

Problem Solving



Techniques

- Brainstorming
 - Uninhibited idea generation
 - Group-based technique
 - Enhances creative thinking
- SWOT Analysis
 - Strengths: Internal positive factors
 - Weaknesses: Internal negative factors
 - Opportunities: External positive factors
 - Threats: External negative factors
- Root Cause Analysis
 - Identify main issue
 - Determine underlying reasons
 - Fix the root problem, not symptoms
- Decision Matrix
 - Prioritization of problems
 - Ranking based on severity and impact
- 5 Whys
 - Asking "why" repeatedly
 - Dive deep into the problem
- Six Thinking Hats
 - Different perspectives on problem
 - White Hat: Facts & Information
 - Red Hat: Feelings & Intuitions
 - Black Hat: Criticisms & Difficulties
 - Yellow Hat: Positive Judgements
 - Green Hat: Ideas & Alternatives
 - Blue Hat: Control of Thinking
- Trial and Error
 - Testing multiple solutions until success
 - Time-consuming but often effective
- Simulation Modeling
 - Predict future events
 - Determine actionable steps
- Pareto Analysis
 - 80/20 rule
 - Most effects come from few causes
- Flowchart or Process Mapping
 - Visual representation
 - Shows steps in a process
- Heuristic Methods
 - Rule of thumb or educated guess
 - Speeds up the process of finding satisfactory solution
- Hypothesis Testing
 - Formulate hypothesis
 - Conduct experiments
 - Interpret results
- Design Thinking
 - Problem-solving method in design
 - Includes empathy, definition, ideation, prototyping, and test stages.

Definition

- Process of discovering resolution for difficulties or hindrances
- Applying knowledge, facts, and data to effectively solve problems

Stages of Problem Solving

- Defining the Problem
 - Understanding the problem's context
 - Identifying the root cause of the problem
 - Determining the scope and implications of the problem
 - Breaking down the problem into sub-problems
- Problem Analysis
 - Utilizing problem-solving tools (e.g., SWOT analysis, PESTLE analysis)
 - Gathering and interpreting relevant data
 - Identifying trends, patterns, and relationships within the data
 - Prioritizing problems based on urgency and impact
- Generating Possible Solutions
 - Brainstorming
 - Solo brainstorming
 - Group brainstorming
 - Mind mapping
 - Benchmarking (looking at how others have solved similar problems)
 - Using creativity enhancement techniques (e.g. SCAMPER, Reverse Thinking)
- Evaluating and Selecting Solutions
 - Comparing potential solutions against criteria of effectiveness
 - Assessing feasibility of solutions (cost, time, resources)
 - Risk assessment of potential solutions
 - Consensus decision making
- Implementing the Solution
 - Developing a plan of action
 - Allocating resources
 - Setting timelines and milestones
 - Executing the plan
- Following Up
 - Monitoring and evaluating progress
 - Measuring success or outcomes
 - Making adjustments if necessary
 - Learning from the problem-solving process.

Skills Required

- Creative Thinking
- Critical Thinking
- Emotional Intelligence
- Quantitative Reasoning
- Technical and Functional Knowledge

Applications

- Business & Management
- Personal Life Challenges
- Scientific Research
- Technology Development
- Education & Learning

Obstacles in Problem-Solving

- Lack of clarity in problem definition
- Inadequate resources
- Poor communication
- Resistance to change
- Lack of creativity