Chapter I

Introduction

CHAPTER I

INTRODUCTION

Engineering industry is the backbone of a country in the era of modern industrial development. Engineering industry in India has gone through various phases of development over the period of time, starting from industrial foundation in 1950's and early 1960's, and License-permit Raj from 1965 to 1980. In 1990's India witnessed the phase of liberalization and entered into global competitiveness. In India, after independence the heavy engineering industries developed in the public sector. The engineering industry occupies a premier position as one of the major instruments for the economic development of the country. Since independence, this industry has achieved spectacular growth. Emphasis on industrialization during the plan periods have encouraged the establishment of thousands of large, medium and small engineering undertakings scattered all over the country. These industries provide machines for other industries and equipment for transport, agriculture, mining, etc. No sector of the economy develops in isolation.

The engineering industries requires a huge amount of components which they do not create by themselves which has encouraged the development of a large number of ancillary industries. These industries have crucial forward and backward linkages with the rest of the industry sector. The engineering industry is characterized by linkages with other economic sectors, since this sector is the supplier of their capital equipment's. Micro-Engineering products are used extensively as inputs in the production of larger engineering blocks. The collection of their products differs from nuts and bolts to industrial machinery, automobiles, railway engines and coaches, ships, aircrafts, transmission towers, etc.

The engineering industry can be broadly categorized into two segments, namely, heavy engineering and light engineering. Heavy engineering constitutes over 80 percentage of the total industry and includes capital goods and engineering industry comprises mainly of machine tools, electrical machinery, industrial machinery, transport and agricultural equipments, control instruments, oil exploration, mining, earthmoving and construction equipments etc., while light engineering contributes the rest and consists of low-tech items like castings, forgings and fasteners, to the highly sophisticated microprocessors based

process control equipment and diagnostic medical instruments. The Indian manufacturing industry is dominated equally by the presence of large scale organizations and micro, small and medium enterprises (MSMEs). All heavy industries like iron and steel manufacturing, automobile manufacturing, fertilizer, power, oil and gas fall under large scale industrial arena. The MSME sector is predominant in manufacturing light engineering equipments, wood products, rubber and plastic products, electrical machinery and apparatus, furniture manufacturing, precision and optical instruments etc. The MSME sector nurtures entrepreneurship, driven by individual creativity and innovation.

The productive workers engaged in many interdependent industries comprising the economy, support each other through their respective contributions to production. The engineering industry, for instance, supplies machine to the textile industry, which manufacturers clothes also used by the engineering workers and both engineering and textiles depend on the services of the transport industry, which in its turn transports the goods produced by the textile and engineering industry. Therefore the engineering industry is the backbone of all industries and hence a strong base in engineering industry is needed for a growing industrial nation.

1.1 Engineering Industry in India

India has a robust engineering and capital goods market. The development of a strong and vibrant engineering and capital goods sector was initiated in the year 1951. In 1930's based on Soviet Union model, which had made impressive progress by rapid state-led industrialization through the development of the core engineering and capital goods sector. During 1959, the tempo of industrial production gathered momentum with the utilisation of new capacity, better availability of raw materials and the occurrence of fewer strikes. Substantial investments were made in the industrial sector, particularly in heavy industries.

Since, India became independent, the leaders were well aware that the development of the country was not possible without establishing a strong heavy engineering sector. Heavy engineering industry produces capital goods and consumer durables and its products can be categorized as industrial machinery or capital goods, power generation equipment, transport equipment, rail equipment, aircraft building and ship building. The main drive of

industrial development was on heavy engineering, iron and steel, and fertilizer industries. Iron and steel plants were established in Bokaro, Bhilai, Durgapur, and Rourkela which fuelled the growth of engineering sector in India.

The engineering sector in India has been emerging in the user industries and several new projects are being undertaken in various core industries such as railways, defense, steel and coal production, crude oil and natural gas production, power, infrastructure, etc. The bulk of capital goods required for the iron and steel industry, fertiliser industry, mining, construction machinery, sugar industry, textile industry, agricultural machinery, tractors, pumps, diesel engines, etc were made in India. The engineering industry has shown its capacity to manufacture large-size plants and equipment for various sectors like fertilizer, power, and cement. The heavy electrical industry meets the requirements of industries such as infrastructure, power, mining, oil and gas, refinery, steel, automotives, consumer durables, etc.

Table 1.1 (a): Growth in the production of Eight Core Industries (average annual growth in %)

Sector	Weight	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Coal	4.379	6.6	5.9	6.3	8	8.1	-0.2	1.2
Crude Oil	5.216	-5.2	5.6	0.4	-1.8	0.5	11.9	1
Natural Gas	1.708	1.4	-1.4	2.1	1.3	44.6	10	-8.9
Refinery Products	5.939	2.1	12.9	6.5	3	-0.4	3	3.2
Fertilizers	1.254	0.6	3.1	-7.9	-3.9	12.7	0	0.4
Steel	6.684	7	12.8	6.8	1.9	6	13.2	7
Cement	2.406	12.4	9.1	8.1	7.2	10.5	4.5	6.7
Electricity	10.316	5.1	7.3	6.3	2.7	6.2	5.6	8.1
Overall Index	37.903	3.9	8.4	5.2	2.8	6.6	6.6	4.4

Table 1.1 (b): Growth in the production of Eight Core Industries (average annual growth in %)

Sector	Weight	2012-13	2013-14	2014-15	2015-16	2016-17	Apr-Nov 2017-18
Coal	10.3335	3.2	1.0	8.0	4.8	3.2	1.5
Crude Oil	8.9833	-0.6	-0.2	-0.9	-1.4	-2.5	-0.2
Natural Gas	6.8768	-14.4	-12.9	-5.3	-4.7	-1.0	4.4
Refinery Products	28.0376	7.2	1.4	0.2	4.9	4.9	3.6
Fertilizers	2.6276	-3.3	1.5	1.3	7.0	0.2	-1.1
Steel	17.9166	7.9	7.3	5.1	-1.3	10.7	7.2
Cement	5.3720	7.5	3.7	5.9	4.6	-1.2	0.6
Electricity	19.8530	4.0	6.1	14.8	5.7	5.8	4.9
Overall Index	**100.0000**	**3.8**	**2.6**	**4.9**	**3.0**	**4.8**	**3.9**

Source: Table 1.1 (a) and (b) are downloaded from the URL http://eaindustry.nic.in/discussion_papers/Manufacturing_Growth_Trend.pdf. Office of the Economic Advisor , DIPP, 2013 and http://pib.nic.in/newsite/PrintRelease.aspx?relid=175089. Government of India, Ministry of Commerce and Industry, 2018.

Present Scenario of the Indian Engineering Industry

The engineering industry is a growing market. The engineering industry is the largest segment of Indian Industry and has observed an outstanding growth over the last few years driven by increased investments in infrastructure and industrial production. Engineering is India's largest manufacturing segment and accounts for nearly 3-4 percent of the country's economy and employs more than 4 million skilled and semi-skilled workers (www.ipsosconsulting.com) November 2013. The Government of India has employed the Engineering Export Promotion Council (EEPC) as the apex body in 1955 in charge of promotion of engineering goods, products and services from India. In India engineering industry has grown by an annual average of 12 per cent for the past five years on the back of higher investment in infrastructure development and industrial production (www.ipsosconsulting.com) November 2013. The engineering sector has received cumulative

FDI inflows worth US$ 3.34 billion during April 2000 to June 2017 over US$ 13.48 billion during the period of April 2000 to June 2015, as per data released by the Department of Industrial Policy and Promotion (DIPP, 2017).

Favorable regulatory policies and growth in the industrial sector has facilitated several foreign players to invest in India. With the development in the associated sectors such as automotive, industrial goods and infrastructure, coupled with a well-developed technical human resources pool, India's engineering exports recorded a growth of 22.75 per cent to reach US $ 56,091.89 million in 2017 (IBEF, 2018).

The government has withdrawn excise and customs duty exemptions in the year June 2015 granted to goods manufactured and supplied to the defense ministry by state-owned defense firms. These steps also encourages participation of foreign Original Equipment Manufacturers such as Boeing, Airbus, Lockheed Martin, BAE Systems, etc., in the industry. Engineering Services Outsourcing (ESO) is a huge opportunity for India over the next few years. The Engineering Services Outsourcing (ESO) includes product design, research and development and other technical services across industries like automotive, aerospace, hi-tech/telecom, utilities and construction/industrial machinery. By 2020, the ESO market in India is expected to reach US$ 40–50 billion, driven by the increasing onshore to offshore movement of services (IBEF, 2014). India is fast developing as a solution provider to the global challenges in the engineering and design arena, with over 600 local and 400 global Engineering and research and development (ER&D) centres (Business standard, 2014), employing over 200,000 engineers from service providers and engineering firms. According to a study by NASSCOM Engineering summit 2014, Engineering and research and development (ER&D) export revenue from India may touch $37-45 billion by 2020 up from an estimated $22 billion in financial year 2016 (www.ibef.org, 2016).

Coimbatore Engineering Industry

Coimbatore is a major business hub in the state of Tamil Nadu. The business tradition of Coimbatore has progressed over a period of last two hundred years. More than 50,000 engineering units function in and around Coimbatore city and has been considered as one of the largest foundry cluster in India. The engineering industry in Coimbatore are

making high quality inputs such as castings and forgings and a wide variety of ancillary products. Of the total 700 plus foundry units in and around Coimbatore, most of them are on an expansion or modernization drive (www.dcmsme.gov.in) (2015-16). The engineering industry of Coimbatore is recognized with offering modified and cost effective engineering solutions.

Some of the prominent engineering industries in Coimbatore include L&T, BOSCH, Craftsman Automation Pvt Ltd, ELGI Equipments, Shanthi Gears, Roots Industries, PSG, Sakthi Group, Lakshmi Machine Works, Premier Instruments and Control Limited, Premier Evolvics, Janatics, LGB, Revathi Equipments, Suzlon, Hansen Transmission etc. The industrial growth in Coimbatore district has been propelled by the inspiring effort of the private enterprises. Almost all the major engineering industries of India have their units in Coimbatore. Hence it can be rightly concluded that Coimbatore is a representative sample area for the engineering industry of India. The year wise registration of manufacturing units in Coimbatore district is represented in table1.2.

Table 1.2: Registration of Manufacturing units in Coimbatore

Year	Number of Registered Units			
	Micro	**Small**	**Medium**	**Total**
2007-08	2874	814	12	3700
2008-09	3396	803	34	4233
2009-10	5606	1099	38	6743
2010-11	5276	846	43	6165
2011-12	5818	990	62	6870
2012-13	6351	1503	237	8091
2013-14	7801	2303	555	10659
2014-15	9235	3469	601	13305

Source: http://dcmsme.gov.in/dips/2016-17/dip.coimbatore.2015.16.pdf.

Engineering Industry under Plans

The Engineering Industry received priority during the five year plans. The Planning Commission issued the draft outline of the First Five Year Plan for the period April 1951 to March 1956. During the First Five-Year Plan India faced with the problem of severe food shortage and mounting inflation. So the highest priority was given to agriculture to overcome the food crisis and to curb inflation. The second five year plan (1956-1961) also known as Mahalanobis model, laid the foundation for the industrial development by building up a strong industrial structure. Substantial investments were made in the industrial sector, particularly in heavy industries which can lead the Indian Economy to a long term higher growth path.

In Third five year plan (1961-1966) emphasis was on the expansion of heavy industries like iron and steel, fossil-fuel and production of machine building. The first four years (1961-1965) of the Plan witnessed about 8-10% annual increase in industrial production and also faced two wars 1962 with China and 1965 with Pakistan. During the annual plans period (1966 and1969) the industry could not make much progress. Export orders helped the engineering industries to extricate themselves from recessions.

During the Fourth Plan (1969-1974), the reduced demand for industrial machinery, shortage of steel, power, labour unrest and low capacity utilization were mainly responsible for poor performance of the industrial sector. The fifth plan (1974-1979) focused on rapid development of the core sector covering steel, machine building, power, coal, petroleum products and export oriented industries and consumer goods industries such as sugar, drugs textiles etc. The Sixth Plan (1980-1985) envisaged a substantial increase in exports to add to the foreign exchange reserves. The Plan, focused in improving the international competitiveness and technology of domestic engineering industrial units.

The main thrust in the Seventh Plan (1985-1990) was the development of industries with large domestic market and also export potential to emerge as World leaders in them and to achieve self-reliance and high employment generation. In 1990's India witnessed the phase of liberalization and entered into global competitiveness. The Eighth Plan (1992-1997) was directed towards creating a more competitive environment to improve efficiency in production and accorded priority to qualitative up gradation and elimination of the weaknesses of engineering industries.

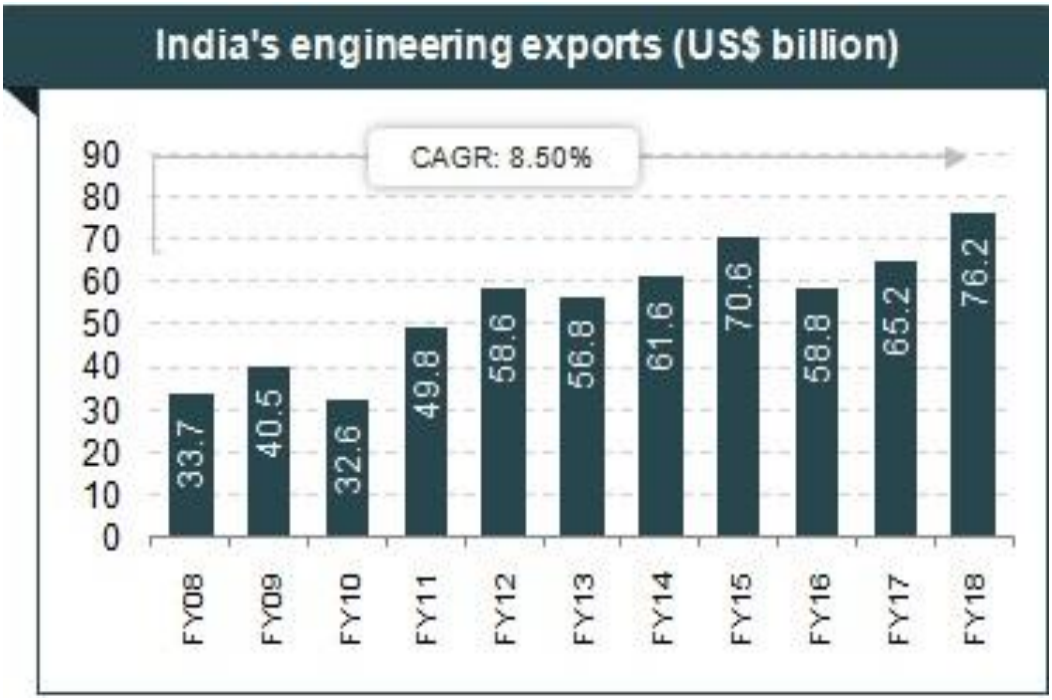
The Ninth Plan (1997-2002) focused in reducing the cost of capital goods manufactured in home country. The thrust areas during the Ninth Plan were R&D and exports of capital goods. In Tenth Plan (2002 - 2007), there was acceleration in the industrial growth rate. During this plan, the main emphasis was on modernization, technology, up gradation, etc., and also to enhance exports and to increase global competitiveness. In the Eleventh Plan (2007-12) priority was given to industry, infrastructure, and employment. The plan recognized that there should be a rapid industrial development that brings a faster reduction in poverty and generates employment.

In the Twelfth Five Year Plan (2012-2017), the Planning Commission focused on instilling "inclusive growth" is making headway. The Plan is expected to create employment by developing India's manufacturing sector and move the nation higher up the value chain. The planning commission indicated that it aims to have industry & manufacturing related activities grow by 11% during this plan period, contrasted to 8% over the previous eleventh five year plan.

India's Engineering Exports

The nature of Indian engineering exports is fluctuating with time. India is moving fast from exporting more sophisticated goods to developed countries and low value goods to developing countries to. Out of 227 export destinations of Indian engineering goods, top 25 nations accounted for 74.7 percent of India's total engineering exports in 2017-18 compared to 2016-17 (refer Table 1.3) (www.eepc.com, 2018).Export destinations like USA, UAE, China, Germany, UK, Mexico, Nepal, Italy, Bangladesh, korea RP, Indonesia, Turkey, Srilanka, Belgium, South Africa, Saudi arab, Thailand, Spain, Vietnam, Japan and Brazil recorded positive growth during April-March 2017-18 over April-March 2016-17 (refer Table 1.3).However, Malaysia, Singapore, France and Netherland recorded negative growth in April – March (2017-2018) (IBEF, 2018). Engineering exports include capital goods, transport equipment, other machinery/equipment and light engineering products such as forgings, castings and fasteners. Engineering exports from India stood at S$ 65.23 billion in FY17 over USD 58.8 billion in FY16 with the revival of demand for iron and steel in China and the US(IBEF, 2017). The key categories of Indian engineering exports are transport equipment, iron and steel products and industrial machinery including electrical machinery.

Transport equipment, Aircraft and ship boats is the leading contributor to engineering exports. Total engineering exports from India in FY17 was accounted for 32.46 per cent. Iron and steel products accounted for an export of around 22.44 per cent, in the overall exports, while industrial machinery including electrical machinery accounted for 23.85 per cent of the total engineering exports in FY17 (IBEF, 2017). Other commodities includes medical and scientific instruments, bicycle parts, office equipment, prime mica and mica products, hand tools and cutting tools, etc. accounted for a share of 10 per cent of the total engineering exports from India in FY17 (IBEF, 2017).



Source: https://www.ibef.org/industry/engineering-india.aspx. Reserve Bank of India, Engineering Export Promotion Council, Engineering Export monitoring report, Ministry of Commerce and Industry Estimates

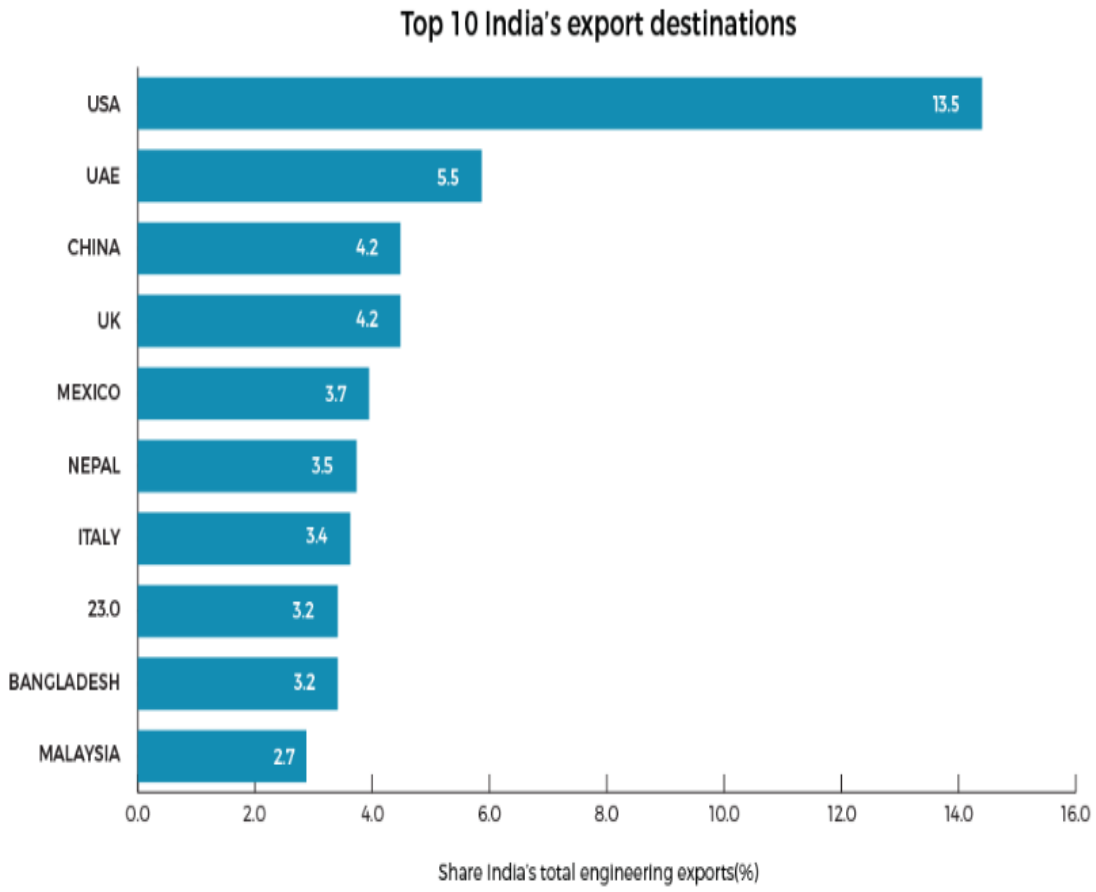
Figure 1.1: India's Engineering Exports from the year 2008-18

Table 1.3: Country Wise Exports of Indian Engineering Products in Fiscal 2017-18

Country	Mar, 2016	Mar, 2017	Growth (%)	Apr-Mar 2016-17	Apr-Mar 2017-18	Growth (%)
USA	863.81	1056.87	22.35	7115.87	10268.42	44.30
UAE	386.44	325.20	-15.85	4021.48	4193.13	4.27
CHINA	355.01	363.59	2.42	1973.18	3222.90	63.34
GERMANY	229.12	325.79	42.19	2215.48	3211.70	44.97
UK	288.37	276.20	-4.22	2529.06	2854.21	12.86
MEXICO	246.54	247.31	0.31	2449.10	2674.80	9.22
NEPAL	180.31	268.87	49.12	2164.89	2557.71	18.14
ITALY	310.56	233.95	-24.67	2086.28	2460.16	17.92
BANGLADESH	208.33	287.34	37.92	1998.73	2454.99	22.83
MALAYSIA	173.40	132.44	-23.62	2406.95	2021.34	-16.02
SINGAPORE	250.97	155.58	-38.01	2833.28	1995.70	-29.56
KOREA RP	216.51	193.09	-10.82	1602.41	1931.18	20.52
INDONESIA	168.90	207.72	22.99	1421.12	1784.96	25.60
TURKEY	116.77	195.77	67.65	1550.61	1761.26	13.59
SRI LANKA	136.59	325.71	138.46	1434.52	1579.12	10.08
FRANCE	459.86	114.76	-75.05	1694.94	1424.79	-15.94
BELGIUM	163.34	135.46	-17.07	1220.24	1406.79	15.29
SOUTH AFRICA	117.43	128.76	9.65	1063.40	1355.21	27.44
SAUDI ARAB	153.76	121.24	-21.15	1231.44	1271.68	3.27
THAILAND	140.89	123.55	-12.31	970.00	1241.22	27.96
SPAIN	105.76	149.71	41.55	963.04	1196.76	24.27
VIETNAM	256.29	101.20	-60.51	1133.11	1170.13	3.27
JAPAN	86.14	132.07	53.32	801.13	1055.93	31.80
BRAZIL	69.83	86.68	24.12	627.40	926.25	47.63
NETHERLAND	81.72	95.10	16.37	922.79	890.95	-3.45
Top 25 Countries Total	5766.65	5783.95	0.30	48430.47	56911.28	17.51
Grand Total	7706.19	7850.31	1.87	65239.17	76204.42	16.81
Share % Total Engineering Exports	74.83	73.68		74.24	74.68	

Source : Department of Commerce, Government of India, 2018.
(https://www.eepcindia.org/download/EEA-180423155712.pdf)

From the Table 1.3 it could be inferred that exports of engineering goods to the US and Europe, accounts for over 60 per cent of the total exports. USA holds the first place of India's engineering exporters with 13.47 percent share in total engineering exports during 2017-18. The top products exported to USA includes products of iron and steel, Industrial Machinery for dairy, electrical machinery, aluminium and products, auto components parts, etcc. USA, China, Germany, U.K., Canada, France, Russia, Japan, Australia, South Korea, Saudi Arabia and Southern Africa are attractive markets for Indian engineering products. Indian engineering sector with capacity and advanced technology export a wide array of equipments and products.



Source: www.eepcindia.org, 2018.

Figure 1.2: Top 10 India's Export Destinations during 2017-18

1.2 Need for Job Performance in Engineering Industry

In the current global market, to develop a competitive advantage, it is important that engineering industries leverage on the workforce as a competitive weapon. The current business environment is characterized as Volatile, Uncertain, Chaotic and Ambiguous. Hence to achieve business goals and for long time survival and sustainability, engineering industries seek to optimize their workforce through skill development programmes with the objective of enhancing their knowledge, skills and competencies needed to work effectively.

To compete in the global markets, the engineering industry needs to focus on product design and development since producing for foreign markets as well as domestic market requires more technological capabilities of their workforce for meeting the international standards and customer expectations. Production lines are replaced with more flexible systems, such as manufacturing cells. Quality testing departments are replaced by total quality management systems. These factors have contributed to an overload of demands and an under-supply of response capabilities in manufacturing organizations, which might affect individuals' psychological experiences of their work, for example, their work engagement (Nelson & Simmons 2003).The demands of manufacturing processing and design are changing rapidly. Production facilities must be able to customize processes and adapt rapidly to the fluctuating production demands of the market in order to remain globally competitive and profitable. But more complex procedures and automation can increase the cognitive load placed on the process operators. As a result, employees are required to perform more. Managers in the organizations have to unleash the human potential in organizations to improve the overall performance of employees. According to May, Gilson and Harter (2004), employees seek fulfillment through self-expression at work. The authors believe that for employees to thrive, they should engage themselves cognitively, physically and emotionally in their work. To achieve the set standards, Performance of employees is highly important for organizations to remain competitive and successful in the market. Especially globalization and technological progress expose employees constantly to new forms of working and changed task demands (Tims, Bakker, & Derks, 2013). Aboazoum et al., (2015) stated that, in government and private organizations, the importance of employee performance is very crucial.

Performance analysis is the process of ascertaining the organization's performance requirements and linking them to its objectives and capabilities. It involves identification of gaps in performance. For determining the performance gap, performance analysis process involves in finding out the impact, outcomes or consequences of the discrepancy. It is important to assess the impact of the performance gap, at the organizational level, the work or process level or the individual performer level and ensure that the cost of minimizing or eliminating the problem is not greater than the cost of the problem. From the organizational level, the focus is on the ability of the organization to meet the customer needs, carry out strategies and achieve goals, and compete in the market place. At the process level, the focus is to achieve organizational objectives hence analysis is carried out about the processes and internal systems. The last is the individual performer level and hence focus is done on the employees and how they are performing their work activities. In the current scenario knowledge and capacity is the real key to success and this rests in people. Hence, paying serious attention to people's issues becomes even more important. Leaders ought to build the systems at this perspective. Hence to ascertain the performance of organization and employees, there are several attributes to be studied both in general and specific.

Measures of organizational performance : Generally applied measures are – Productivity, Organizational Effectiveness and Organizational Ranking. **Peter F. Drucker** the well-known management guru was of the view that an organizations employees need to see the connection between what they do and the outcomes. He believed that - The focus of the organization must be on performance. The spirit of organization is high performance standards, for the group as well as for each individual. The most commonly used organizational performance measures include productivity, organizational effectiveness, and organization rankings.

Productivity refers to the process of converting inputs (e.g. labor and capital) into output (e.g. products) from a production process. Organizations strive to be productive. They want the goods and services to be produced using the least amount of inputs. Output is measured by the sales revenue an organization receives when these goods and services are sold. Input is measured by the costs of acquiring and transforming the organizational resources (land, labour, capital, people, machine) into the outputs.

Every management‘s job is to increase productivity by reducing the input cost (e.g. labor and capital) and increasing the output price (selling price). Hence, organizational productivity becomes a measure of how efficiently employees do their work. this leads to increase in company‘s capability by increasing the capability of their employees. Nowadays, companies are investing in its future productivity by making employees more efficient in their job-related use of various resources such as skill development programs and Internet.

Organization Effectiveness: Jorge Morales Pedraza (2014) stated that organization effectiveness is the efficiency that an organization, group, or company can meet its goals i.e., produces a desired effect or an organization that is productive without waste. Organizational effectiveness is the capacity of an organization to produce the desired results with a minimum expenditure of energy, time, money, and human and material resources. The desired outcome will depend on the objectives of the organization, which could be, for example, making a profit by producing and selling a product.

It measures the big-picture performance of a business, across a broad range of criteria. Financial performance, internal structure, long-term planning, and core values may all be critical components in understanding organizational effectiveness. Highly effective organizations exhibit strengths across five areas: leadership, people, work processes, decision making and structure and systems, and culture. Evaluating and improving organizational effectiveness and efficiency is one strategy used to help ensure the continued growth and development of an organization.

Ranking of Organization: Ranking of Organization is determined by specific performance measures. For instance, Fortune‘s Top Performing Companies performance are determined by financial results including, profits, return on revenue, and return on shareholder‘s equity; growth in profits for 1 year, 5 years, and 10 years; and revenue per employee, revenue per dollar of assets, and revenue per dollar of equity and superior management skills in the areas of financial performance, leadership, innovation, globalization, employee benefits and education, alliances and partnerships, and community involvement. These different parameters or measures could help to assess performance of organizations and are used as basis to rank organizations.

Approaches for measuring Performance of employees

Measuring performance of employees is the pillar of any organization's management. Organizations usually measure employee performance by assessing how much contribution the employee is making to the firm's growth and convey to the employee at the time of their performance appraisal. Performance appraisal refers to the evaluation of employees performance and providing them with valuable feedback and creating a positive effect on future performance. Employee performance depends upon a number of factors such as; conducive work environment, work profile, compensation, bonus system, company policies, technology, job satisfaction, organization commitment and employee engagement. These factors play an important role in determining the employee productivity and lead to overall organizational development.

Different approaches of measuring Employee performance

Organizations can use different strategies and approaches for the purpose of measuring performance of their employees. The five major approaches proposed by Abhisikta Dey and Indra Giri (2017) are:

1. Comparative approach,
2. Attribute approach,
3. Behavioral approach,
4. Result Approach and
5. Quality approach.

Comparative approach of measuring performance: Comparative approach involves ranking an employee's performance on the basis of highest to the lowest performer with respect to that of others' in the group. Comparative approach used several methods such as forced distribution technique, paired comparison and graphic rating scale. Forced Distribution technique involves ranking employees in groups and ensures reward for the top performers. Proper training and guidance could help these top performers to be promoted to higher managerial positions. In Paired Comparison, the organization compares one performer with the other and assigns a score of 1 for the higher performer. Comparative approach is performed with a small group of employees with similar job profiles. Graphic Rating Scale measures the employee performance on a scale of 1 to 5 (lowest to highest).

Attribute approach of measuring performance: In this approach, the employees are rated on the basis of a specific set of factors such as: problem solving skills, creativity and innovation, judgment, teamwork and communication. The employee performance is rated as high, medium or low on a given set of factors. It is simple and most of the organizations use this approach. It is accurate and helps to identify the best and the worst performers.

Behavioural approach of measuring performance: Behavioural approach is one of the oldest performance measurement techniques. It can be done by using BARS technique or BOS technique. The Behaviorally Anchored Rating Scale (BARS) technique consists of five to ten vertical scales based on parameters (called "anchors") which are decided consensually from all employees. It provides a more specific description along with frequency with regard to the employee behavior for an effective performance.

Result approach of measuring performance: This approach is a simple and straight-forward concept, where in organization rate employees on the basis of employee performance outcomes. The result approach is also known as Balanced Scorecard technique. This technique focuses on four perspectives namely: financial, customer, internal and operations and learning and growth. The second approach is Productivity Measurement and Evaluation System (ProMES). It helps in motivating employees for enhanced productivity and measuring the feedback.

Quality approach of measuring performance: This approach focuses on improving customer satisfaction and achieving continuous service improvisation. It takes into consideration both person and system factors and also employers take regular feedback on the personal and professional traits of the employee from managers, peers and clients to resolve performance issues. It mainly focuses on the use of Kaizen process in order to continuously improve the business processes. The advantages of this approach includes: assessment of employee and system, problem solving through teamwork, use of multiple sources to evaluate performance and involvement of both internal and external factors**.**

Improving Employee Performance: Employee Performance Development is a robust tool that can be used to shape intellectual capital, establish and maintain a - high-performance workplace, enhance profitability and encourage productivity and improved safety. Employee Performance Development consists of two distinct aspects, performance

and behavior. Behavior contribute to accomplishments whereas performance is the outcome. Although the crucial emphasis of Employee Performance Development is on performance and accomplishments, behavior contributes to the performance as they can positively or adversely affect the performance. The core competencies associated with Employee Performance Development work are Industry awareness, Leadership skills, Interpersonal relationship skills, Technological awareness and understanding, Problem-solving skills, System thinking and understanding, Performance undertaking, Knowledge of interventions, Business understanding, Organization understanding, Negotiation / Contacting skills, Buy-in/advocacy skills, Coping skills, Ability to see the ―Big Picture, Consulting skills and Project management skills. Apart from the general, specific job characteristics such as skill variety, task identity and task significance are also required. These job characteristics enable the employee to see the job as more meaningful and significant (experienced meaningfulness of work) which makes the job intrinsically satisfying. For achieving success and long-term sustainability in business, building a high-performance workforce is essential.

The manufacturing industry has experienced a significant change in moving from traditional work organisation principles to team based work and multi-skill principles (Bolden, Waterson, Warr, Clegg and Wall 1997). Hence, Employee job performance should be analyzed together with job crafting and Occupational self-efficacy to make sure it is synchronized well with the unstable business environment. There are several variables which influence the job performance of the employees in the work place. Rummler and Brache (1990) have pointed the variables that affect Job Performance are task interference, performance specifications, consequences, feedback, knowledge/skill, and individual capacity and also other variables such as Motivation, Competence, Ability, Role Perception, Resources and Work Place Environment. Hence the present study considers Personal resource (Self-efficacy) as an important factor, since it is the most powerful personal resource, which contributes to the Job Performance of employees. Based on Social Cognitive theory, Self-efficacy is defined as "beliefs in one's capabilities to organize and execute courses of action required to produce certain achievements or results" (Bandura, 1997, p.3). More specifically, Salanova et al. (2010) also speculated that there is a positive cycle that includes job resources, personal resources, positive emotions, work engagement and

enhanced performance, in which self-efficacy (personal resources) is considered important. This self-efficacious behavior may increase the chances of successful outcomes such as in – role or extra role performance, employee engagement, organizational commitment etc., Highly self-efficacious employees can easily craft the jobs through specific job crafting activities such as those that involve securing task or relational resources, or taking on challenging task or relational demands, and studies have demonstrated positive relationships with performance (Bakker et al. 2012). Employees view organizations as places where skills can be used and developed, and no longer as communities of lifelong employment (Grant and Parker, 2009). Currently, the career and personal development of the employee are dependent upon the investments and initiatives of the employee, rather than the employer (Boselie, 2010; van der Heijde and van der Heijden, 2006). Van der Heijden (2002) argues that continuous development of individuals in a job by learning new skills will enable them to make optimal use of their qualities and capabilities. This view partly overlaps with job crafting, in which individuals shape their job to meet their own preferences, needs and personal goals (Wrezeniewski and Dutton, 2001).

Job Crafting is a proactive behavior of employees. Self-efficacy may increase employee's proactiveness which in turn influence Job performance. In other words, Job crafting may relate positively to job performance because employees make changes to their jobs to enable better performance or be more efficient but also to be able to do tasks they find interesting or rewarding. Job crafters may thus direct their energy to change job characteristics to achieve goals they value or goals they believe to lead to rewarding outcomes (Warr and Inceoglu, 2012). Crafting jobs proactively could be an effective mechanism to obtain career advancement and work improvement (Chan and Dar, 2013). The internal environment of organizations is frequently in change due to downsizing and off shoring; hence the importance of job crafting with their work takes on even greater dimensions. However, job crafting activities are not necessarily aligned with the organizational objectives and therefore do not always demonstrate positive links to performance (Wrzesniewski &Dutton 2001; Tims et al. 2012).

1.3 Research Gap and Opportunity

The reviews of literature show that plethora of studies have been conducted for identifying the factors that influence the Job Performance of employees; Co-workers relation (Li Min and Su Yong 2014; Nagami, Tsutsumi,Tsuchiya and Morimoto 2010; Amarneh, Raeda F. Abu Al-Rub and Nawzat F. Abu Al-Rub 2009), self-efficacy and effort (Manasseh 2015; Ming and Yen 2012; and Randhawa 2004), selection, optimization, and compensation strategies received positive task performance (Demerouti, Bakker and Leiter 2014), work related attitudes (job satisfaction, organizational commitment and job involvement) (Revenio Jalagat 2016; Hettiararchchi and Jayarathna 2014; Ahmad, Khaliq Ahmad and Ali Shah 2010), job stress, motivation and communication factors (Obiekwe Nduka, 2016; Iskandar, Ahmad and Martua 2014; Kakkos and Trivellas, 2011; Hourani, Williams, and Kress, 2006), salary (Idrees, Xinping, Shafi, Hua, Nazeer 2015; Bryson, Buraimo and Simmons 2010; Ittner, Larcker, and Pizzini, 2007), training and development (Johnson Amos and Natamba, 2015; Sultana, 2012; and Elnaga and Imran, 2013), and organizational culture (Daniel and Purmanti, 2015; Shahzad, 2014; Alvesson, 2012), working hours, trainings, communication barriers, stress and financial rewards (Iqbal, Ijaz, Latif and Mushtaq 2015; Otoo Florence 2015; Lim Kah Boon, Yeo Sook Fern, Cheah Chew Sze and Stanley 2012). Among the factors that influence Job performance of employees, Occupational self-efficacy (Bandura, 2008; Stajkovic and Luthans, 1998, 1997) is critical; since it is the belief that the employee has that he/she is efficacious in carrying out his job. Further reviewing the literature brings to light the factors which influence Occupational self-efficacy; perceived leadership relevant attributes, task and person oriented attributes (Birgit and Sabine, 2010; Schyns, 2004; McCormick, Tanguma and Anita Sohn López, 2002); job resources (Neve, Devos and Tuyten, 2015; Salanova, 2010; Pierce and Gardner, 2004); emotional intelligence (Gadiwan, Ansari and Wagde,2016; Gharetepeh, Safari, Pashaei, Razaei, and Kajbaf, 2015; Neerpal and Renu 2009); internal locus of control (Mehdi Ashagi and Beheshtifar 2015; Jon Elliott and Carla Puerto 2014; Cornelius, Maike, Stéphanie, Nora and Martin, 2010); tenacity and determination (Breso, Schaufeli, and Salanova, 2011); knowledge management practices (Chenari, Rafati, Mogaveri and Dehbashi 2017; Chandana and Ales Gregar, 2013; Chia-Ying Li, 2013); verbal persuasions and vicarious

modeling (Hendricks, 2015;Yasmin, Rashmi and Mahima, 2014); high commitment human resources management (Goncalves Martins, 2016; Piety and Karin 2015; Tom Vianen and Kalshoven, 2014); task interdependence and learning goal orientation (Piety, Timothy, Karin and Yang, 2016; Navon and Erez, 2004; Bell and Kozlowski, 2002); and team effectiveness (Chowdhury and Lanis; Manhas and Bakhshi 2011; Sabine Sonnentag, 2009).

Studies by Tims et al.,(2014); Bakker et al., (2012) reveal that Job Crafting is positively related to Job performance as well as contextual performance (Akoto, 2015). In addition, Work Meaningfulness is associated with numerous work-related benefits, such as performance, motivation, and increased job satisfaction (Allan, Duffy, and Collisson, 2016; Schoberova, 2015 and Rosso et al., 2010). Drach-Zahavy and Erez, (2002) states that if employees perceive their work as meaningful, it is more likely that they will perform better and also Bandura's (2008) social cognitive theory draws definite links between meaningful work and performance. Wrzesniewski, Berg, and Dutton, (2010) in their study claim that Job crafting is particularly critical as a path to meaningfulness in modern work contexts. Review indicates that there are only a few studies that highlight the importance of Occupational self-efficacy in contributing to Job Crafting (Bakker and Schaufeli 2016; Kanten 2014) and the influence of Job Demand and Job Resources on Occupational self-efficacy.

Hence this research focuses in examining the influence of Job Demand, Job Resources, Occupational Self-efficacy, Work Meaningfulness and Job Crafting on Job Performance. Job Performance has been studied widely within the literature. The majority of researches on job performance have looked at the direct effects of variables such as self-efficacy and effort (Manasseh 2015; Ming and Yen 2012; Randhawa 2004) and job stress, motivation and communication factors (Obiekwe Nduka, 2016; Iskandar, Ahmad and Martua 2014; Kakkos and Trivellas, 2011; Hourani, Williams, and Kress, 2006). There are only sparse studies in the Indian context examining the influence of Occupational Self-efficacy and Work meaningfulness on Job crafting and on Job Performance. Hence, the current research aims in addressing this gap.

1.4 Statement of the Problem

Luthans and Sommers, (2005) state that to be successful, a firm must be able to improve performance by reducing costs, creating new products and processes, enhancing quality and productivity, and increasing speed to market. The relationship of building a culture that fosters high employee engagement, and enhance the performance is essential for an organization to creating successful outcomes. Apart from culture and engagement, companies are looking for highly skilled employees. Human resources are the capital assets of any organization. Specifically knowledge, skills and competencies are the important resources for an employee to achieve high performance. Like other industries, engineering industry is increasingly becoming a knowledge-based profession. Technology advancements in engineering industry have created skills gap in the workforce. Hence the present study considers Occupational self-efficacy as an important variable which in turn enhances the employee's skills and abilities to foster job performance amidst the availability of resources and hassles in performing the job. To foster employees Job Performance, the organization should have occupationally efficacious employees, who are also able to involve themselves in job crafting i.e. utilizing the opportunities and customizing their jobs at work place. However, employees are likely to involve in job crafting only when they find meaningfulness in their work. Such activities are likely to enhance the job performance of the employees and therein to the development of the organization. Therefore it is of significance to examine the influence of Occupational self-efficacy, Work Meaningfulness and Job Crafting on Job Performance. Hence, this study attempts to examine the influence of Job Demands and Job Resources on Occupational Self-efficacy and the influence of Occupational Self-efficacy, Work Meaningfulness and Job Crafting on Job Performance of employees among the engineering industries.

1.5 Objectives of the Study

The objectives of the study are:

1. To study the perception of Job Demands, Job Resources, Occupational Self Efficacy, Job Crafting, Work Meaningfulness and Job Performance among the employees.

2. To investigate the influence of Job Demands and Job Resources on Occupational Self Efficacy and the influence of Occupational Self Efficacy on Job Performance.
3. To examine the mediating role of Job Crafting between Occupational Self Efficacy and Job Performance.
4. To investigate the moderating role of Work Meaningfulness on the relationship between Occupational Self Efficacy and Job Crafting.
5. To identify the factors that discriminate employees with low Job Performance and high Job Performance.
6. To examine significant differences in Age, Gender, Marital Status, Education, Nature of Work and Experience among the study variables.

1.6 Scope of the Study

The performance of the engineering industry is linked to the performance of the end user industries. Performance begins with individuals (employees and employers) skills, abilities and competence. Self-Efficacy at work can pave the way to the wholesome performance in the engineering industry. Hence, performance of employees should be focused. Thus, this study will help to identify the factors that influence the Occupational Self-Efficacy of employees. Focusing on these factors will help the organization to enhance the self-efficacy levels of its employees and also this study helps in identifying the influence of Occupational Self-Efficacy, Work Meaningfulness and Job Crafting on Employee's Job Performance. Since employee's job performance is one of the important factors for effectiveness and long- term growth of the organization. The research of the study shall pave way for identifying the extent of influence of Job Demands, Job Resources, Occupational Self-Efficacy, Work Meaningfulness and Job Crafting on Job Performance. Focusing on these factors is likely to help organizations enhance the Job Performance of employees.

1.7 Chapter Framework

The entire thesis is prepared into five main chapters. A brief outline of each of the chapters is given below:

Chapter 1: The Introductory chapter titled “Introduction” deals with a brief introduction of the study discussing the research gap and opportunity, Problem statement, Objectives of the study, and Scope of the study.

Chapter 2: The Second chapter titled “Literature review” discusses the concepts of the study and reviews of relevant literature, proposed theoretical framework and hypotheses.

Chapter 3: The Third chapter titled “Research Methodology” details the methodology adopted while conducting the research, questionnaire validation, sampling techniques, data collection and the statistical tools applied.

Chapter 4: The Fourth chapter titled “Analysis and Discussion” discusses the results of the analysis portraying the interrelationship among the study variables.

Chapter 5: The Fifth chapter titled “Findings, Suggestions and Conclusion” summarizes the significant Findings, Suggestions, Conclusion, Limitations of the study and Scope for further study.