

ISMAIL SHAH



Department of Statistics, Quaid-i-Azam University, 45320, Islamabad, Pakistan



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Career Objective

Looking for an opportunity to work in such an environment that provides professional development, valuable experience, and personal growth to become a good teacher, researcher, and contributor to ongoing research and development.

Research Interests

Functional data analysis, Time series forecasting, Penalized regression techniques, Energy economics, Applied statistics, Quality control, Nonparametric regression

Education

Ph.D. in Statistics	2016
Department of Statistical Sciences, University of Padua, Italy.	
Ph.D. thesis title: Modeling and forecasting electricity market variables	
Master of Science, Statistics	2010
Department of Statistics, Lund University, Sweden.	
Master of Statistics	2007
Department of Statistics University of Peshawar, Pakistan.	
Bachelor of Education	2008
Institute of Education & Research University of Peshawar, Pakistan	
Bachelor of Arts	2005
Government College Peshawar, Pakistan.	
Diploma in Information & Technology (one year)	2005
Khyber Pakhtunkhwa board of technical education, Peshawar, Pakistan.	

Computational Skills/ Tools

R, SPSS, Eviews, Latex, MS office, MS PowerPoint

Experience

Associate Professor Department of Statistics, Quaid-i-Azam University Islamabad, Pakistan.	March 2022 to date
Assistant Professor Department of Statistics, Quaid-i-Azam University Islamabad, Pakistan.	Aug 2017 to March 2022
Lecturer University of Swabi, Pakistan.	Nov 2012 to July 2017
Lecturer Abdul Wali Khan University Mardan, Pakistan (Anbar Swabi Campus)	May 2012 to Nov 2012

Additional Experience

• Editor, Journal of Quantitative methods	May 2020 to date
• Editor, Mathematical problems in Engineering	Feb 2022 to date
• In-charge Student affairs	Jan 2019 to date
• In-charge Bachelor Faculty Hostel	July 2019 to date
• Member Board of Faculty Natural Sciences	Jan 2019 to date
• Member Security council Quaid-i-Azam University	Jan 2020 to Nov 2021

Courses Taught

- ST-101: Probability and Statistics
- ST-102: Basic Statistical Inference
- ST-302: Statistical Methods
- ST- 301: Probability and Probability Distribution-I
- ST- 309: Probability and Probability Distribution-II
- ST-308: Statistical Inference-I (Estimation)
- ST-401 Statistical Inference-II (Hypothesis testing)
- ST-310: Regression Analysis-I
- ST-313: Quality Control and Quality Management
- ST-407: Generalized Linear Models
- ST- 403/411: Time Series Analysis and Forecasting
- ST-420: Statistical Quality Management
- ST-609: Linear Models
- ST-616: Time Series Analysis
- ST-625: Recent Development in Statistics
- ST-704: Functional Data Analysis

Published Thesis

- "Modeling and forecasting electricity market variables", PhD thesis, University of Padova, Italy, January 2016.
- "Human Development Index and Human Poverty Index for Indian states, 2005: Multivariate Statistical Analysis of basic indicators." Master thesis, Lund University Sweden, June 2010

- "The Fisher Equation, Belgium before and after Euro currency." Master thesis, Lund University Sweden, June 2010

Publications

1. **Shah, I**, Ejaz, Z, Ali, S, Aldallal, R, Kilai, M (2022): Modeling the Determinants of Out of School Children in Pakistan, *Complexity* (in press) (Impact Factor= 2.121, ISSN: 1076-2787)
2. Talib, A., Ali, S., **Shah, I.**, and Gul, F. (2022). Time and magnitude monitoring using Weibull based Max-EWMA chart. *Communications in Statistics-Simulation and Computation*, 1-17, DOI: 10.1080/03610918.2022.2145310 (Impact Factor = 1.118, ISSN: 0361-0918).
3. **Shah, I.**, Muhammad, I., Ali, S., Ahmed, S., Almazah, M., and Al-Rezami, A. Y. (2022). Forecasting Day-Ahead Traffic Flow Using Functional Time Series Approach. *Mathematics*, 10(22), 4279, DOI: 10.3390/math10224279 (Impact Factor = 2.592, ISSN: 2227-7390).
4. Akram, M. F., Ali, S., **Shah, I.**, and Muslim Raza, S. M. (2022). Max-EWMA Chart Using Beta and Unit Nadarajah and Haghghi Distributions. *Journal of Mathematics*, 2022. Article ID 9374740, DOI: 0.1155/2022/9374740 (Impact Factor = 1.555, ISSN: 2314-4629)
5. **Shah, I.**, Iftikar, H., Ali, S (2022), Modeling and forecasting electricity demand and prices: a comparison of alternative approaches, *Journal of Mathematics*, 2022, Article ID 3581037, DOI: 10.1155/2022/3581037 (**Impact Factor = 1.555**, ISSN: 2314-4629)
6. Taimoor, M., Ali, S., **Shah, I.**, Muwanika, F. R. (2022). COVID-19 Pandemic Data Modeling in Pakistan Using Time-Series SIR. *Computational and Mathematical Methods in Medicine*, 2022, Article ID 3581037, DOI: 10.1155/2022/6001876 (**Impact Factor = 2.809**, ISSN: 1748-670X)
7. **Shah, I.**, Jan, F., Ali, S. (2022), Functional Data Approach For Short-Term Electricity Demand Forecasting, *Mathematical Problems in Engineering*, 2022, Article ID 6709779, DOI: 10.1155/2022/6709779 (**Impact Factor = 1.305**, ISSN: 1024-123X)
8. Ibrar, F., Ali, S., and **Shah, I.**, (2022), A Comparison of Single and Double Threshold ROC Plots for Mixture Distributions, *Journal of Applied Statistics*, in press, -. DOI: 10.1080/02664763.2022.2122027
9. Ali, S, Fazal, S., **Shah, I.**, Raza, S. M. M., and Tahir, M. (2022), Bayesian Analysis for Geometric Shapes in Additive Manufacturing, *Journal of Taibah University for Science*, 16(1), 836-853. DOI: 10.1080/16583655.2022.2122261(Impact Factor = 3.459, ISSN: 1658-3655)
10. Ali, S., Akram, M. F., **Shah, I.** (2022). Max-EWMA Chart Using Beta and Simplex Distributions for Time and Magnitude Monitoring, *Mathematical Problems in Engineering*, 2022, Article ID 7306775, 2022. DOI:10.1155/2022/7306775 (**Impact Factor = 1.430**, ISSN: 1024-123X)
11. Ali, S., Ara, J., **Shah, I.** (2022). A comparison of different parameter estimation methods for exponentially modified Gaussian distribution. *Afrika Matematika*, 33(2), 1-34. DOI: 10.1007/s13370-022-00995-w (**Impact Factor = 0**, ISSN: 1012-9405)
12. Nabeel, M., Ali, S., **Shah, I.** (2022). Proportional hazard-based robust monitoring schemes using logistic distribution. *Quality and Reliability Engineering International*. 38(7), 3304-3321, DOI: 10.1002/qre.3118(**Impact Factor=2.885**, ISSN: 1099-1638)

13. Jan, F., **Shah, I.**, Ali, S. (2022). Short-Term Electricity Prices Forecasting Using Functional Time Series Analysis. *Energies*, 15(9), 3423, DOI: 10.3390/en15093423 (**Impact Factor=3.004**, ISSN: 1996-1073)
14. Talib, A., Ali, S., **Shah, I.** (2022). Max-EWMA chart for time and magnitude monitoring using generalized exponential distribution. *Communications in Statistics-Simulation and Computation*, 1-16. DOI: 10.1080/03610918.2022.2058548 (**Impact Factor = 1.118**, ISSN: 0361-0918)
15. Akram, M. F., Ali, S., **Shah, I.**, Marcon, G. (2022). Unit Interval Time and Magnitude Monitoring Using Beta and Unit Gamma Distributions. *Journal of Mathematics*, 2022, 7951748, DOI: 10.1155/2022/7951748 (**Impact Factor = 0.971**, ISSN: 2314-4629)
16. Ahmed, N, Ali, S, **Shah, I** (2022). Type-I censored data monitoring using different conditional statistics. *Quality and Reliability Engineering International*. 38(1) 64-88. DOI:10.1002/qre.2958 (**Impact Factor=2.885** , ISSN: 1099-1638)
17. Lone, S. A., Panahi, H., **Shah, I.** (2022). Bayesian prediction interval for a constant-stress partially accelerated life test model under censored data. *Journal of Taibah University for Science*, 15(1), 1178-1187. DOI:10.1080/16583655.2021.2023847 (**Impact Factor = 2.688** , ISSN: 1658-3655)
18. Bibi, B., Ali, S., **Shah, I.** (2022). Robustness of shape parameter for Erlang and Weibull Bayesian acceptance sampling plans. *Scientia Iranica*. 1-19, DOI: 10.24200/SCI.2022.56796.4914 (**Impact Factor = 1.435**, ISSN: 2345-3605)
19. Ahmed, N, Ali, S, **Shah, I** (2022). Control charts for monitoring mean of generalized exponential distribution with type-I censoring. *Quality and Reliability Engineering International*. 38(1) 592-614 DOI:10.1002/qre.3003 (**Impact Factor=2.885** , ISSN: 1099-1638)
20. Talib, A., Ali, S., **Shah, I.** (2022). Max-EWMA chart for time and magnitude monitoring using exponentially modified Gaussian distribution. *Quality and Reliability Engineering International*. 38(2) 1092-1111. DOI: 10.1002/qre.3037 (**Impact Factor=2.885** , ISSN: 1099-1638)
21. **Shah, I.**, Iqbal, B., Farhan Akram, M., Ali, S., Dey, S. (2021). Unit Nadarajah and Haghghi Distribution: Properties and Applications in Quality Control. *Scientia Iranica*, 1-35. DOI: 10.24200/sci.2021.57302.5167 (**Impact Factor= 1.435**, ISSN: 2345-3605)
22. N. Bibi, **Shah, I.**, A. Alsubie, Ali, S, Lone, S. A. (2021). Electricity Spot Prices Forecasting Based on Ensemble Learning. *IEEE Access*, vol. 9, 150984-150992, DOI: 10.1109/ACCESS.2021.3126545. (**Impact Factor= 3.367**, ISSN: 2169-3536)
23. Ali, S., Khan, H., **Shah, I.**, Butt, M. M., and Suhail, M., (2021), A comparison of some new and old robust ridge regression estimators, *Communication in Statistics-Simulation and Computation*, 50(8), 2213-2231 DOI: 10.1080/03610918.2019.1597119. (**Impact Factor=1.118**, Print ISSN: 0361-0918 Online ISSN: 1532-4141)
24. **Shah, I.**, Akbar, S, Saba, T, Ali, S, Rehman, A, (2021). Short-Term Forecasting for the Electricity Spot Prices With Extreme Values Treatment. *IEEE Access*, vol. 9, 105451-105462, 2021, DOI: 10.1109/ACCESS.2021.3100076. (**Impact Factor= 3.367**, ISSN: 2169-3536)
25. Ashraf, A., Ali, S., **Shah, I.** (2021). Online disease risk monitoring using DEWMA control chart. *Expert Systems with Applications*, 180, 115059, DOI: 10.1016/j.eswa.2021.115059 (**Impact Factor=6.954**, ISSN: 0957-4174)

26. **Shah, I**, Sajid, F, Ali, S, Rehman, A, Bahaj, S, A, and Fati, S, M (2021). On the Performance of Jackknife Based Estimators for Ridge Regression. *IEEE Access*, 9, 68044-68053. DOI: 10.1109/ACCESS.2021.3077385 (**Impact Factor= 3.745**, ISSN: 2169-3536)
27. Ali, S, Ahmed, N, **Shah, I**, Lone, S, A, Alsubie, A (2021). Absolute Deviation-Based Control Charts for Monitoring Mean of Weibull Distribution With Type-I Censoring, *IEEE Access*, vol. 9, pp. 107519-107547, 2021, DOI: 10.1109/ACCESS.2021.3100845 (**Impact Factor= 3.367**, ISSN: 2169-3536)
28. Rafique M, Ali, S, **Shah, I**, Ashraf, B (2021). A Comparison of Different Bayesian Models for Leukemia Data. *American Journal of Mathematical and Management Sciences*, 41(3), 244-258, DOI: 10.1080/01966324.2021.1957730 (**Impact Factor= -**, ISSN: 0196-6324)
29. Nabeel, M, Ali, S, **Shah, I**. (2021). Robust proportional hazard-based monitoring schemes for reliability data. *Quality and Reliability Engineering International*. 37(8), 3347-3361, DOI: 10.1002/qre.2921 (**Impact Factor=1.718**, ISSN: 1099-1638)
30. Raza, SMM, Ali, S, **Shah, I**, Butt, MM. (2021), Conditional mean- and median-based cumulative sum control charts for Weibull data. *Quality and Reliability Engineering International*, 37(2), 502-526, DOI:10.1002/qre.2746 (**Impact Factor=1.718**, ISSN: 1099-1638)
31. Siddiqua, H., Ali, S. & **Shah, I**. (2021), Most recent change point detection in censored panel data. *Computational Statistics*, 36(1), 515-540, DOI:10.1007/s00180-020-01028-5, (**Impact Factor=0.744**, ISSN: 1613-9658)
32. **Shah, I**, Lisi, F. (2020). Forecasting of electricity price through a functional prediction of sale and purchase curves. *Journal of Forecasting*. 39(2), 242– 259, DOI: 10.1002/for.2624, (Impact Factor=**0.816**, ISSN: 0277-6693, E-ISSN: 1099-131X)
33. **Shah, I**, Bibi, H., Ali, S., Wang, L., and Yue, Z. (2020), Forecasting one-day-ahead electricity prices for Italian electricity market using parametric and nonparametric approaches, *IEEE Access*, 8(1), 123104-123113, DOI: 10.1109/ACCESS.2020.3007189. (**Impact Factor= 3.745**, ISSN: 2169-3536)
34. Shafqat, M., Ali, S., **Shah, I**, & Dey, S. (2020). Univariate Discrete Nadarajah And Haghghi Distribution: Properties and Different Methods of Estimation. *Statistica*, 80(3), 301-330. DOI:10.6092/issn.1973-2201/9532 (**Impact Factor= 0**, ISSN: 1973-2201)
35. **Shah, I**, Iftikhar, H., & Ali, S. (2020). Modeling and Forecasting Medium-Term Electricity Consumption Using Component Estimation Technique. *Forecasting*, 2(2), 163-179, DOI: 10.3390/forecast2020009 (**Impact Factor= 0**, ISSN: 2571-9394)
36. Ali, S., **Shah, I**, Wang, L., and Yue, Z. (2020), A Comparison of Shewhart-type Time-Between-Events Control Charts based on the Renewal Process, *IEEE Access*, 8(1), 113683-113701, DOI:10.1109/ACCESS.2020.3003265. (**Impact Factor= 4.098**, ISSN: 2169-3536)
37. Raza, S. M. M., Ali, S., **Shah, I**, Wang, L., and Yue, Z. (2020), On Efficient Monitoring of Weibull Lifetimes Using Censored Median Hybrid DEWMA Chart, *Complexity*, 2020, Article ID 9232506, 10 pages, DOI: 10.1155/2020/9232506. (**Impact Factor= 2.591**, ISSN: 1076-2787)
38. S. Ali, S. Ali, **I. Shah**, G. F. Siddiqui, T. Saba and A. Rehman. (2020). Reliability Analysis for Electronic Devices Using Generalized Exponential Distribution, *IEEE Access*, 8, 108629-108644, DOI: 10.1109/ACCESS.2020.3000951. (**Impact Factor= 4.098**, ISSN: 2169-3536)

39. Ali, S., Zafar, T., **Shah, I.**, and Wang, L. (2020), Cumulative Conforming Control Chart assuming Discrete Weibull Distribution, *IEEE Access*, 8 (1), 10123-10133, DOI: 10.1109/ACCESS.2020.2964602. (**Impact Factor= 4.098**, ISSN: 2169-3536)
40. Ali, S., Altaf, N., **Shah, I.**, Wang, L., and Raza, S. M. M. (2020), On the effect of Estimation Error for the Risk-adjusted Charts, *Complexity*, 2020, Article ID 6258010, 21 pages. DOI:10.1155/2020/6258010 .(**Impact Factor= 2.591**, ISSN: 1076-2787)
41. Aslam, M., Ali, S., Yousaf, R., and **Shah, I.** (2020), Mixture of Transmuted Pareto Distribution: Properties, Applications and Estimation under Bayesian Framework, *Journal of the Franklin Institute-Engineering and Applied Mathematics*, 357 (5), 2934-2957, DOI: 10.1016/j.jfranklin.2019.11 (**Impact Factor= 3.653**, ISSN: 0016-0032)
42. Lisi, F., and **Shah, I.** (2020). Forecasting next-day electricity demand and prices based on functional models. *Energy Systems*, 11 (4), 947-979. DOI: 10.1007/s12667-019-00356-w (**Impact Factor=0**, ISSN: 1868-3967)
43. Ara, J., Ali, S., and **Shah, I.**, (2020), Monitoring Schedule Time using Exponentially Modified Gaussian Distribution, *Quality Technology & Quantitative Management*, 17 (4), 448-469, DOI: 10.1080/16843703.2019.1668164. (**Impact Factor=0.946**, ISSN: 1684-3703)
44. Ali, S., and **Shah, I.** (2020), Monitoring Regularly Maintained Systems Based on the Renewal Process with Generalized Exponential Distribution of Time between Events, 48 (5), *Journal of Testing and Evaluation*, 48, DOI: 10.1520/JTE20180044. (**Impact Factor=0.669**, ISSN 0090-3973, E-ISSN: 1945-7553).
45. **Shah, I.**, Iftikar, H., Ali, S., and Wang, D., (2019). Short-Term Electricity Demand Forecasting Using Components Estimation Technique, *Energies*, 12, 2532. DOI: 10.3390/en12132532 (**Impact Factor=2.707**, ISSN and EISSN: 1996-1073)
46. Ali, S., Shafqat, M., **Shah, I.**, and Dey, S. (2019), Bivariate Discrete Nadarajah and Haghighi Distribution: Properties and Different Methods of Estimation, *Filomat*, 33 (17), DOI: 10.2298/FIL1917589A, 5589-5610. (**Impact Factor=0.789**, ISSN: 0354-5180)
47. Ali, S., Ali, S., **Shah, I.**, and Khajavi, A. N. (2019), Reliability Analysis for Electronic Devices using Beta Generalized Weibull Distribution, *Iranian Journal of Science and Technology, Transactions A: Science*, 43, (5), 2501-2514. DOI: 10.1007/s40995-019-00730-4. (**Impact Factor= 0.692**, ISSN: 1028-6276)
48. Yousaf, F., Ali, S. and **Shah, I.** (2019), Statistical Inference for the Chen Distribution Based on Upper Record Values. *Annals of Data Science*. **6**, 831–851. DOI: 10.1007/s40745-019-00214-7 (**Impact Factor= 0**, ISSN: 2198-5804)
49. **Shah, I.**, and Lisi, F. (2015). Day-ahead electricity demand forecasting with nonparametric functional models. In 12th International Conference on the European Energy Market (EEM), DOI: 10.1109/EEM.2015.7216741, 1-5. *IEEE*.
50. Siddiqa.H., Ali, S. and **Shah, I.** (2019). cpcens: Changepoint Analysis using Censored Time Series Data. *R package version 0.1.0.*, <https://CRAN.R-project.org/package=cpcens>
51. Durante, D., **Shah, I.**, and Torelli, N. (2014). Bayesian nonparametric modeling of contraceptive use in India. *arXiv preprint arXiv:1405.7555*.

Projects

Project Title	Principal / Co-Principal Investigator	Amount (in PKR.)	Sponsoring Agency	Duration
Hierarchical modeling for determinants of out-of-school children in Pakistan	Principal Investigator	0.430 Millions	Higher Education Commission, Pakistan.	01 year 2018- 2019 (Completed)
Monitoring the Regularly Maintained Systems assuming an Exponentiated Class of Lifetime Distribution of the Renewal process	Co-Principal Investigator	0.348 Millions	Higher Education Commission, Pakistan.	01 year 2019-2020 (Completed)
A comparison of Reliability analysis for electronic devices using beta generalized Weibull and generalized exponential distributions	Co-Principal Investigator	0.430 Millions	Higher Education Commission, Pakistan.	01 year 2018- 2019 (Completed)
Modeling and Forecasting complex time series data: A case study from electricity market	Principal Investigator	0.150 Millions	URF, Quaid-i-Azam University.	12 months 2018. (Completed)

Students Supervised

Bachelor of Science (BS)

Student name

Thesis title

- Muhammad Shahzeb Ali Forecasting Volatility in Pakistan Stock Exchange

Master of philosophy (MPhil)

Student name

Thesis title

- Hasnain Iftikhar Modeling and forecasting complex time series: a case of electricity demand
- Zainab Ejaz Modeling the determinants of out of school children in Pakistan
- Naqash Shabbir Variable selection in low and high dimensional dataset
- Arsalan Khan Modeling contraceptive behavior in Pakistan through semi parametric hierarchical approach
- Misbah Iftikhar Factors affecting post secondary school education in Pakistan
- Muhammad Shoaib Day-ahead electricity price forecasting using hybrid models
- Hajra Bibi Short-term electricity price forecasting based on parametric and nonparametric approaches
- Brikhna Iqbal Unit Nadarajah and Haghghi distribution: properties and

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| | applications |
| 10. Anum Naz | Predictive analytics for spousal violence: the case of Pakistan |
| 11. Shar Akbar | Forecasting electricity spot prices in the presence of extreme values |
| 12. Faiza Sajid | Biased method of parameters estimation under ill-condition |
| 13. Hina Naz | Regularization regression methods for handling multicollinearity |
| 14. Farooq Khan | Modified ridge regression estimator through dimension reduction technique |
| 15. Salma Lateef | Short-term electricity demand forecasting using machine learning techniques |
| 16. Iqra Afzal | Modeling and forecasting of the COVID-19 outbreak in Pakistan |
| 17. Nadeela Bibi | Short-Term electricity spot prices forecasting based on ensemble learning |
| 18. Iqra | Modeling and forecasting natural gas prices based on parametric and nonparametric models |
| 19. Qaisar Abbas | A fractional data approach for modeling and forecasting mortality rate |
| 20. Izhar Muhammad | Short-term traffic-flow forecasting using functional time series analysis |
| 21. Nusrat Shaheen | Some modified ridge estimators for handling the multicollinearity problem |

Doctor of philosophy (PhD)

Student name

Thesis title

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|----------------|---|
| 22. Faheem Jan | Functional Modeling and Forecasting of Complex Time Series Data |
| 23. Huma Nawaz | to be decided |

Awards

1. Awarded Ph.D. scholarship by the department of statistical sciences, university of Padova, Italy.
2. Selected for national internship program awarded by the government of Pakistan.
3. Awarded HEC Pakistan Post-doc fellowship 2022

Conferences

1. Bernoulli-IMS One World Symposium 2020, held virtually, August 24 – 28, 2020.
2. 1st international applied statistics conference (1.UYIK-2020), held virtually, October 1-4,2020, Tokat Turkey
3. 12th International Conference on the European Energy Market, Lisbon Portugal. April 19-22, 2015
4. 13th International Conference On Statistical Sciences, Peshawar Pakistan. March 16-18, 2015
5. International work-conference on Time Series, Granada Spain. June 25-27, 2014
6. Recent advances in statistical inference: theory and case studies, Padova Italy. March 21-23, 2013

Extra-Curricular Activities

My spare time activities include traveling, Playing Cricket and Soccer, swimming and Reading.

References

- Prof. Francesco Lisi, Department of Statistical Sciences, University of Padova Italy (**Email: francesco.lisi@unipd.it**)
- Dr. Muhammad Riaz, Department of clinical trial reserach, School of medicine, Cardiff University, United Kingdom (**Email: riazm3@cardiff.ac.uk**)
- Dr. Sajid Ali, Department of Statistics, Quaid-i-Azam University Islamabad Pakistan (**Email: sajidali@qau.edu.pk**)