ESSENTIAL ISSUES IN AUDITING – A PRACTICAL APPROACH

ROOT CAUSE ANALYSIS ("RCA")

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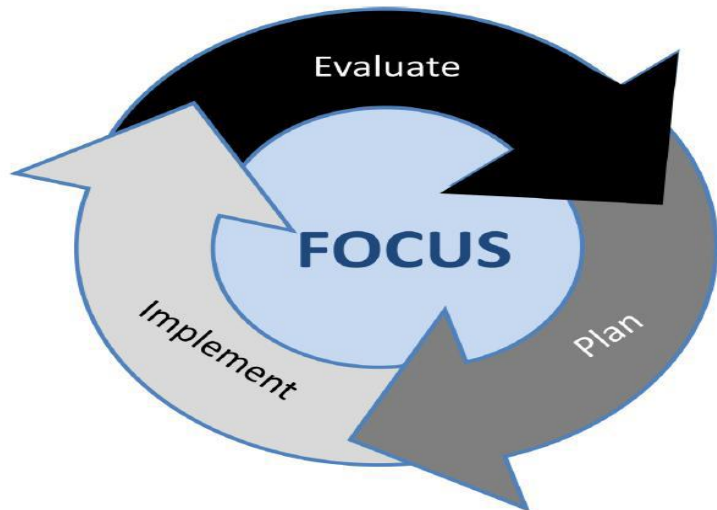
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Content

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Introduction

- **Root Cause** **(Definition):**

  ....."the deepest underlying cause, or causes, of positive or negative symptoms within any process that, if dissolved, would result in elimination, or substantial reduction, of the symptom".


"the most basic cause that can reasonably be identified, that we have control to fix, and for which effective recommendations for prevention can be implemented."

"the underlying cause of adverse out comes."

Introduction

- **Root cause analysis** (**RCA**) is a method of <u>problem solving</u> used for identifying the <u>root causes </u>of faults or problems.

- A factor is considered **a root cause** if removal thereof from the problem-fault-sequence prevents the final undesirable event from recurring; whereas **a causal factor** is one that affects an event's outcome, but is not a root cause.

- Though removing a <u>causal factor </u>can benefit an outcome, it does not prevent its recurrence within certainty.

Root Cause Analysis
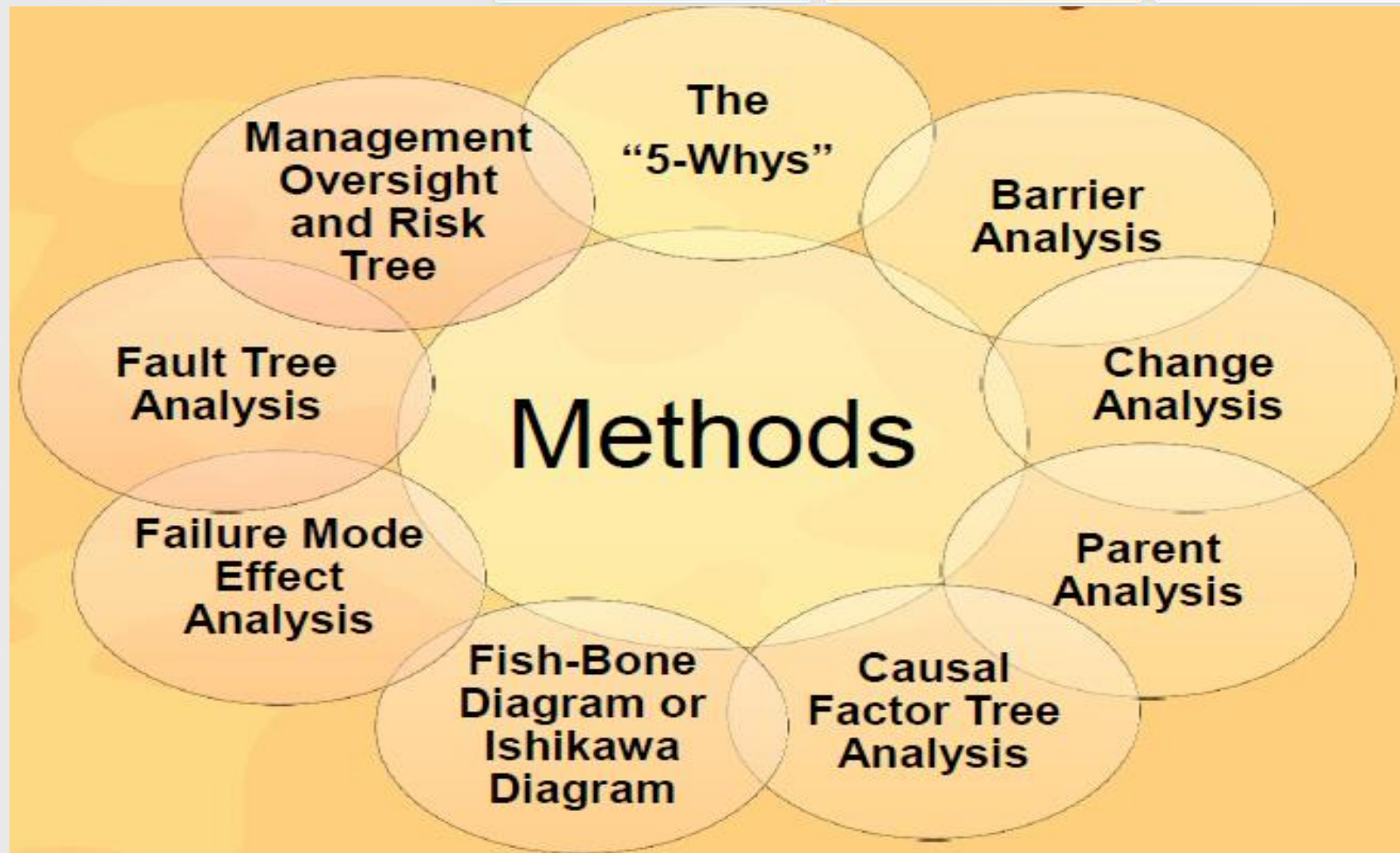
Importance of Root Cause Identification

- RCA is a popular and often-used technique that helps people answer the question of why the problem occurred in the first place.

- RCA seeks to **identify the origin** of a problem.

- It uses a specific set of steps, with associated tools, to find the primary cause of the problem, so that you can:

    1. Determine what happened.

    2. Determine why it happened.

    3. Figure out what to do to reduce the likelihood that it will happen again.

Importance of Root Cause Identification

- RCA assumes that **systems and events are interrelated**.

- An action in one area triggers an action in another, and another, and so on.

- By tracing back these actions, you can discover where the problem started and how it grew into the symptom you're now facing.

You'll usually find three basic types of causes:

1. **Physical causes** – *Tangible, material items failed in some way (for example, a car's brakes stopped working).*

2. **Human causes** – People did something wrong. or did not doing something that was needed.

3. **Organizational causes** – A system, process, or policy that people use to make decisions or do their work is faulty *(for example, no one person was responsible for vehicle maintenance, and everyone assumed someone else had filled the brake fluid).*

Root Cause Analysis Process…….

Root Cause Analysis has **five identifiable steps**.

- ***Step One:*** *Define the Problem*
  - – □ What do you see happening?
  - – □ What are the specific symptoms?

- ***Step Two:*** *Collect Data*
  - – □ What proof do you have that the problem exists?
  - – □ How long has the problem existed?
  - – □ What is the impact of the problem?

  Nb/-Employ **CATWOE** - Customers, Actors, Transformation affected, World View, process Owner and Environmental Constraints.

Root Cause Analysis Process…….

- ***Step Three:*** *Identify Possible Causal Factors*
    - What sequence of events leads to the problem?
    - What conditions allow the problem to occur?
    - What other problems surround the occurrence of the central problem?

- **Use these tools to help identify causal factors:**

    - ☐ **Appreciation** – Use the facts and ask "So what?" to determine all the possible consequences of a fact.

    - ☐ **5 Whys** – Ask "Why?" until you get to the root of the problem.

    - ☐ **Drill Down** – Break down a problem into small, detailed parts to better understand the big picture.

    - ☐ **Cause and Effect Diagrams** – Create a chart of all of the possible causal factors, to see where the trouble may have begun.

Root Cause Analysis Process…….

- ***Step Four:*** *Identify the Root Cause(s)*
    - Why does the causal factor exist?
    - What is the real reason the problem occurred?
- ***Step Five:*** *Recommend and Implement Solutions*
    - What can you do to prevent the problem from happening again?
    - How will the solution be implemented?
    - Who will be responsible for it?
    - What are the risks of implementing the solution?

    *FMEA was originally known as Failure Mode, Effects, and Criticality Analysis (FMECA). It grew out of systems engineering, and is a widely-used tool for quality control. It builds on tools like **Risk Analysis** and **Cause and Effect Analysis** to try to predict failures before they happen.*

Challenges of Identifying Root Causes

- These are associated with:
  - forming and leading the investigation team;
  - gathering and analysing supporting evidence; and
  - formulating and implementing service improvements.

  - It remains a complex non-linear task which entails balancing a multiplicity of concerns and expectations.

  - Supporting enhanced incident investigation requires keeping in focus the instrumental aim of triggering sustainable service improvement and not for the investigation to become an end in itself.

Contextualizing Auditors Role

Ammerman has identified **three criteria to determine** if each identified cause is a root cause or if it is a contributing cause. They are:

1. Would the problem have occurred if the cause had not been present? If no, then it is a root cause. If yes, then it is a contributing cause.

2. Will the problem reoccur as the result of the same cause if the cause is corrected or dissolved? If no, then it is a root cause. If yes, then it is a contributing cause.

3. Will correction or dissolution of the cause lead to similar events? If no, then it is a root cause. If yes, then it is a contributing cause.

Contextualizing Auditors Role

Other indicators that you have **found the root cause are**:

i.   You run into a dead end asking what caused the proposed root cause.

ii. Everyone agrees that this is a root cause.

iii. The cause is logical, makes sense, and provides clarity to the problem.

iv. The cause is something that you can influence and control.

v.   If the cause is dissolved, there is realistic hope that the problem can be reduced or prevented in the future.

How to Identify Root Causes….

i. Focus on **closely related performance** concerns.

ii. If an **external review** has been done, then consider the findings of the review. If not, consider the categories of factors that typically cause performance concerns.

iii. **Brainstorm possible explanations** (causes) for the performance concerns using the fishbone chart (see below).

iv. **Categorize** like causes together.

How to Identify Root Causes:

v. **Narrow the explanations** to those that are actionable, which includes removing items outside of the school's control.

vi. **Deepen the thinking** to ensure the causes are —root causes by using the - Why … Because chart or the enhanced questions below.

vii. **Verify root causes with multiple data sources** to ensure improvement strategies and action steps align with the root cause of performance concerns. They should be the deepest and most basic reason, within the school's control, evidence based, and focused on the adult actions of the leaders and teachers.

Advantages of Root Cause Analysis

1. it **uncovers relationships** between causes and symptoms of problems, works to solve issues at the root itself and provides tangible evidence of cause and effect and solutions.

2. By getting to the root cause of the initially identified problem, we may have **also solved many other issues**,

3. Introduces **organizational improvements** in many situations, lasting improvements and most importantly, a learning process to follow for thorough understandings of relationships, causes and effect and solutions.

4. By practicing RCA, you **eliminate taking action on possible causes**, and **delay a response** to the last responsible moment when the actual root cause of an effect is identified.

5. **Cost Savings** & **Increased Customer Satisfaction**

Practical Approach

- Safety-based RCA arose from the fields of **accident analysis** and occupational safety and health.

- Production-based RCA has roots in the field of quality control for industrial manufacturing.

- Process-based RCA, a follow-on to production-based RCA, broadens the scope of RCA to include business processes.

- Failure-based RCA originates in the practice of failure analysis as employed in engineering and maintenance.

- Systems-based RCA has emerged as an amalgam of the preceding schools, incorporating elements from other fields such as change management, risk management and systems analysis.

- Despite the different approaches among the various schools of RCA, all share some common principles. Several general processes for performing RCA can also be defined.

General Principles of RCA

1. The primary aim of RCA is: to identify the factors that resulted in the nature, the magnitude, the location, and the timing of the harmful outcomes (consequences) of one or more past events; to determine what behaviors, actions, inactions, or conditions need to be changed; to prevent recurrence of similar harmful outcomes; and to identify lessons that may promote the achievement of better consequences. ("Success" is defined as the near-certain prevention of recurrence.)

2. To be effective, RCA must be performed systematically, usually as part of an investigation, with conclusions and root causes that are identified backed up by documented evidence. A team effort is typically required.

3. There may be more than one root cause for an event or a problem, wherefore the difficult part is demonstrating the persistence and sustaining the effort required to determine them.

Practical Approach

4. The purpose of identifying all solutions to a problem is to prevent recurrence at lowest cost in the simplest way. If there are alternatives that are equally effective, then the simplest or lowest cost approach is preferred.

5. The root causes identified will depend on the way in which the problem or event is defined. Effective problem statements and event descriptions (as failures, for example) are helpful and usually required to ensure the execution of appropriate analyses.

6. One logical way to trace down root causes is by utilizing hierarchical clustering data-mining solutions (such as GT data mining). A root cause is defined in that context as "the conditions that enable one or more causes". Root causes can be deductively sorted out from upper groups of which the groups include a specific cause.

Practical Approach

7. To be effective, the analysis should establish a **sequence of events** or **timeline** for understanding the relationships between contributory (causal) factors, root cause(s) and the defined problem or event to be prevented.

8. RCA can help transform a reactive culture (one that reacts to problems) into a forward-looking culture (one that solves problems before they occur or escalate). More importantly, RCA reduces the frequency of problems occurring over time within the environment where the process is used.

9. RCA as a force for change is a threat to many cultures and environments. Threats to cultures are often met with resistance. Other forms of management support may be required to achieve effectiveness and success with root cause analysis. For example, a "non-punitive" policy toward problem identifiers may be required.

General process for performing and documenting an RCA-based Corrective Action

1. RCA forms the most critical part of successful corrective action, directing the corrective action at the true root cause of the problem.

2. Define the problem or describe the event to prevent in the future. (qualitative and quantitative attributes (properties))

3. Gather data and evidence, classifying it along a timeline of events to the final failure or crisis.

4. In data mining Hierarchical Clustering models, use the clustering groups instead of classifying: *(a) peak the groups that exhibit the specific cause; (b) find their upper-groups; (c) find group characteristics that are consistent; (d) check with experts and validate.*

5. Ask "why" and identify the causes associated with each sequential step towards the defined problem or event.

General process for performing and documenting an RCA-based Corrective Action

6. Identify all other harmful factors that have equal or better claim to be called "root causes.".

7. Identify corrective action(s) that will, with certainty, prevent recurrence of each harmful effect and related outcomes or factors.

8. Identify solutions that, when effective and with consensus agreement of the group: *prevent recurrence with reasonable certainty; are within the institution's control; meet its goals and objectives; and do not cause or introduce other new, unforeseen problems.*

9. Implement the recommended root cause correction(s).

10. Ensure effectiveness by observing the implemented solutions in operation.

11. Identify other possibly useful methodologies for problem solving and problem avoidance.

12. Identify and address the other instances of each harmful outcome and harmful factor.

Limitations

- The quality of RCA varies across facilities, and its effectiveness in lowering risk or improving medical safety has not been systematically established.

- The quality of RCA is dependent on the accuracy of the input data as well as the capability of the RCA team to appropriately use these data to create an action plan.

- In some cases, only one source of error or a few sources of error are emphasized, when in reality the situation might be more complex. The thoughts, conversations, and relationships of members play an important role in determining the effectiveness of an RCA team.

Limitations

- People tend to select and interpret data to support their prior opinions.
  - An atmosphere of trust, openness, and honesty is critical to encourage members to share what they know without fear of being criticized or unacknowledged.
  - In addition, RCA lacks the ability to allow one to determine the probability, criticality, and severity of events, which can be useful for prioritizing management and preventing future undesirable events.
- RCA can be very time-consuming because of all the time required for data gathering, as the accuracy of the research is crucial.

- Organizations should ensure that adequate resources, time, and feedback are sufficiently provided during the RCA process so that the team will be able to carry out its task effectively.

Reporting the Root Cause

Questions to Help Validate Root Causes:

1. What is the proof that this cause exists? Is it concrete? Is it measurable? Are there more than two data elements that provide evidence?

2. What is the proof that this cause could lead to the stated effect? Am I merely asserting causation? (Ex. If a program is identified as the reason students are not achieving, is there evidence that it is not aligned to tested and taught curriculum? Have students spent the majority of the allotted instructional time using this program?)

3. What proof is there that this cause actually contributed to the problem? Given that it exists and could lead to this problem, how do I know it was not actually something else?

Reporting the Root Cause

Questions to Help Validate Root Causes:

4. Is anything else needed, along with this cause, for the stated effect to occur? Is it self-sufficient? Is something else needed? (Ex. Are Special Education student schedules the only problem that prevents them from grade level curriculum exposure, or is there another key factor, perhaps the level of experience of teacher to scaffold instruction to meet the needs of all learners?)

5. Can anything else, besides this cause, lead to the stated effect? Are there alternative explanations that fit better? What other risks are there?

Reporting the Root Cause

- The purpose of the report is to provide:
  - a formal record of the investigation process;
  - a means of sharing the learning.

- The report should explain
  1. **what** happened (i.e. chronology of events);
  2. **who** it happened to;
  3. **when** it happened;
  4. **where** it happened;
  5. **how** it happened (i.e. what went wrong);
  6. **why** it happened (i.e. what underlying, contributory or deeprooted factors caused things to go wrong).

The report should be clear and logical, and demonstrate that an open and fair approach has taken place.

Reporting the Root Cause

The report should include;

i.   Summary incidence description and consequences
ii. Scope and level of investigation
iii. Involvement and support of other parties
iv. Chronology of events
v.   Detection of incident

vi.   Contributory factors
vii. Root Causes
viii. Lessons Learned
ix.   Recommendations
x.   Arrangements for Sharing and Learning
xi.   Author & Date

Thank You
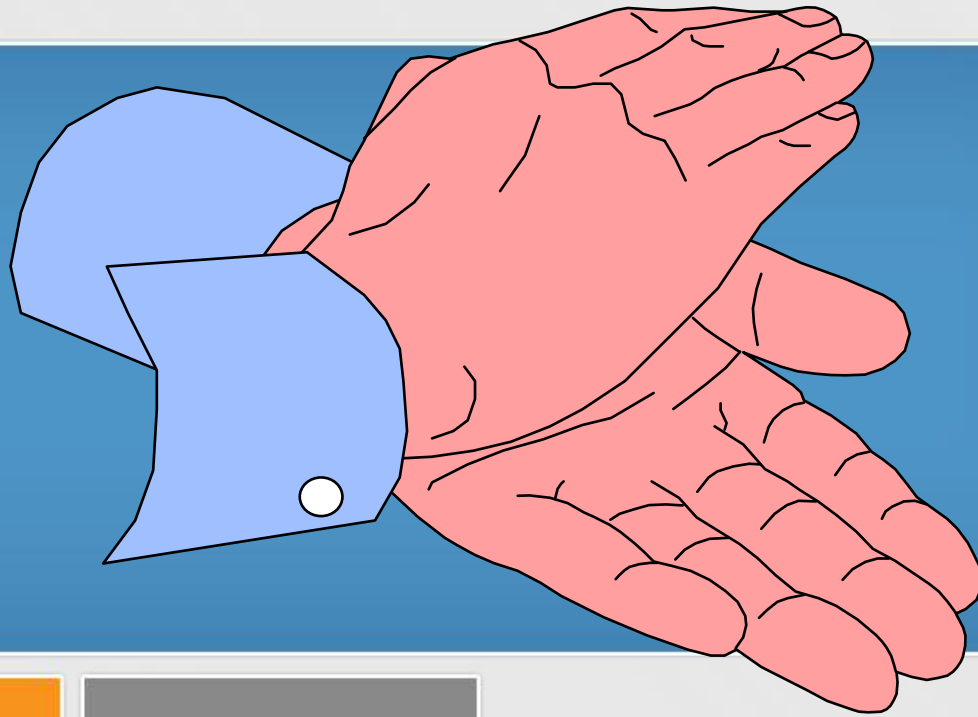
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