EIN 5226

Basic Tools II

Chapter 5 Sections 7,14-19

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5.7 Benchmarking

Benchmarking involves the search of an organization for the best practices, adaptation of the practices to its processes, and improving with the focus of becoming the best in class.

5.7 Benchmarking

Benchmarking can involve comparisons of products, processes, methods, and strategies.

http://totalqualitymanagement.files.wordpress.com/2008/11/picture24.png

5.7 Types of Benchmarking

- Internal benchmarking makes comparisons between similar operations within an organization.
- Competitive benchmarking makes comparisons with the best direct competitor.
- Functional benchmarking makes comparisons of process methodologies in similar industries.

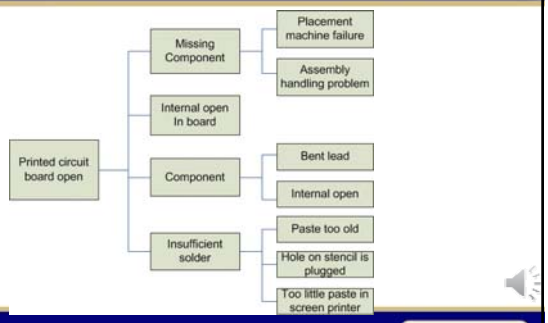
5.7 Types of Benchmarking

- Generic benchmarking makes comparisons of processes of non-related companies.
  - Xerox Corporation partnered with L.L. Bean and Hershey Foods for warehousing and distribution.
  - Motorola has partnered with Domino's Pizza and Federal Express for ideas on how to rush delivery of its cellular phones.
  - Major airline studied auto racing pit crews to improve maintenance turnaround time. (The Benchmarking Exchange)
  - Hotel chain studied admittance process with hospital emergency room to reduce wait times at check in. (The Benchmarking Exchange)

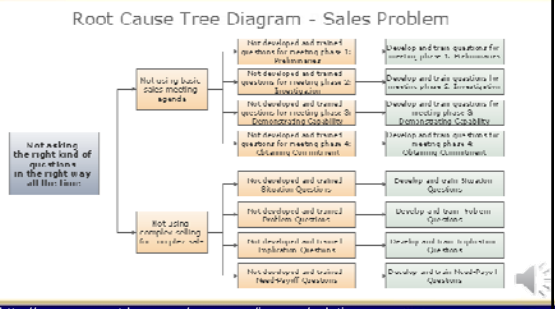
5.14 Tree Diagram

- Tree diagrams can help people uncover, describe, and communicate a logical relationship that is hierarchical between important events or goals.
- Similarly, a tree can describe the hierarchy that leads to a desirable or undesirable event. (fault tree or FT).
- With this approach a big idea or problem is partitioned into smaller components.
- Logical operators such as AND or OR gates can connect lower elements to higher elements in the hierarchy.

5.14 Tree Diagram



5.14 Tree Diagram



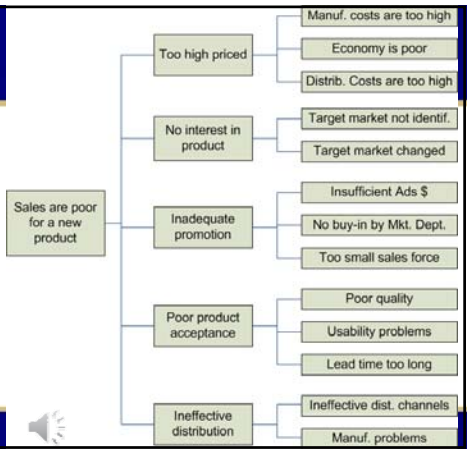
http://www.conceptdraw.com/resources/images/solutions-screens/business/Root_Cause_Tree_Diagram.png

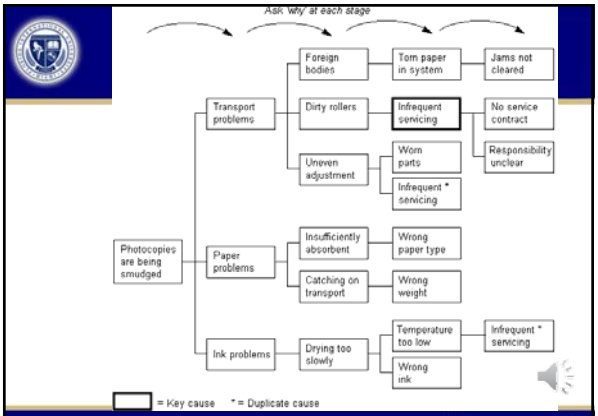
5.15 Why-Why Diagram

Why-Why Diagram

- A variation of the cause-and-effect diagram and tree diagram (Higgins 1994; Majaro 1988).
- These final responses can be used as wisdom of the organization inputs for further investigation.

Why-Why Diagram





http://www.syque.com/improvement/images/image343.gif

5.16 Matrix Diagram

- A matrix diagram is useful to discover relationships between two, three or four groups of information.

L Shaped Matrix – Relates 2 groups of items

Requirements	Customer *D*	Customer *M*	Customer *R*	Customer *T*
Purity %	> 99.2	> 99.2	> 99.4	> 99.0
Trace metals (ppm)	< 5	—	< 10	< 25
Water (ppm)	< 10	< 5	< 10	—
Viscosity (cp)	20-35	20-30	10-50	15-35
Color	< 10	< 10	< 15	< 10

Adapted from matrix at http://asq.org/learn-about-quality/new-management-planning-tools/overview/matrix-diagram.html

5.16 Matrix Diagram

T Shaped Matrix – Relates 3 groups of items

Products—Customers—Manufacturing Locations

Texas plant	●		○	○
Mississippi plant		●		○
Alabama plant	○			●
Arkansas plant		○	●	
● Large volume ○ Small volume	Model A	Model B	Model C	Model D
Zig Corp.		●		
Arlo Co.	○	○	○	●
Lyle Co.			○	○
Time Inc.	●			●

Adapted from matrix at http://asq.org/learn-about-quality/new-management-planning-tools/overview/matrix-diagram.html

5.16 Prioritization Matrices

- A prioritization matrix quantifies and prioritizes items within a matrix diagram: activities, goals, or characteristics
- Simple prioritization matrix, Analytical hierarchy process

5.16 Prioritization Matrices

- Within a prioritization matrix, one can assign relative importance weights.
  - Simply assigned by the organization or team.

Simple Prioritization Matrix

Prioritization criteria: / Motivation problems	We are able to influence Weight = 20		Many people have problem Weight = 30		Likely survey improvement Weight = 50		Final score
Unhelpful management	25%	5.0	21 = 11%	3.2	2 = 9%	4.6	12.8
Insufficient pay	19%	3.8	29 = 15%	4.5	4 = 18%	9.1	17.4
Work overload	6%	1.2	36 = 18%	5.5	5 = 23%	11.4	18.1
Unclear objectives	20%	4.0	23 = 12%	3.5	3 = 14%	6.8	14.4
Inadequate tools	8%	1.6	45 = 23%	6.9	3 = 14%	6.8	15.3
Poor food in canteen	4%	0.8	21 = 11%	3.2	2 = 9%	4.6	8.6
Uncooperative workmates	13%	2.6	10 = 5%	1.5	2 = 9%	4.6	8.7
Untidy workplace	5%	1.0	10 = 5%	1.5	1 = 5%	2.3	4.8
Totals			195		22		100

http://www.syque.com/quality_tools/toolbook/Priority/example.htm

5.16 Prioritization Matrices

- Within a prioritization matrix, one can assign relative importance weights.

Analytical hierarchy process (AHP)

- Within the AHP approach, a number of decision-makers can integrate their priorities into a single priority matrix using a pairwise fashion.
- This result of this matrix is a prioritization of the factors.

5.16 Prioritization Matrices

Analytical hierarchy process (AHP)

Watch the following YouTube video

Analytic Hierarchy Process AHP - Business Performance Management

http://www.youtube.com/watch?v=18GWVtVAAzs

(Link provided in Blackboard)

5.17 Process Decision Program Chart (PDPC)

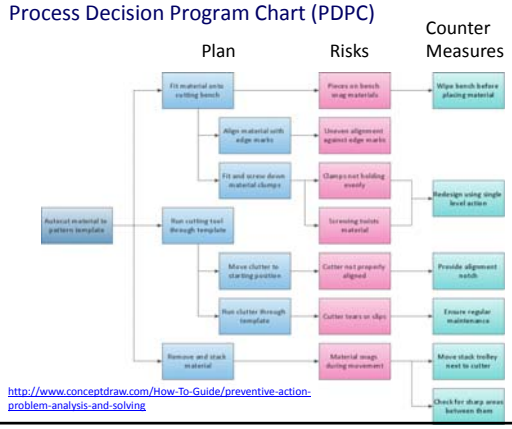
- A process decision program chart (PDPC) helps with the organization and evaluation of processes and the creation of contingency plans.
- PDPC can help anticipate risks/ deviations from expected events so specific actions can be undertaken for problem prevention or mitigation of impact when they do occur.

5.17 Process Decision Program Chart (PDPC)

Basic Steps PDPC

- Identify the basic activities and related events associated with the process in tree diagram format
- Determine possible risks/deviations with each of the activities/events. (Next level of the tree diagram)
- Identify and annotate contingency/risk mitigation activities.
- Determine actions to take. (Subjective probabilities of occurrence can be assigned and then used for the assignment of priorities.)

Process Decision Program Chart (PDPC)

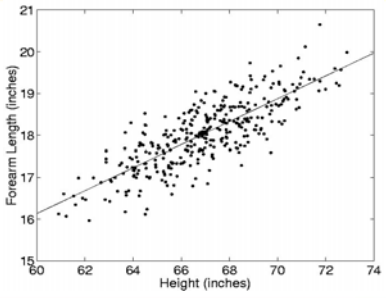


http://www.conceptdraw.com/How-To-Guide/preventive-action-problem-analysis-and-solving

5.19 Scatter Diagram (Plot of Two Variables)

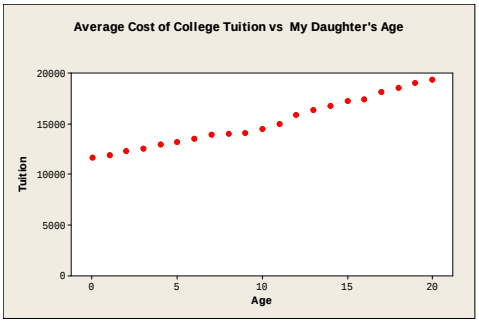
- A scatter diagram (plot) assesses the relationship between two variables
  - 50 to 100 pairs of samples should be plotted
  - the independent variable is on the x-axis while the dependent variable is on the y-axis.
- The correlation and regression techniques can be used to test the statistical significance of relationships. (Ch. 23)

5.19 Scatter Diagram (Plot of Two Variables)



5.19 Scatter Diagram (Plot of Two Variables)

- A scatter diagram relationship does not predict a true cause-and-effect relationship.
- The plot only shows the strength of the relationship between two variables



Tuition data source: Digest of Education Statistics 2012, Table 381. Average undergraduate tuition and fees and room and board rates charged for full-time students in degree-granting institutions, by level and control of institution: 1969-70 through 2011-12. (Data depicted is 1992-2012, constant dollars 2011/12)

Related Assignments

See Blackboard for related assignments