

Design-Expert : Software for Design of Experiments Version 6.0.1, Stat-Easy, Inc., Hennepin Square, Suite 191, 2021 E. Hennepin Ave., Minneapolis, MN, 55413-2723,2000, \$995.

Design of Experiments as a statistical technique, is a powerful tool per se for investigators to understand empirically how three, four or even more factors impact the outcomes and provides a direction for improvement. It can also be used to identify the optimal setting for multivariables, thus it can be used for the purpose of process improvement and process optimization.

The technique is underutilized in the industry and R&D. Part of the reasons for this underutilization, is that it is a difficult subject to understand and except in a few fractional factorial design cases, it is difficult to put together the design and conduct the required analysis by anyone other than a few well trained professional statisticians. Design-Expert as Design of Experiment software serves the purpose well in filling in the gap between the textbook understanding and the real world application of the techniques.

In the design part, based on the nature of the factor properties, it provides design categories in factorial, response surface, mixture, and crossed. Within each category it provide wide array of selections. For example, in the factorial category, the design ranged from the familiar two level factorial, or fractional factorial, Plackett-Burman , and Taguchi to less familiar D-optimal design. In the mixture category, it provides an array of simplex designs and other techniques. The software actually allows the users to define any design he or she requires by either using various design criteria to pick the design points, or provides the design point directly. The D-Optimal design technique is included in all categories.

In the process of applying Design of Experiment techniques, it involves designing the experiment, collecting data according to the design (conducting the experiment), analyzing the data at the completion of the experiment, and finding the trend or optimum setting based on the analysis. Design-Expert provides a very user friendly and seamless transition from one phase to the other. Within each phase this software also provides almost automated process to obtain the result. The users need to provide only a few selections of parameters and conditions. The rest will be handled by the software.

It worth to mentioning that Design-Expert also provides a very good graphical representation of the design points and the fitted model, especially where the users can view the responsive surface using either contour plots or 3-D display. 3-D display also allows the users to rotate the surface and be viewed from any angle of the model.

Among the Design of Experiment Software existing in the market, Design-Expert Version 6.0.1 is the most users friendly, and comprehensive in terms of the scope and the depth of the coverage in both the design, analysis (modeling), and optimization. This is a must have tool for you if you are involved with the process optimization and improvement.

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