DR BUSHRA SHAMSHAD

Associate Professor
Department of Statistics, University of Karachi
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EMPLOYMENT

Associate Professor 2023-till date	**University of Karachi**, Department of Statistics, Karachi.
Assistant Professor 2011-2023	**University of Karachi**, Department of Statistics, Karachi.
Lecturer 2006-2011	**University of Karachi**, Department of Statistics, Karachi.
Co-operative Lecturer 2004-2006	**University of Karachi**, Department of Statistics, Karachi.

EDUCATION

Ph.D
2013

University of Karachi, Department of Statistics, Karachi
Pakistan

- Ph.D. in Statistics on "**Testing of Hypothesis of Latent Structure Model's Parameters: A Simulation Study**" completed in year 2013 under the supervision of Dr. Junaid Saghir Siddiqi.
- Conversion from M.Phil leading to Ph.D to Ph.D in year 2009.
- Obtained 81 marks in both Research Methodology courses (ASR-701 and ASR-702) conducted by Dean Faculty of Science, University of Karachi.
- Obtained 89 marks in a course on "Qualitative Data Analysis" conducted by Department of Statistics, University of Karachi.

Masters of Science
2003

University of Karachi, Department of Statistics, Karachi
Pakistan

Thesis: Principal Component Analysis

- Multivariate Sampling through PCA
- Comparison between different statistical packages through PCA
- Application of PCA on Classical and Real Data (On Foreign Direct Investment in Pakistan).

Report: Gold Analysis Data

Bachelors of Science
2000-2002

University of Karachi, Department of Statistics Karachi, Pakistan

ACHIEVEMENTS

Masters of Science

- Obtained First Class First position with 81.3% marks

- Obtained MILLWALA GOLD MEDAL in Annual Convocation 2005, University of Karachi

- Obtained GOLD MEDAL from STATISTICAL ALUMNI KARACHI UNIVERSITY (SAKU)

- Qualified and Obtained Highest Marks (70%) on Quality Management Systems ISO 9001'2000

Bachelors of Science

- Obtained First Class Second Position with 76.32% marks

Art Exhibitions

INTERNATIONAL CHILDREN'S ARTS EXHIBITION, TOKYO, JAPAN

- Bronze medal in 1997

- Silver medal in 1991

- Bronze medal in 1989

SUPERVISION

Supervised an MPhil thesis in Statistics on the topic "**Multivariate Cross-Sectional Data using Statistical Technique**" completed in year 2025 (Student name: Ms. Ayesha Sadiqa)

Co-supervised an MPhil thesis in Statistics on the topic of "**A Cohesive Approach of Correspondence Analysis, Non-Linear PCA and Copula Theory Using Statistical Packages**" in **2019** to Ms. Zara Omer.

Supervised M.Sc (Thesis) of 6 credit Hours on the topic of "**Non-linear principal Component Analysis**" in **2017** (Student name: Mr. Muhammad Zubair Khan)

Supervised a M. Sc (Technical Report) on "**Comparison of Different Measures in Cross Classification Tables**" in year **2009** (Student name: Mr. S. M. Adil Akram)

Co-Supervised M.Sc (Thesis) of 6 credit Hours on the topic of "**Multivariate Techniques of Quality Control data**" in year **2008** (Student name: Ms. Maria Rahim)

Served as an Internal Supervisor in ACT-Final year (**Technical Report**) on "**Actuarial Pricing and Reserving**" in year **2017** (Student Name: Malik Bilal)

Served as an Internal Supervisor in ACT-Final year (**Technical Report**) on "**Impact of portfolio Risk on Portfolio outflows (A Case Study of Malaysia)**" in year **2017** (Student Name: Momina Riffat)

Served as an Internal Supervisor in ACT-Final year (**Technical Report**) on "**Pricing of Maturity Guarantee for an Accumulation-Annuity Product using RSLN-2 Model**" in year **2017** (Students Name: Shahadat Wali & M. Mairaj Saleem)

Served as an Internal Supervisor in ACT-Final year (**Technical Report**) on "**Research on the Progress of Retirement Benefit Scheme**" in year **2019** (Student Name: Zarish Khan)

Served as an Internal Supervisor in ACT-Final year (**Technical Report**) on "**Generalized Linear Model for General Insurance**" in year **2020** (Student Name: Aisha Ishfaq & Syed Ahmed Ali)

WORKSHOPS AND CONFERENCES ATTENDED

- Attended an event jointly organized by the Pakistan Bureau of Statistics (PBS) and the Department of Statistics, University of Karachi, held on November 4, 2025, at the Department of Statistics to announce **DataFest 2025– "Living the Numbers" is a two-day event scheduled to be held at the Pak-China Friendship Centre, Islamabad, from November 11–12, 2025.** The seminar concluded with a symbolic walk led by the Chairperson, joined by faculty members, students, and PBS officials.
- Contributed as **Co-Chairperson** in the *21 International Conference on Statistical Sciences (21st ICSS)* "*Mobilizing Data Science & Big Data to Achieve the SDGs*" an Islamic Society of Statistical Sciences (ISOSS) at Dow University of Health Sciences Karachi held on **December 9-11, 2024**.

- Attended 2nd workshop on *"Data Users and Producers Dialogue Workshop"* organized collaboratively by the Pakistan Bureau of Statistics (PBS) and the United Nations

Population Fund (UNFPA) at Avari Towers in Karachi on **27th November, 2023.**

- Attended "***Annual International Conference 2019; The Economy of New Pakistan: Emerging Challenges, Prospects for Change and Road to Prosperity***" held at Applied Economic Research center, University of Karachi on **November 19 – 20, 2019**

- Presented two papers on "Empirical Null Distribution of -2log(lambda)" (published in BRAIN in April 2019) and "Significance Value of Bootstrap Likelihood Ratio Test Statistics in Latent Class Model" in ***14th International Conference on Statistical Sciences "Statistics for Better Decision-making & Development"*** held on March 14-16, 2016 organized jointly by *Islamic Countries society of Statistical Sciences* and *Jinnah Sindh Medical University (JSMU)* at *JSMU*, Karachi, Pakistan

- Presented paper in ***11th Islamic Countries Conference on Statistical Sciences (ICCS-11) "Statistics for strategies in Development"*** held on December 19-22, 2011 organized by *Islamic Countries society of Statistical Sciences* at University of Management and Technology, Lahore, Pakistan

- Paper published on the topic of "*Impact of Foreign Direct Investment in Pakistan*" in the Conference proceedings of ***International Conference on Information and Financial Engineering***" held on April 17-20, 2009 and listed in **IEEE Xplore** and indexed by **EI (Compendex)** and **ISI Thomson (ISTP)**. The above paper was also presented in the ***Fourth International Conference on Statistical Sciences*** held on May 9-11, 2008 at *University of Gujrat, Pakistan.*

- Presented paper on the topic of "Multivariate *Normal Sampling using Principal Component Analysis*" in the ***Third National Conference on Statistical Sciences*** held on May 28-29, 2007 organized by *Islamic Countries society of Statistical Sciences*. The modified version of the paper is published in International Journal of Current Research in May 2019.

- Presented a paper on *"Study of the Effect of Covariances of a Variance covariance matrix on Eigen Values and Eigen Vectors"* in the ***International Conference on Statistical Data Produced and Application of Statistics*** held on

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September 3-5, 2007 at *University of Punjab, Pakistan.* The modified version of the paper is published in "International Journal of Advanced Research" in April 2019.

PEER REVIEWED PUBLICATIONS

- Zara Omar, **Bushra Shamshad** and Juniad Saghir Siddiqi. "Using D-Vine Copula for Modeling of Dependency of Categorical Data" manuscript ID: TS 242124 reviewed and **ACCEPTED** for publication in **Thailand Statistician** (a "**Y**" category journal according to HJRS) on **29-April-2023**.

- **Bushra Shamshad** & Junaid Saghir Siddiqi "Testing Procedure for Item Response Probabilities of 2-Class Latent Model". Mehran University Research Journal of Engineering & Technology, July 2020, Vol. 39 (3). DOI: https://doi.org/10.22581/muet1982.2003.20 (at the time of publication HEC Recognized the journal in "X" Category)

- **Bushra Shamshad**. "Foreign Direct Investment in Pakistan through Principal Component Analysis during July 2001 till February 2019". International Journal of Computer Science and Network Security. Vol. 19, No. 5, pp. 223-229, May 2019.

- **Bushra Shamshad** & Junaid Saghir Siddiqi. "Multivariate Normal Sampling: An Approach through Principal Component Analysis". International Journal of Current Research, May 2019, Vol. 11 (5), 3632-3635.

- **Bushra Shamshad** & Junaid Saghir Siddiqi. "Empirical Null Distribution of -2log(lambda)", Broad Research in Artificial Intelligence and Neuroscience, April 2019, Vol. 10, No. 2.

- Junaid Sagheer Siddiqi, **Bushra Shamshad** & Zara Omar. "The Impact of Morning Shows and celebrity Endorsement on the Brands Image using Multiple Correspondence Analysis". International Journal of Computer Science and Network Security, April 2019, Vol.19, No.4, 102-107.

- **Bushra Shamshad** & Maria Ejaz. "Assessing the Relationship between Attitude and Awareness regarding HIV/AIDS using Canonical Correlation Analysis". International Journal of Advanced Research, April 2019, Vol. 7, No. 4, 357-366.

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- **Bushra Shamshad**, M. Zubair Khan, & Zara Omar. "Modeling and Forecasting Weather Parameters using ANN-MLP, ARIMA and ETS model: A case study for Lahore, Pakistan". International Journal of Scientific & Engineering Research, April 2019, Vol. 10 (4), 351-366.

- Zara Omar, Junaid Sagheer Siddiqi & **Bushra Shamshad**. "Impact of Mobile Phone on study Habits of University of Karachi Students". International Journal of Current Research, April 2019, Vol. 11 (3), 3263-3268.

- **Bushra Shamshad**. "A note on Effect of Off-diagonal Entries in a Variance Covariance Matrix on Eigen Analysis". International Journal of Advanced Research, April 2019, Vol. 7, No. 4, 273-282.

- Junaid Sagheer Siddiqi, **Bushra Shamshad** & Zara Omar. "Nonlinear Principal Component Logistic Regression: Impact of Morning Shows on Fashion Products Consumer". International Journal of Computer Science and Network Security, March 2019, Vol.19, No. 3, 134-137.

- **Bushra Shamshad** & Junaid Saghir Siddiqi. "Latent Class Model on Socio-Religious Data". Journal of Basic and Applied Sciences, 2018, Vol. 14, 147-155.

- **Bushra Shamshad** & Junaid Saghir Siddiqi. "Exploration of Groups through Latent Structural Model". Journal of Basic and Applied Sciences, 2012, Vol. 8, 145-150.

- **Bushra Shamshad** & Junaid Saghir Siddiqi "Impact of Foreign Direct Investment in Pakistan". Conference proceedings of International Conference on Information and Financial Engineering April 2009, 157-161. DOI 10.1109/ICIFE.2009.26 **(listed in IEEE Xplore and indexed by EI (Compendex) and ISI Thomson (ISTP)).**

WORK EXPERIENCE

- Worked as a Resource Person in a 4-day training program on Statistical software **SPSS**, to SBP employees at National Institute of Banking and Finance (NIBAF), from May' 29 2005 to June' 1 2005.

- Participated as a Resource Person in the HEC Workshop – PARC (ALP) Seminar on "Bacteriocins: Conventional and molecular Approaches for Screening, Characterization and Purification" at Department of Microbiology, University of Karachi held on December 6-10, 2005.

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- Worked as a Resource Person in a 4-day workshop on "**Design of Experiment**" at Pakistan Tobacco Company Limited, Akora Khatak on January 17-20, 2006.

- Worked as a Resource Person in a 3-day training program on Statistical software **SPSS**, to SBP employees at Economics Department, State Bank of Pakistan.

FURTHER TRAINING

Internship 2003	**State Bank of Pakistan,** Karachi, Pakistan. Report: Foreign Direct Investment in Pakistan.
Quality Management Systems (ISO 9001'2000)	**University of Karachi**, Department of Statistics, Karachi Pakistan

COURSES ATTENDED

- A **Staff Development Course** in year 2006 organized by Human Resource Center, University of Karachi. This Two months course was sponsored by National Academy of Higher Education and Higher Education Commission.

- A Hand on Training program on "**Basic Web Development and Deployment**" at Department of Computer Science, University of Karachi, from 26th April 2006 to 28th April 2006

- A training program on "**Networking and Infrastructure**" at Department of Computer Science, University of Karachi, from 18th May 2006 to 20th May 2006.

- A 2-day "**Data Producers and Users"** workshop was held at the Auditorium Hall, Learning Resource Centre, State Bank of Pakistan (SBP), I. I. Chundrigar Karachi on May 08-09, 2006.
  http://www.sbp.org.pk/stats/2006/wrkshp_present/Collaboration.pdf

MEMBERSHIP

- Member Board Faculty of Science- (at present)

- Member Board of Studies department of Statistics-(at present)

- Member Board of Faculty of Arts and Social Sciences (2012-2015)

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- Member Board of Faculty of Arts and Social Sciences (2022-2024)

- Convener Departmental Time Table Committee-Evening Program since 2021

- Convener Departmental Technical Report and Thesis Committee (2019-2024 & 2025-till date)

- Member Departmental Research Committee-(2019-to date)

- Acted as a Joint Secretary in Statistical Alumni Karachi University (SAKU) 2005 till 2015.

- Sharing the responsibilities with the Departmental time table committee, in making semester and examination schedules for the department in 2019-2020.

CONDUCTED/CONDUCTING COURSES

Taught /Teach following courses of (2 + 1) credit hour each

- Elements of Statistics I (**STAT - 301**) Morning + Evening
- Elements of Statistics II (**STAT - 302**) Morning + Evening
- Elementary Mathematics for Biostatistics (**STAT - 315**)
- Basic Statistics and Probability for Biostatistics (**STAT-316**)
- Biostatistical Methods-I (**STAT-415**)
- Biostatistical Methods-II (**STAT-416**)
- Continuous Probability Distributions and Methods (**STAT - 401**)
- Elementary Statistical Methods (**STAT -402**)
- Introduction to Mathematical Statistics-I (**ACT-411-Evening**)
- Introduction to Mathematical Statistics-II (**ACT -412 - EVENING**)
- Sampling distribution I (**ACT -501**)
- Sampling distribution II (**ACT -502**)
- Computing Methods (**ACT – 532**)
- Computer Programming and Application.(**ACT-531**)
- Computer Programming and Data Analysis(**STAT-571 & 572**)
- Probability Theory –I (**STAT-511**)
- Probability Theory –II (**STAT-512**)
- Multivariate Analysis I (**STAT – 661**)
- Multivariate Analysis II (**STAT – 662**)

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- Multivariate Analysis (**STAT-711**)
- Advanced Multivariate Analysis (**STAT-712**)
- Independent Study/Research Seminars (**STAT-811**)

Conducted/ Conducting Practical (contributing 1 Credit hr)
- Multivariate Analysis I (**STAT – 661**)
- Multivariate Analysis II (**STAT – 662**)
- Distribution Theory I (**STAT – 601**)
- Linear Estimation and Distribution Theory (**STAT – 602**)
- Reliability and Quality Control - I (**STAT – 625**)
- Reliability and Quality Control - II (**STAT – 626**)
- Sampling distribution I (**STAT -501**)
- Sampling distribution II (**STAT -502**)
- Theory of Probability-I & II (**STAT-511 & STAT-512**)
- Introduction to Computer Applications-I (**ACT – 313**)
- Introduction to Computer Applications-I (**ACT – 314**)

Conducted/ Conducting Practical (Contributing 2 Credit hours)
- Computer Programming and Data Analysis (**STAT – 565**)
- Computer Programming and Data Analysis(**STAT-571 & 572**)
- Computing Methods (**ACT – 532**)

COMMUNICATION SKILLS

- Demonstrated oral presentation skills
- Excellent interpersonal communication skills
- Demonstrated written skills
- Obtained 6 Bands in International English Language Testing Systems (IELTS)

COMPUTER SKILLS

- MS Office (word, excel, Power point)
- SAS
- SPSS
- STATISTICA
- MINITAB
- R-Gui
- MATLAB

INTERESTS

- Painting
- Sketching

REFEREES

Dr. Bushra Shamshad

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