

## Chapter 7

### 7 Conclusion

Finding solution to facility layout problem (FLP) is a tough issue. This becomes more difficult in food processing industry as specific hygiene, GMP and regulatory parameters to be fulfilled in the layout. There are very few research performed in connection with layout design for specific requirements of food processing industry. Similarly the practical implementation of layout in a food processing plant is not discussed in depth. Hence solutions identified can not be implemented as it is in the food processing industry FLP.

A framework was developed to address the above gap in FLP of food processing industry. This framework considers specific requirements of food processing industry and collects data in a systematic manner to support resolving FLP. This was tested in the case study. It helped to collect vital data of the factory operation in a logical manner. The framework was helpful in the decision making process to resolve FLP. This can be applied to any manufacturing process with necessary modifications.

Food processing plants characterised with a unique set of operations. These operations can be separately identified by considering the risk level to the manufacturing process in terms of food safety. Thereby various operations can be grouped into five different sections as primary, secondary, utility, warehouse and administration. These five sections will have different ventilation, building finishing, access control, lighting systems to mitigate the risk level for food safety.

The proposed colour scheme helps to clearly identify these sections in a layout drawing. The colour helps to identify the spread of operation in one section that needs similar treatment in the layout design process. This clear visibility supports the decision making process to resolve FLP.

The diamond model further simplified the FLP by splitting the plant operation in to five major sections and provided the location of each section in a layout. This supported the decision making process to resolve the FLP. The diamond model was

tested and was proved to be successful when applied in a food processing plant case study.

### **7.1 Future work**

The proposed model can be taken as the foundation and a study can be done to further narrow down the facility design problem. Data needs to be collected in relation to pest presence, microbial growth and particle size in air, to further strengthen the model by providing additional information that may help designers of facilities in the food processing industry.

The model can be applied to other food manufacturing industries like ice-cream manufacturing or yogurt manufacturing. This will help to test the applicability of the model to all food manufacturing industries.

Similarly two layouts can be developed with one using the diamond model and the other not considering the diamond model concept. This can be used to measure the efficiency of the diamond model.

Further more a support system, for example a worksheet or software could be developed to support the framework of data collection and decision making.



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