ABSTRACT

The world has been witnessing renaissance during the past two decades. Particularly in manufacturing arena, there has been tremendous and innovative developments of both technologies and managerial philosophies. During this period, advanced technologies such as Flexible Manufacturing Systems, Computer Integrated Manufacturing, Robotics etc., emerged. At the same time manufacturing management philosophies such as Total Quality Management, Business Process Re-engineering etc., also emerged. Amidst these phenomenal developments, there are certain key areas which deserve high potential research but they are given much less importance by both theorists and practitioners. In fact, these areas need to be refined and developed in proportion to the development that are taking place in manufacturing arena. One such prominent area is "Risk Management". Although some work has been done on risk management, it does not match the present day manufacturing environment. In this context, this research work was carried out to evolve solutions to manage risks by reducing or eliminating Loss Producing Events (LPEs) in organisations.

After recognising the need for carrying out research on risk management, comprehensive literature survey was undertaken in the appropriate domain to identify the gaps which need to be filled by this research work. Accordingly, it was found out that investigations were required to be carried out in five areas namely i) Risk management for controlling disaster in manufacturing enterprises through mock drill exercise ii) Risk management in special purpose processes iii) Effectiveness of Bayesian approach on risk management iv) Failure Mode and Effect Analysis for controlling risk of advanced manufacturing devices and v) Predicting the severity of industrial accidents using neural network model. Under each investigation, a case study was undertaken to check the practical viability of the technique used for reducing or eliminating the loss producing events and controlling them through risk management strategy. Each module of investigation has been useful in bringing out the generalised models. Moreover, the areas of investigations have been chosen in such a way that they represent the samples of the entire manufacturing arena and the results of this research project would be useful to a wide range of theorists and practitioners.