
Overview

This standard is about the skills and knowledge needed to apply Design of Experiments (DOE) techniques as part of your organisation's drive to increase the effectiveness and productivity of food operations. Design of Experiments are tools and techniques to achieve operational cost savings by minimising process variation and reducing rework, scrap, and the level of need for quality monitoring or inspection. This is important in the achievement of excellence and the success of manufacture, processing and supply across the food supply chain.

You will need to apply and understand the principles of Design of Experiments to support improvement to meet the business objectives set out in your organisation's improvement plan. You will need to show and know how to present findings to relevant people within the organisation, including management colleagues. You will need to know how to comply with your company policy for improvement, take responsibility for your actions, and refer any issues outside of the limit of your authority to others.

This standard is for you if you work in food or drink operations including, manufacturing, processing, packaging or supply chain activities. You may have responsibilities for aspects of organisational improvement in a team leadership or management role.

Apply Design of Experiments (DOE) improvement techniques in food operations

Performance criteria

You must be able to:

Prepare to apply Design of Experiments tools and techniques

1. confirm and agree the defined scope of improvement activity with the relevant personnel
2. check and confirm that the tools and techniques are the most appropriate to support the improvement required in accordance with the improvement plan
3. obtain information, documentation and resources necessary to support the tools and techniques in accordance with procedures
4. communicate the purpose of the improvement activity to the relevant personnel

Apply Design of Experiments tools and techniques to support improvement activity

5. use approved methodology to collect information and performance data on potential cost saving activities in accordance with the improvement plan
6. analyse and evaluate information and performance data in accordance with the improvement plan

Report improvement opportunities

7. present the findings on the application of Design of Experiments tools and techniques to the relevant personnel
8. make recommendations about improvement opportunities and targets resulting from the findings to the relevant personnel

Knowledge and understanding

You need to know and understand:

1. the organisation's improvement vision, strategy, objectives and the reasons for implementation of improvement programmes
2. how the health, safety and hygiene requirements of a work area can influence the design of experiment improvement technique
3. design of experiments as an improvement technique in food operations
4. why we use Design of Experiments and how this can benefit an improvement project
5. the importance of determining the scope of an experiment
6. how to apply and complete a Design of Experiments project
7. the tools and techniques used in the Design of Experiments
8. the data required to carry out the Design of Experiments
9. how population and sample size is used in the Design of Experiments
10. Alpha risk and Beta risk
11. how to calculate Mean, Median, Mode, Standard Deviation, Range and Variance
12. how graphical display can be used to show main effects and interactions
13. the meaning of a population and a sample in terms of the Design of Experiments
14. arrays design linked to the design of interactions
15. levels of authority linked to problem resolution
16. how to report findings and present improvements

Apply Design of Experiments (DOE) improvement techniques in food operations

Developed by	NSAFD
Version Number	2
Date Approved	March 2017
Indicative Review Date	January 2022
Validity	Current
Status	Original
Originating Organisation	Improve
Original URN	IMPQI257
Relevant Occupations	Engineering and manufacturing technologies; Manufacturing technologies; Process Operatives; Process, Plant and Machine Operatives; Plant and Machine Operatives
Suite	Achieving Food Manufacturing Excellence
Keywords	Food; Operations; Manufacturing; Excellence; Improvement; Development; Change; Management; Design; Experiments; DOE;