AN EASY WAY TO DETECT PROBLEM´S ROOT CAUSE: IS – IS NOT ANALYSIS

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Abstract

The paper describes one of the possible ways how to easily detect problem's root cause by using the IS - IS NOT analysis tool. A major benefit of the IS - IS NOT Analysis is its documentation of circumstances leading to the problem as well as those not associated with the problem. IS – IS NOT analysis as an efficient way to narrow the search for a root cause.

Key words

problem root cause, analysis, problem detection, quality improvement

Modern problems solving tools

Modern quality management uses different kind of tools and methods to detect a problem root cause. There are plenty of problem solving tools to use. It is only up the team problem solving team leader to choose what kind of tool to use. Organizations mainly use 7 basic tools of quality management to detect the root cause of a problem, such as Ishikawa Chart (Identifies many possible causes for an effect or problem and sorts ideas into useful categories), Pareto Chart (Shows on a bar graph which factors are more significant), Check list (A structured, prepared form for collecting and analyzing data; a generic tool that can be adapted for a wide variety of purposes). Some organizations prefer to use the so-called new quality management tools: Affinity diagram (organizes a large number of ideas into their natural relationships), Relation Chart (shows cause-and-effect relationships and helps you analyze the natural links between different aspects of a complex situation), Tree diagram (breaks down broad categories into finer and finer levels of detail, helping you move your thinking step by step from generalities to specifics), Matrix Diagram (a complex mathematical technique for analyzing matrices, often replaced in this list by the similar prioritization matrix. One of the most rigorous, careful and time-consuming of decision-making tools).Except that groups of tool there are many other modern techniques to define the problem root cause. FTA (Fault tree analysis) is a method which is usually used in case that

any other problem solving tool has specified complex problem which has to be more deeply solved. FMEA analysis is widely used before the FTA tool implementation.

Except that tools the modern management systems are still looking for the most efficient tools to detect the problems root causes as soon as possible. The traditional tools are sometimes time-consuming and a problem could be solved more easily, more quickly which as a matter of fact would bring financial prosperity to the organizations. That is why such methods as 5Why and Is-Is not analysis have been developed.

How it works

IS - IS NOT analysis works by making you deliberately think about the problem and in particular the boundaries of what it is or is not. It thus helps to create focus in attention and consequently is more likely to lead to the right problem being solved - it is a very common issue that an unclear boundary can lead to wandering off the path and solving unimportant problems [1].

The problem's root cause is often too easy to be detected. It means that the basic product's or system's requirements are not followed. The problem solving teams is looking for the complicated reasons of the problem's appearance. Practical experience though often shows that the problem's root cause is often very easy. That is the main reason to use the IS – IS NOT analysis. This analysis should be carried out before starting with the more complicated root cause analysis, such as 5Why, Ishikawa diagram and so on.

When to us

This analysis is used when a problem is being defined to decide what is in scope and what is not going to be considered at this time. Use it also when you are part of the way through a problem and you are not sure what you are trying to do and what is not so important. You can also use it when planning a solution, to help decide what to include and what to exclude [1].

There are different ways of the analysis interpretation. IS – IS NOT analysis answers the questions what was and what was not made in order to produce the superior product (Fig. 1). It is often used in combination with other quality management tools. It is usually followed by 5Why or Fishbone analysis.

According to the Fig. 1 The root cause of the problem was the incorrect working instruction. It finally caused the product defect. The 5Why analysis should be used in this case to find out the reason why the incorrect instruction was created and approved.

In case that all the requirements are fulfilled it is better to use the Ishikawa analysis in order to carry out the all the possible reasons for the analyzed defect occurrence. It gives the problem solving team the opportunities to inspect all the process main factors and to statistically evaluate each of them.

Requirement	Is	Is not
Working instruction created	x	
Operators trained according to working instruction	x	
Working instruction followed	x	
Working instruction correct		x
Control plan created	x	
Control plan followed	x	
Inspection carried out	x	
Investigated in the FMEA	x	

Fig. 1 *Defining the root cause by basic product's requirements fulfillment analysis using the IS – IS NOT matrix*

The analysis may also document where, what, when and who are associated with the problem (Fig. 2). This is a good technique to pinpoint a problem by exposing when it does and does not occur. The matrix questions help to organize existing knowledge and information about the problem. Using this technique first to identify the problem can help focus additional problem analysis [2]. Both ways of interpretation finally lead to the exact definition of the problem's root cause.

	Is	Is Not	Possible Causes	Further Action
Where	Johnstown Plant	Cedarville Plant	Equipment (pitters), inspection procedures, fruit variety	Interview plant management
What	Pit fragments less than 1/16"	No fragments larger than 1/16"	Improperly maintained pitters, pitter performance data Line speeds	Analyze maintenance logs and production records
When	Production after July 30	Production before July 30	Change in fruit characteristics Pitter performance	Analyze maintenance logs, production records, and fruit characteristics
Who	Smith, Abbot farms	All other farms	Soft fruit	Measure fruit softness

Fig. 2 *Defining place, problem, occurrence time and responsibilities by means of IS – IS NOT matrix* [2]

The characteristics of the IS - IS NOT analysis are as follows [3]:

- Creates a geographically searchable project problem statement
- Describes what the project will and will not address
- Identifies internal and external benchmarking opportunities
- Identifies potential control groups for "better" research methods
- Identifies project replication opportunities
- Identifies balanced metrics
- Protects against scope creep
- Differentiates between core and extended team
- Maintains team focus throughout all phases of DMAIC
- Provides direction from/to external stakeholders.

How to use

The IS - IS NOT analysis is rarely used independently. It is often used in terms of complex failure root cause analysis. The 8D uses the IS - IS NOT exercise to gather facts and do comparative analysis for the purpose of determining where the root cause is not. The 8D process attempts to gather facts to prove where the problem is not. After sufficient facts have been gathered the possible causes are eliminated by proving they are not the root cause.

This is typically not understood when using 8D as most people are trying to find the root cause directly instead of finding out what it is not. That is why some automotive organization even require from their suppliers to use the IS – IS NOT matrix in terms of the 4. step of the 8D technique - root cause analysis. It has become inseparable part of the 8D methodology in different organizations in the world.

The IS – IS NOT analysis is also one of the main simple analysis tool in terms of the third step of the DMAIC (Define – Measure – Analyze – Improve – Control) methodology. It is also used in combination with the other tools and methods of quality management.

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