

# *Appendix*

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**RURAL ENTREPRENEURSHIP – AN ANALYTICAL STUDY ON FACTORS  
INFLUENCING THE BUSINESS PERFORMANCE OF MICRO, SMALL AND  
MEDIUM MANUFACTURING UNITS IN RURAL AREAS**

**INTERVIEW SCHEDULE**

**Enterprises Profile:**

1. Name of the enterprise:
2. Business Age: a) 5-7 years b) 8-10years c) 11-13 d) More than 13years
3. Generation: a) First generation b) Antecedent
4. Legal status:
  - a) Sole Proprietorship b) Partnership c) Private Limited Company
  - d) Public limited company e) others, specify
5. Nature of business activity:
  - a) Textile processing b) Engineering c) Food Processing firm
  - d) Metal fabrication e) others (Please specify):
6. Total Investment made in plant and machinery:
  - a) Below Rs.25 lakhs b) Rs.25lakhs to Rs.5 crores c) Rs.5crores – Rs.10 crores
7. Sources of Finance for the business are:
  - a) Own funds b) Borrowed funds c) Both
8. Number of employees engaged in:

<b>S.No</b>	<b>Employees</b>	<b>Less than 5</b>	<b>5-10</b>	<b>11-15</b>	<b>16-20</b>	<b>More than 20</b>
8.1	Permanent employees					
8.2	Daily labourers					

9. The annual turnover of the business is:
  - a) Less than Rs.20,00,000 b) Rs. 20,00,000- Rs.40,00,000
  - c) Rs. 41,00,000- Rs.60,00,000 d) Above Rs.60,00,000

10. Annual profit is:

- a) Less than Rs.1,00,000 b) Rs. 1,00,000- Rs.5,00,000
- c) Rs. 5,00,001-Rs.10,00,000 d) More than Rs.10,00,000

11. The business profits is---**Kindly tick the options that are appropriate and there could be more than one option.**

S.No.	Factors	Tick
11.1	Used to repay loan	
11.2	Reinvested in business	
11.3	Saved	
11.4	Used for private purpose	

12. Are you a member in any of the association?    A)yes    B) no

12.1 if yes, mention the association name\_\_\_\_\_

### **Motivational Factors**

13. Who motivated you to start the enterprise? **Kindly tick the options that are appropriate and there could be more than one option.**

Sl.No	Motivators	Tick
13.1	Self motivation	
13.2	Spouse	
13.3	Family members	
13.4	Friends and relatives	

14. For the statements given below, as an entrepreneur, to what extent you feel you are motivated to initiate the business. **The description for the options are (Highly motivated -5, Motivated -4, Moderately motivated -3, Demotivated -2, Highly Demotivated -1)**

S.No.	Statements	5	4	3	2	1
<b>14.1</b>	<b>Need for Independence</b>					
14.1.1	To be my own boss					
14.1.2	To control in my own timings					
14.1.3	To be greater flexible in life					
14.1.4	To create job instead to seek					
14.1.5	To adopt freedom work approach					
<b>14.2</b>	<b>Need for Achievement</b>					
14.2.1	To prove I can do it					
14.2.2	To use my knowledge and experience					
14.2.3	To challenge myself					
14.2.4	To realize my dream					
14.2.5	To be innovative in the forefront of new technology					
14.2.6	To generate ideas and keep learning					
<b>14.3</b>	<b>Social Recognition</b>					
14.3.1	To continue the family business tradition					
14.3.2	To gain respect from family and friends					
14.3.3	To follow an example of a successful entrepreneur					
14.3.4	To gain social prestige					
14.3.5	To have higher position in the society					
14.3.6	To gain well reputation					
<b>14.4</b>	<b>Financial Rewards</b>					
14.4.1	To self earn					
14.4.2	To increase my family income					
14.4.3	To improve my financial security					
14.4.4	To improve my standard of living					

15. For the statements given below, as an entrepreneur, to what extent you feel the level of support you have obtained from the following members to increase the business performance. **The description for the options are (Very high -5, High -4, Moderate -3, Low -2, Very Low -1)**

S.No.	Support from	5	4	3	2	1
15.1	Spouse					
15.2	Family Members					
15.3	Government Bodies					
15.4	Banking and Financial Institutions					
15.5	Promotional Institutions (DIC, MSME etc)					
15.6	Money lenders					

16. Rank the following reasons which made you to choose this present line of activity.

**(Give 1 for the most preferred reason and 2 for the next and so on till 6)**

S. No.	Reasons	Rank
16.1	Passion towards entrepreneurship	
16.2	Inherited business	
16.3	Demand for new products	
16.4	Market scope	
16.5	Profitability	
16.6	Business networks	

### Internal Factors

17. Rank the following factors considered for locating your production unit in rural areas. **(Give 1 for the most preferred and 2 for the next and so on till 7).**

S.No.	Reasons	Rank
17.1	Birth place	
17.2	Availability of Land	
17.3	Availability of raw materials and labourers	
17.4	Availability of subsidy	
17.5	Adequate infrastructure facilities	
17.6	Proximity to market	
17.7	Tax incentives	

18. What is the source of energy used?

- a) Electricity      b) Coal      c) Wood      d) others

19. Nature of business premises is: a) Owned b) Rental c) Lease d) Hire purchase

20. State your level of agreeability for the following infrastructure facilities which influence the business performance. **The description for the options are (Strongly agree -5, agree -4, neutral -3, disagree -2, strongly disagree -1)**

S.No.	Statements	5	4	3	2	1
20.1	Raw material is accessible at reasonable rate.					
20.2	Cost of the land is less in rural areas					
20.3	Labourers are available at cheaper cost					
20.4	Low cost machinery is used for production					
20.5	Absence of competition in the place of existence					
20.6	Infrastructure facilities (water, road, transportation etc.) are accessible at less cost					

## Financial Resources

21. If funds are borrowed, mention the external sources of finance that are appropriate and there may be more than one option

S.No.	External Sources	Tick
21.1.1	Banks and financial institutions	
21.1.2	Family	
21.1.3	Friends and relatives	
21.1.4	Moneylenders	

22. If both funds are used in the business, specify the percentage of each:

a) Own fund \_\_\_\_\_%      b) Borrowed fund \_\_\_\_\_%

23. Specify the banks and financial institutions approached to avail financial assistance .

S.No.	Financial Assistance	Public sector banks	private sector banks	TIIC	SIDBI	others
23.1	Fixed assets					
23.2	Working capital					

24. How much is the loan amount availed from banks and financial institutions for Fixed Assets?

a) Below Rs.25 lakhs    b) Rs.25lakhs to Rs.5 crores    c) Rs.5crores – Rs.10 crores

25. How much is the loan amount availed from banks and financial institutions for Working Capital?

a) Less than Rs.50,000    b) Rs. 50,001 - 1 lakh    c) Rs. 1 – Rs.5 lakhs

d) Rs. 6- Rs.10 lakhs      e) More than Rs.10 lakhs





29. Products are sold through-----

- a) Sales personnel    b) Agents    c) Government agencies  
 d) Personally to the customers    e) others

30. Which pricing policy are you following in the business?

- a) Demand price    b) cost plus price    c) competitor's price    d) others

31. Are you exporting your product? a) Yes b) no

a. If yes, where do you export?

- a) America    b) Europe    c) Middle East    d) Asia specific    e) others

32. What is your export percentage in your total sales?

- a) Less than 10%    b) 10-25%    c) 25-50%    d) 50-75%    e) 100%

33. State your level of agreeability for the following marketing resources which influence the business performance. **The descriptions for the options are (Strongly Agree -5, Agree -4, Neutral -3, Disagree -2, Strongly Disagree -1) cordial**

S. No.	Marketing resources	5	4	3	2	1
33.1	Customers feedback are taken into account to improve the quality of production					
33.2	Credit sales is encouraged					
33.3	Products are displayed in trade fairs					
33.4	Middlemen service charge is relatively low					
33.5	Business links are supportive in marketing the products					

### Human resources

34. How do you recruit your employees?

- a) Word-of-mouth    b) Advertisement    c) Employee Referrals  
 d) Labour contractors    e) others, if any

35. Do you keep your employees updated with new technologies? a) yes b) no

36. What are the measures undertaken to retain the employees? **Kindly tick the appropriate option and there could be more than one option**

S. No	Measures	Tick
36.1	Incentives and allowances	
36.2	Flexible work schedule	
36.3	Wages are paid	
36.4	On the job training	
36.5	Labourers participation in decision making	
36.6	Bonus	

37. State your level of agreeability for the following Human resources which influence the business performance. **The description for the options are (Strongly Agree -5, Agree -4, Neutral -3, Disagree -2, Strongly Disagree -1)**

S. No.	Human resources	5	4	3	2	1
37.1	Firms adhere to the labour laws which are suitable to the enterprise					
37.2	Stress free environment is provided to labourers					
37.3	Cordial relationship is maintained with the labourers					
37.4	Job security is provided to workers					
37.5	Labourers are regular in their work					
37.6	Employees are praised and acknowledged for their work					

**External factors - Micro environmental factors**

38. From where do you purchase raw materials for the business? Rank the Following  
(1 for the most preferred, 2 for the next and so on till 4)

S. No.	Place of Purchase Raw Materials	Rank
38.1	Locally	
38.2	With in the state	
38.3	Outside the state but with in the country	
38.4	Importing	

39. From your business experience, State your level of agreeability for the following micro environmental factors which influence the business performance. **The description for the options are ( Strongly Agree -5, Agree -4, Neutral -3, Disagree -2, Strongly Disagree -1)**

S. No	Statements	5	4	3	2	1
39.1	Different suppliers are available to procure raw materials					
39.2	There is sufficient and timely availability of raw materials					
39.3	Raw materials are supplied on credit basis, if necessary					
39.4	Customers have sufficient purchasing power which leads to increase in demand					
39.5	Attitude and desire of customers are supportive to the business					
39.6	Products are sold to different group of customers					
39.7	Market potential is identified from the competitors					
39.8	Competitor's dynamic move alert us					
39.9	Appropriate Market intermediaries are involved in distributing the products					
39.10	Regulatory agencies (DIC, Ministries, NSICetc) are helpful in promoting the business					
39.11	Non-Government Organization (NGO) is helpful					
39.12	Local public are co-operative.					

40. From your business experience, State your level of agreeability for the following macro environmental factors which influence the business performance. **The description for the options are (Strongly Agree -5, Agree -4, Neutral -3, Disagree -2, Strongly Disagree -1)**

S.No.	Statements	5	4	3	2	1
40.1	Government regulations and procedures are simple					
40.2	Industrial policy changes are liberalised					
40.3	Government schemes and subsidy are accessible					
40.4	Ministries enhance assistance on the functional areas of business					
40.5	Labour laws are simple and streamlined					
40.6	Business registration is easy					
40.7	Line departments are prompt while issuing certificates					
40.8	Monetary and fiscal incentives are supportive					
40.9	Proper utilisation of capacity during price inflation					
40.10	Technological changes makes production faster					
40.11	Family support is essential to start the business					
40.12	Materials used for the production are recyclable					

## Performance

41. With reference to your business performance, to what extent are you satisfied with the following achievements of your business? **The descriptions of the options are (Highly Satisfied -5, Satisfied -4, neutral -3, Dissatisfied -2, Highly Dissatisfied -1)**

S.No.	Indicators	5	4	3	2	1
41.1	Cost of production					
41.2	Sales volume					
41.3	Profit					
41.4	Employees strength					
41.5	Return on investment					
41.6	Customer satisfaction					
41.7	Customer retention					
41.8	Business image					
41.9	Market share					
41.10	Expansion and diversification					

## Problems in functional areas

42. Rank the following financial problems that inhibit the business success. **Give 1 for the most important problem, 2 for the next and so on and 8 for the least one.**

S.No.	Financial Problems	Rank
42.1	More legal formalities for getting loan/cumbersome procedures	
42.2	Delay in sanction of the loan amount	
42.3	Insistence on collateral and margin money requirement	
42.4	High rate of interest	
42.5	High transaction cost	
42.6	Tight repayment schedule	
42.7	Insisting compulsory deposit	
42.8	Difficulty in collecting the outstanding amount from the customers	

43. Rank the following human resource problems that inhibit the business success. **Give 1 for the most important problem, 2 for the next and so on and 6 for the least one.**

<b>S.No.</b>	<b>Human Resource Problems</b>	<b>Rank</b>
43.1	Difficulty in identifying the source of recruitment	
43.2	Lack of skilled labourers	
43.3	Inadequate motivation from employees	
43.4	Labour absenteeism	
43.5	Labour turnover	
43.6	Demanding high monetary and non-monetary benefits	

44. Rank the following production problems that inhibit the business success. **Give 1 for the most important problem, 2 for the next and so on and 5 for the least one.**

<b>S.No.</b>	<b>Production problems</b>	<b>Rank</b>
44.1	Lack of modern technology	
44.2	Irregular power supply	
44.3	High cost of raw material	
44.4	Shortage of water	
44.5	Lack of transportation and communication	

45. Rank the following marketing problems that inhibit the business success.  
**Give 1 for the most important problem, 2 for the next and so on and 8 for the least one.**

<b>S. No.</b>	<b>Marketing Problems</b>	<b>Rank</b>
45.1	Lack of information on changing market condition	
45.2	Cut-throat competition from large scale and urban entrepreneurs	
45.3	Inadequate market research	
45.4	Lack of organised market channels	
45.5	Unfamiliarity with export procedures	
45.6	Cumbersome export formalities	
45.7	Inadequate marketing support from Govt. Agencies	
45.8	Customers request for extension of time for payment	

46. Give your valuable suggestions:

## *Publications*

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## Green Innovation for SMEs in a Low Carbon Economy

DR.D.VIJAYALAKSHMI<sup>1</sup> AND G.R.RAJALAKSHMI<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of B.Com (AM), PSGR Krishnammal College For Women, Peelamedu, Coimbatore -641 004

<sup>2</sup>Ph.d Research Scholar, Department of Commerce, PSGR Krishnammal college for women, Peelamedu, Coimbatore – 641 004

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### ABSTRACT

*“Earth has enough resources to meet people’s needs,  
But will never have enough to satisfy people’s greed”*

*-Mahatma Gandhi*

Climate change is one of the most pressing developmental changes of our time. In the wake of industrialization and continued growth of the world economy, a low carbon economy has emerged as the new paradigm to sustain growth. The Indian SMEs is developing rapidly towards sustainability that made shift in the role of industries towards the low carbon path. Presently, there is a need for urgent collective action to achieve a transition to a low carbon green and more resource efficient economy.

India<sup>1</sup> is the world’s third largest carbon emitter, behind the U.S. and China. In Intended Nationally Determined Contributions (INDCs), the Indian government assured to reduce carbon emissions relative to its GDP by 33% to 35% from 2005 to 2030. India also pledged that 40% of the country’s electricity would come from non-fossil fuel-based sources, such as wind and solar power, by 2030. Our Prime Minister Narendra Modi looks forward that investments in solar power will bring reliable electricity to an additional 300 million Indians.

The present study discussed how Small and Medium Enterprises (SMEs) are responding to environmental threats as well as challenges and opportunities faced by SMEs in a low carbon economy. This study explains conceptual framework of green innovation practices for sustainability, which ensures the firm to make eco-friendly environment.

**KEYWORDS:** *SME, low Carbon economy, green innovation, Sustainability*

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### INTRODUCTION

The low-carbon economy is a highly entrepreneurial area – industries are constantly developing innovative products that provide them with new sources of income while reducing their own, or their customers’ environmental impacts. India, like other developing economies, is in a transition. It occupies 134<sup>th</sup> position out of 182 countries in Human Development Index (HDI) tally (UNDP, 2012). As per International Energy Agency (IEA) estimates, the world energy - induced CO<sub>2</sub> emissions will increase by 57.4% during 2005 - 2030, and India will account for 14.2% of those emissions (IEA, 2012). The higher share of pollution can be attributed to two factors—India’s heavy reliance on coal, which is of low quality with high ash content (low calorific value); and low

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<sup>1</sup> <http://time.com/4059051/india-indc-climate-change-carbon-emissions/>



## Role of MSME’s in economic growth of India

<sup>1</sup> Dr. D Vijayalakshmi, <sup>2</sup> GR Rajalakshmi

<sup>1</sup> Assistant Professor, Department of Commerce, PSGR Krishnammal College for Women,  
 Peelamedu, Coimbatore, Tamil Nadu, India

<sup>2</sup> Ph.D Research Scholar, Department of Commerce, PSGR Krishnammal College for Women,  
 Peelamedu, Tamil Nadu, India

### Abstract

Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and the dynamic sector of the Indian economy over the last six decades. MSMEs not only play a crucial role in providing large employment opportunities at comparatively lower capital cost than large industries but also help in industrialization of rural and backward areas, thereby, reducing regional imbalances, assuring more equitable distribution of national income and wealth. As per the quick estimates of fourth All-India Census of MSMEs, the number of enterprises is estimated to be about 26 million and these provide employment to an estimated 60 million persons. Of the 26 million MSMEs, only 1.5 million are in the registered segment while the remaining 24.5 million (94%) are in the unregistered segment.

The Indian economy is expected to grow by over 8 per cent per annum until 2020 and can become the second largest in the world, ahead of the United States, by 2050, and the third largest after China and the United States by 2032. In this context it is very important to examine the role of MSMEs for economic growth of India.

**Keywords:** Micro, Small and Medium Enterprises, Economic Growth & India

### Introduction

As per the Report of the Working Group on Micro, Small and Medium Enterprises (MSMEs) Growth for 12th Five Year Plan (2012-2017), the sector accounts 45% of the manufacturing output and 40 percent of total exports of the country. The sector provides employment to about 69 million persons through 26 million enterprises throughout the country. Over 6000 products ranging from traditional to high-tech items are being manufactured by the MSMEs in the country. The labour to capital ratio in MSMEs and the overall growth in the sector is much higher than in the large industries. The geographic distribution of the MSMEs is also more even. Thus, MSMEs are essential for the national objectives of growth with equity and inclusion.

### Concept of MSME’S

Definition of micro and small-scale enterprises in India has changed over the years. Micro small and medium enterprises as per MSME Act 2006 are defined based on their investment in plant and machinery (for manufacturing enterprises) and on equipment for enterprises providing or rendering services. The defined limit on investment for micro, small and medium enterprises is as follows.

Enterprises	Manufacturing Sector	Service Sector
Micro Enterprises	Does not exceed twenty five lakh rupees	Does not exceed ten lakh rupees:
Small Enterprises	More than twenty five lakh rupees but does not exceed five crore rupees	More than ten lakh rupees but does not exceed two crore rupees

Medium Enterprises	More than five crore rupees but does not exceed ten crore rupees	More than two crore rupees but does not exceed five crore rupees
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**Source:** Ministry of Micro, Small and Medium enterprises

The State-wise distribution of MSMEs show that more than 55 percent of these enterprises are in 6 States such as Uttar Pradesh, Maharashtra, Tamil Nadu, West Bengal, Andhra Pradesh and Karnataka. Further, about 7 percent of MSMEs are owned by women and more than 94 percent of the MSMEs are proprietorships or partnerships.

### Objectives of the study

1. To know the policy support and opportunities for MSMEs in India
2. To examine the performance and contribution of MSMEs in India
3. To find out the problems facing MSME’s in Indian economy.

**1. Policies and Initiatives for Growth of the Sector:** The Indian government realizes the crucial role played by MSMEs in the economic and social development of the country. The government, over the years, has taken various measures to support and ensure growth and development of Indian MSMEs. Some of these measures have been briefly discussed below: Industrial Policy Resolution 1990: It raised the investment ceiling in plant and machinery for SSIs. It created central investment subsidy for this sector in rural and backward area. Also, assistance was granted to woman entrepreneurs for widening the entrepreneurial base. Small Industries Development Bank of India was established to ensure adequate



## **IMPACT OF DEMONETIZATION TO MSME SECTOR**

**G.R.RAJALAKSHMI**

Ph.D Research Scholar, Department of Commerce,  
PSGR Krishnammal college for women, Peelamedu, Coimbatore

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### **ABSTRACT**

Demonetisation: 'Cashless economy'

Demonetization marked a paradigm shift in digital payments and has brought substantial change in the entire economic environment, drawing various opportunities for the industry and especially for MSMEs towards a visionary leap for faster and stable growth. "It is heartening to see this marked shift to cheque or electronic payments, especially in the traditional, cash-intensive sectors such as textiles, agricultural products, electrical equipment, steel, consumer durables and automobiles. Given that these are the core sectors of the economy, a move to 'less-cash' transactions will eventually transform business models in the MSME sector. This article proposed in a way to explore the impact of demonetization to MSME sector and measures taken by the Government in the backdrop of demonetization.

**Keywords:** Demonitazion, impact on MSME, Measures

### **INTRODUCTION**

MSMEs are nurseries for entrepreneurship that makes significant contribution to the GDP, manufacturing output, exports and employment. Moreover, growth of MSMEs is imperative for socio-economic equity and inclusion. Labour reforms, skill development and timely financial assistance are generally advocated for the growth of the sector. However, due to factors like poor financials, lack of experience and collateral, MSMEs are regarded as high risk, which results in their inability to get adequate and timely financial assistance.

Demonetization marked a paradigm shift in digital payments and has brought substantial change in the entire economic environment, drawing various opportunities for the industry and especially for MSMEs towards a visionary leap for faster and stable growth.

### **STATISTICAL DATA**

"It is heartening to see this marked shift to cheque or electronic payments, especially in the traditional, cash-intensive sectors such as textiles, agricultural products, electrical equipment, steel, consumer durables and automobiles. Given that these are the core sectors of

**AN EMPIRICAL STUDY ON FUNCTIONAL PROBLEMS FACED BY RURAL MICRO, SMALL AND MEDIUM ENTERPRISES WITH REFERENCE TO MANUFACTURING SECTOR IN COIMBATORE DISTRICT**

**\*G.R.Rajalakshmi**

\*\*Research Scholar, Department of Commerce, PSGR Krishnammal College for Women, Coimbatore

**Abstract**

*Rural entrepreneurship is an emerging field in the area of entrepreneurship. The growth and development of rural entrepreneurship facilitate self employment, results in wider dispersal of economic and industrial activities and helps in the maximum utilization of locally available raw materials and labour. It is one of the essential factors for rural economic development. The MSME sector, being one of the prominent sectors of the economy, contributes significantly to the country's industrial production, exports, and employment. It also plays an important role in socioeconomic development of the country by supporting industrialization in rural and backward areas with a lower capital base. In the light of MSMEs significance in growth and development, this sector has been facing a lot of problem and challenges in the recent scenario. The Major problems in the MSME unit are finance problems, Raw material problems, labour problems, marketing problems and technology problems. Hence this paper has proposed to identify the various problems faced by MSME manufacturing enterprises in their functional areas to the growth of the business which has its existence in rural areas of Coimbatore District.*

**Keywords:** Rural Entrepreneurship, MSME, Problems faced by MSME

**Introduction**

Entrepreneurship is one of the activities which can resolve many major challenges such as unemployment, low income and lack of economic diversity in rural areas (Faraji et al., 2011). Friedman (1987) and Mackenzie (1992) stated that, one of the primary measures to boost economic development and well-being in rural areas is by enhancing rural entrepreneurship. Rural entrepreneurship should not only set up enterprises in rural areas but should also be using rural produce as raw material and employing rural people in their production processes. Rural entrepreneurship is, in essence, that entrepreneurship which ensures value addition to rural resources in rural areas engaging largely rural human resources. Choudhary K. (2011), Kalpana P. Nandanwar (2011). A rural entrepreneur is someone who is prepared to stay in the rural area and contribute to the creation of local wealth (Nandanwar, 2011). There is a growing need for rural entrepreneurs because industrial units undertaken by rural entrepreneurs are providing much employment to men than machines (Saxena, 2012).

The micro, small and medium enterprises play an important role in the regional economy. The speedy development of industries in the backward areas can be achieved by the rapid promotion of MSMEs. The MSMEs have been recognized as an effective instrument in the development of backward and rural areas. Apart from economic aspects, the social role of this sector is quite significant for achieving objectives such as removal of poverty, attainment of self sufficiency, reduction in disparities in income, wealth and consumption standards and regional imbalances. As per fourth All India census of MSME 2006-2007, the total number of registered working enterprises is 15.64 lakhs located in rural areas. Of the total working enterprises 15.64 lakhs, proportion of micro, small and medium enterprises were 94.94%, 4.89% and 0.17%, respectively. MSME Development Act 2006 which recognized the concept of manufacturing enterprises.

**Table 1: The Investment limit in plant and machinery and in equipment For manufacturing enterprises**

Enterprises	Investment in Plant and Machinery
Micro Enterprises	Does not exceed Twenty Five Lakh rupees
Small Enterprises	More than Twenty Five Lakh rupees but does not exceed Five Crore rupees
Medium Enterprises	More than Five Crore rupees but does not exceed Ten Crore rupees

**Source: MSME Annual Report**

# Innovation in Waste Management: A Study on Challenges faced by MSMEs in implementing Lean Manufacturing Techniques

<sup>1</sup>Dr. D.Vijayalakshmi & <sup>2</sup>G.R.Rajalakshmi

<sup>1</sup>Assistant Professor Department of Commerce, PSGR Krishnammal College for women peelamedu, Coimbatore (India)

<sup>2</sup>Research Scholar Department of Commerce, PSGR Krishnammal College for women peelamedu, Coimbatore (India)

## ARTICLE DETAILS

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MSME, Lean, manufacturing, Tools and Techniques, Challenges

## ABSTRACT

Manufacturing sector plays a momentous role in the intensification of an Indian economy. A dynamic change in Globalized business environment has been posing challenges of competitiveness and survival of manufacturing sector. MSME manufacturing units across the world are struggling hard to minimize their costs and maximise their performance. Lean manufacturing techniques offers a proven method to reduce costs, eliminate waste, increase productivity, maintains high level of quality and also higher profit. It requires top-down commitment and bottom-up involvement. It offers tools to identify the different types of wastages and defects within the manufacturing operation and provide remedial steps to eliminate them. Hence, the study is proposed to understand the role and importance of lean manufacturing tools and techniques and the challenges faced by MSMEs in implementation of Lean manufacturing.

## 1. Introduction

### *“Doing the same things, but differently”*

According to the World Bank report of 2016, MSMEs contribute about 45 per cent of employment all across the globe and 33 per cent of national income in growing economies. In India, MSMEs contribute about 8 per cent of the country's GDP and they have a potential of making to 50 per cent (Economics Times report, December 2016). Nevertheless, Manufacturing operations are continually striving to increase productivity and output of their operations. Their goal is to satisfy the customer with the exact product, quality, quantity, and price in the shortest amount of time. Lean manufacturing is more than a cost reduction program or a problem solving approach (Tapping<sup>1</sup>, 2002). Under the National Manufacturing Competitiveness Programme (NMCP), a component 'Lean Manufacturing Competitiveness Scheme' (LMCS) has been conceptualized, and the main objective of the scheme is to assist Indian MSMEs to reduce their manufacturing costs through proper personnel management, better space utilization, scientific inventory management, improved process flows, reduced engineering time etc., with the application of Lean Manufacturing techniques.

## 2. Statement of the problem

Besides the MSMEs contribution to economic growth, Indian MSME's are facing tremendous challenges. Imports, especially from china and MNCs are becoming the major threats to Indian industries. Globalization and new technologies have a major impact on the manufacturing industry. In the era of stiff competition and customer expectations, MSME manufacturing units across the world are struggling hard to minimize their costs and maximise their performance. Lean Manufacturing have not received due attention in MSME's globally (Gunasekaran, A.,L. Forker and B.Kobu<sup>2</sup>, 2000). Indian government has also started focusing on MSMEs through

cluster formation to implement Lean but many MSMEs have failed to implement Lean successfully. In order to implement Lean successfully, it is necessary to identify the various challenges faced by them, while implementing Lean tools and techniques (Ravikumar, Marimuthu, Parthiban, & Zubar<sup>3</sup>, 2014). Hence, the study has proposed to identify the role and importance of lean manufacturing tools and techniques, challenges in implementation of lean in Indian MSMEs and attempts have been made to provide realistic solutions to overcome major barriers identified, for the successful implementation of Lean techniques.

## 3. Review of Literature

Manufacturers in the Indian industry have always faced discriminating challenges such as increasing customer's expectation, demand variation, and competition in markets (Khadse Priti, Sarode Avinash and Wasu Renu<sup>4</sup>, 2013). Sujatha and Prahlada Rao<sup>5</sup> (2013) have aimed to find out the adoption of lean manufacturing tools and techniques in the silk production industry in Andhra pradesh. A sample of 350 manufacturers has been identified randomly and questionnaires have been distributed to them using postal mail. The result of the study has revealed that the companies are found to have a good understanding of lean manufacturing, and since its implementation, they have gained many benefits such as reduced cost and improved productivity. Harsimran Singh Sodhi, Bikram Jit Singh and Doordarshi Singh<sup>6</sup> (2016) have observed that Lean Six Sigma is very rarely used technique in Indian industrial environment. Therefore, there is a huge scope of implementing LSS technique in Indian SMEs and to notice the subsequent changes. Saumyaranjan Sahoo and Sudhir Yadav<sup>7</sup> (2018) have examined the extent to which lean management practices are adopted by small- and medium-sized manufacturing organizations in India and their impact on firm's operational performance (OP). They have identified the barriers and challenges faced by Indian SMEs that are striving to succeed with improvement efforts based on