

Continuous Improvements in Small Scale Industries Using Rapid Cycle Improvement Methodology

Prof.Sajidali.M.Hatturkar.

BLDEA'S, V.P.Dr.P.G.H.College of Engineering & Technology,
BIJAPUR, KARNATAKA, INDIA.

Abstract.

The purpose of this paper is to show how continuous improvements can be brought about in small scale industries using the 'Rapid Cycle Improvement' methodology. Today's modern, mechanized global world has given rise to a very stiff competition for the small scale industries not only in India, but across the world. New products, new markets, new technologies are constantly emerging to change industrial competitive edge. But these financially weakened SSI's are a step behind in adopting the new technologies & markets. Keeping this in mind, this paper has highlighted about the 'Rapid cycle Improvement' methodology which is cost effective and can be easily applicable to the SSI's.

Keywords. SSI's, Continuous Improvements, Rapid cycle improvement, PDCA/PDSA.

1. Introduction.

There has been a rapid growth in the development of new technologies in the

market. At the same time, the market has become globalised. Due to this the competition in the market has become stiff and it had brought immense pressure on the business entrepreneurs to produce quality products at low costs and continuously improve the performance of their business [1]. The product life cycles are becoming shorter, due to which the time to bring new products in the market is also decreasing. The industries are facing changes at every instant. The competition has changed, the working environment is changing, the technologies are changing, the participants in the market are increasing and new management concepts are continuously emerging. Thus we can say that now we are living in a competitive environment in this fast –moving competitive world.

This paper deals with the SSI's and the necessity of continuous improvements needed in their business. So many techniques like six sigma, TQM, lean manufacturing, Green manufacturing, kaizen technique have come up and are also successively being used

in the mass productions industries. But these techniques have not gained importance in the SSI's due to lack of awareness, lack of managerial skills, and also due to the complexity of the techniques in its application [2,3] and also due to lack of finance availability.

Rapid Cycle improvement methodology is one such technique that helps to remove the obstacle in improving the business of SSI's. This technique is not complex, neither it is expensive nor it is difficult in its application for the SSI's. This technique helps the SSI sector to perform exceedingly well and enable our country to achieve a wide measure of industrial growth and diversification.

This paper deals with three parts.

Firstly, the definition of SSI in India and abroad, and its importance and role in the industrial sector. Secondly, it deals with the various obstacles in SSI's in implementing the quality improvement techniques, and thirdly it explains about the RCI technique and its feasibility in the SSI's.

According to the newly enacted micro, small & medium industries development Act (MSMDA) 2006, which came into effect on Oct 2 2006. – A small enterprise (SSI) can be defined as follows.

“An enterprise that is engaged in the manufacture of goods and its investment is more than 25 lakhs, but does not exceed Rs.5 Crores is called small enterprise”

“An enterprise that is engaged in providing/rendering of services and its investment is more than 10 lakhs but does not exceed 2 crores is a small enterprise” [4].

Defining the SME sector & particularly small business is fairly difficult as there are differences in what is appropriate to describe as “small” in different countries.

The new European Union (EU) definition for a small (SSI) unit is as follows [5].

“A small scale industry is the one is which –

- Maximum. number. of employees is 49
- “Annual turnover is 10 million Euros
- “Annual balance sheet total is 5 million Euros.”

2. Role & Importance of SSI's in India.

The SSI's sector not only play a vital role, but also occupy an important & strategic place in the economic growth and

equitable development in all the countries. They are driving force behind a large number of innovations & contribute the growth of the national economy through employment creation, investments and exports [4]. Their contribution to poverty reduction & wider distribution of wealth in developing economies cannot be under rated.

It is estimated that this sector has been contributing about 40% of the gross value of output produced in the manufacturing sector and the generation of employment by the small scale sector is more than five times to that of the large scale sector. In spite of the stiff competition from the large scale sector, their narrow profit margins, they play an important role in the growth process of Indian economy [3, 4]. Because of the narrow profit margins and low capital, the SSI's do not opt to innovate products and processes and resort to tactics that defers their growth in the long run. The small scale sector has grown rapidly over the years. The number of small scale units has increased from an estimated 0.87 million units in the year 1980-81 to over 3 million in the year 2000 [10]. When the performance of this sector is viewed against the growth in the manufacturing and the industry sector as a whole, it instills confidence in the resilience of the small scale sector [10]

But because of globalization, high competition, high risk low financial supports, the SSI's in India are struggling. They are not in a position to use latest techniques of production like six sigma, TQM, Kaizen, Lean manufacturing, Green manufacturing, etc.[6]. So there is a need to use a method or a technique that is best suited for these small scale industries. One such technique is the "Rapid Cycle Improvement" Methodology Technique that is explained in the part four of the paper.

2.1 Different obstacles in implementing Business improvement techniques.

There are a large number of problems SSI's are facing in implementing the Quality or business performance improvement techniques. They are –

- i. Poor financial conditions.
- ii. Low R&D levels
- iii. Isolation from technology hubs
- iv. Poor adaptability to changing trade trends
- v. Desire to avoid risk
- vi. Non-availability of technically trained human resources
- vii. Emphasis on production and not on production costs [6]
- viii. Few employees, so less time for planning or improvement [4]
- ix. Inadequate credit assistance
- x. Competition from Large Scale Industries.

3. “Rapid Cycle Improvement” Methodology.

Traditionally quality improvement efforts seem to be driven by the steps in the process rather than by the improvements themselves. This can delay progress and distract us from what we really want to accomplish. One way to accelerate the process and keep a focus on targeted improvements is through rapid cycle improvement methodology [7].

Rapid Cycle Improvement is not eliminating the traditional quality improvement tools but using them to expedite change and results. Rapid cycle is the application of the recurring sequence in a

brief period of time to solve a problem facing a team or organization in order to achieve break through or continuous improvement [8].

The rapid cycle process in fig-1 is defined as shown below [8,9]-

- Realization of a problem or issue that needs to be corrected.
- Acting to start a change to the problem by using QI tools.
- Planning for success by developing a clear Goal.
- Involving key constituents in the process.
- Developing the change team and establishing the rapid cycle time line.

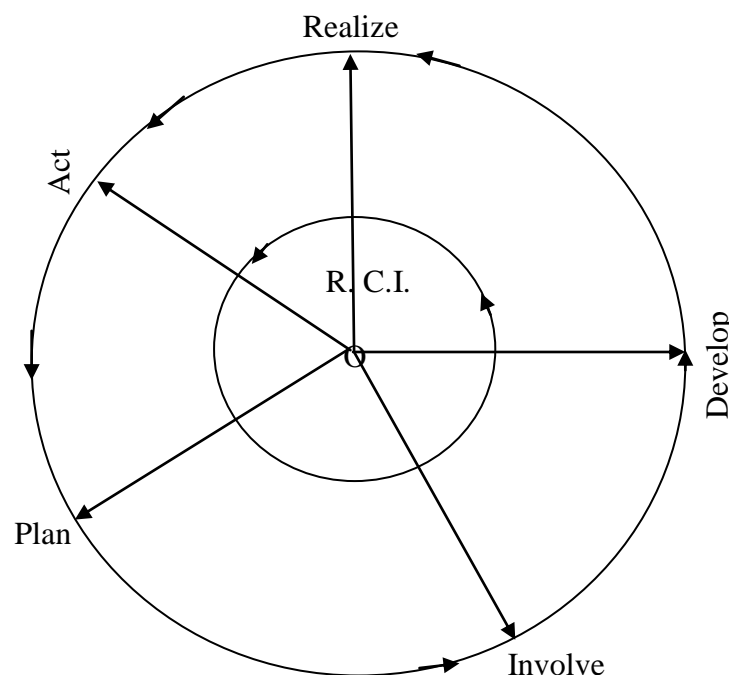


Fig.1: Rapid Cycle Process

Once you realize what the issue is, then decide what you want to accomplish by stating the clear goal. For this, first consider what guidelines we have established and what our current performance is. Collect all the relevant data's and first determine whether we are meeting the accepted standards or not: A clear look at this will help to reduce the failure rates, rather than just improving performance.

Then it is necessary to include all the key constituents involved in the process that changes can lead to improvement. These can include clarifying procedures, revising protocols, educating staff or using a new method. [7]. Finally develop a Change Team.

3.1 PDCA Cycle. A PDCA/PDSA is one such rapid cycle improvement method. It helps to execute and test the change. (Ref.fig-2)

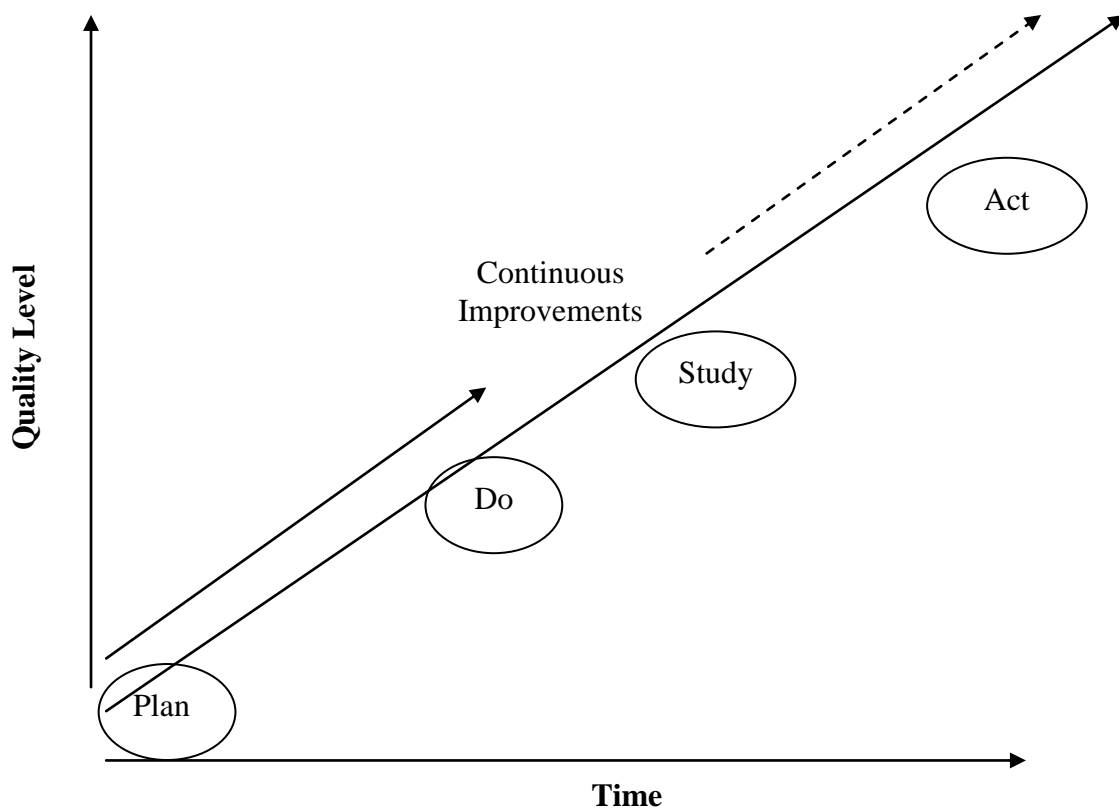


Fig.2: PDCA / PDSA Cycle

The PDCA cycle consists of 4 steps- 1) Plan
2) Do 3) check 4) Act.

- To plan is to know the aim of this improvement project
- To do is to develop an improvement plan
- To check/study is to check the results of the pilot test with the predictions made earlier

- To act is to implement the test on a large scale if found 'OK', and to re-plan if found 'Not ok',

A Flow chart of PDCA is shown in fig.3.

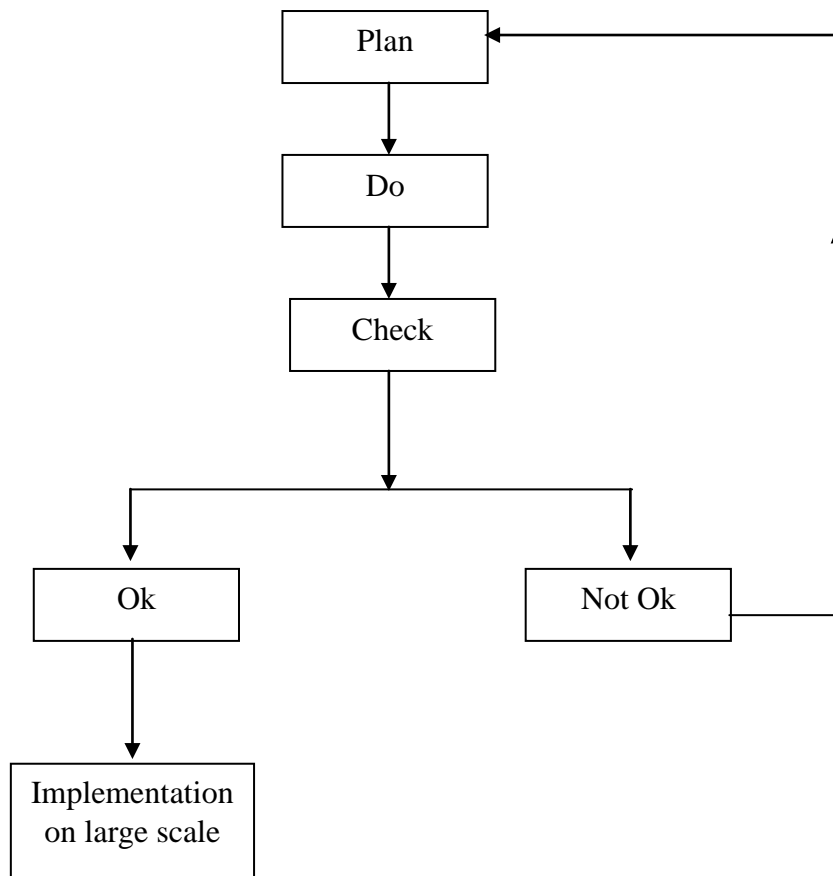


Fig.3: PDCA Cycle Flow Chart

4. Conclusion.

The small scale industrial sector has grown rapidly over the years and it plays a vital role in the economic growth of not only India, but many other developing nations of the world. At the same time Globalization and the entry of Multi National Companies into the markets has forced the SSI's to face a stiff competition for their survivals. It has become compulsory for them to produce quality products and sell them at lower prices to the customers. For this purpose, continuous improvements in products, processes, quality have become a daily task now for them. The rapid cycle improvement methodology being simple can be a best tool for the Small Scale Industrial sector, which is also not affected by the financial condition of the SSI's. The rapid cycle PDCA is an example of rapid cycle Improvement method and is a fundamental concept of continuous improvement processes embedded in the organization's culture.

References.

[1] Murlidharan Nebhwani, Hussain Bux Marri, & Riyaz Ahmed Sohag, "An Assessment of entrepreneur's

business strategies towards SME is success". Mehran University Research Journal of Engineering & Technology, Volume 30.

- [2] Chinmoy Kumar, "Role & Importance of SSI in India", Business.
- [3] Arkupal Acharya, "Problems faced by SSI in India", Business.
- [4] Science & Technology for small & medium scale enterprises for Eleventh Five year plan [2007-12].
- [5] Asghar Afshar Jahanshahi, Khalid Nasaver, Sayed Md Sadiq Khaksar, Amin Reza Kamalian, "The relations between Government Policy and the Growth of entrepreneurship in MSME's of India", Journal of Technology Management and Innovation.
- [6] Abhijit Chakraborty, Sudip Kumar Deb, Ranjan Bhattacharya, "Internal obstacles to quality for small scale enterprises". International Journal of Exclusive Management & Research.
- [7] Pamel Brown & Debora hare [Arkanas Foundation for Medical Care], "RCI-Controlling change".
- [8] Grace L.Duffy & John W.Moran, "Rapid Cycle/PDCA".

- [9] M Sukovic, D.Pavletie, “Quality Improvement Methodology”, **Journal of achievements in materials & manufacturing engineering.**