CHAPTER 1

INTRODUCTION

1.1 Preamble

The globalization has forced organizations across the world to adopt newer technologies and competitive strategies to produce the products or services with highest quality at competitive price. In the race of being competitive the economies of the world are putting tremendous efforts on each sector for being effective. Indian economy is also on the way of improving the competitiveness. As per the record of the World Economic Forum (WEF), the competitiveness index of India has got a higher jump in the year 2015-2016 after experiencing backward movements for consequently four years [1]. The efforts put by the government of India like ‘Make in India’ have contributed a lot in bringing the rank up. According to Auto Component Manufacturing Association (ACMA) of India, auto manufacturing organizations sector’s turnover is $ 66 Billion for the year 2015-16 and expected to be $ 115 Billion up to the year 2020-21 [2]. Auto manufacturing industries of India has share of $ 85 Billion of total industry. Recently India is being considered as a vibrant economy for doing business with following characteristics.

• Largest economy - 1.2 Billion People
• 4th largest Gross Domestic Product (GDP)
• Fastest growing economy with average GDP 8.4% over 5 years
• 3rd largest investor base in world
• Robust legal and banking infrastructure
• Youth driven economy
• Suburbanization and rural to urban migration is expected to be 140 million by 2020 and 700 million by 2050
• 2nd largest pool of certified professional
• Highest number of qualified engineers

The Indian manufacturing organizations are adopting number of improvement practices like Total Quality Management (TQM), Business Process Re Engineering (BPR), Supply Chain Management (SCM), Lean
Manufacturing Practices (LMPs) and Six Sigma to be competitive [3]. Among them Lean Manufacturing Practices (LMPs) follow the principles of identifying values and elimination of Non Value adding Activities (NVAs). They help reduce cost of production and improve quality by improving efficiency of equipment, modifying layout, adopting principles of zero defects, reducing change over time and stopping production of defective items. An organization becomes eligible to attract the customers with the lowest price after implementing LMPs.

The interest and inclination of manufacturing giants of the world considering India as a manufacturing hub due to attractive government policies and labour market, may help to expand the manufacturing facilities in India and create a job potential in the field. At the same time Indian manufacturing organizations have to compete with other developed economies.

LMPs find their origin in auto manufacturing organizations and have inherent characteristics to improve the manufacturing functions. Many Indian manufacturing industries are practising LMPs since long. All of them may not be improving significantly, while some of them have reported certain level of improvements too. It is learnt from the experimentations reported in literature study, that the Lean Principles (LPs) can be adopted in different business functions of variety of manufacturing industries like process, job shop or batch type. A good action plan and habit of practicing specific practices contributes to achieve the goal of lean production; the success stories of implementing LMPs in manufacturing organizations are published widely in literature.

1.2 Scope of Work

The main objectives of this research work were to identify the relationships between LMPs, Manufacturing Performance Measures (MPMs) and Competitive Dimensions (CDs) and investigate the implementation aspects for LMPs. For the purpose it was required to recognize the present competitiveness scenario, different improvement techniques being practiced in manufacturing industries, manufacturing principles followed, the barriers to implement such initiatives, supportive practices, improvement achieved in
MPMs and CDs due to improvement practices, span and extent of applications of these initiatives etc.

Identification of particular LMP(s) which is focusing particular MPM(s) and CD(s) can be useful to accelerate and enhance the performance. The knowledge about the status of competitiveness and manufacturing performance can help in adopting specific LMP(s). Hence to achieve the objectives of the research work following tasks are planned to be performed:

➢ To study
   • Economy of manufacturing sector
   • Different aspects of competitiveness index of Indian economy
   • Contribution of manufacturing sector for improving competitiveness of national economy
   • Various methods for improving manufacturing performance
   • Present scenario of LMPs in Indian manufacturing organizations

➢ To conduct survey
   • For knowing the potential of LPs in improving organizational performance
   • Of Indian manufacturing organizations to identify the relationship between LMPs, MPMs and CDs
   • Of experts’ opinion to add knowledge of present scenario of Indian manufacturing industries for adapting LMPs

➢ To suggest set of guidelines
   • To select LMP(s) by analysing the motivational factors to implement them
   • To implement the LMP(s) considering the requirements, affecting MPMs, CDs, immediate outcomes and factors responsible as barriers.

1.3 Approach for the Present Research

To achieve the objectives of the research, it was decided to get the first hand information from the Indian manufacturing sector. So survey research method with questionnaire was found quite suitable for the purpose.

The survey was executed in three parts- pilot survey, survey of manufacturing organizations and survey for experts’ opinion. Separate
questionnaire forms were designed for all parts. The design of questionnaire for manufacturing organization took significant efforts and resources to include the questions related to all LMPs and their associated parameters. The sample industries were contacted and upon their consent, they were sent an invitation letter to participate in the survey by conveying the objectives of project, along with questionnaire.

The feedbacks and experiences from pilot survey guided to add e-links in the surveys to provide convenience to respondents to reply at their ease. The feedbacks were analysed using statistics and hypotheses testing. The proposed relationships were validated using the outcome of all surveys.

1.4 Outline of the Thesis

Different aspects and stages of the research work reported are in the chapters, the details of which are as under.

Chapter 1 highlights the preamble for the work, flow of research and structure of the thesis.

Chapter 2 presents the review of literature surveyed to understand about strategic importance of manufacturing, competitiveness, Indian manufacturing industries, various manufacturing improvement practices, LPs and LMPs, application of lean in manufacturing and other functions of the organizations, and critical aspects of implementation of LMPs. It also presents the critical observations from literature, proposes the objectives and scope of the work.

Chapter 3 present the review of research methods and details of different questionnaire survey methods. The pilot study analysis is presented in this chapter. Based on learning from pilot survey, design and structure of the survey for manufacturing industries and survey for experts' opinion are designed and presented in this chapter. A cyclic frame work depicting the relations between LMPs, CDs and MPMs is presented for validation subsequently. It also presents mapping of research objectives with preliminary analysis and tests methods.

Chapter 4 analyses the responses to questionnaire by manufacturing industries. The descriptive analysis and hypotheses testing are presented briefly. It summarizes the outcome as per sections of questionnaire.
Chapter 5 analyses the opinions of the experts from industries and academics.

Chapter 6 presents the inferences and cross inferences derived from the feedbacks from industries and experts, validation of the proposed cyclic framework, and offers a set of guidelines with support chart to implement LMPs.

Chapter 7 concludes the work by mentioning gains of the study, useful recommendations, future scope for the research and limitation of present research work.

The questionnaires used for pilot survey, main survey and expert's opinion survey are attached as annexure, after list of publication and copyright.