

# Benchmarking and Sigma quality

**Benchmarking** is the process companies use to identify competitors who perform a particular task best (the “targets”) in order to use them as a point of reference or a model to understand and evaluate their current position on the market. This allows companies to see how well they are performing in quality, time, costs and processes and to identify strategies to become more competitive. By looking at performance levels outside a particular business, organisation, industry or country, companies can also accelerate their process of change and updating.

Benchmark reports can be compared to a dashboard on a car: just like a dashboard checks speed, gas level, temperature and the general condition of a vehicle, benchmark reports examine revenues, expenses or productivity and determine the health of the business.

Benchmarking is used by most types of companies, including private, public, non-profit as well as industries in all sectors. They have special positions or offices in charge of benchmarking, such as data analysts, consultants or market researchers.



The application of benchmarking involves four key steps:

1. understanding existing business processes in detail
2. analysing competitors’ processes
3. comparing the two performances
4. implementing the steps necessary to close the performance gap.

## Six Sigma quality

In a competitive business environment, companies need to focus on developing and delivering customers near-perfect products and services. Quality can be measured by using a set of techniques and tools, called Six Sigma, introduced by engineer Bill Smith while working at Motorola in 1986. The word is a statistical term that measures how far a given process deviates from perfection, which means zero defects.

The central idea behind Six Sigma is that if it is possible to measure how many defects a process can have, it can be systematically figured out how to eliminate them and get as close to “zero defects” as possible. To achieve Six Sigma quality, a process must produce no more than 3.4 defects per million opportunities or chances for non-conformance or non-meeting the required specifications, which means less than one defect in 300,000 components.

## Six Sigma Calculator

In order to calculate the **DPMO** (number of defects per million opportunities) three parameters are necessary:

1. the number of units produced
2. the number of defect opportunities per unit
3. the number of defects.

The formula is:

$$\frac{(\text{N}^\circ \text{ of defects})}{(\text{N}^\circ \text{ of defect opportunities}) (\text{N}^\circ \text{ of units})} \times 1,000,000$$



## Six Sigma Reference Table

Sigma Quality	DPMO
1	690,000
2	308,537
3	66,807
4	6,210
5	233
6	3.4



**1 Answer these questions.**

1. What is benchmarking and why do companies use it?
2. Why can benchmark reports be compared to a car dashboard?
3. How can companies compete in a competitive business environment?
4. How can quality be measured?
5. What does Six Sigma quality mean?
6. What is the DPMO? How is it calculated?
7. When is Six Sigma quality achieved?



**2** A manufacturer of computer hard drives wants to measure his company's Sigma level. Over a given period of time, the manufacturer creates 83,934 hard drives and performs 8 individual checks to test the quality of the drives. During testing 3,432 items are rejected. Calculate the DPMO and the Sigma level of this company by using the formula and the table on the previous page.



**3** Choose from the sentences A-G the one which fits each gap. There are two extra sentences.

**The Advantages of Benchmarking for an Organisation**

Companies from every kind of industry use benchmarking to measure their successes and pinpoint their weaknesses in order to improve their performance. **1.** .....

Among its several advantages, benchmarking can lower labour costs. **2.** .....

Company managers are able to obtain information on these robotics systems through the competitor's website or online articles and can also identify the company that sold the competitor the robots. **3.** .....

Companies may also use benchmarking to improve product quality. Engineers sometimes purchase leading competitors' products, study them and determine how the competitors' products outperform others in the industry. **4.** ..... Consequently, improvements can be made to product quality.

Some organisations use internal benchmarking to improve performance in different departments too. Department managers often study and imitate the best practices of one particular department. **5.** .....

- A. The process of benchmarking, or identifying the best practices, in fact, is a method that is rapidly gaining a reputation in all industrial sectors.
- B. These examples may spark improvements and changes among all employees.
- C. This same company could help set up its own robotic system too.
- D. The general process of benchmarking, in fact, involves identifying problem areas, selecting top competitors who excel where a company falls short and making the necessary changes.
- E. Chemical engineers usually study food or cleaning products in a similar manner to compare various elements contained in competitive products in their own product line.
- F. Another productive use of benchmarking is also to identify areas of excellence among employees and inside the business.
- G. For example, a small manufacturing company may study how a top competitor uses robots for several basic plant functions in order to save a significant amount of money.



**4 Discuss these questions in pairs.**

1. Do you think that a form of benchmarking could be necessary to individuals too? Why? Why not?
2. Do you think that better examples could help to make further improvements? Why/Why not?
3. Learning from errors helps. Do you agree? Why? Why not?