in various uses in homes as well as in scientific establishments. Radio and television ceramic parts are of very high importance for the successful operation of these devices.

(j) Labour Intensive Characteristics:
It is remarkable on the part of ceramic industry that it is basically labour intensive in character. The units engaged in production of ceramic products provide employment to large number of technical, skilled, unskilled and educated personnel. It also gives substantial income to investors and entrepreneurs who are alternatively contributing to the national economy. Thus, it is providing substantial employment and is expanding the scope of socio-economic welfare of the society.

(k) Real Substitute to Metals:
We have seen that the multiplicity of uses of ceramic products is remarkable, because ceramic products have proved good substitute to metals. The ceramic products have not only proved good substitute in India and abroad, in view of the metal shortage but also essential ingredient and component in various industries. With the expansion of industrial activities, it is felt that metals are much more required for the capital goods rather than consumption goods and house utility purposes. Therefore, the only alternative remains to meet the demand of house utility goods by substituting the ceramic goods in place of metallic...
ones. In industrial purposes also ceramic products proved to be good substitutes wherever it was possible.

Technological Progress:

Today engineering technology is facing many problems. These problems are of heat bearing and power generation, controls, high heat maintenance and sustaining capacity. These are neither solved by plastic nor by any metal, but ceramics are adequate means to solve them and to gear up the technological progress.

It is evident from the above that the ceramics has been at the great service of mankind from ancient days to this day of atomic science. In the march of progress and utility ceramics has been economically helpful.