

Dr. Rohtash K. Bhardwaj


Professor

Department of Statistics

Punjabi University, Patiala-147002, Pb., India


ADDRESS

Correspondence:

 H.No-710/ P-I
Urban Estate, Patiala
PIN-147002, Punjab.

 +91-80547-80540

Permanent:

 VPO Brahmanwas
District Rohtak
PIN-124001, Haryana

 rkb_mstates@rediffmail.com

EDUCATION

PH. D.

M.D. UNIVERSITY - Rohtak
Faculty of Physical Sciences, Department of Statistics

Thesis: Stochastic Analysis of Repairable Reliability Models of
2-out-of-3 Redundant Systems

Supervisor: Prof. Suresh Chander Malik

M. PHIL.

M.D. UNIVERSITY - Rohtak
Faculty of Physical Sciences, Department of Statistics

Thesis: A Study of Reliability Models with Different Failure
Modes and Repair Policies

M. SC

M.D. UNIVERSITY - Rohtak
Faculty of Physical Sciences, Department of Statistics

Project: A Statistical Comparison of Study Habits of Male-
Female Students at PG Level

EXPERIENCE

2018-Present

Assistant Professor (Permanent)
Grade-III

Department of Statistics,
Punjabi University, Patiala (Pb.)

2014-2018

Assistant Professor (Permanent)
Grade-II

Department of Statistics,
Punjabi University, Patiala (Pb.)

2009-2014

Assistant Professor (Permanent)
Grade-I

Department of Statistics,
Punjabi University, Patiala (Pb.)

2009-2014

Lecturer (Regular)

Department of Applied Sciences (Mathematics)
D.C.E. Gurugram (Hr.)

RESEARCH STATISTICS

Research Publications

- Full length Papers- 41
- Edited Book Chapters- 02
- Conf. Proceedings- 01

Webmetrics

- Google Scholar Citations-243
- H-Index- 09
- i-10-Index-09
- Clarivate Analytics IF (Max)-3.3
- Research Gate Citations - 130
- Research Gate Score- 5.34

RESEARCH SUPERVISION

Ph.D. Research Supervision- 06

- Degree Awarded- 02
- Thesis Submitted- 01
- Ongoing- 03

Masters Project Supervision

- Degree Awarded- 01

GRANTS/AWARDS

2003
University Gold Medal-PG

2005-2007
University Research Scholarship

2014-2017
Major Research Project Grant
UGC, Under MHRD Govt. of India

Research Projects

Major Research Project (MRP)

Role: Principal Investigator (Sole)

Amount Released: 12.5 L

Period/Duration: 2014-2017 (Completed)

Funding Agency: University Grants Commission, under MHRD Govt. of India

Title: Stochastic Modeling and Profit Analysis of Standby Systems with Server Failure

Research Areas

Stochastic Processes

Markov & Semi-Markov Processes

Reliability Theory

Modeling & Applications

System Failure Analysis

Corrective & Preventive Maintenance

Big Data Analysis

Current Research Interests

Highly Configured Virtual Computing Systems

VM- Virtual Machine and

VMM- Virtual Machine Monitor

System Environment Modeling and

Steady State Performance Evaluation

Professional Affiliations

□ National

Life Membership- Indian Association for Reliability and Statistics, Vice-President

Life Membership- Indian Society for Probability and Statistics

Life Membership- Indian Science Congress Association

Life Membership- Society for Reliability, Quality and Operations Management

□ International

Life Membership- Society for Reliability and Safety

Life Membership- International Association of Engineers

Membership- International Indian Statistical Association

Membership- Forum for Interdisciplinary Mathematics

Significant Research Publications

- **2021-** Bhardwaj, RK; Singh, R; Steady State Performance Of A Cold Stand by System With Conditional Server Replacement, *J. Stat. Appl. Prob.*, vol. 10(3), pp. 1-8. (Indexed- SCOPUS, Web of Science, **IF-1.17**)
- **2021-** Bhardwaj, RK ; Kaur, M; Mean Time to System Failure Analysis of a Standby System with Delayed Rectification and Random Switch, *Indian Journal of Natural Sciences*, vol.12(69), pp. 351-357. (Indexed- Web of Science, ESCI, **IF-1.7**)
- **2021-** Bhardwaj, RK ; Kaur, M; Mean Time to System Failure Analysis of Probabilistic System with Provision of Switch Repair and Operating Time Threshold, *Int. J. Stat. & Syst.*, vol.12(69), pp. 351-357. (Indexed- ICI, Google Scholar)
- **2021-** Bhardwaj, RK ; Kaur, M; Singh, R; Stochastic Behaviour of a Standby System with Maximum Operation and Repair Time under Random Switching, *Int. J. Stat. & Reliab. Engg.*, vol. 8(1), pp. 149-160. (Indexed- Google Scholar, UGC CARE List)
- **2021-** Bhardwaj, R. K.& Kaur, K; Performance Analysis of a Standby System using Exponential-Rayleigh-Weibull Distributions , *Turkish Journal of Computer and Mathematics Education*, vol.12(02), pp. 2881-2892. (Indexed- SCOPUS, Web of Science, **IF-0.3**)
- **2020-** Bhardwaj, RK; Nandal, N; Profit Analysis of a Three Unit Parallel-Cold Standby System Using Lindley Distribution, *Int. J. Stat. & Reliab. Engg.*, vol. 7(3), pp. 364-370. (Indexed- Google Scholar, UGC CARE List)

Publications Cont....

- ❑ **2020-** Bhardwaj, RK; Kaur, M; Singh, R; MTSF and Profit Analysis of a Cold-Standby System with Unstable Switching Device and Weibull Distribution, *Int. J. Stat. & Reliab. Engg.*, vol. 7(3), pp. 435-444. (*Indexed- Google Scholar, UGC CARE List*)
- ❑ **2019-** Bhardwaj, RK ; Kaur, M; Cost Benefit Analysis Of Stochastic Model Of A System With Proviso Of Switch Rectification And Operating Unit Time, *Communications on Stochastic Analysis*, vol.13(3), pp. 445-452. (*Indexed- SCOPUS, Web of Science, SCI, IF-3.3*)
- ❑ **2018-** Bhardwaj, R. K.& Kaur, K; A Standby System Model under Maximum Redundancy Time and Gamma Repairs, *Int. J. of Engg. Sc.& Tech.*, vol.10(03), pp. 123-131. (*Indexed- SCOPUS, Web of Science, IF-0.3*)
- ❑ **2017-** Bhardwaj, R. K.& Kaur, K; Reliability Indices of a Redundant System with Standby Failure and Arbitrary Distribution for Repair & Replacement Times, *Int. J. of Sys Ass. Engg & Mgmt.*, vol.08 (02), pp. 123-131. (*Indexed- SCOPUS, Web of Science, IF-1.1*)
- ❑ **2016-** Bhardwaj, RK; Singh, R; Stochastic Model of a Cold-Standby System with Waiting for Arrival & Treatment of Serve, *American Journal of Operations Research*, vol. 6(04), pp. 334-342. (*Indexed- Clarivate Analytics/Web of Science, IF-1.1*)
- ❑ **2015-** Bhardwaj, RK; Singh, R; An Inspection-Repair-Replacement Model of a Stochastic Standby System with Server Failure, *Mathematics in Engineering, Science & Aerospace*, vol. 6(02), pp. 191-203. (*Indexed- SCOPUS, ESCI, Clarivate Analytics/Web of Science, IF-1.7*)
- ❑ **2014-** Bhardwaj, RK; Singh, R; Steady State Behavior of a Cold-Standby System with Server Failure and Arbitrary Repair, Replacement & Treatment , *Int. J. of Appl. Eng. Res.*, vol. 9(24), pp. 26563-78. (*Indexed- Google Scholar, SCOPUS IF-0.1*)
- ❑ **2014-** Bhardwaj, RK; Singh, R; Semi Markov Approach for Asymptotic Performance Analysis of a Standby System with Server Failure, *Int. J. of Compt. Appl.*, vol. 98(3), pp. 09-14. (*Indexed- Google Scholar, ProQuest IF-0.8*)
- ❑ **2011-** Bhardwaj, RK; Malik, SC; Asymptotic Performance Analysis of 2oo3 Cold Standby System with Constrained Repair and Arbitrary Distributed Inspection Time , *Int. J. of Appl. Eng. Res.*, vol. 6(8), pp. 1493-1502. (*Indexed- Google Scholar, SCOPUS IF-0.1*)
- ❑ **2011-** Bhardwaj, RK; Malik, SC; Stochastic Modeling and Performance Analysis of 2(K)-out-of-3(N) with Inspection Subject to Operational Restriction, *J. of Reliab. & Sta. Stud.*, vol. 4(1), pp. 85-93. (*Indexed- ESCI, WOS/Clarivate Analytics IF-0.8*)
- ❑ **2010-** Bhardwaj, RK; Malik, SC; Grewal, AS; Probabilistic Analysis of a System of Two Non-Identical Parallel Units with Priority to Repair Subject to Inspection, *J. of Reliab. & Sta. Stud.*, vol. 3(1), pp. 01-11. (*Indexed- ESCI, WOS/Clarivate Analytics IF-0.8*)

Conference Proceedings

- ❑ **2007-** Bhardwaj, RK; Malik, SC; Reliability Modeling of 2-out-of-3 Unit Redundant System Subjected to Conditional Arrival Time of the Server, ISSAT- Int. Conf. on Reliability and Quality in Design, Seattle (USA) , vol. 13, pp. 206-210, ISBN: 978-0-9763486-2-7.
(Indexed- Scopus)

Edited Book Chapters

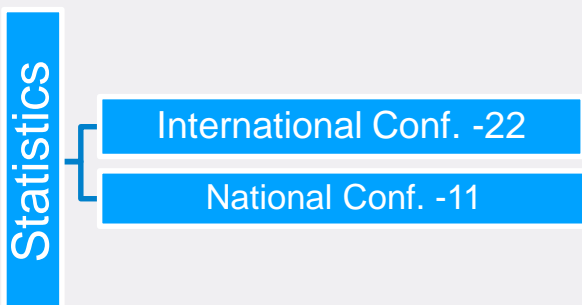
- ❑ **Year- 2022**

Authors: Bhardwaj, RK; Sonker, P; Singh, R;
Book Title: System Assurances: Modeling and Management
Chapter: *A Semi-Markov Model of a System working under Uncertainty*
ISBN: 978-0-323-90240-3
Ch. No./pp.: 11/ 154-170
Publisher: Academic Press, **Elsevier (International)**

- ❑ **Year- 2021**

Authors: Bhardwaj, RK; Singh, Ravinder;
Book Title: Advanced Statistical Methods for Agricultural and Biological Sciences
Chapter: *Performance evaluation of a dissimilar unit cold standby system with server recovery*
ISBN: 978-93-92513-20-6
Ch. No./pp.: 9/ 154-170
Publisher: New Delhi Publishers, Daryaganj, New Delhi-110002

Conference Presentations/Invited Talks



INTERNATIONAL

- ❑ **2021 International Conference (Online) on Recent Application of Statistical Techniques and Analysis**, Department of statistics, *Banaras Hindu University*, 15-17, Dec 2021.
Talk: Steady-state behavior of a cold-standby system subject to inspection with server failure.
- ❑ **2021 International Conference (Virtual Mode) on Emerging trends in Statistics and Data Science**, jointly organized by The Madura College Madurai, University of Kerala, MD University Rohtak, *Bharathiar University Coimbatore*, 07-10, September 2021
Talk: MTSF and profit evaluation of a repairable cold standby system.
- ❑ **2021 International Virtual Akhand Conference on Envisioning Education for Transforming Youth to Restore Global Peace**, *Central University of Punjab*, 7-8 Jan 2021.
Talk: Quantifying and Comparing the Study Habits of University Students in the Changing Environment
- ❑ **2020 International Virtual Conference on Prof. CR Rao's School of Thought on Statistical Sciences**, Department of Statistics, Ramanujan School of Mathematical Sciences, *Pondicherry University (A Central University)*, Puducherry- 605014, India, Nov 21-22 and Nov 28-29, 2020.
Talk: Concerns and Claims about Improving the System Reliability and performance.
- ❑ **2018 International Conference on Emerging Innovations in Statistics and Operations Research**, Department of Statistics, *MD University, Rohtak*, Haryana, Dec 27-30, 2018.
Talk: On Reliability of a Constrained Renewable System.
- ❑ **2018 International Conference on Theory and Applications of Statistics and Information Sciences**, Department of Statistics, *Bharathiar University, Coimbatore*, Tamil Nadu, January 5-7, 2018.
Talk: Reliability and Profit Analysis of a System with Vulnerable Standby.
- ❑ **2017 International Conference on Recent Developments in Engineering Science, Humanities and Management**, Indian Council of Social Science Research, North West Regional Centre, Punjab University, Chandigarh, Dec. 24, 2017.
Talk: Analysis of a Repairable Cold Standby System Using Semi-Markov Process.
- ❑ **2017 International Conference on Latest Concepts in Science, Technology, Management and Humanities**, Gwalior Institute of Information Technology, Gwalior, M.P., Dec. 17, 2017.
Talk : Profit Analysis of a Standby System Model Using Regenerative Point Technique.
- ❑ **2017 International Conference on New Frontiers of Engineering, Science, Management and Humanities**, Institution of Electronics and Telecommunication Engineers- A Scientific and Research Organization, Chandigarh, July, 29, 2017.
Talk : Stochastic Modeling and Performance Analysis of a Redundant System.
- ❑ **2017 International Conference on New Frontiers of Engineering, Science, Management and Humanities**, Institution of Electronics and Telecommunication Engineers- A Scientific and Research Organization, Chandigarh, July, 29, 2017.
Talk : MTSF and Cost Benefit Analysis of a Standby System with Repairable Server.
- ❑ **2016 International Conference on Recent Advances in Statistics**, University of Mumbai, Mumbai, June, 27-29, 2016.
Talk : Probabilistic Performance Analysis of a Redundant System using Regenerative Point Technique.
- ❑ **2015 International Conference on Celebrating Statistical Innovation and Impact in a World of Big and Small Data**, International Indian Statistical Association (IISA), Pune University, Pune, Dec. 20-24, 2015.
Talk: Performance Evaluation of a Repairable Standby System with Server Failure.

- ❑ **2012 International** Conference on Frontiers of Statistics and its Applications, Pondicherry University, Pondicherry, Dec. 21-23, 2012.
Talk: Reliability Modeling of a Computer System with Arrival time of the Server at H/w and S/w Failure.

- ❑ **2012 International** Conference on Interdisciplinary Mathematics, Statistics and Computational Techniques, Punjab University, Chandigarh, Dec. 15-17, 2012.
Talk : Probabilistic Analysis of a Computer System with Priority of H/w Repair over S/w Replacement.

- ❑ **2012 International** Conference on Optimization Modeling and Applications, University of Delhi, Nov. 29-Dec.01, 2012.(Session Chaired)
Talk : Stochastic Modeling and Reliability Analysis of a Cold Standby System with waiting time of Server.

- ❑ **2011 International** Conference on “Statistics, Probability and Related Areas” Cochin University of Science and Technology, Cochin (Kerala), Dec. 19-22, 2011. (Paper presented) (Session Chaired)
Talk : Performance Analysis of a Repairable System with Probability of Fluctuations and Degradation.

- ❑ **2011 International** Congress on “Productivity, Quality, Reliability, Optimization and Modeling”, Indian Statistical Institute (ISI), New Delhi (India), Feb. 07-08, 2011. (Paper presented)
Talk : Reliability and Cost Analysis of 2-out-of-3 Units Redundant System with Arbitrary Distribution of Inspection and Repair Times.

- ❑ **2009 International** Conference on “Quality, Reliability and Infocom Technology”, University of Delhi, New Delhi (India), Dec. 18-20, 2009. (Paper presented)
Paper: Measures of System Effectiveness of 2-out-of-3 Units Redundant System with Post-Failure Inspection and Repair.

- ❑ **2009 International** Conference on “Interdisciplinary Mathematical and Statistical Techniques”, Jaypee University (JUIT), Wanknaghat, Himachal Pradesh, (India), August 02-04, 2009. (Paper presented)
Paper: Economic Analysis of a System with Repair and Inspection Subject to Weather Conditions and Degradation.

- ❑ **2009 International** Conference on “Operations Research Applications in Engineering and Management”, Anna University, Trichirappalli, Tamil Nadu (India), May 27-29, 2009. (Paper presented)
Paper: Cost- Benefit Analysis of Stochastic Model of a 2-out-of-3 Redundant System with Inspection.

- ❑ **2008 International** Conference on “New Trends in Statistics and Optimization”, University of Kashmir, Srinagar, J&K (India), Oct. 20-23, 2008. (Paper presented)
Paper: Stochastic Modeling of 2-out-of-3 Units Redundant System Subject to Inspection.

NATIONAL

- ❑ **2021** Research Scholars enrichment Programme conducted by Department of Statistics, MD University Rohtak, under MATRICS project of DST, Govt. of India, March 9, 2021. (Invited lecture)
Talk: Reliability analysis of non-repairable systems.
- ❑ **2019** **National** Seminar on Data Analysis Using Software (R & SPSS), Department of Statistics, MD University Rohtak, Oct., 17-18, 2019.
Talk : Reliability Analysis of Repairable System under Varying Conditions.
- ❑ **2017** **National** conference on Statistics and Optimization Techniques, Department of Statistics, MD University Rohtak, Feb. 11-13, 2017. (Invited Talk)
Talk: Stochastic analysis of a rectifiable system with rectifications subject to inspection
- ❑ **2015** **National** Conference on “Recent Trends and Developments in Statistics” Department of Statistics, MD University Rohtak, Feb. 21-23, 2015. (Paper Presented & Session Chaired)
Paper: Reliability and Cost Benefit Analysis of a Redundant System with Server Failure.
- ❑ **2014** **Indian** Science Congress, University of Jammu, Feb, 03-07, 2014.
Paper: Reliability and Performance Analysis of Redundant System with Waiting Time of Server. (Paper Presented)
- ❑ **2012** **National** Conference on “Modeling, Computational Fluid Dynamics & Operations Research” Department of Mathematics, Birla Institute of Technology and Science (BITS), Pilani, Rajasthan, Feb. 4-5, 2012.
Talk : Reliability Modeling and Profit Analysis of a System with Different Failure Modes and Replaceable Server Subject to Inspection.
- ❑ **2010** **National** Workshop (DST sponsored) on “Modeling, Optimization and their Applications” Department of Statistics, M.D. University, Rohtak-124001(Hr.), August 17-21, 2010.
Talk : Reliability Modeling and Profit Analysis of 2-out-of-3 Units Redundant System under Inspection.
- ❑ **2009** **National** Conference (UGC Sponsored) on “Social Developments Under the Ages of Operations Research”, M.M. PG College, Fatehabad (Hr.), March 21-22, 2009.
Talk : Reliability and Profit Estimation of 3-Units Cold Standby System.
- ❑ **2008** **National** Seminar on “Modern Trends in IT”, Dronacharya College of Engineering, Gurgaon (Hr.), July 16th 2008. (Paper presented)
Paper: On Reliability of Multi-Units Redundant System.
- ❑ **2008** **National** Conference on “Emerging Trends in Statistical Methods and Optimization Techniques”, University of Jammu, J&K, Feb. 22-23, 2008. (Paper presented)
Paper: Reliability and Economic Analysis of 2-out-of-3 Units Redundant System with Priority to Repair.
- ❑ **2006** **National** Symposium on “Applicable Mathematics to Engineering” and Technology & 11th Annual Conference of GAMS, Jaypee Institute of Engineering and Technology, Guna (M.P.), April 22-23, 2006. (Paper presented)
Paper: Stochastic Analysis of a System of Two- Parallel Units Working Under Different Weather Conditions.
- ❑ **2006** **National** conference on IT- Setting Trends in Modern Era & 8th Annual Conference of Indian Society of Information Technology, N. C. College of Engineering, Panipat (Hr.), March, 18-20, 2006. (Paper presented)
Paper: Profit Analysis of a System of Two Parallel-Units with Simultaneous Repair.

Services as Reviewer

- Reliability Engineering and System Safety
- IEEE Transactions on Reliability
- Microelectronics Reliability
- Annals of Applied Probability
- Stochastic Analysis and Applications
- Statistical Modelling
- Operational Research
- Theory of Probability and its Applications
- Journal of Statistical Computation and Simulation
- Journal of Reliability and Statistical Studies
- Journals of World Academy of Science, Engineering and Technology
- Mathematical Problems in Engineering
- International Journal of Systems Science: Operations & Logistics
- International Journal of Statistics and Reliability Engineering