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Six Sigma: Quality Improvement Tool for Organizational Success

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Abstract: Six Sigma is a journey for those who are truly committed to improving the quality and meeting customer needs as well as driving human development to new levels. It is the responsibility of every human resource professional in implementing and sustaining this strategy which will improve the culture in their organization. Six Sigma creates a culture for motivating people to work together to achieve higher levels of efficiency in all aspects. Six Sigma is a vast concept which will be not acquired in a day or in a certain period of time. The human element is finally taking advantage of technological developments by implementing the revolutionary Six Sigma management approach to deliver higher levels of unbelievable quality at lower costs that required competing in a challenging and tough global economy. Thus it can be said that Six Sigma is a road map for success of human resource as well as for the entire organizations. This article focused on a study of steel industry is related to attitudes of employees towards Six Sigma the quality improvement tools in practice in Rourkela Steel Plant (RSP),SAIL as the frame of reference.
Keywords: culture, performance, strategy, sustaining ,quality etc.

Introduction

Six Sigma is a long-term forward thinking concept designed to generate immediate improvements to profit margins. Once employees understand the concept of Six Sigma and how it works then only they will begin to see new ways to buy success. Because through Six Sigma an organization can transfer their organization into a World-class organization.

Earlier days, an organization compared current performance with pt performance not with what might have been but now Six Sigma tears down the structures on the horizon because there is no time to learn by trial and error. We can say the success of Six Sigma is based on people who are implementing as well as they are act as a central pillar of responsibilities for putting various techniques and tools of Six Sigma into work in an organization. As per Dennis Sester, Senior Vice-President of Motorola service, "Six Sigma is not a product you can buy, it is a commitment". The concept of Six Sigma was first developed by Motorola in the year 1980 translating knowledge into opportunities for business growth by emplaning on quality improvement that is directly proportional to financial results. The methodology of Six Sigma mainly eliminated the use of opinions such as 'I think', ' I feel' or ' I believe' as it moves the organization in amore scientific way of decision making which has result of customer satisfaction, quality, growth, competitive advantages and impact on employees etc.

Six Sigma methodology i.e. DMAIC is used to enhance the efficiency of business processes within human resource. DMAIC is an acronym which consist of these basic steps:

D: Define process improvement goals and also identify the problem.
M: Measure key aspects of the current process and also establish metrics to quantify.
A: Analyze the data to verify cause and effect relationship, that means figure out what the metrics tell.
I: Improve the process by crafting a solution based on analysis.
C: Control the process and find ways to sustain improvements.

Six sigma comprises the basic principles and technique used to improve the process performance, decreases variation and maintains consistent quality of each process output, which leads to defect reduction and improvement in profits, product quality and customer satisfication,etc.Six sigma is nothing but it is all about knowledge but it is all about knowledge sharing that means if a company has more than one unit and if one of the units produces better quality than others, then the Six sigma team should visit the higher quality unit and

learn how it is performing better and implement that technique across all other units.Let us understand how theoretical aspects are transformed into real application and how Six Sigma is used to drive down defects and drive up profitability.

Literature Review

Ganguly (2012) found that how aluminum company find the most cost efficient way to improve and utilize its resources through the reduction of defects.

Baswaraj, Rao and Kumar(2015) found that the environment is becoming more and more a key issue for the steel industry. This study summarizes the optimization of Energy consumption in secondary steel manufacturing by Six Sigma(DMAIC) methodology.

Naidu (2011), has dealt with a critical evaluation of the preventive maintenance system in steel industry. For this, the mathematical models have been developed and these models are used to obtain the optimum preventive maintenance frequency for minimizing the down time and maximizing the profits.

Singh Kumar and Ram(2015), have tried to maintain a balance mix of surveys as well as experimental observation to provide a clear concept of a steel tube welding by using DMAIC technology under Six Sigma in order to reduce leakage problem in steel tube welding.

Ahmad (2014), et.al., have examined the use of lean Six Sigma methodology to reduce the gap between the national and international quality standard and various techniques that improves the existing quality.

Need of the study

The present study entitled **"Six Sigma: Quality Improvement Tool for Organizational Success"** attempts to empirically examine the nature and extent to which how Six Sigma programs can be an important quality improvement tool of an organization. The study is limited only to Indian companies. The findings of the study will be useful not only to the sample organization but to similar other organizations that will also be benefited in shaping their quality improvement programmes for enhancing the organizational performance and productivity.

Six Sigma: Quality improvement tool in practice in the Indian Steel Industry

This section deals with identifying the quality improvement practice at the sample organization i.e. Rourkela Steel Plant (RSP).RSP has created a strategy with an entirely different environment for problem-solving. To achieve dramatic financial results, Six Sigma has changed the entire company culture and behavior of all levels of employees. RSP establish a strong link between its objectives, its vision and the activities that takes place throughout the organization. By correlating all the processes into a specific sigma level, Rourkela Steel Plant has helped to chart its course efficiently. Two important lessons to be learnt are:

Lesson 1: Follow Never Ending Process

RSP has recognized that all members of senior management need some training towards Six Sigma and in its potential financial impact. If something does not have a positive impact on customer satisfaction, then their processes should be implemented in a different way.

Lesson 2: Better Capability which is Critical to the Success of the Strategy

RSP has an independent supplier to provide many of the critical components contained in its product and allows more responsibility as a supplier for the design and manufacture of critical components.RSP has increased its savings from Six Sigma and eliminated many supplier-based problems which would create dissatisfied customers.

RSP has identified five actions critical to perpetuating Six Sigma within the organization:

- Maintain the strategy of Six Sigma culture through constant training
- Senior management involvement
- Supplier improvement in Six sigma initiatives.
- Involvement of experienced people who work in Six Sigma projects
- Continued on-site leader strategy .

HR persons contribute to a large extent and are responsible for the success of Six Sigma project in such a way:

1. **Appropriate Selection and Retention-**As human element plays a vital role in success of an organization. So HR manger have to ensure about selection of right people at the right place at a right time.HR mangers have to do competency mapping of existing and potential employees and need to prepare job description that would help the candidate in understanding his role and expectations of the organization. Simultaneously, they should be done proper retention planning by providing training programs.
2. **Managing Careers-** HR managers should guide about various opportunities that help them to map their own career path which will motivate employee to learn continuously.
3. **Enhancing QWL-** Six Sigma also facilitates emerging techniques of QWL in organization such as job enrichment, job rotation, working hours etc. which helps to boost morale, increase motivation, efficiency and involvement of employees in Six Sigma projects.
4. **Managing Change-** Implementation of Six Sigma approach leads to change in the culture and functioning of the organization. Change is incorporated in all the areas ranging from change in structure as well as operational activities. So for this HR managers counsel employees which reduce the uncertainty and anxiety among employees. Also involving employees in implementing change to reduce resistance, increase commitment of employees towards Six Sigma approach.
5. **Continuous training and learning-** As Six Sigma requires huge investment in terms of time and training, so HR mangers should take training seriously and should train employees at all levels at regular intervals about the concept, implementation and benefits of Six Sigma.

RSP has achieved the secret to success by emphasizing on efforts in the process as everything is based on measurable data. By adopting Six Sigma concept, the plant has achieved dramatic improvements in their long term profitability.

Objectives of the Study

- ✓ To study the Six Sigma quality improvement tool in practices in an organization namely Rourkela Steel Plant, SAIL.
- ✓ To analyze the views of employees respondents regarding Six Sigma quality improvement tool in practices.

Methodology

Data Source and Method of Collection

The study has been conducted mainly through questionnaire used as the tool for primary data collection whereas secondary data were collected from records, circulars, leaflets, magazines and journal of Rourkela Steel Plant. The scale consisting of 20 statements were distributed among the respondents and collected back upon being filled up by the respondents.

Sample size and Sampling

For the purpose of present study, the samples are selected from different strata of employees from different department. A total 80 respondents from the sample unit, i.e., Rourkela Steel Plant (RSP) of the Steel Authority of India Limited (SAIL) from have been included in the study. Proper attention has been paid in selection of the sample.

Tools and Techniques Used

The important statistical tools and techniques used in the study are 'Item Analysis' with calculation of t-value.

Analysis

The present study attempts to find out if there is any significant variation in the attitude of employees towards quality improvement practices. To examine the same a null hypothesis was formulated that "there would be no significant difference in the attitude of employees towards quality improvement practices". The validity of this hypothesis has been tested through t-test by comparing employees' attitude towards quality improvement practices.

Table-1: Significant difference in the attitude of employees towards Six Sigma quality improvement practices

Sl. No.	Items/Statements of Six Sigma quality improvement practices	Values of Six Sigma quality improvement practices	t-test	df	Level of significance
01.	Six Sigma approach produces extraordinary results by including economic value.	4.1	Variance = 0.711 t=14.711	df=19 tabulated value=1.729 at 5% level	Significant at 0.05
02.	Six Sigma implies a dynamic improvement through innovation of human resource function.	2.8			
03.	Six Sigma provides a specific method to recreate the process on making improvements in all operations within a process.	1.5			
04.	Six Sigma emphasizes on understanding as well as fulfilling customer needs by providing a statistical analysis tools.	1.7			
05.	Converting the functional activities of HR with Six Sigma is a new touch and a right attempt.	2.5			
06.	Six Sigma is a statistical phenomenon that mainly analyse a process in terms of defects.	3.2			
07.	Six sigma is a quantitative approach for measuring the quality as well as the number of errors per million operations and improving business performance.	1.8			
08.	Six Sigma is a business improvement process that should be deployed in all the functions of business to improve the total business performance.	2.8			
09.	Six Sigma provides method to improve systems in the organization for better performance.	2.4			
10.	Implementing Six Sigma in HR implies exciting improvement through innovative HR practices.	1.8			
11.	Six Sigma is the way through which HR performs better, faster and becomes more cost-effective and for creating value.	1.7			
12.	Six Sigma is the most powerful statistical tool that enables organizations to considerably increase profits by restructuring the operations.	3.1			
13.	Six Sigma is a formal methodology for measuring, analyzing , improving and then controlling process.	3.3			
14.	In Six Sigma, the organization needs	1.7			

	to resolve the distinction by focusing on human resource management as the function for managing human resources.				
15.	Functional deployment of Six Sigma is the first step towards improving the business process.	1.8			
16.	HR experts with their proficiency can contribute to Six Sigma initiatives as the strategic as well as at the tactic level.	1.5			
17.	Six Sigma provides career enhancement prospects to all the employees and motivate them to learn continuously to move up on the ladder of success.	2.4			
18.	Six Sigma incorporates the concept of high quality of work life and organizational culture.	2.5			
19.	Six Sigma is a much focused strategy that helps to generate significant value for the organization.	1.8			
20.	Six Sigma promotes team culture and a team can work efficiently only when there is a proper communication management in the organization.	2.4			

From above analysis we conclude that there is a significant difference in the attitude of employees towards quality improvement practices as the calculated value t is 14.711 which is greater than the tabulated value of 1.729 (df=19) at 5% level of significance. Therefore, the hypothesis is rejected leading to the conclusion that there is a significant difference in the attitude of employees towards quality improvement practices in Rourkela Steel Plant.

When compared organization wise, the views of different levels of employee in different department differ in their views on Six Sigma. A quick comparison of such practice at RSP and SAIL has been given in Table 2 which makes an effort to analyze the views of management respondents regarding quality improvement practice.

Table-2: Six Sigma in practice RSP and SAIL:A comparison

Parameters	RSP	SAIL
Six Sigma approach produces extraordinary results by including economic value.	Y	Y
Six Sigma implies a dynamic improvement through innovation of human resource function.	Y	Y
Six Sigma provides a specific method to recreate the process on making improvements in all operations within a process.	To a larger extent	Y
Six Sigma emphasizes on understanding as well as fulfilling customer needs by providing a statistical analysis tools.	Y	Y
Converting the functional activities of HR with Six Sigma is a new touch and a right attempt.	Y	Y
Six Sigma is a statistical phenomenon that mainly analyses a process in terms of defects.	Y	Y
Six sigma is a quantitative approach for measuring the quality as well as the number of errors per million operations and improving business performance.	Y	Y

Six Sigma is a business improvement processes that should be deployed in all the functions of business to improve the total business performance.	To a larger extent	Y
Six Sigma provides methods to improve systems in the organization for better performance.	Y	Y
Implementing Six Sigma in HR implies exciting improvement through innovative HR practices.	Y	Y
Six Sigma is the way through which HR performs better, faster and becomes more cost-effective and for creating value.	Y	Y
Six Sigma is the most powerful statistical tool that enables organizations to considerably increase profits by restructuring the operations.	Y	Y
Six Sigma is a formal methodology for measuring, analyzing , improving and then controlling process.	To a larger extent	To a larger extent
In Six Sigma, the organization needs to resolve the distinction by focusing on human resource management as the function for managing human resources.	Y	Y
Functional deployment of Six Sigma is the first step towards improving the business process.	Y	To a larger extent
HR experts with their proficiency can contribute to Six Sigma initiatives as the strategic as well as at the tactic level.	To a larger extent	Y
Six Sigma provides career enhancement prospects to all the employees and motivate them to learn continuously to move up on the ladder of success.	Y	Y
Six Sigma incorporates the concept of high quality of work life and organizational culture.	Y	Y
Six Sigma is a much focused strategy that helps to generate significant value for the organization.	To a larger extent	Y
Six Sigma promotes team culture and a team can work efficiently only when there is a proper communication management in the organization.	To a larger extent	Y

Findings

It is clear that Six Sigma is a process of asking questions leading to tangible, quantifiable answers that ultimately produce profitable results. Organizations are paying increased attention to their human resource function by implementing Six Sigma which creates an opportunity for enhancement. Six Sigma implies a dynamic improvement through innovation of human resource function. Six Sigma emphasizes on understanding as well as fulfilling customer needs by providing a statistical analysis tools. There is no reason why one cannot adopt Six Sigma because by using Six Sigma methodology one can solve a number of strategic human resource projects such as fulfilling orders, reversing a trend of high turnover, improving recruitment procedure etc.

The present study find out the attitude of employees of different departments must be made effective so as to be acceptable to all the employees.Quality improvement practice have been accepted by the employees which also have got transferred into enhance performance. Therefore, all the company needs to continue with the current practices, besides coping up with the changing needs.

Suggestions and Conclusion

Companies are increasingly adopting quality improvement tools like Six Sigma to enhance their quality of manufacturing. It is not uncommon to see companies using Six Sigma to measure the quality of processes involved in production. In recent times, Six Sigma has increased in popularity so many companies have begun to achieve significant benefits and an increasing number of companies are eager to jump. Six Sigma can be applied to any business of any size during the designing of products and services as well as to all functions of human resource management practices. Although such practice in other competing firms is broader and

extensive compared to that of SAIL or RSP, Six Sigma quality improvement practice done in RSP also indicates its remarkable impression.

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