CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

The three sectors constituting an economy are the Agricultural or Primary sector, the Industry or Secondary sector and the Services or Tertiary sector. The primary sector is directly concerned with natural resources of the country. Agricultural, forestry, fishing and mining constitute the primary sector. The primary sector utilizes the natural resources and produces raw materials and basic goods which may be used by the industries or by the end-users. Hence, it can be said that the primary sector serves as a basic sector assisting the growth of the secondary and tertiary sectors. The Secondary sector consists of the industrial sector, engaged in construction activities and manufacturing of finished goods and tangible products. The secondary sector performs the vital role of catering to the needs of potential consumers of the nation. The Tertiary sector is intangible in nature, concentrating on the services sector. This sector consists of provision of services such as education, medical, hotel and finance needed by the consumers.

Early civilization started with excessive reliance on the primary sector. However, with extreme spurt in food production, people started to turn to industries. This led to the industrial revolution during the 19th century. Rapid industrialization saw the development of the support system in the form of the services sector. Thus, the economy evolved from the primary sector to the tertiary sector gradually in phases.

The level of development achieved by any nation is indicated by the position of these three sectors. Any nation in which majority of its GDP is contributed by the Agricultural sector is an “Under-developed nation”, while a country whose GDP is largely accounted for by the Industrial sector may be termed as a “Developing nation”. In case a nation’s GDP is largely contributed by the Tertiary sector, the nation may be categorized as a “Developed Nation”.

1.2 INDIAN ECONOMY

The Indian economy has witnessed rapid development since independence through its well executed five year plans and formulation of effective Government policies, both fiscal and monetary. India is currently the eleventh largest economy in the world (IMF 2011). India’s total GDP is about $1.676 trillion and GDP growth rate was
5.5%. India is currently growing at a rapid pace next only to China. India is one of the very few countries which has accomplished a positive growth rate despite the global recession. Agriculture is the important sector of India as the country is still an agro-based economy. Agriculture feeds almost 52% of the country’s population. Almost 17.2% of India’s GDP is contributed by Agriculture, while the Secondary sector contributes almost 26.4% of GDP and provides employment to about 14% of the population. The tertiary sector contributes almost 57.2% of the nation’s GDP, employing about 34% of the population. The Tertiary sector consists of transport, distribution of goods, wholesaling, retailing, after sales service, maintenances etc. The Tertiary sector has witnessed a rapid development in the past two decades. This has significantly contributed to the boosting of the Indian economy.

1.3 THE THREE SECTORS OF INDIAN ECONOMY

1.3.1 Agriculture and Allied sector (the primary sector)

Agriculture is the most important sector of India, providing employment to majority of our population. The primary sector witnessed a reasonable rate of growth during the eleventh five year plan when compared to the tenth plan. This has been attributed to the fact that government spending in this sector has almost doubled, though private spending has not witnessed such a sharp growth. The food processing sector is growing at a whopping 13% and it shall be the engine for the growth of this sector. The Agri-Biotech sector has tremendous scope for growth in India with the growing of transgenic rice and genetically engineered vegetables offering tremendous growth opportunities. A RBI bank report quotes that this sector has witnessed an enormous growth of 30% during the preceding half decade.

The manufacturing sector of India has also witnessed a reasonable growth during the recent past. The lengthy past record of manufacturing coupled with higher education system has positively contributed to the enormous growth of this sector, giving India an international recognition in this field. Availability of desired skilled manpower, necessary products and processes, and capital engineering has immensely contributed to India becoming a manufacturing hub in the global level. Many multi-national companies are attracted to venture into India to exploit these favorable conditions, enabling India to become a force to reckon with in the manufacturing sector. The International Yearbook
of Industrial Statistics 2009 has highlighted the following remarkable achievements of India in the manufacturing sector:

a. Our country occupies twelfth position in Manufacturing Value Added (MVA).

b. India is ranked fourth in Textiles, next only to China, the US and Italy.

c. India occupies position five in electrical machinery and apparatus.

d. India occupies the sixth rank in basic metals industry.

e. India occupies the seventh position in chemicals and chemical products.

f. Our country occupies the tenth rank in leather, leather products, refined petroleum products and nuclear fuel.

g. India occupies the twelfth position in the manufacturing of machinery and equipment and motor vehicles.

1.3.2 Services

The services sector is the engine for India’s growth during the past decade. The sector has contributed more than half of the country’s GDP. This trend has persisted over the past decade, and is expected to continue in the future also. The components of the Services sector namely, hotels, insurance, Trade, transport and communication, real estate, financing and business services are all growing strength to strength year after year. Lead indicators also show favorable trends for high growth of the services sector. The spurt in arrival of foreign tourists into our country, Railway Freight Traffic, quantum of cargo handled by major ports and the number of mobile and telephone connections are all indicators of the robust growth of services sector in the country and excellent future prospects.

KPMG Survey 2009 has revealed that 31.3% of Indian companies engaged in the services sector shall witness a spurt in their activities level, 37% are anticipating fresh orders while 16% are anticipating a decline, 43% planning for enhancement of capital expenditure in the form of increased spending in fixed assets, and an anticipated spurt in revenues of these firms by 31.1%. These statistics indicate the healthy state of the Indian services sector.

1.3.3 Manufacturing

Manufacturing is the process consisting of activities concerned with the conversion of basic raw materials in to finished or semi-finished products by utilizing the
available resources. In short, it is the process of conferring form utility to the raw inputs. For instance, when a raw leather is turned into shoes, form utility is provided to the raw leather converted into shoes, which constitutes the actual manufacturing process. This manufacturing process undergoes various stages before yielding the final product for consumption or industrial use. The three stages involved in the process of manufacturing are input-process-output. Firms engaged in the production of food, chemicals, textiles, machine tools and equipment’s, etc. are said to constitute the manufacturing sector. Manufacturing units constitute the secondary sector of an economy. This secondary sector plays a vital role in the growth and prosperity of any economy.

1.4 IMPORTANCE OF THE SECONDARY SECTOR

The secondary sector plays a significant role in shaping the Indian economy. It is the second largest contributor to the nation’s GDP next to the Services sector. It contributes to almost 26.5% of India’s GDP. Manufacturing units constitute the major part of the secondary sector. They provide employment opportunities to innumerable youth in the country. Manufacturing units play a vital role in improving the health of the economy, as they have a direct impact on the country’s inflation and employment pattern. They play a significant role in reducing the inequalities of distribution of wealth and income in the country, enhancement of the country’s National Income and Per capita income, and thereby eradicating poverty among the people. Studies reveal that a 1% increase in GDP shall result in a 0.8% reduction in poverty, whereas, in India 1% increase in GDP has yielded only a negligible 0.3% reduction in poverty. The reason for this dismal situation is that Indian economy has grown largely due to the services sector rather than the manufacturing sector. Had India’s GDP grown due to the right share of the manufacturing sector, poverty rates will drastically decline.

1.5 DEFINITION OF MANUFACTURING INDUSTRY

“The branch of manufacture and trade based on the fabrication, processing or preparation of products from raw materials and commodities. This includes all foods, chemicals, textiles, machines, and equipment. This includes all refined metals and minerals derived from extracted ores. This includes all lumber, wood, and pulp products” {Source: Standard Industrial Classification (SIC) established in the United States in 1937}. 
1.6 CLASSIFICATION OF MANUFACTURING INDUSTRIES

1. Classification Based on Possibility of dismantling the finished goods: Based on the possibility of dismantling of the finished goods yielded by the manufacturing units, the manufacturing process may be broadly classified into two types of Process Manufacturing and Discrete Manufacturing (product).

   a. Process manufacturing: Under Process manufacturing, the production takes place in huge bulk and the goods produced cannot be dismantled into the original component. Thermal or chemical reactions such as heating, applying pressure, processing time etc, are used in the Process manufacturing process to convert the inputs and raw materials into finished or semi-finished goods. Some illustrations of process manufacturing industries are chemicals, food and beverage, cement, paint, etc.

   b. Discrete Manufacturing: Also known as Product manufacturing, under discrete manufacturing, each product is paid unique care and attention by the craftsman at the time of production. The goods are manufactured in discrete units under this Manufacturing process by the workers engaged in fitting or assembling activities to produce finished or semi-finished products. Under this production process, the products produced can be disassembled to their original form if desired. Importantly, the individual products are easily identifiable. Some illustrations of products manufactured using the Discrete Manufacturing process are bicycles, washing machines, cars etc.

2. Classification based on investment: The Micro, Small and Medium Enterprises (MSME) Development Act, 2006 classifies manufacturing enterprises into Micro, Small, Medium and Large scale based on the quantum of investment in plant and machinery. The classification of undertakings based on investment is explained as under:

   a. Micro Enterprise: A manufacturing enterprise shall be categorized as a micro enterprise if its investment in plant and machinery is not more than Rs. 25,00,000 (this ceiling is Rs. 10,00,000 in case the unit is engaged in providing service).

   b. Small Enterprise: A manufacturing enterprise shall be categorized as Small Industry if the amount of investment in plant and machinery ranges from Rs.
25,00,000 to 5,00,00,000 (this range is Rs. 10,00,000-2,00,00,000 in case the enterprise is engaged in providing service).

c. Medium Enterprise: A manufacturing enterprise shall be labeled as medium enterprise if the quantum of investment in plant and machinery ranges from Rs. 5,00,00,000 to 10,00,00,000 (this range is Rs.2,00,00,000 to 5,00,00,000 in case the enterprise is engaged in providing service).

d. Large Enterprise: A manufacturing enterprise shall be categorized as “Large Enterprise” if the quantum of investment in plant and machinery exceeds Rs. 10,00,00,000 (in case of service firms, it is Rs. 5,00,00,000).

1.7 INITIATIVES FOR ENCOURAGING THE MANUFACTURING SECTOR

Manufacturing is the engine for industrialization of a country, which alone shall lead to development and prosperity of the nation. Abundant availability of human and natural resources in India needs to be rationally utilized for the prosperity of the country, and it is the manufacturing sector which will facilitate such utilization.

The four factors of production are to be properly utilized to bring about a balanced industrial growth. The pace of industrialization shall be largely influenced by a variety of factors such as sound infrastructure, power, timely and adequate availability of finance and inputs, and proactive entrepreneurs. Service sector has a direct bearing on the Indian economy as it is the largest contributor to the country’s GDP. However, the secondary sector forms the base for the growth of both the primary and tertiary sectors. Any issue in the secondary sector will have its impact on both the primary and tertiary sectors, and hence on the economy at large. Hence, secondary sector is of immense importance for the overall development of any economy and the prosperity of the nation. Recognising the importance of the manufacturing sector, the Government of India announced the New National Manufacturing Policy.

1.7.1 Goals of the New National Manufacturing Policy

The New National Manufacturing Policy envisages the following goals:

a. Enhance the share of manufacturing sector to 25% of the nation’s GDP by 2025. This can be accomplished by a 12-14% growth in the sector.

b. Creation of 100 million additional jobs in the manufacturing sector by 2025.
c. Strive for domestic value addition. This will increase the “depth” of the manufacturing sector.
d. Provision of adequate policy support to enhance the global competitiveness of Indian manufacturing sector.
e. Provide for growth of the manufacturing sector giving due consideration to the environmental conditions.

1.8 ACTION PLAN FOR ACCOMPLISHING THE GOALS OF THE NEW NATIONAL MANUFACTURING POLICY

The manufacturing policy has mapped out a wide portrait of intent. The action plans contained in the policy include:

a. Establishment of “National Manufacturing and Investment Zones”.
b. Reduction of legal conformity saddle on the manufacturing industry by effecting Simplification of regulating mechanisms.
c. Providing for effective way-out machinery for sick units. This will enable them to compensate labour for loss of jobs and close down the unfeasible business.
d. Vocational education shall be given due emphasis. Work force with minimum qualifications should be engulfed into the labour force through the provision of “farm to work” and “school to work” programmes.

1.9 CHALLENGES CONFRONTING THE MANUFACTURING SECTOR

Prior to the liberalization era of the early 1990s, the major problem which was impeding the manufacturing sector was high and rigid regulations. This has been overcome through economic and structural reforms. However, the current scenario presents a different and complicated picture. The constraints which the manufacturing sectors in our country are subject to are briefed as under:

a. **Land acquisition:** Land is a natural resource, supply of which is highly scarce. Land is absolutely inevitable for the manufacturing sector, and many ventures have to be stopped or shifted because of problems associated with land acquisition.
b. **Industrial Relations:** Strained relations between the management and workers pose a severe threat to the development of the manufacturing sector. Cases of
violence involving the massacre of Human Resources officials will be a severe impediment to the expansion of the manufacturing sector.

c. **Environmental clearances:** the most important problem confronting any manufacturing unit is the requirement to obtain environmental clearances for projects. The situations wherein the sanction of environmental clearances by the ministry can be challenged and squashed by the court of law make it very difficult for manufacturing enterprises to have a settled approach to their business venture.

These challenges can be overcome only through fruitful negotiations and consultations with all the concerned stakeholders and not being aggressive or oppressive. All of them should be convinced that their interests shall be protected and preserved by the proposed initiatives.

### 1.10 A BRIEF OVERVIEW OF THE MANUFACTURING SECTOR IN PUDUCHERRY

Manufacturing industry plays a vital role in the economy of Puducherry. The industry sector is the highest contributor to the GSDP of the Union Territory, pushing back the other two sectors. Manufacturing industries creates more employment opportunities to young people in Puducherry. The successful manufacturing industry helps in creating new jobs, increasing trade and thereby increasing the GSDP of the Union Territory. It can therefore be said that the manufacturing industry immensely contributes to the social development and economic prosperity of the Union Territory.

Considering the tremendous impact that manufacturing sector exerts on the overall prosperity of Union Territory of Puducherry, it becomes absolutely essential to understand the factors which contribute to the success of the manufacturing sector in the region.

Some studies have highlighted that the success of the manufacturing industries depends on the external and internal environmental factors such as political condition of the state, Government policy, availability of financial support and infrastructure, etc. Similarly, the success of any firm largely depends upon its ability to adapt to the business characteristics of the external environment, its capacity to adopt advanced manufacturing technologies (AMT), its competence to select appropriate competitive priorities and its aptitude towards accomplishing efficient and effective business performance.
In order to be capacitated to adapt to external environmental conditions and take advantage of latest innovative practices, it is inevitable for the manufacturing firms to be well equipped to adapt to the changing environment. They have to tirelessly work and strive for “Continuous Improvement”, which is the most important philosophy of Operations Management. To gain “continuous improvement”, manufacturing firms should be well updated in the latest technologies and adopt all possible new, advanced, innovative and sophisticated manufacturing technologies. This will enable the manufacturing firms to enhance their manufacturing efficiency and reduce their operational cost. This will help them to gain immense comparative advantage, which will positively contribute to them to expand their market beyond the frontiers of the nation and conquer the global markets.

Furthermore, it is inevitable for the manufacturing firms to be strong in formulation of effective and efficient strategies. Today’s market is characterized by cut throat competition and the companies have to formulate suitable strategies to face this competition and survive in the market. They have to formulate strategies which will enable them to gain comparative advantage over their competitors. In general, competitive priority is used to study the manufacturing strategy that improves the business performance of the manufacturing units. This will enable them to take right decisions at the right time. Manufacturing enterprises perennially face competition in both the domestic and international markets. This can be overcome only by the successful formulation of effective manufacturing strategies, whereby the enterprises can advance from their present competitive position to a new advanced height.

More importantly, globalization, strict corporate regulations in the field of environment and other requirements, emerging new markets, constant and rapid change in consumer tastes and fashions, evolution of innovative technologies almost every day and compulsion to adopt new strategies in production and marketing make the life of manufacturing enterprises highly challenging.

It is well established that manufacturing sector plays a crucial role in the economic development of a country and it is highly imperative for the sector to perform absolutely well. This research endeavors to study the four important constructs of Business Environment Characteristics, Advanced Manufacturing Technology,
Competitive Priorities and Business Performance, which contribute to the efficient functioning of any manufacturing unit and the relationships that exist among these four constructs.

1.11 FACTORS INFLUENCING EFFICIENCY OF MANUFACTURING FIRMS

Thousands of firms are in existence in the market, each competing with one another in an unrestricted manner. Not all firms succeed in their business endeavours. Similarly, the success rates of the successful firms also vary drastically. The success of a firm largely depends on its capacity to project its superiority over its rivals among the customers. Those firms which are able to adjust to the dynamic business environmental conditions utilize the latest technology and turn high quality products at cheap rates, shall gain comparative advantage over their competitors, which shall go a long way in making the firm successful.

The various factors which may contribute to success of manufacturing firms are discussed in the forthcoming sections.

1.12 BUSINESS ENVIRONMENT CHARACTERISTICS

Any business is affected by numerous factors, some of which may be controllable while others are uncontrollable. Invariably, the uncontrollable factors remain out of control of the business managers in the short run whereas in the long run, these factors can be countered by framing and executing suitable strategies in accordance to the changing business environment scenario. However, the strategies may differ according to the nature and characteristics of the business firms. The most important factor determining the efficiency of any manufacturing firm is the cost of its operations. The cost sustained by the manufacturing firms in the form of cost of labour, transportation, health care, utilities, raw materials, rent and telecommunications constitute the firm’s business cost of operation.

The next important factor determining the success of any firm is the availability of adequate and efficient human resources in the form of skilled labour. Shortage of local and skilled labour force, managerial and administrative staff, technicians and suitable workers in the clerical and production cadres have a bad impact on the efficiency of any manufacturing firm. It becomes urgently important to overcome these hindrances in case the firm wants to project itself as a successful one.
The other important factor affecting the performance efficiency of any manufacturing firms is the Competitive hostility factor. Cut throat competition leading to reduction of profit margins, declining demand in the local and international markets, compulsion to adhere to necessary quality standards of production though the quality of raw material supplies may not be reliable put a sword on the neck of manufacturing firms.

To add fuel to the above mentioned factors, government rules and regulations act as a major impediment for the efficient performance of any firm. Complexities of government rules, regulations and procedures, red tapism and delays involved in government finalizing business transactions and government’s unwarranted protectionism policies adversely affect the operational efficiency of business firms. Dornier et al. (1998) indicates that government regulations always have a significant influence on the operational activities of a manufacturing firm.

Political environment exert a significant influence on the efficiency of any firm. Country’s balance of payment situation, Bilateral and multi-lateral agreements entered by the government with other governments, stability of political system in the nation, laws and regulations regarding investment protection and type of military alliances with other countries all may have a significant impact on the operational efficiency of any manufacturing firm. Finally, the highly dynamic conditions prevalent in the market also play a significant role in shaping the efficiency of any manufacturing firm. This domain consists of the rate at which innovation creeps into operations processes, change in customer needs, new challenges from competitors and information diffusion. According to Dess and Beard (1984), Environmental dynamism means unimaginable activities accrued in business environment which is very difficult to face by the manufacturing firms.

1.13 ADVANCED MANUFACTURING TECHNOLOGY (AMT)

While the Business Environment Characteristics is concerned at the macro level, The Advanced Manufacturing Technology measures deal with the micro-level construct. This consists of the investments to be made to create a supportive infrastructure for the firm to execute its business strategies. Advanced Manufacturing Technology plays a vital role in enhancing the operational efficiency of the firm, improving the quality of products
and reducing the operational cost by installing the latest and sophisticated technology. Advanced Manufacturing Technology helps the firm to gain competitive advantage (Pagell et al. 2000). Advanced Manufacturing Technologies help the manufacturing firms to produce high volume at low cost and thus rationally utilize the scarce resources available at its disposal (Goldhar and Jelinek, 1983).

The Advanced Manufacturing Technology consists of the hardware technologies, which is termed as ‘Direct Advanced Manufacturing Technology’, while the software technologies are categorized as “Indirect Advanced Manufacturing Technology”. The level of implementation process is categorized as “Implementation Advanced Manufacturing Technology “.

Technology utilized by the factory to cut, transport, store or modify materials join, reshape using Robotics (Ro), Automated material handling systems (AMHS), Computer numerical control (CNC) machines, Automated guided vehicles (AGV), Flexible manufacturing system (FMS) and Rapid prototyping (RP) come under the Direct Advanced Manufacturing Technology, while the technology used to design products and schedule production using Computer aided design (CAD), Material requirement planning (MRP), Material resource planning (MRPII), Bar coding (BC) and Statistical process control (SPC) fall under the Indirect Advanced Manufacturing Technology. The Implementation Advanced Manufacturing Technology Consists of Training Planning, Requirement Analysis, Technology assessment, Cost/Benefit Analysis, and Development and Implementation.

1.14 COMPETITIVE PRIORITIES

Globalisation has been the order of the day, resulting in enormous changes in the technology arena. This implies that manufacturing firms have to enhance their level of concentration on Competitive priority domain, which are highly dynamic and subject to frequent changes from time to time. Competitive priorities are defined as “the dimensions that a firm’s production system must possess to support the demands of the markets that the firm wishes to venture in” (Krajewski and Ritzman, 1993). According to Kim and Arnold, (1996) the competitive priorities is a holistic set of tasks, assisting in the formulation of business strategy based on market conditions. Competitive priorities
domains traditionally have been considered to be incompatible with one another (Wheelwright, 1984).

The four main variables constituting the competitive priorities are flexibility, quality, cost and dependability (Ferdows and De Meyer, 1990; Ward and Duray, 2000; Vickey et al., 1993; Li, 2000; Kathuria, 2000; Hayes and Wheelwright, 1984). However, new variables such as innovation and human resources have been included to measure the competitiveness of manufacturing industries, hence modifying the multi-dimensional structure of competitive priority (Wood et al. 1990).

Competitiveness of manufacturing enterprises in general, depends up on their ability to adapt to difficult environmental conditions by adjusting their priorities like cost, quality, delivery, dependability and speed, innovation and flexibility, and thereby cater to the expectations (Carpinetti et al. 2000).

Phusavat and Kanchana (2007) used six domains of competitive priorities namely, delivery, cost, flexibility, customer focus, quality, and know-how. The components of Competitive Priorities may be explained as under:

a. **Quality**: Quality of products enormously contributes to manufacturing firms gaining competitive advantage over their rivals. Instances such as Zero Defect Rate of the products supplied, performance quality, durability, environmental friendliness, standardization and reliability of the products contribute vastly to the concerns gaining immense competitive advantage over their rivals.

b. **Cost**: Cost is another important factor which shall enable manufacturing firms to gain great comparative advantage over their rivals. Undertakings which are able to minimize their cost of operations can offer their products at low price in the market, thereby displaying a distinct portrait of their products. Customers get attracted to low priced products which do not compromise with quality, which can be achieved by the manufacturing firms by effective cost management. Manufacturing firms can gain comparative cost advantage over their rivals by controlling the variable cost and planning their operational leverage efficiently to effect low risky ventures as well as maximize profits. The aspects which manufacturing firms can concentrate to gain comparative cost advantage shall be
Low operational and administration costs, value additions, continuous improvement, activity based measurement and quality costs.

c. **Delivery:** Provision of timely services is most important in business, for that matter, in all walks of life. Firms which are able to meet their commitments well within the stipulated period shall enjoy great comparative advantage over their rivals. Hence, firms should concentrate on fast and on-time delivery of quality products at the agreed price to gain reliability among its customers about honouring commitments.

d. **Flexibility:** Manufacturing firms which are highly flexible to adjust their product mix, marketing mix, product design, lines of operations and those capable of modifying their scale of operations and volume of production and output according to the environment shall gain great comparative advantage over their competitors.

e. **Customer-focus:** those manufacturing firms which are highly customer-oriented and customer-friendly will gain huge comparative advantage over their rivals. Firms can serve their customers better through great After-sales services, better product support, fulfillment of promises made at any level and product customization. Excellent data-base shall be maintained about customers to have access to any information about customers so that close contact may be maintained with them. These factors will enable the manufacturing firms to gain immense comparative advantage over their rivals.

f. **Know-how:** Manufacturing firms which have their own R&D cell always enjoy comparative advantage over their rivals. Their products shall be distinct when compared with their competitors, which shall be liked by the customers. Creativity and novelty of products are results of continuous R&D efforts of manufacturing firms. Gaining a thorough knowledge about the product dealt through effective knowledge management, continuous learning and training and education, and problem solving skills will contribute to the manufacturing firms gaining tremendous comparative advantage over their rivals.
1.15 BUSINESS PERFORMANCE

It is quite natural that high performing firms are bound to succeed. Though performance measurement system plays an essential role in the efficient and effective management of organizations, yet it remains critical and much debatable issues (Kennerly and Neely, 2002). Measuring the firm performance has been one of the major challenges to the researchers as there is no universally accepted parameter to indicate the operational efficiency of manufacturing firms. However, the general indicators of performance of a firm can be enumerated as under:

a. Market share: Firms with reasonable market share and those which are able to sustain their share in the market and penetrate into new market shall be considered as successful firms.

b. Sales growth: firms which are able to maintain a steady growth in their sales turnover shall be considered as quite successful.

c. Profit margin: Profit is the indicator of the operational efficiency of any firm. It is profits which show the overall results of the operations of a firm. Firms which are able to manage profit margin in par with the industry norms and those which are able to sustain this margin and able to increase this margin steadily shall be termed as successful firms.

d. Return on assets (ROA): Percentage returns on the assets of a firm are another indicator of its operational efficiency. Firms which are able to maintain a good percentage return on assets in par with the industry levels shall be labeled as successful firms.

e. Return on investment (ROI): ROI is the most important parameter indicating the operational efficiency of firms. Industry norms are available in respect of ROI and all those firms which are able to match these standards can be said to be successful.

1.16 STATEMENT OF THE PROBLEM

Many business units are started with full vigour in Union Territory of Puducherry. However, these units are not able to survive in the market for longer period of time and they stop their business very early. This research endeavours to study the factors which
are responsible for forcing the manufacturing units to shut down very early and the problems encountered by such units which are forcing them to wind up soon.

This study also tries to find the factors which are helping the enterprises to perform successfully in this region from operational perspective.

Despite exemplary support offered to the business firms by the Government of Puducherry by formulating innovative strategies to promote the industry, it is disheartening to note that many firms fail to have a perpetual survival. Some researchers suggested the success of a firm depends upon its ability to adapt to business environment characteristics, adoption of advanced manufacturing technologies, selection of its appropriate competitive priorities and its business performance. Various studies reveal that a significant positive relationship exist among business environment characteristics, advanced manufacturing technologies, competitive priorities and business performance. All these four factors are vital for the efficient performance of any business firm.

1.17 SIGNIFICANCE OF THE STUDY

This study shall contribute to the rich literature on the impact of Business Environment Characteristics, Advanced Manufacturing Technologies and competitive priorities on the Business Performance of manufacturing firms.

This study shall provide valuable information about the factors which affect the efficiency of manufacturing undertakings in general, and the positive and negative impact of such factors on the efficiency of the manufacturing units located in Puducherry.

This study also aims to measure a viable multi-dimensional operational construct by using data to empirically validate the factors which might influence the performance of manufacturing units. This endeavour will largely help the manufacturing enterprises to take rational decision on such factors.

This study focuses on assessing important factors which influence the efficiency of business performance of manufacturing firms. This will enable the managerial staff of manufacturing firms to formulate and implement suitable and effective operational strategies and to make rational and timely decisions.

This study proposes to arrive at valuable suggestions for improving the operational efficiency of manufacturing firms, which will be of immense utility to the
managerial staff of low performing manufacturing firms to enhance their operational efficiency.

Suggestions provided by the researcher will be of great help to the government and policy-makers to formulate effective industrial policy which will further boost the industrial development of Union Territory of Puducherry.

The study will also be of immense utility to new and budding entrepreneurs to start their ventures in Union Territory of Puducherry.

1.18 OBJECTIVES OF THE STUDY

Objectives of the proposed research are given below:

1. To study the business environment characteristics of the manufacturing enterprises located in Union Territory of Puducherry.
2. To assess the impact of advanced manufacturing technologies on business performance of manufacturing units in Puducherry.
3. To study the competitive priorities influencing the operating competence of manufacturing units in Puducherry.
4. To study the business performance of manufacturing enterprises located in Union Territory of Puducherry.
5. To study the relationship between business environment characteristics, advance manufacturing technologies, competitive priorities and overall business performance of manufacturing enterprises located in Union Territory of Puducherry.

1.19 HYPOTHESES

Nine null hypotheses formulated for this study are given below:

Hypothesis 1: There is no significant association between demographic characteristics of manufacturing firms (profile of the firms) and their business environment characteristics.

The demographic characteristics used for the purpose of testing the above null Hypothesis are the period for which the manufacturing firms are engaged in business, type of ownership, type of production system, targeted customers, type of industry, kind of manufacturing industry, type of
product, number of employees working in the organisation, location of production plant and percent of exports on total sales.

Hypothesis 2: There is no significant association between demographic characteristics of manufacturing firms and various dimensions of their advanced manufacturing technologies.

The demographic characteristics used for the purpose of testing the above null Hypothesis are the period for which the manufacturing firms are engaged in business, type of ownership, type of production system, targeted customers, type of industry, kind of manufacturing industry, type of product, number of employees working in the organisation, location of production plant and percent of exports on total sales.

Hypothesis 3: There is no significant association between demographic characteristics of manufacturing firms and their competitive priorities.

The demographic characteristics used for the purpose of testing the above null Hypothesis are the period for which the manufacturing firms are engaged in business, type of ownership, type of production system, targeted customers, type of industry, kind of manufacturing industry, type of product, number of employees working in the organisation, location of production plant and percent of exports on total sales.

Hypothesis 4: There is no significant association between demographic characteristics of manufacturing firms and their business performance.

The demographic characteristics used for the purpose of testing the above null Hypothesis are as follows: the period for which the manufacturing firms are engaged in business, type of ownership, type of production system, targeted customers, type of industry, kind of manufacturing industry, type of product, number of employees working in the organisation, location of production plant and percent of exports on total sales.

Hypothesis 5: There is no significant relationship between the business environment characteristics and competitive priorities of manufacturing firms.
Hypothesis 6: There is no significant relationship between the business environment characteristics and advanced manufacturing technologies of manufacturing firms.

Hypothesis 7: There is no significant relationship between the business environment characteristics and business performance of manufacturing firms.

Hypothesis 8: There is no significant relationship between the advanced manufacturing technologies and business performance of manufacturing firms.

Hypothesis 9: There is no significant relationship between the competitive priorities and business performance of manufacturing firms.

1.20 SCOPE OF THE STUDY

The study shall focus on assessing the business performance of small, medium and large scale manufacturing units in Union Territory of Puducherry. An attempt has been made to study the performance of the manufacturing units in Union Territory of Puducherry in the light of the important factors of Business Environment Characteristics, avenue for Advanced Manufacturing Technologies, Competitive Priorities of existing industries and Business Performance Characteristics. These basic factors have been studied in depth using separate domains. The factors of “business environment characteristics” have been studied using six domains of competitive hostility, dynamism, business cost, labour availability, political environment and Government Laws and Regulations.

The second factor of “advanced manufacturing technologies” have been evaluated thoroughly based on three domains, namely implementation of AMT, direct AMT and indirect AMT, while the third factor of “competitive priorities” has been assessed using six important domains of quality, cost, delivery, flexibility, customer focus and know how.

Finally, the business performance of manufacturing firms have been studied considering five variables of market share, sales growth, profit margin, return on assets and return on investment. Careful effort has been made to ensure that all domains which are likely to affect the efficiency of business performance of manufacturing undertakings are included in the study.
1.21 LIMITATIONS OF THE STUDY

Limitations relating to the scope of study, selection of respondents, choice of research design, sampling procedure, etc. are inevitable in any research work and this study is no exception. This study is subject to the following limitations:

a. To begin with, one of the most important limitations of this study is that this survey is purely based on the perceptive answers given to the sample questions by the managers of the industrial units selected for the study. The opinion expressed by the managers to the survey instrument is seldom a reflection of the confidential data pertaining to the manufacturing units.

b. This research has made an analysis of the impact of business environment characteristics, advanced manufacturing technologies and competitive priorities on the business performance of manufacturing firms at a single point of time. However, these factors are constantly changing in nature, and a longitudinal follow up research should be conducted to identify these changes and re-examine the variation of the relationships.

c. This research endeavours to collect data relating to the Business Environment Characteristics, Advance Manufacturing Technologies and Competitive Priorities of manufacturing firms and their impact on the firm’s efficiency. Data relating to all these aspects have been collected from a single respondent occupying the top most position in the firm such as the head of purchasing, operations, finance or marketing department of the firm. It is absolutely difficult to expect a single manager to be thorough in information relating to all the functional areas as he may be able to provide reliable information relating to his functional area only. For instance, a Purchase manager is solely responsible for firm’s activities relating to purchasing and allied activities. He may not be in a position to provide information relating to the financial aspects of the firm or Advance Manufacturing Technology related questions. Hence, the use of a single respondent to provide information about the firm’s various aspects may result in generation of data with some element of inaccuracy.

d. The scope of this research work is limited to Union Territory of Puducherry. Hence the findings cannot be generalized at the macro level.
1.22 CHAPTERISATION OF THE THESIS

This thesis consists of eleven Chapters. The first chapter entitled, “Introduction”, gives an overview of the Indian economy and about the manufacturing industries located in Union Territory of Puducherry. The chapter also consists of the statement of problem, significance of the study, objectives of the study, hypotheses for the study, scope of the study and limitations of the study. The second chapter entitled “Review of Literature”, covers the operational definitions of terms used in the study and the vast literature reviewed for the conduct of this study.

The third chapter entitled “Methodology” throws light on the research methodology adopted for the conduct of this study. This chapter provides an elaborate description of the research design, Nature and source of data collected for the study, Data collection instrument used for the survey and, explanation about the various tools used for generating the items needed to be included in the schedule, Qualitative Inquiry and Face Validity and Content Analysis to test the validity and reliability of the components of the schedule. The chapter further discusses details about the pilot study conducted, the data collection procedure adopted in the form of sampling method, the data analysis tools used in the study and data examination and preparation.

The fourth chapter entitled “Profile of the Manufacturing Sector” contains details about the manufacturing units operating in Union Territory of Puducherry and a detailed representation of the demographic details of the manufacturing units selected for the study.


The sixth chapter entitled “Advanced Manufacturing Technologies” contains details about the present status of the Advanced Manufacturing Technologies utilized by the manufacturing firms in Union Territory of Puducherry, while the seventh chapter
entitled “Competitive Priorities” evaluates the present status of competitive priorities among the manufacturing units in Union Territory of Puducherry.


The ninth chapter entitled “Structural Equation Model” contains details about the valid and reliable measurement model arrived at, to measure the relationship between the business environment characteristics, the advanced manufacturing technologies and the competitive priorities of the manufacturing firms and their consequential impact on the firm’s business performance using the SEM.

The tenth chapter presents the summary of findings and inferences made from the study in the light of objectives of the study and gives a detailed account of the implications of the study to operational decision makers, Manufacturers, Government regulators and policy makers, and provides some valuable suggestions to improve the competencies of manufacturing firms. The chapter concludes with information about possibilities for future research.

1.23 CONCLUSION

The present study endeavours to analyse the performance of manufacturing enterprises in Union Territory of Puducherry. The performance of manufacturing enterprises shall be assessed in the light of the environmental, technological and competitive factors influencing their operations. The study shall bring to light, the impact exerted by these factors on the firms’ performance. Suitable hypotheses have been formulated to accomplish this endeavour and scientific tools have been used to analyse the data and test the hypotheses. The conceptual framework based on which these hypotheses have been formulated shall be discussed elaborately in the forthcoming chapter on review of literature.