Muhammad Waleed Barki
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EDUCATION

Lahore University of Management Science   *Sept 2018 - May 2025*

BS Political Science and Economics
Minor: Computer Science

Relevant Courses:
Machine Learning
Databases
Econometrics
International Finance
Principles and Techniques in Data Science
Data Structures
Issues in Economic Policy

WORK EXPERIENCE

CSO Career Fair Volunteer 2025   *February 2025*
- Coordinated logistics for a university-wide Career Fair hosting 220+ employers and 4,000+ students, assembling 500+ welcome kits and supporting smooth event execution.
- Delivered on-site support for 100+ employer booths, managing setup, resolving logistical issues, and ensuring efficient student flow across an assigned zone.
- Collaborated with the Career Services team to improve employer-student engagement, strengthening skills in event management, communication, and problem-solving under pressure.

SOS Children's Village Multan - *Teacher*   *June 2016*
- Taught reading, spoken English and Urdu to children at SOS Children's Complex, Multan.

ACADEMIC PROJECTS

Movie Success Prediction System   *February 2021 – April 2021*
- Analysed the TMDB 5000 Movies dataset to predict and classify movie success using linear and logistic regression, based on revenue and profit thresholds.
- Pre-processed data through EDA, correlation analysis**,** and feature encoding, selecting key variables like budget, popularity, and genre.
- Achieved 0.75 R^2 in regression and 76% classification accuracy using Python, Pandas, Scikit-learn**,** and visualized results with residual plots and precision metrics**.**

Vehicle Detection and Classification from Images   *February 2022 – May 2022*
- Collaborated on a machine learning project to tackle traffic monitoring challenges by developing a multi-class vehicle detection system (cars, motorcycles, no-vehicle) using a dataset of 5,000 images.
- Applied feature engineering techniques (HOG, PCA) and trained four classifiers (Naïve Bayes, SVM, Logistic Regression, Neural Network), achieving >93% accuracy across models and up to 99.6% with neural networks**.**
- Implemented a sliding-window algorithm for real-world image classification, optimizing model parameters through iterative testing to enhance detection robustness in complex traffic scenes.

Econometric Analysis of Women's Fertility rate   *October 2024 – December 2024*
- Conducted econometric analysis on 100,000+ women survey responses (Pakistan DHS 2012-13, 17-18) to study how family planning awareness influences fertility outcomes
- Identified a statistically significant reduction in births ($\beta = -0.124$, $p < 0.01$) associated with family planning awareness; also found education strongly reduced births ($\beta = 0.865$) while contraceptive use and pregnancy loss increased fertility
- Delivered policy insights demonstrate that awareness campaigns and education significantly lower fertility rates, with the model explaining ~20% of variation in total births ($R^2 = 0.20$).

Education Dynamics in Nishat Colony: A Case Study   *February 2025 – April 2025*
- Researched education access for 1,800+ households in Nishat Colony (Lahore Cantonment) through 35 household interviews, 5 school visits, and 2 focus groups, generating one of the first localized education datasets for the area.
- Identified key systemic barriers financial precarity (cited by 70% of families), gender-based dropout rates (girls 2x more likely to leave school), and poor teacher training/absenteeism using mixed qualitative and quantitative analysis.
- Formulated evidence-based policy solutions, including targeted cash transfers, subsidized learning materials, and community education hubs, aligned with UN SDG-4, to inform NGOs and government on improving access and retention.

Senior Project & Independent Study   *February 2025 – April 2025*
- Conducted a mixed-methods study (survey of 61 students/alumni, 10 interviews, 30 forum threads) to assess how the "LUMS bubble" influences career choices and readiness for the workforce.
- Revealed systemic trends: 97% acknowledged the bubble, 80% rated isolation at 4–5/5, 66% cited job prospects as their top concern, and peer pressure doubled the likelihood of shifting career goals, with regression showing isolation and peer pressure explain 42% of readiness gaps.
- Proposed institutional reforms such as mandatory internships, diverse alumni mentorship, experiential modules, and bilingual career preparation to address transition shock and broaden career pathways beyond corporate/MNC pipelines.

CO-CURRICULAR ACTIVITIES, SKILLS & INTERESTS

- Captained and coached a junior 5-a-side football team to victory at LUMS Spring Sports Fest (Feb 2024).
- Completed a swimming course at LUMS (Jan–May 2023) and continued regular practice.
- **Skills:** C++, Python, HTML, CSS, JavaScript, SQL, STATA, Excel (Intermediate), Statistical & ML Modelling, Data Analysis, Survey Design, Technical Reporting, Collaboration, Problem-Solving
- **Interests:** Strategy games, Football, History, Theology, Philosophy, Data Exploration