PM Notebook

Summarizing Project Management Concepts for the PMP Exam

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Road to PMP

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No great man ever complains of want of opportunity.
Ralph Waldo Emerson

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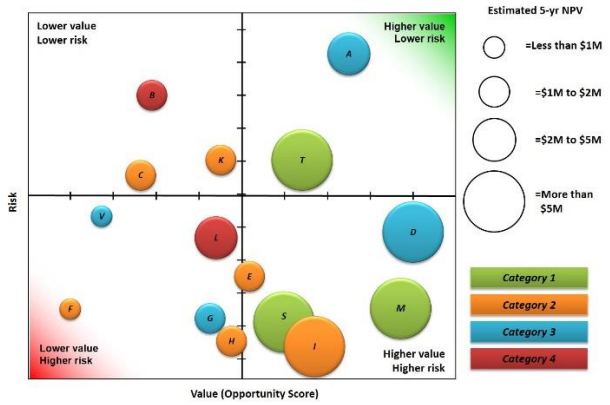
APPENDIX C – DATA REPRESENTATION TOOLS

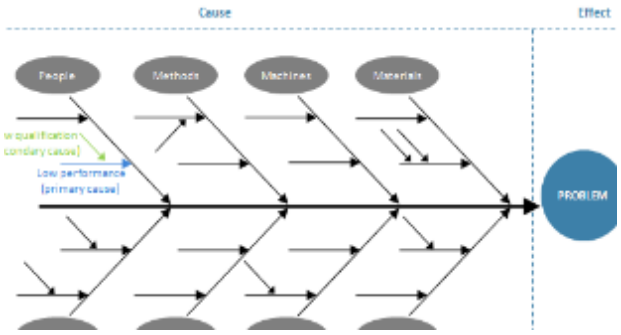
Affinity Diagram (KJ Diagram) – Decomposing and organizing data based on natural relationships. Can be used to organize ideas and patterns of thoughts.	
Bubble Chart – is a variation of a **scatter chart** in which the data points are replaced with bubbles, and an additional dimension of the data is represented in the size of the bubbles. Just like a scatter chart, a bubble chart does not use a category axis — both horizontal and vertical axes are value axes.	
Burndown Chart – A chart that shows how quickly (rate/velocity) you and your team are burning through your customer's user stories. It tracks the work remaining, and help analyzing the variance in an iteration-based plan.	

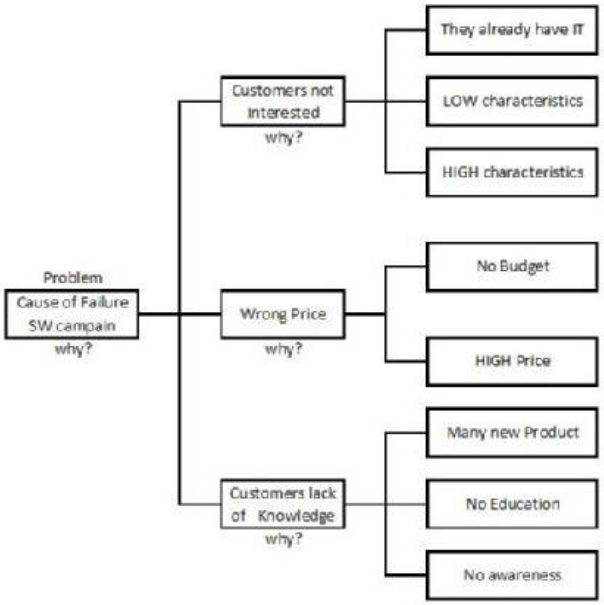
Cause and Effect Diagram – A visualization tool for categorizing the potential causes of a problem in order to identify its root causes.
Variations are –

- **Fishbone / Ishikawa**
- **Why-Why Diagram**

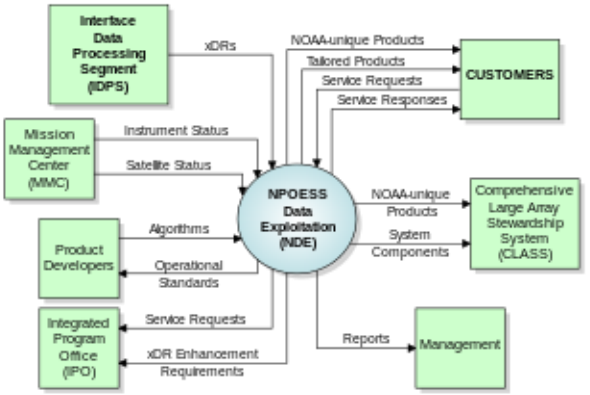
Steps to find causes of a problem –

1. Identify the problem as a gap to be closed or as an objective to be achieved.
2. Looking at the problem statement and asking "why" until a root cause has been identified.
3. Taking an action





Context Diagram / Level-0/Context-Level Data Flow Diagram – A specialized type of flow diagrams that defines the boundaries between the system, or part of a system, and its environment, showing the entities that interact with it and the flow of information between components.



Control Charts – A line graph of data plotted used to study how a process changes over time.

Components –

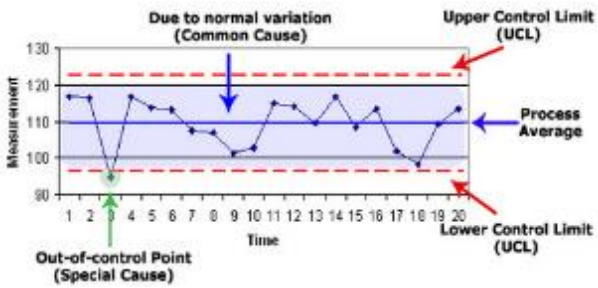
- **Upper Control Limit (UCL)**
- **Average / Mean**
- **Lower Control Limit (LCL)**
- **Normal Distribution Curve / Bell-Shaped Curve –** Shows valid data range.
- **Control Limit –** usually set **to +/-3 sigma or +/- 6 sigma**.

Types –

- **Variable Chart –** Used with continuous data.
- **Attribute Chart –** For use with discrete data. Attribute data have only two values: conforming and nonconforming.

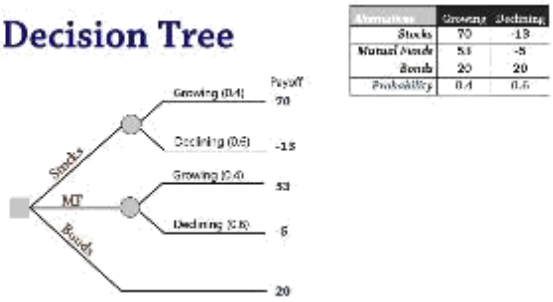
Characteristics –

- **Out of Control/State –** When a data **falls outside of the limits.**
- **Assignable/Special Cause –** When an out-of-control process requires investigation.
- **Rule of Seven –** When 7 data points in a row fall on one side of the mean.
- **Specification Limits –** Customer's expectations and requirements. To meet those requirements, your limits must be stricter than customer's.
- The graph without the lines is called **Run Chart**.

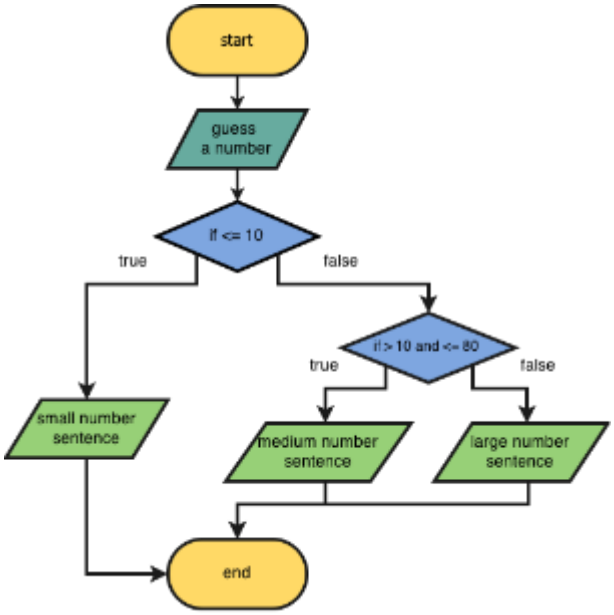
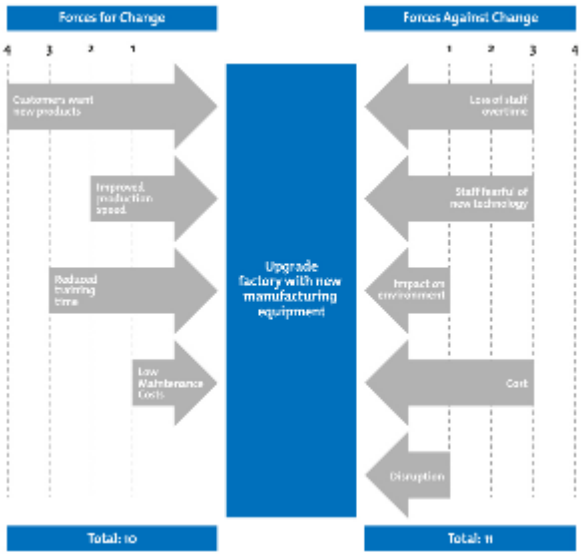


Decision Tree – a decision support tool that uses a tree-like graph or model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility. Usually used within **Quantitative** risk analysis and **Expected Monetary Value** analysis.

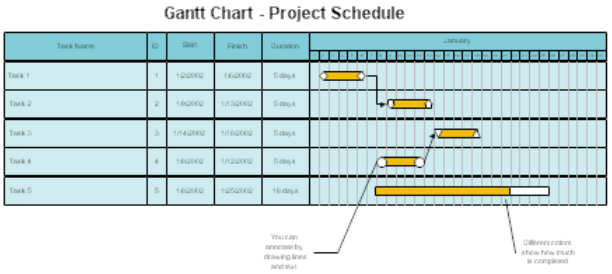
- **Decision Nodes (Squares) –** Show a decision.



	Growing	Declining
Stocks	70	-15
Mutual funds	53	-5
Bonds	20	20
Probability	0.4	0.6

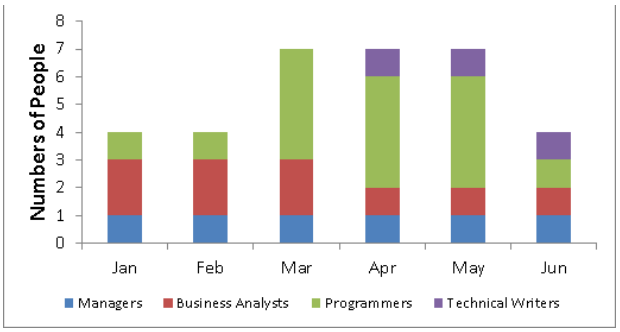
• **Event/Chance Nodes (Circles) –** Show possibilities of certain results. • **Consequence/End Nodes (Bar/Triangle) –** Shows the final outcome of a decision.	
Flowcharts / Process Map – Illustrates the flow of a process throughout a system. Helps anticipating where problems might occur. • **SIPOC –** A flowchart type that shows the connections among **suppliers, inputs, process, outputs, customers.**	
Force Field Analysis – Analyzing pressures for and against a decision.	

Grantt Chart – plots current work schedule against calendar. Gives quick insights into **task schedules** and **resource utilizations**.

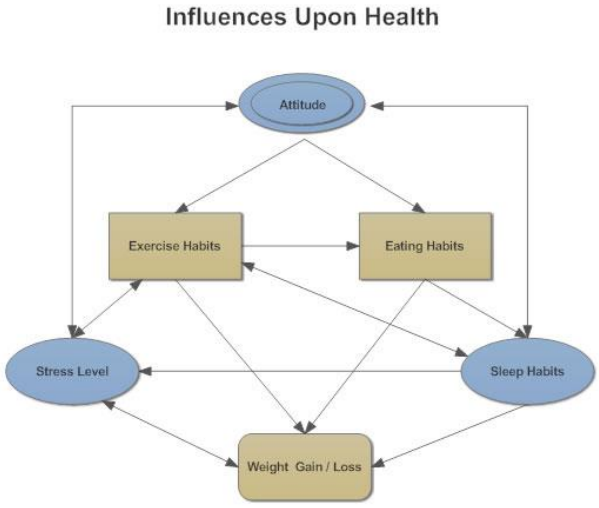


Histograms – A type of bar charts, has no particular order and used to represent

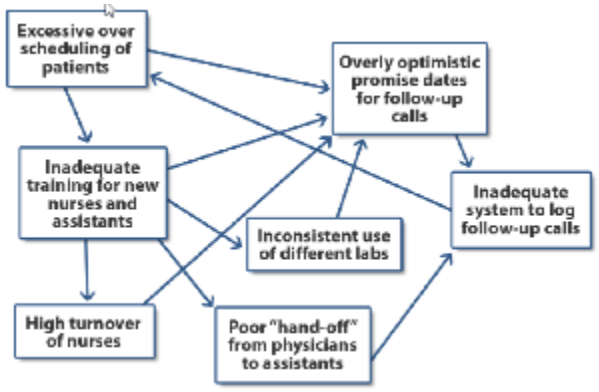
- **Central Tendency**
- **Dispersion**
- **Shape of Statistical Distribution**



Influence Diagram - graphical representations of situations showing causal influences, time ordering of events, and other relationships among variables and outcomes.

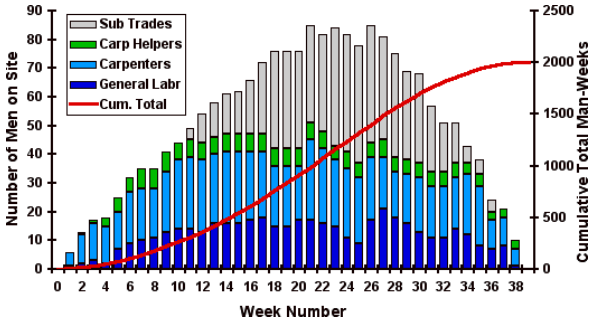


Interrelationship Digraphs – Allows you to see and analyze relationships among numerous different issues.

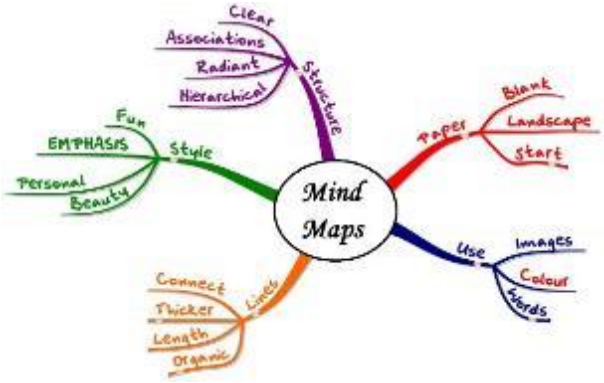


Matrix Diagrams – Tables, spreadsheets and pivot tables.

Manpower/Resource Histogram – Shows how many people / hours are needed to get a job done over time, so you can schedule the right number of workers for each stage of a project.

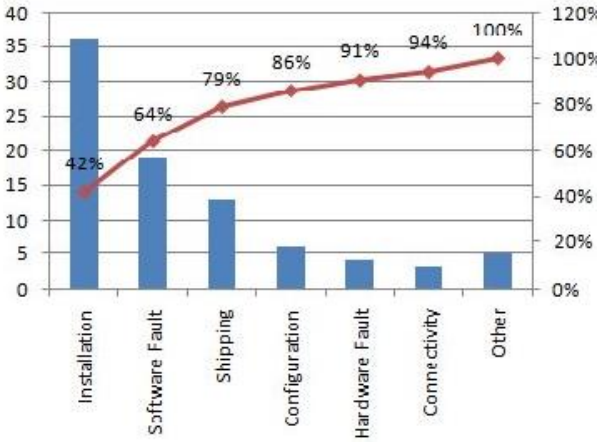


Mind Maps – Decomposing and grouping brainstormed ideas.



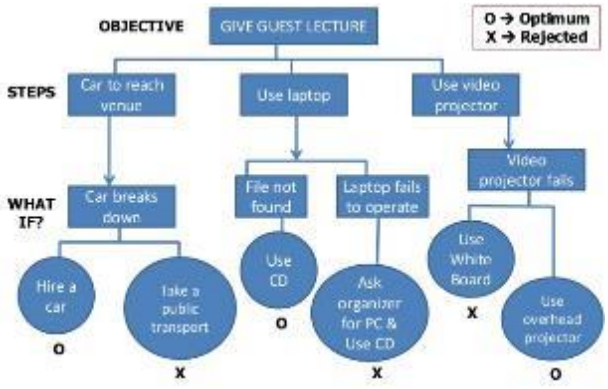
Pareto Charts/Diagrams – A type of **histogram** that contains both bars and a line graph, where individual values are represented in **descending** order by bars, and the cumulative total is represented by the line.

- **Basic Pareto –** identifies that vital few contributors that account for most quality problems.
- **Weighted Pareto –** gives a measure of significance to factors that may not appear significant at first (such as cost, time, and criticality.)
- **Comparative Pareto –** focuses on any number of program options or actions.



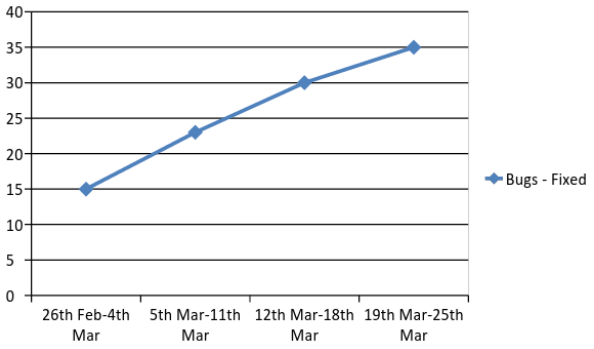
80/20 Rule / Vilfredo Pareto Principle / Principle of Factor Sparsity / Solzo Rule / Law of Vital Few (Joseph Juran) – A rule that says that 80 percent of quality problems are caused by 20 percent of potential sources of problems.

Process Decision Program Chart (PDPC) – to identify the consequential impact of failure on activity plans, and create appropriate contingency plans to limit risks.



Run Chart – a line graph of data plotted over time.

- **Trend –** Where 5 or more sequential data points are all going up or are all going down.



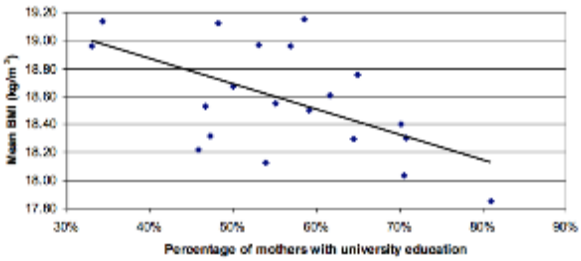
Scatter Diagram / Correlation Chart – A graph in which the values of two variables are plotted along two axes, the pattern of the resulting points revealing any correlation present.

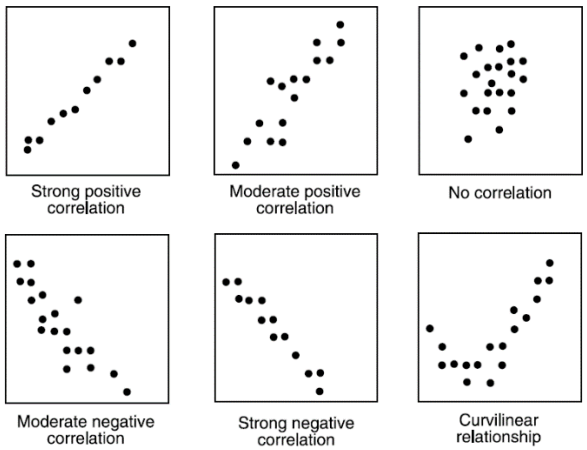
Correlation –

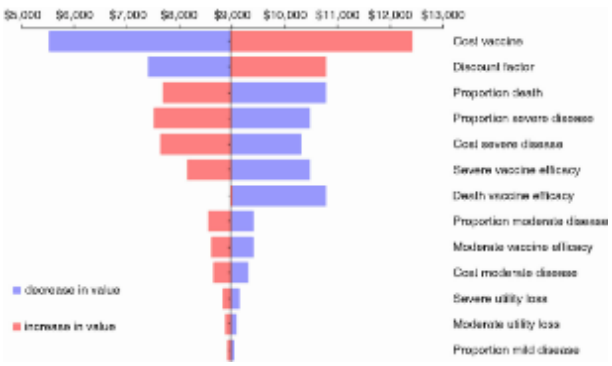
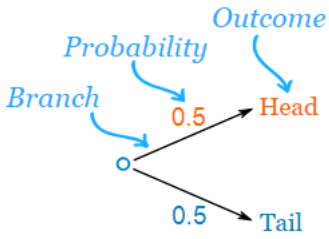
- **Regression/Correlation Line –** To show the correlation. Can be used for estimation and forecasting.
- **Positive/Proportional Correlation –** As one quantity increases, so does the other.
- **Negative/Inverse Correlation –** As one quantity increases, the other decreases.
- **No Correlation –** Both quantities vary with no clear relationship.

Variables –

- **Independent Variable –** variable that does not change by other variables.
- **Dependent Variable –** variable that changes based on the change of another variable.





Tornado Diagram / Sensitivity Analysis – A special bar chart which is a graphical output of a comparative sensitivity analysis. It is meant to give you an idea of which factors are most important to the decision / risk at hand.	
Tree Diagram – can be used to find the number of possible outcomes and calculate the probability of possible outcomes. Each branch in a tree diagram represents a possible outcome.	
Venn Diagram / Primary Diagram / Set Diagram – a diagram representing logical sets pictorially as circles or closed curves within an enclosing rectangle (the universal set), common elements of the sets being represented by intersections of the circles. You can see the Venn Diagram in **Salience Model stakeholder analysis** technique.