

Design of Experiments (DOE) in Industry and Academic Research: Examining Differences, Misconceptions and Common Challenges

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After a brief review of the basic methods of statistical design of experiments, we will discuss the following issues and consider their relevance to the application of DOE in industry and in academic research through a series of examples:

- Identifying and dealing with unpleasant and unwelcome sources of variation, such as raw materials and measurement
- Constraints of time and resources
- Use of sequential rather than one off designs
- Appropriate definition of nesting and random effects
- Implications of relying on surrogate processes for experimentation
- Planning, documentation and knowledge management
- Treating experimentation as a process, with appropriate monitoring
- Confusion regarding statistical concepts such as "a representative sample", "sampling error" and "significance" (small pvalue as holy grail)