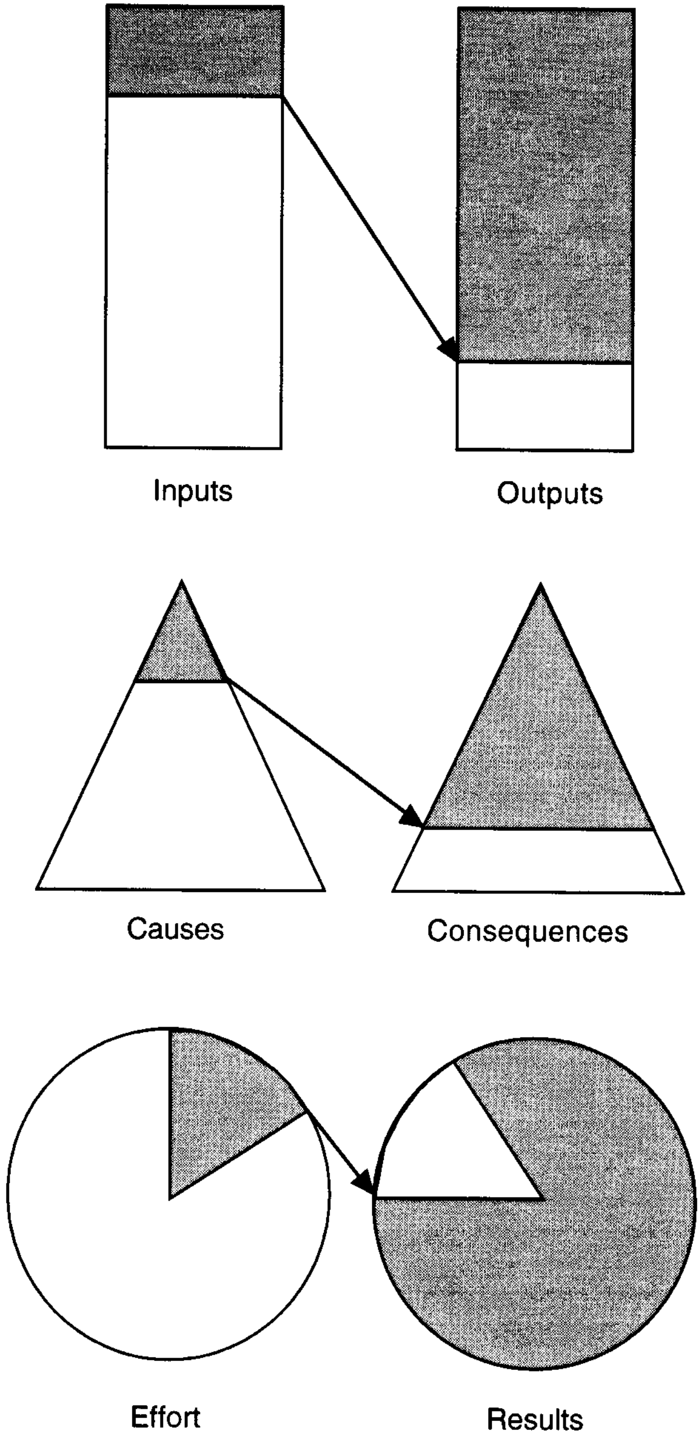

Inputs
Outputs
Causes
Consequences
Effort
Results

concentrate as much investment as possible into it. Conventional wisdom is not to put all your eggs in one basket. 80/20 wisdom is to choose a basket carefully, load all your eggs into it, and then watch it like a hawk.

How to use the 80/20 Principle

There are two ways to use the 80/20 Principle, as shown in Figure 5.

Traditionally, the 80/20 Principle has required 80/20 Analysis, a quantitative method to establish the precise relationship between causes/input/effort and results/outputs/rewards. This method uses the

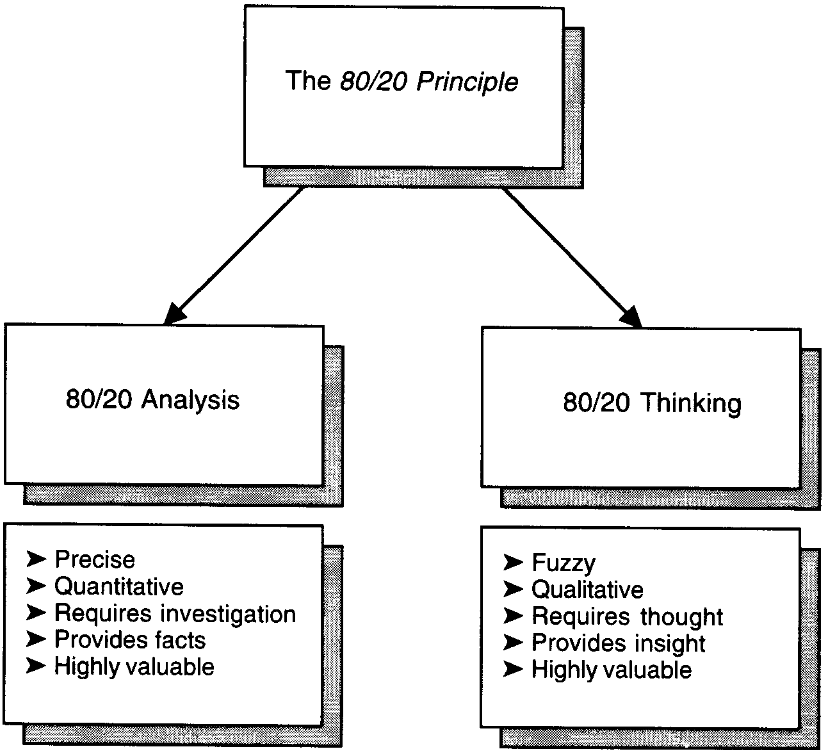


Figure 5. Two ways to use the 80/20 Principle

possible existence of the 80/20 relationship as a hypothesis and then gathers the facts so that the true relationship is revealed. This is an empirical procedure which may lead to any result ranging from 50/50 to 99.9/0.1. If the result does demonstrate a marked imbalance between inputs and outputs (say a 65/35 relationship or an even more unbalanced one), then normally action is taken as a result (see below).

A new and complementary way to use the 80/20 Principle is what I call 80/20 Thinking. This requires deep thought about any issue that is important to you, and asks you to make a judgement on whether the 80/20 Principle is working in that area. You can then act on the insight. 80/20 Thinking does not require you to collect data or actually test the hypothesis. Consequently, 80/20 Thinking may on occasion mislead you—it is dangerous to assume, for example, that you already know what the 20 per cent is if you identify a relationship—but I will argue that 80/20 Thinking is much less likely to mislead you than is conventional thinking. 80/20 Thinking is much more accessible and faster than 80/20 Analysis, although the latter may be preferred when the issue is extremely important and you find it difficult to be confident about an estimate.

We look first at 80/20 Analysis, and then at 80/20 Thinking.

80/20 Analysis

80/20 Analysis examines the relationship between two sets of comparable data. One set of data is always a universe of people or objects, usually a large number of 100 or more, that can be turned into a percentage. The other set of data relates to some interesting characteristic of the people or objects, that can be measured and also turned into a percentage.

For example, we might decide to look at a group of 100 friends, all of whom are at least occasional beer drinkers, and compare how much beer they drank last week. So far, this method of analysis is common to many statistical techniques. What makes 80/20 Analysis unique is that the measurement ranks the second set of data in descending order of importance, and makes comparisons between percentages in the two sets of data.

In our example, then, we will ask all our 100 friends how many glasses of beer they drank last week and array the answers in a table in descending order. Figure 6 shows the top 20 and bottom 20 from the table.

80/20 Analysis can compare percentages from the two sets of data (the friends and the amount of beer drunk). In this case, we can say that 70 per cent of the beer was drunk by just 20 per cent of the friends. This would therefore give us a 70/20 relationship. Figure 7 introduces an 80/20 frequency distribution chart (or 80/20 chart for short) to summarize the data visually.

Why is this called 80/20 Analysis?

When comparing these relationships, the most frequent observation, made long ago (probably in the 1950s), was that 80 per cent of the quantity being measured came from 20 per cent of the people or objects. 80/20 has become shorthand for this type of unbalanced relationship, whether or not the precise result is 80/20 (statistically, an exact 80/20 relationship is unlikely). It is the convention of 80/20 that it is the top 20 per cent of causes that is cited, not the bottom. 80/20 Analysis is my name for the way that the 80/20 Principle has generally been used to date, that is in a quantitative and empirical way, to measure possible relationships between inputs and outputs.

We could equally well observe from the data on our beer-drinking friends that the bottom 20 per cent of people only consumed 30 glasses, or 3 per cent of the total. It would also be perfectly legitimate to call this a 3/20 relationship, although this is rarely done. The emphasis is nearly always on the heavy users or causes. If a brewery was conducting a promotion, or wanted to find out what beer drinkers thought about their range of beers, it would be most useful to go to the top 20.

We might also want to know what percentage of our friends

Rank	Name	Glasses drunk	Cumulative
	Our top 20 beer drinkers		
1	Charles H	45	45
2	Richard J	43	88
3=	George K	42	130
3=	Fred P	42	172
5	Arthur M	41	213
6	Steve B	40	253
7	Peter T	39	292
8	Reg C	37	329
9=	George B	36	365
9=	Bomber J	36	401
9=	Fatty M	36	437
12	Marian C	33	470
13	Stewart M	32	502
14	Cheryl W	31	533
15=	Kevin C	30	563
15=	Nick B	30	593
15=	Ricky M	30	623
15=	Nigel H	30	653
19	Greg H	26	679
20	Carol K	21	700
	Our bottom 20 beer drinkers		
81=	Rupert E	3	973
81=	Patrick W	3	976
81=	Anne B	3	979
81=	Jamie R	3	982
85=	Stephanie F	2	984
85=	Carli S	2	986
87=	Roberta F	1	987
87=	Pat B	1	988
87=	James P	1	989
87=	Charles W	1	990
87=	Jon T	1	991
87=	Edward W	1	992
87=	Margo L	1	993
87=	Rosabeth M	1	994
87=	Shirley W	1	995
87=	Greg P	1	996
87=	Gilly C	1	997
87=	Francis H	1	998
87=	David C	1	999
87=	Darleen B	1	1000

Figure 6.

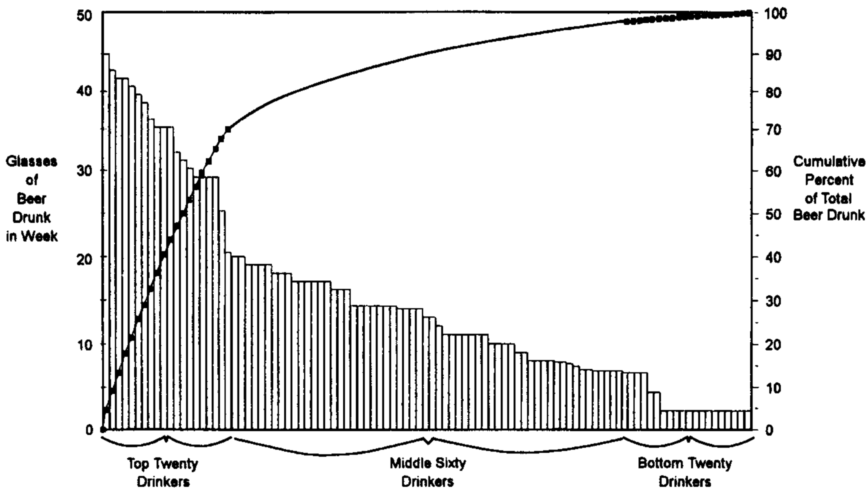


Figure 7. 80/20 frequency distribution chart of beer drinkers

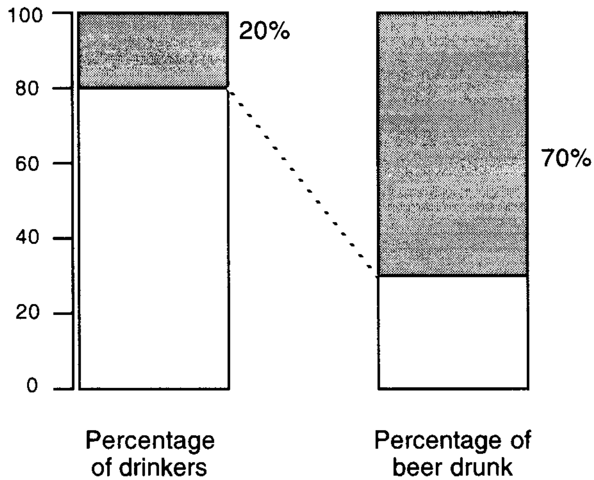
combined to account for 80 per cent of total beer consumption. In this case, inspection of the part of the table not displayed (the middle part) would show that Mike G, the 28th biggest drinker with 10 glasses, took the cumulative total to 800 glasses. We could express this relationship, therefore, as 80/28: 80 per cent of total beer was drunk by just 28 per cent of our friends.

It should be clear from this example that 80/20 Analysis may result in any set of findings. Clearly, individual findings are more interesting and potentially more useful where there is an imbalance. If, for example, we had found that all of our friends had drunk exactly eight glasses each, the brewery would not have been very interested in using our group for a promotion or research. In this case, we would have had a 20/20 relationship (20 per cent of beer was drunk by the 'top' 20 per cent of friends) or an 80/80 relationship (80 per cent of beer was drunk by 80 per cent of friends).

Bar charts show 80/20 relationships best

An 80/20 Analysis is best displayed pictorially, by looking at two bars—as is particularly appropriate for our example! (Figures 2–4 above were bar charts.) The first bar in Figure 8 contains our 100 beer-drinking friends, each filling 1 per cent of the space, starting with the biggest beer drinker at the top and ending with the smallest beer drinkers at the bottom. The second bar contains the total amount of beer drunk by each (and all) of our friends. At any point, we can see for a given percentage of our friends, how much beer they accounted for.

Figure 8 shows what we discovered from the table (and could also see from Figure 7): that the top 20 per cent of beer drinkers accounted for 70 per cent of the beer drunk. The simple bars in Figure 8 take the data from Figure 7 and display them from top to bottom instead of from left to right. It doesn't matter which display you prefer. If we wanted to illustrate what percentage of our friends drank 80 per cent of the beer, we would draw the bar charts slightly differently, as in Figure 9, to show the 80/28 relationship: 28 per cent of our friends drank 80 per cent of the beer.



Shows a 70/20 rule

Figure 8.

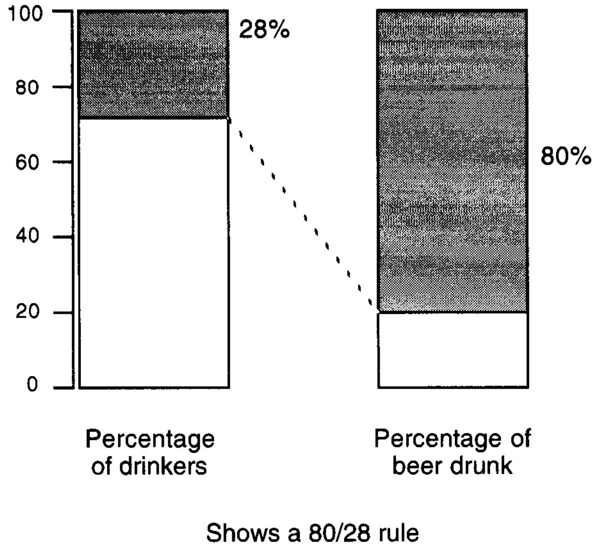


Figure 9.

What is 80/20 Analysis used for?

Generally, to change the relationship it describes, or to make better use of it!

One use is to concentrate on the key causes of the relationship, the 20 per cent of inputs that lead to 80 per cent (or whatever the precise number is) of the outputs. If the top 20 per cent of beer drinkers account for 70 per cent of beer consumed, this is the group that a brewery should concentrate on reaching, in order to attract as high a share as possible of the business from the 20 per cent, and possibly also to increase their beer consumption still further. For all practical purposes, the brewery may decide to ignore the 80 per cent of beer drinkers who only consume 30 per cent of the beer; this simplifies the task immensely.

Similarly, a firm that finds that 80 per cent of its profits come from 20 per cent of its customers should use this information to concentrate on keeping that 20 per cent happy and increasing the business carried out with them. This is much easier, as well as more rewarding, than paying equal attention to the whole customer group. Or, if the firm finds that 80 per cent of its profits come from 20 per cent of its products, it should put most of its efforts behind selling more of those products.

The same idea applies to non-business applications of 80/20 Analysis. If you analysed the enjoyment you derived from all your leisure activities and found that 80 per cent of the enjoyment derived from 20 per cent of the activities, which currently took only 20 per cent of your leisure time, it would make sense to increase the time allocation from 20 to at least 80 per cent.

Take transport as another example. 80 per cent of traffic jams occur on 20 per cent of roads. If you drive on the same route to work each day, you will know that roughly 80 per cent of delays usually occur at 20 per cent of the intersections. A sensible reaction would be for traffic authorities to pay particular attention to traffic phasing on those 20 per cent of jam-creating intersections. While the expense of such phasing might be too much for 100 per cent of junctions 100 per cent of the time, it would be money well spent in the key 20 per cent of locations for 20 per cent of the day.

The second main use of 80/20 Analysis is to do something about the 'underperforming' 80 per cent of inputs that contribute only 20 per cent of the output. Perhaps the occasional beer drinkers can be persuaded to drink more, for example by providing a blander product. Perhaps you could work out ways to get greater enjoyment out of the 'underperforming' leisure activities. In education, interactive teaching systems now replicate the technique used by college professors where questions are addressed randomly to any student, in order to combat the 80/20 rule, where 80 percent of classroom participation comes from 20 percent of the trainees. In US shopping malls it has been found that women (some 50 per cent of the population) account for 70 per cent of the dollar value of all purchases.[4] One way to increase the 30 per cent of sales to men might be to build stores specifically designed for them. Although this second application of 80/20 Analysis is sometimes very useful, and has been put to great effect in industry in improving the productivity of underperforming factories, it is generally harder work and less rewarding than the first use.