Introduction to Root Cause Analysis

Root Cause Analysis Techniques

- Pareto Chart
- The 5 Whys
- Fishbone Diagram
- PDCA
- Failure Mode and Effects Analysis (FMEA)

Root Cause Analysis Techniques

Introduction to Root Cause Analysis

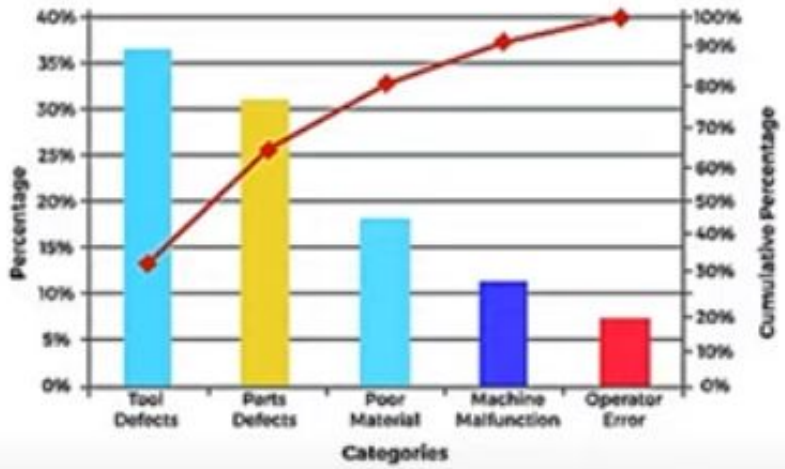
Root Cause Analysis

Root Cause Analysis is a **systematic approach** used to **analyze** the **fundamental problems** before trying to **solve them**

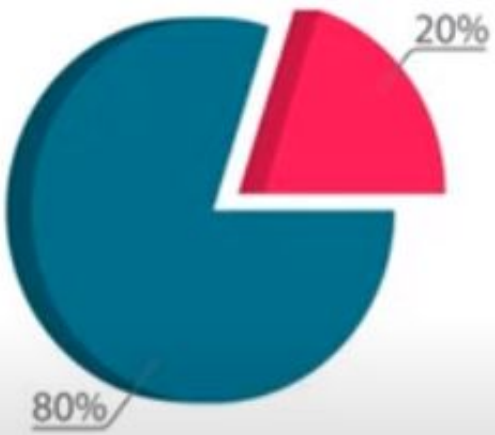
- Plays an **important** role in any **organization**
- RCA process involves **data collecting, causal factor charting, root cause identification, and recommendation generation and implementation**
- RCA is used to **target opportunities** for **systemwide improvement**
- Root causes are specific **underlying causes** that can be reasonably identified, are within management's control to remedy

Root Cause Analysis Techniques – Pareto Chart

Pareto Chart



A Pareto Chart is a simple technique of RCA which is a **combination of a bar graph and a line graph**. Pareto Chart is a graph that **indicates the frequency of defects, along** with their cumulative impact



The Pareto chart is built based on a Principle which states that **80% of the results are determined by 20% of the causes**. Thus, you should try to find the 20% of defect types that are directly causing 80% of all defects

Pareto Chart

Features

1. A Pareto Chart is one of the seven basic tools of quality control
2. It is a combination of a bar graph and a line graph
3. Each bar represents a type of defect or error
4. The bars are presented in descending order, and the left-most bar indicates the highest issues
5. The line in the graph represents the cumulative percentage of defects

Benefits

1. Gives an idea of the cumulative impact of issues
2. Gives a focused, simple, and clear way to find vital few causes
3. Helps to improve problem-solving and decision-making skills
4. Useful in every form of leadership decision
5. Helps in problem-solving and decision-making

Pareto Chart

How to build Pareto Chart

1. Segmenting the range of the data based on different categories
2. Arrange the categories in descending order
3. The first graph represents the highest defects
4. Accordingly one must take the necessary action to reduce defects and errors

Examples

- 20% of employees do 80% of work
- 20% of drivers cause 80% of accidents
- 20% of the time spent in a day leads to 80% of work
- 20% of things in the warehouse occupy 80% of storage space
- 20% of employees are responsible for 80% of sick leaves

The 5 Whys

The 5 Whys

The 5 Whys technique is one of the simple, effective, and best tools for **solving problems**. It mainly aims at **finding the exact reason** that has caused a given problem by asking a sequence of **"Why" questions**. In simple words, it helps to **focus on finding the root cause of any problem**. Thus encouraging each team member to share their ideas for **continuous improvement**, rather than blaming others

The 5 Whys

Features

1. It is an iterative approach to finding the underlying cause of a problem
2. It just not solves the symptoms, but also the root causes
3. it enables to solve root problems with symptoms
4. A holistic approach to problem-solving
5. Most powerful assessment methods of all non-statistical analyses

Benefits

1. Helps the team members to identify the root cause of a problem
2. Understands how one process can cause a chain of problems
3. Determines the relationship between different root causes
4. Highly effective without complicated evaluation techniques
5. Implementation is simpler and easy

The 5 Whys

How to Perform 5 Whys?

Examples

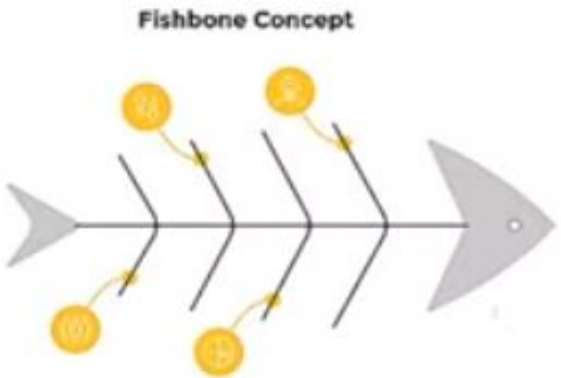
Consider an example where a student comes late to the exam. Five whys can be applied as:

Fishbone Diagram

Fishbone Diagram

A fishbone diagram is a combination of the practice of brainstorming with a type of mind map template that determines cause and effect. It is also used in the range from product development to troubleshooting processes used to focus a conversation around a problem

The Fishbone diagram is considered one of the seven basic quality tools. The fishbone diagram identifies many possible causes for an effect or problem. It can be used to structure a brainstorming session. It immediately sorts ideas into useful categories



Fishbone Diagram

Features

1. A tool used to visualize all the potential causes of a problem
2. It discovers the root causes
3. Visual representation of the factors that contributes to an observed effect that is being examined
4. It analyzes a problem statement and brings quality improvement
5. It builds interrelationships among the possible causal factors

Benefits

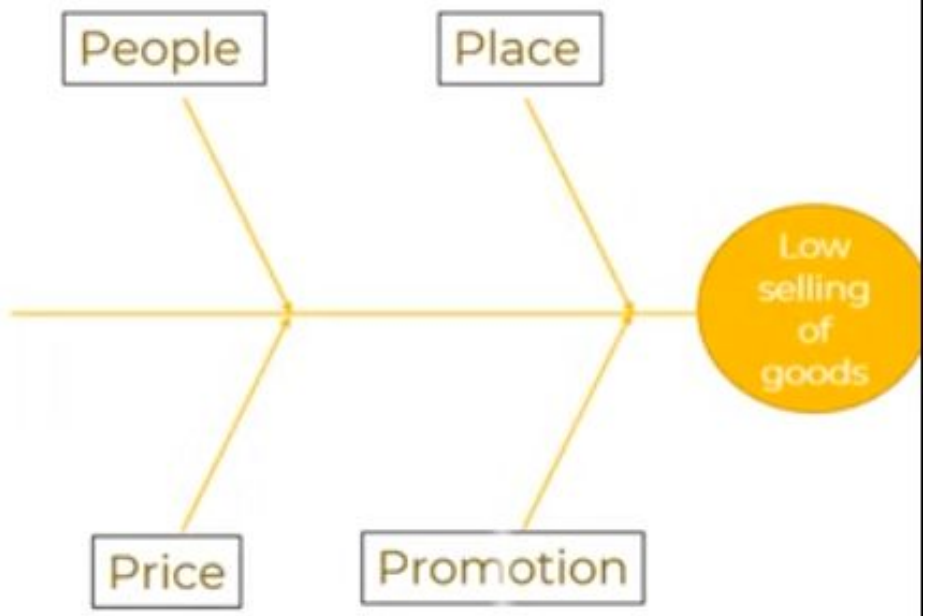
1. It identifies cause and effect relationships
2. The head of the diagram represents problems
3. Easy to understand and develop
4. Provides permanent solutions to the problems occurred
5. Helps in developing a logical approach to solving problems

Fishbone Diagram

How to build a Fishbone Diagram?

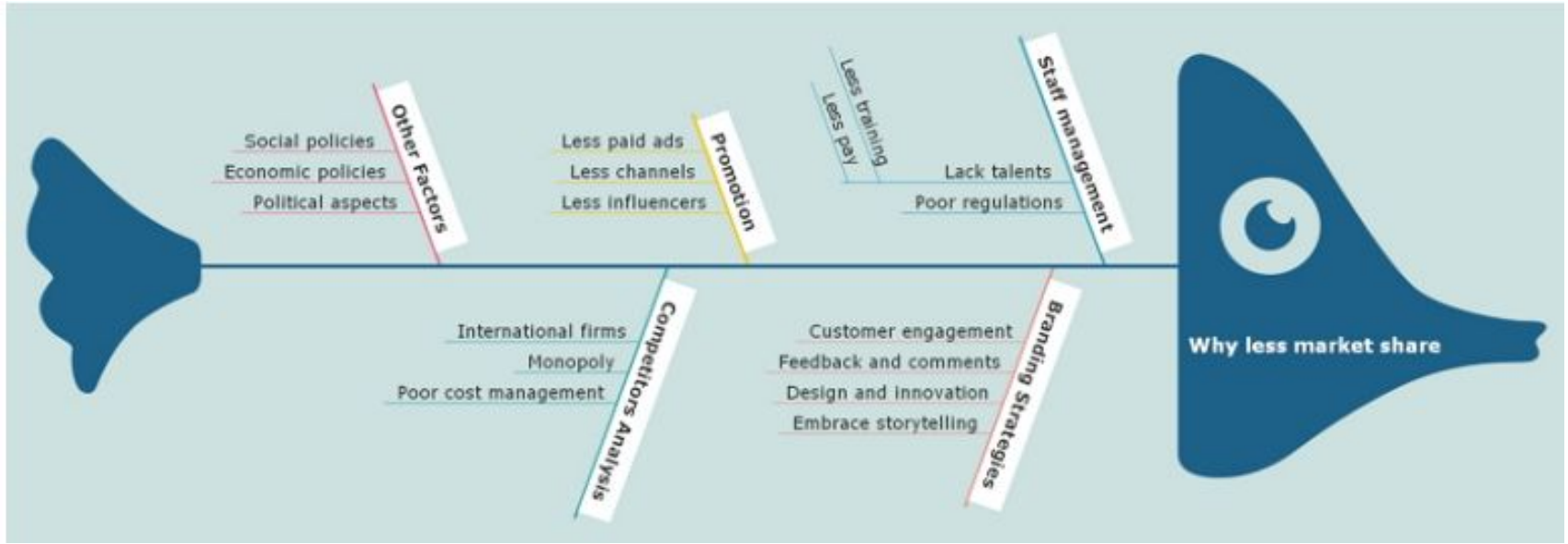
1. Consider a problem and create a problem statement
2. Place the problem to the rightmost side
3. Brainstorm major categories of problems
4. Based on the categories mention the problems

Examples




People
Place
No good customer
No loyal customer
No proper area
No proper selling
Low selling of goods
No clear ratings
No clarity in pricing
No proper promotion
Lack of communication
Price
Promotion

Fishbone: Why less market share



Fishbone Diagram Scenario

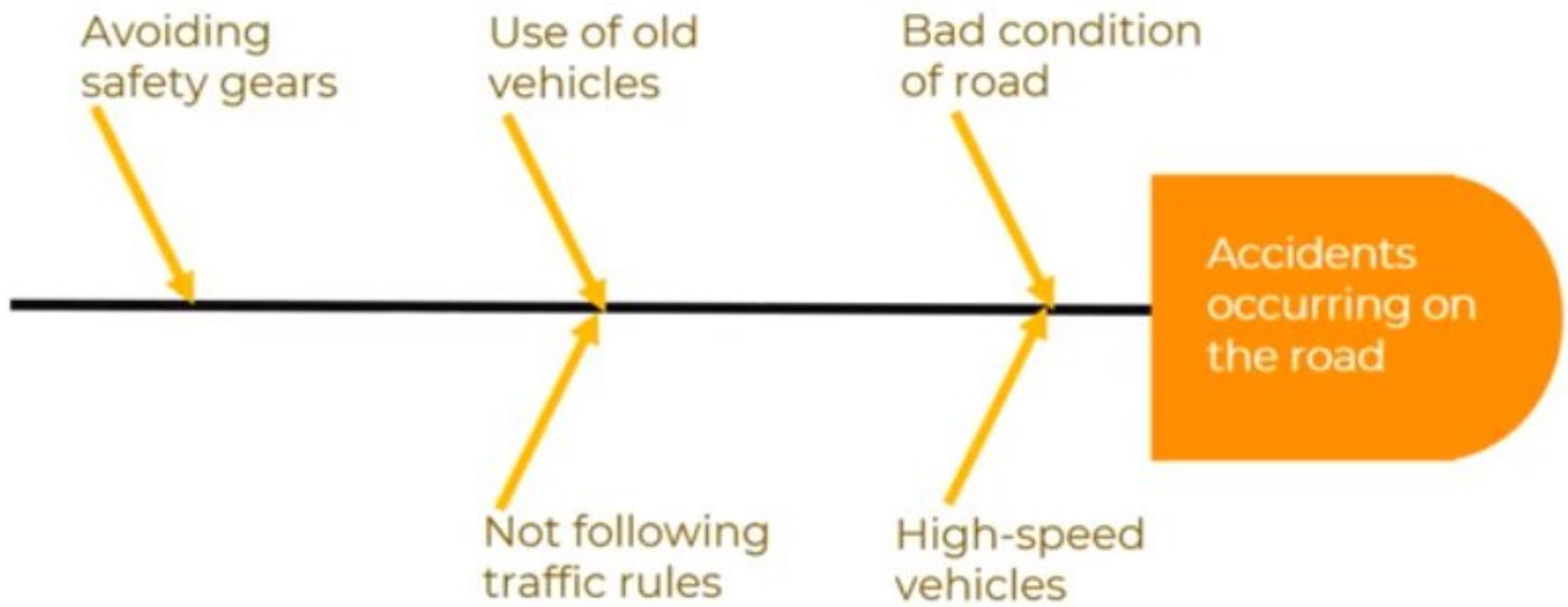
- Many accidents are occurring every day
- But, one needs a way to understand why these are caused
- To understand the root causes, we shall make use of a fishbone diagram

Fishbone Diagram Scenario

Step 1: Form the problem statement

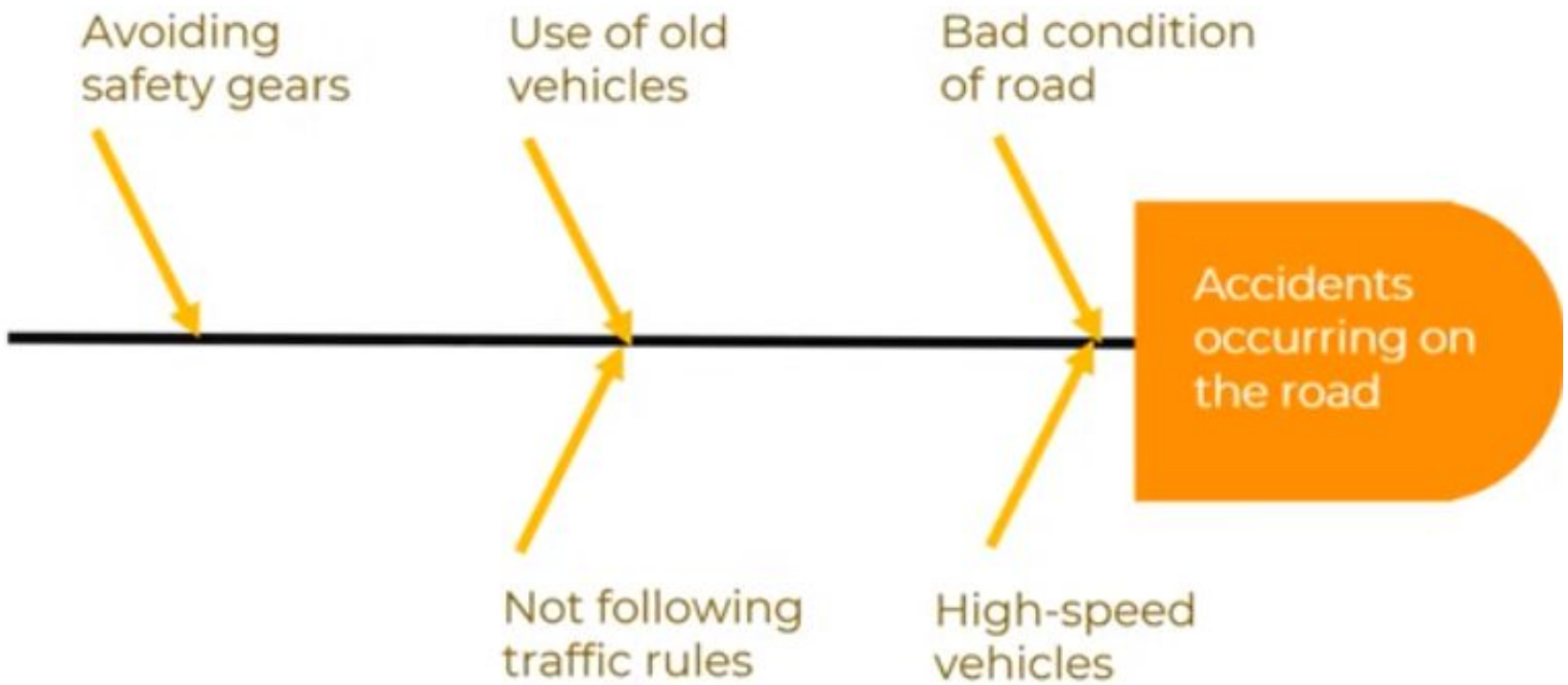
Fishbone Diagram Scenario

Step 2: Mention the categories



Fishbone Diagram Scenario

Step 3 Brainstorm each category



Fishbone Diagram Scenario

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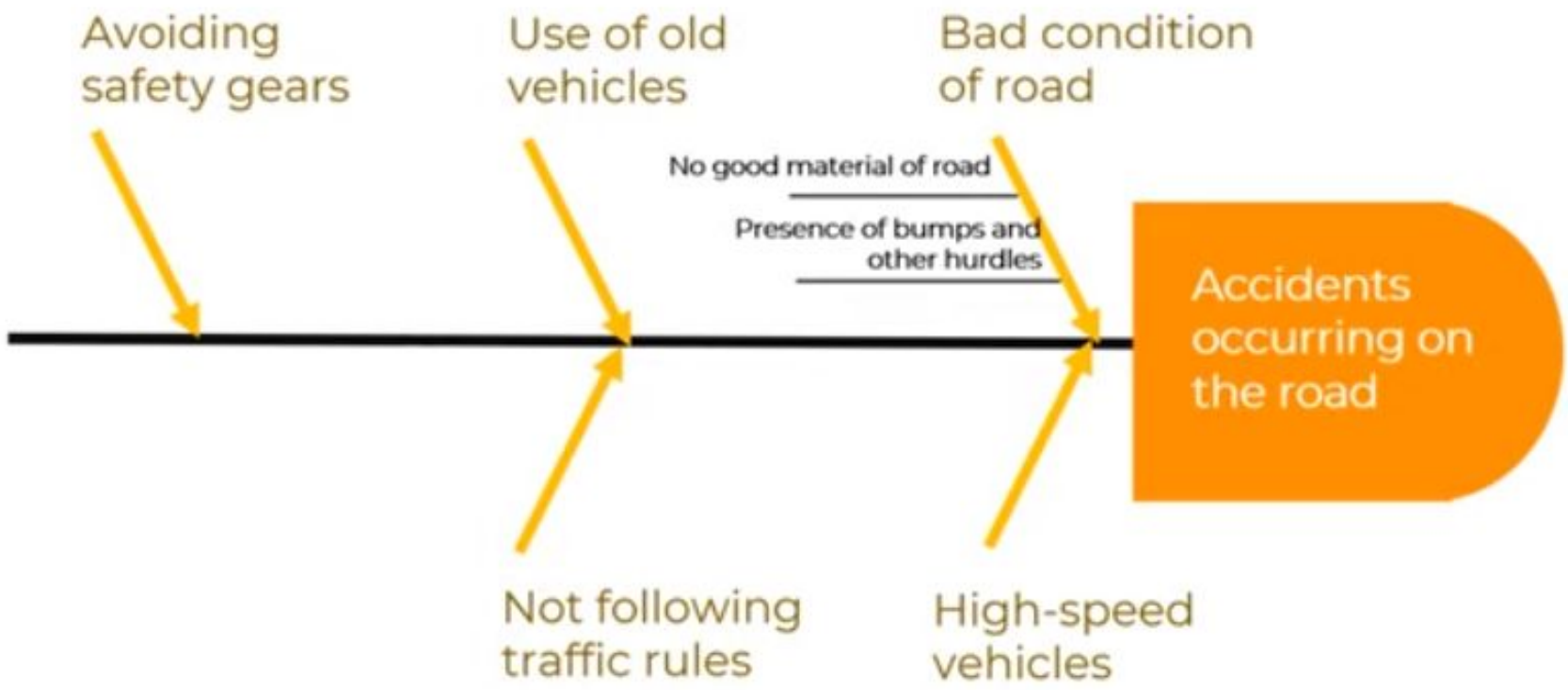

Fishbone Diagram Scenario

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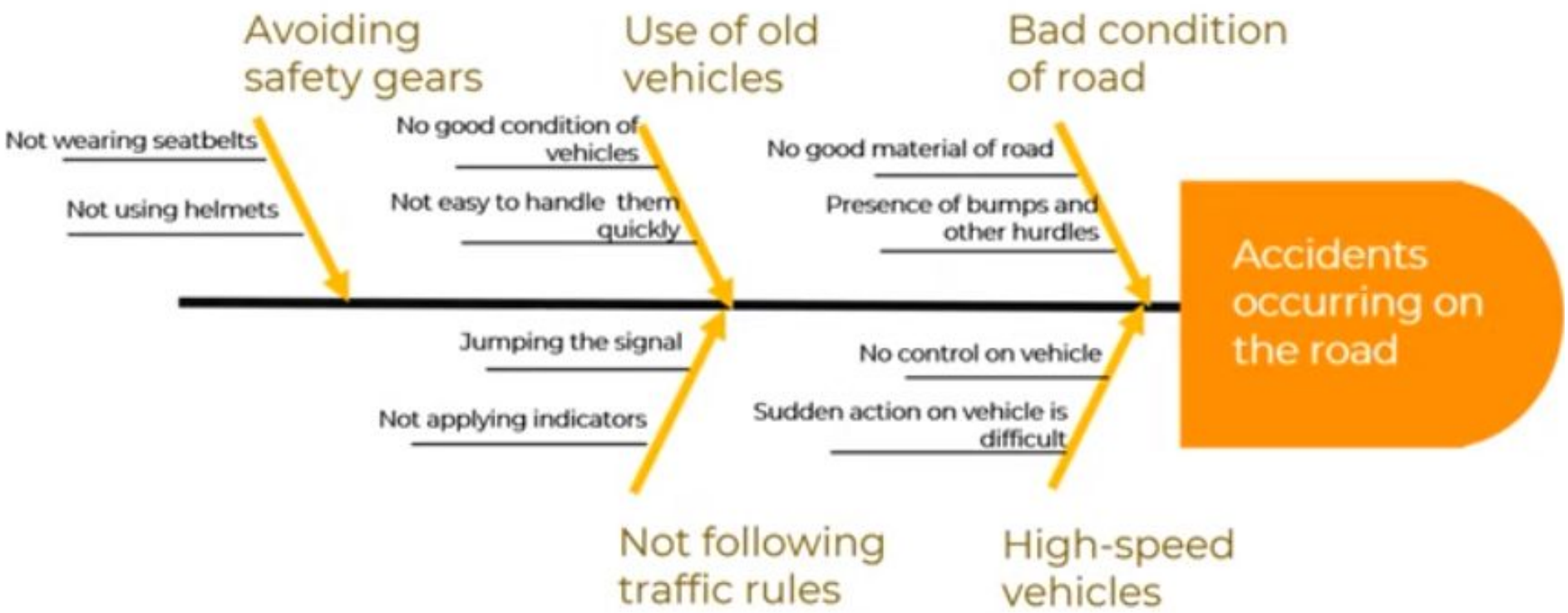

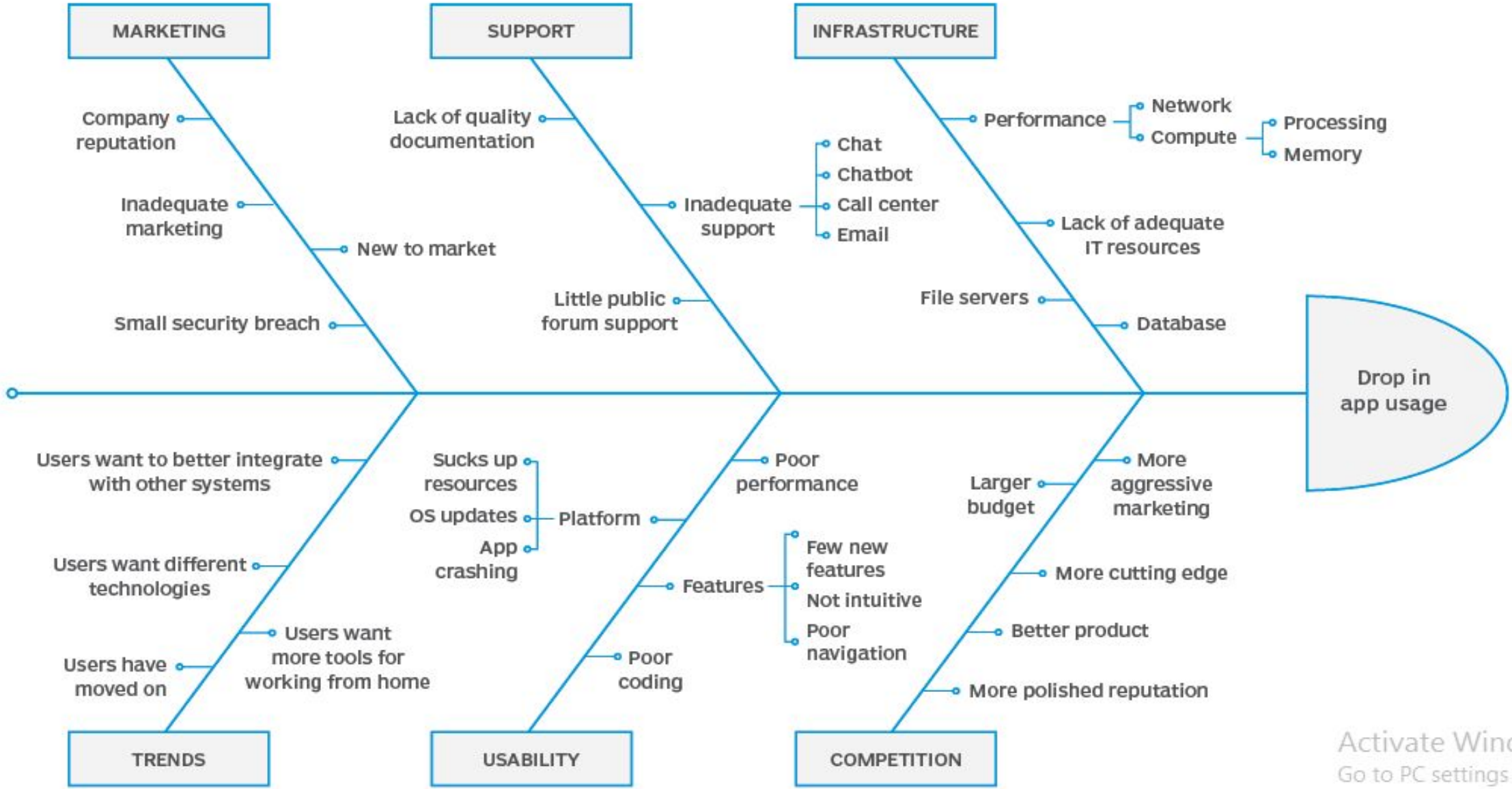

What Next…….

- PDCA Cycle