ACKNOWLEDGEMENT

The author’s heartiest and deepest gratitude to almighty God whose grace provided him the perseverance, guidance, inspiration and strength to complete this thesis work.

The author is greatly indebted to his erudite supervisor Dr. Ramesh K. Garg, Professor, Mechanical Engineering Department, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Sonepat, (Haryana) for his gracious guidance in bringing out the research work successfully.

He places on record the continuous encouragement, spirited inspiration and magnanimous help rendered by his supervisor throughout the work without which the completion has been impossible. His long and rich experience, wide knowledge and clarity of understanding regarding the subtleties of research process have always been of immense help to him during the research work. I am still to learn a lot from him.

I am thankful to my industrial contacts who have been responsive to requests for datasets. It would not have been possible to complete this thesis without their help. I also appreciate the feedback of anonymous experts on responses of questionnaires.

The author is obliged to Dr. Raj Kumar, Dean, Faculty of Engineering and Technology, Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Sonepat for his moral support and to permit to use the facilities and infrastructure of the department where the work has been carried out.

Dr. S. P. Khatkar, Dean, Faculty of Engineering and Technology, M. D. University, Rohtak and Sh. R. K. Arora, Registrar, Deenbandhu Chhotu Ram University of Science & Technology, Murthal have lent the ambience and opportunity to carry out my research work for which I must record my sincere gratitude to them.

Sh. H. S. Chahal, Vice-Chancellor, Deenbandhu Chhotu Ram University of Science & Technology, Murthal has been a towering figure, who after taking over the reign of this University set forth the standard of research which we, the lesser mortals, had to emulate. My sincere gratitude is due for him for his ever-encouraging goading.
He also wishes to express his thanks to all his friends, colleagues and other staff members who have directly or indirectly helped him during the completion of present work. The author is especially thankful to Dr. Suresh Verma, faculty in Mechanical Engineering Department and Mrs. Sandhya Carg, Research Scholar in Faculty of Management Studies of Deenbandhu Chhotu Ram University of Science & Technology, Murthal for her help while preparing the manuscript of the thesis. I am highly thankful to Dr. Kapil Sharma, Faculty at School of Information and Communication Technology, Gautam Buddha University, Greater Noida (UP) for his immense help and services rendered in formulating the computer programs and knowledge base software.

Last but not the least, the author expresses sincere thanks to his wife Mrs. Rupa Thakur, who stoically and steadfastly shared her joys and sorrows and extended full support for this work. He cannot forget to keep on record the contribution of his sons, Srijan and Saksham who has been deprived of love and care for which they deserved.

SURINDER KUMAR