Pareto Analysis

JOHN BESSANT

Managing Innovation

Pareto Analysis

What is it?

Pareto Analysis is a simple method for separating the major causes (the 'vital few') of a problem, from the minor ones ('trivial many').

Why use it?

Pareto Analysis can help you prioritise and focus resources where they are most needed. It can also help you measure the impact of an improvement by comparing before and after. When giving presentations, Pareto Diagrams are a visually effective means of displaying the relative importance of causes, problems or other conditions.80/20 Rule. Vilfredo Pareto was a 19th century economist who observed that 80% of Italy's wealth was owned by 20% of the population. This relationship has been found to be true in many other fields eg 80% of a company's problems resulting from 20% of the causes. Of course the split may not be exactly 80/20, the principle is that a few causes are usually responsible for most of the problems.

Constructing a Pareto Diagram

1. Assemble the data to be analysed. You may need to design a checksheet to collect it.

2. Add up the total of each item under analysis.

3. List the items in order of magnitude, starting with the largest.

4. Calculate the total of all the items, and the percentage that each item represents of the total. Beside each item write the cumulative total and cumulative percentage.

5. Draw a bar chart.Use the y-axis (vertical) to show the volume of what you are comparing (frequency, cost, time etc); list the items from left to right on the x-axis (horizontal), arranged according to size, with the largest on the left. If there are a lot of items, you may group together those containing the fewest numbers into an 'Other' category placed on the far right as the last bar. Above each item draw a bar to a height that matches its frequency or count on the y-axis. The bars should all be the same width and not have gaps between them. Under the horizontal axis label each of the bars.

6. Draw in the cumulative curve.To do this, draw a line from where the axes start to the upper right-hand corner of the first bar. Place a dot here and next to it write the percentage calculated for that item. Make a second dot directly above the top right-hand corner of the second bar to represent the

cumulative total (ie the total of the first and second items added together). Join it to the first dot and write the cumulative percentage beside it. Continue until the last cumulative total has been plotted. On the right-hand side of the diagram, next to the last bar, draw in a second vertical axis which starts at zero and has 100% aligned with the end of the cumulative curve.

7. Label the diagram with a title and any other necessary items: the date it was drawn, the source of the data used, etc.

8. Interpret the diagram. In general, the items requiring priority action, the 'vital few', will appear on the left of the diagram where the slope of the curve is steepest. When comparing before and after, if the improvement measures are effective either the order of the bars will change or the curve will be much flatter. Sometimes it is helpful to do more than one Pareto, based on different units of measurement eg the type of error which occurs most frequently may be the cheapest to correct; in this case it would be appropriate to do a Pareto based on cost to see which error accounts for most of the correction costs.