

# A Study of Continuous Improvement Practices in North Karnataka Manufacturing SMEs: An Empirical Evaluation

**Dr. Mahantesh Halagatti**

Associate Professor,

School of Management Studies & Research

KLE Technological University, Hubballi

mahanteshhalgatti@gmail.com

+91- 9845845266

**Abstract :**

Small and Medium enterprises are the major contributors to the GDP of an economy. These firms contribute directly or indirectly by catering to large industries. To be competitive these enterprises need to continuously incorporate quality at every stage of their process. These quality processes are to be continuously reviewed on regular basis. This can be achieved by following Kaizen the continuous improvement. This paper tries to identify whether different types of enterprises which are categorized as small, medium and large follow similar continuous improvement programs, and an attempt has been made to check how these enterprises borne the costs which are occurring while implementation of Kaizen programs.

**Keywords:** Kaizen, SME, Continuous improvement, Cost, Profit, Quality

**1.Purpose:**

- To understand the level of Continuous improvements in SME.
- To check whether different types of enterprises have similar approach towards continuous improvement programs.
- To understand how the enterprises borne the cost incurred while implementing quality improvement programs.

**2.Introduction:**

Small and Medium enterprises (SMEs) play a crucial role in the sustainable growth and Socioeconomic transformation of both emerging and developed economies. SMEs need to have consistent and continuous effort to have efficiency, innovativeness and quality focus in the processes. SMEs have distinct advantage over large firms in terms of flexibility and cost effectiveness by controlling quality in the products and processes. The prime weapon in this performance oriented market for increasing the customer base and capturing market share is 'Quality'. For business strategy development Quality is becoming a significant factor. Continuous improvement programs help an enterprise to compete effectively in domestic and international markets. For implementation of these practices the enterprises have to keep aside certain financial resources and these costs cannot be passed on to the customers due to competition from other similar enterprises.

**3. Literature Review :**

The objective of literature review is to bring out various issues, problems, observations, comments and models developed by various practitioners, researchers and authors in respect of Kaizen practices in industries and its influence on the cost of the company. Continuous improvement involves efforts to identify chronic and sporadic problems and to make refinements to the process. The Japanese word for this is "kaizen" and is a most important concept of TQM in Japanese management. The continuous improvement of the process leads to customer satisfaction. The defect rate also lowers gradually due to continuous improvement. The Deming cycle or the PDCA cycle is a model for process analysis and serves as a symbol for continuous improvement. Lewis (1999) investigated that if continuous

improvement culture is imbibed with proper measurement it leads to quality improvement. Kuhn (2000) specified that continuous improvement is of a great concern as it sustains and guarantees quality of products and services. Cross functional teams play a vital role for continuous improvement. These teams identify and solve problems and are effective in continual improvement (Dale, 1999; Mann, 1992). Benchmarking and regular audit of a business is essential for continuous improvement. These provide an adequate input for TQM implementation. These identify improvement areas and the firm can compare itself with previous performance, planned objectives, its competitors and the best practices in the same industry (Dale, 1999; Rummler and Brache, 1995). Thus, based on empirical evidences continuous improvement is a major driving force behind any quality implementation effort.

**4. Research Methodology:**

The objective of this study is to investigate the extent of implementation of Kaizen practices while controlling quality in North Karnataka Engineering components manufacturing SME. To that end a survey questionnaire was developed. A total of 12 items were checked. A 5-point likert scale was employed with a score of 5= Strongly Agree, 4=Agree, 3=Neutral, 2= Disagree and 1= Strongly Disagree.

Having validated the questionnaire through expert validation and pilot testing, a sample of 150 companies of small and medium enterprises engaged in manufacturing of engineering components in North Karnataka region, were selected from the directory of District Industrial centers (DIC), Belgaum Chamber of Commerce and Industries (BCCI) and North Karnataka Small Scale Industrial Association (NKSSIA).

The full survey was carried out through personal visits to the SME. The personal visit method was chosen to increase the response rate and to get correct responses. The responses were analyzed using SPSS version 20 statistical package.

**5.Survey Results**

**A.General profile of the firms**

**1.1classification of respondents by the type of company**

II. Industry type: (Manufacturing, Processing)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SMALL	148	98.7	98.7	98.7
	MEDIUM	2	1.3	1.3	100.0
	Total	150	100.0	100.0	

Using SPSS reliability analysis procedure, an internal consistency analysis was performed separately for the items of each critical factor. Cronbranch's Alpha is commonly used for this purpose as shown in Table.

Reliability Statistics		
Classification of Enterprises (1-Small,2-Medium)	Cronbach's Alpha	N of Items
Small Enterprise	.937	49
Medium Enterprise	.938	49

Cronbach's alpha has been run for to check their reliability GroupWise. The value of alpha range between 0 and 1 with higher values indicating higher reliability. The value of each variable, as measured by each statement on a scale of 1 to 5, is computed using the reliability analysis procedure. The above table displays some of the results obtained. The Small Enterprise alpha for the all items is 0.937and Medium Enterprise alpha for the all items is 0.938 which is very high and indicates strong internal consistency among the given items. These results are therefore acceptable and are reliable.

**C. overall degree of agreement of respondents on use of Kaizen (continual improvement) techniques in SMEs**

**3.1 The level of practice of continual improvement programs**

The PRINCIPAL COMPONENT MATRIX gives the component matrix which is rotated using the VARIMAX rotation technique which gives the ROTATED COMPONENT MATRIX. Rotation of factors helps in the better interpretation of factors. Since the first factor in the ROTATED COMPONENT MATRIX is heavily loaded with item Regular Audit of business is done. Factor loading Values of 0.816. This is the highest for the first column. The first factor represents conducting Regular Audit of Business. And thus the subsequent factors can be interpreted based on their factor loading values. The final list of 3 factors which collectively account for 80 % of the variance in the data is shown below.

S.NO	Factor name	Factor loading
1	Regular Audit of business is done	0.816
2	Implementing continuous improvement	0.844
3	Costs of quality are to be borne by profit margin	0.850

**D. Test of significance on the difference of means**

It was found that some statistical tests would be helpful to justify further the level of KAIZEN practices among the SMEs. Significance tests were carried out to investigate whether there are any significant differences between the small and medium sized firms on the extent of quality practices and to check whether the costs were borne by profit margin. In order to conduct the tests, the following hypothesis was set up.

H0: There is no significant association between type of enterprise and their opinions on to achieve continuous improvement the costs related to quality are to be borne by profit margin

			Costs of quality are to be borne by profit margin			Total
			Neutral	Agree	Strongly Agree	
Type of Enterpriser	Small Entr	Count	16	66	19	101
		% within Type of Enterpriser	15.8%	65.3%	18.8%	100.0%
Medium Entr	Count	Count	11	26	12	49
		% within Type of Enterpriser	22.4%	53.1%	24.5%	100.0%
Total	Count	Count	27	92	31	150
		% within Type of Enterpriser	18.0%	61.3%	20.7%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.127a	2	.345
Likelihood Ratio	2.105	2	.349
Linear-by-Linear Association	.007	1	.932
N of Valid Cases	150		

From the above table chi square is not significant (sig. value is 0.345> 0.05), no evidence to reject null hypothesis. It means that there is no significant association between type of enterprise and their opinions on to achieve continuous improvement the costs related to quality are to be borne by profit margin.

**Symmetric Measures**

	Value	Approx. Sig.
Nominal by Nominal	Phi	.119
	Cramer's V	.119
N of Valid Cases	150	.345

The strength of association between type of enterprise and their opinions on to achieve continuous improvement the costs related to quality are to be borne by profit margin is 0.119

Null Hypotheses	Sig. value	Result	Strength of Association
H011: There is no significant association between type of enterprise and their opinions on to achieve continuous improvement the costs	.345	Accepted	.119
Related to quality are to be borne by profit margin			

**6. Discussion**

Having described the survey results, this section attempts to present a broad evaluation of the current status of kaizen tool of TQM amongst the north Karnataka SMEs. The findings are emphasized on the construct of use of continual improvement practices to achieve overall firm performance.

**7. Conclusions**

This paper has presented the results of a survey conducted on north Karnataka Engineering components manufacturing SMEs, with the prime purpose of investigating the status of Kaizen practices in these companies. It is found that the size and type of enterprise does not have influence on implementation on continuous improvement. All types of firms put efforts for continuous improvements. It is also found that the costs incurred for implementation of quality programs are to be borne by the profit margin of the enterprise.

**8. References**

- Gilbert, G. (1992). Quality Improvement in a Defense Organization. Public Productivity and Management Review, 16(1), 65-75.
- Hyde, A. (1992). The Proverbs of Total Quality Management: Recharting the Path to Quality Improvement in the Public Sector. Public Productivity and Management Review, 16(1), 25-37.
- Martin, L. (1993). "Total Quality Management in the Public Sector," National Productivity Review, 10, 195-213.
- Swiss, J. (1992). Adapting TQM to Government. Public Administration Review, 52, 356-362.
- Tichey, N. (1983). Managing Strategic Change. New York: John Wiley & Sons.
- Hill Stephen, 1991. "Why Quality Circles failed but Total Quality management might succeed." British journal of industrial relations, 29(4), 541-568.
- Ishikawa, K, 1985. What is Total Quality Control? The Japanese way. New Jersey, Prentice-Hall.
- Smith, AK, 1993. Total Quality Management in the Public sector. Quality Progress, June 1993, 45-48.
- Total Quality Management in Small Business, parag Diwan, Vanity Books International, New Delhi
- The Toyota Way, Jeffrey Liker, Tata McGraw Hill, New Delhi