SIX SIGMA IN FOOD INDUSTRY

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Six Sigma is a business-improvement tool which can be used to eliminate causes of mistakes or defects in business processes by focusing on output that are of critical importance to customer. The net result is improved customer satisfaction, enhanced process performance and improvement in bottom-line through cost savings and increased revenue - it is a business-improvement philosophy and not just a set of rigorous tools to address quality rather tools are simple to attempt and implement.

Companies who adopted six sigma techniques are large in number world wide, some of them are Allied Signal, General Electric, Sony, Honda, Texas Instruments, Bombardier, Canon, Hitachi & Polaroid. In food Industry the companies where Six Sigma Systems introduced are Kal Kan Foods, Kraft General Foods, Miller Brewing Company. , Procter & Gamble, Schreiber Foods, Inc. Wright Brand Foods, Inc. etc.

No industry is more sensitive to the quality of service than the food industry. Food processors and manufacturers are the key components in the industry. Large food manufacturers - those who start creating products with already-processed ingredients - rarely limit themselves to one food group. However, both processors and manufacturers strive for the right blend of diversification and market expansion to ensure future growth. Here comes the importance of Six Sigma. A lot of problems will be faced during the course of action where the lack of knowledge of root cause will lead to wrong decisions. Six Sigma is the estimated part to part variation (eg: variation from one bill entry to another, variation from packet of sugar to another etc.).

Six Sigma originated from Motorola in 1979, from the realization that when the products is manufactured error free, it rarely failed during use by the consumer. Six Sigma would allow a business leader to be proactive, rather than reactive.

Six Sigma is a business process that allows organizations to drastically improve their bottom line by designing & monitoring every day activities in ways that minimize waste. It guides the organization in to make fewer mistakes in everything they do. The breakthrough management strategy creates specific improvement goals in every process within the organization to understand and incorporate technological advances. When a camera is described as "Six Sigma" this does not mean that only 3.4 camera out of a million will be defective. It means that within a single camera, opportunity for the defect of a critical to quality characteristics is only 3.4 defects per million opportunities.

It is a rigorous, data driven, decision making process. The process begins by defining the problems and things critical to quality (CTQ). Measure and analyze the situation to find the root causes of the problems and determine which problems have the most impact. With the causes identified, the situation has to be improved by initiating change. The change must be sustained by integrating it in to the system for long term control.

The methodology behind Six Sigma is designed to develop right solutions for the problems raised in the industrial and commercial processes in a business sector. In the classic children's story "The wizard of Oz, Dorothy's persistent questions about what she sees and where she is going lead her down the yellow brick road and into the Land of Oz.

R - Recognize functional problems that link to operational issues

D - Define the problem, by identifying the response& specification of response. Define the suspected sources of variations also.

M - Measure the process capability

A - Analyze the data to understand the current trends

I - Improve the process quality by identifying the CTQ (Critical to Quality) characteristic

C - Control the variables

S - Standardize the methods and processes to produce world class results

I - Integrate them in the process design cycle

DOE (Design of Experiment Tools)

The DOE tool is known as Shainin DOE techniques since he developed practical tools to help manufacturers solve problems, including problems that had been considered unsolvable.

Dorian Shainin is best known for the "Shainin Techniques" - The American Society for Quality (ASQ) has created the Dorian Shainin Medal to be awarded for the development and application of creative or unique statistical approaches in the solving of problems relative to the quality of product or service.

The DOE tools are

1. Multi-Vari analysis- this tool can be used when we know the manufacturing process that creates the problem

2. Paired Comparison- When the sources of variation can be measured on good and bad products

3. Process parameter search- When the sources of variation cannot be measured on the good and bad products

4. Component Search- When the problem is because of assembly and the assembly can be dis-assembled and re-assembled without damaging the components

5. Concentration Chart- When the problem can come at any location on the product

6. Better Vs Current (B Vs C) – To validate an already established source of variation.

Persistent defects in any product/service is caused by hidden design flaws, inadequate tolerances, inferior processes, poor vendor quality, lack of employee, training, inadequate tool maintenance, employee carelessness, in sufficient inspection feedback and so on. By simply holding materials, processes, products to the specifications, keeping failure rates, customer satisfaction measurement, warranty returns, and other external performance measures below certain preset levels will not be sufficient to achieve consistent performance. Persistent problems are like lingering cancer. In Most of the cases this cancer gets unnoticed and it affects the healthy parts also. Six sigma breakthrough strategies enable us to find out defects and solve problem in an effective manner.

The six sigma Team - Champions, Master Black Belts, Black Belts & Green Belts

The success of six sigma initiative is driven by the following concerns. Does the top management the importance of root cause elimination? Is there any drive to learn & change? Is there any vision for breakthrough achievement?

People will not change unless they are made aware of the present reality. These should be taught in terms of figures. We can't value what we can't measure. As Mikel Harry says

New measurements create new data, and new data (when properly interpreted and analyzed) lead to new knowledge. In turn new knowledge leads to new beliefs, and new beliefs lead to new values. New values when cultivated through success and properly reinforced create passion. And passion is the root of profound change.

A high level comparison of roles

	Champions	Master Black belts	Black belts	Green belts
Qualifications	Senior managers should be thorough with basic statistical tools	Head of the production/service Team. Knowledge of basic statistical tools	Technical degree holder. Thorough understanding of the process and statistical tools	Technical support. Functional heads the areas where problems are to be solved
Training	Champion training	Master Black Belt	Black belt training	Green belt training
Number of employees to be trained	One champion per one site	One Master Black belt for 30 Black Belts	One black belt for 100 employees	One green belt for 20 employees

References

Six sigma for everyone: *George Eckes*
The six sigma way : *Peter S. Pande*
Six sigma for managers :
Greg Brue, Roger A. Formisano
The power of six sigma : *Subir Chowdhary*

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