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MUHAMMAD ADNAN

1 PERSONAL DATA

- 1.1 **Name** Muhammad Adnan
- 1.2 **Date of Birth** 28-09-1979
- 1.3 **Gender** Male
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E-mail: adnanres@neduet.edu.pk, adnanres@hotmail.com
- 1.6 **Present Employment** **November 2010 to date, Associate Professor**, Urban and Infrastructure Engineering Department, NED University of Engineering and Technology, Karachi, Pakistan
- 1.7 **Previous Employment** **May 2010 to Novemeber 2010**, Assistant Professor, Urban and Infrastructure Engineering Department, NED University of Engineering and Technology, Karachi, Pakistan. Recently joined (dated 3rd May, 2010) after completion of PhD study.
- June 2005 to May 2010**, Assistant Professor, Department of Civil Engineering, NED University of Engineering and Technology, Karachi, Pakistan. (From June 2006 to April 2010, I was on study leave for pursuing my PhD)
- October 2004 to May 2005**, Lecturer, Department of Civil Engineering, NED University of Engineering and Technology, Karachi, Pakistan.
- Mar 2002 to October 2004**, Research Assistant, Department of Civil Engineering, NED University of Engineering and Technology, Karachi, Pakistan

2 EDUCATION DETAILS

2.1 Academic Degrees

PhD Completed PhD study in Transport Modelling from Institute for Transport studies, University of Leeds. PhD thesis titled as “**Development of a Combined Activity Scheduling Model for Tours**”. PhD study started in June 2006, thesis submitted in December 2009, and Viva was held on 29th January 2010. **Prof. David Watling** and **Dr. Tony Fowkes** were my supervisors and PhD examining committee includes **Prof. Benjamin Heydecker** and **Dr. Richard Connors**. PhD Degree awarded on 1st March 2010.

M.Engg (by Research) Completed M.Engg (by Research) in Transportation Engineering from **NED University of Engineering and Technology, Karachi** in Oct-2004. Thesis titled as “**Travel Decision Economic Model**” and it is supervised by **Prof. Dr. Mir Shabbar Ali**. I appointed as a Research Assistant in the Department of Civil Engineering to pursue my master in March 2002.

M.Engg (by Research) program in NED is a completely research based degree, and a candidate is appointed as Research Assistant to pursue for his Masters. Candidate may able to sit in Masters courses as per requirement of his research topic with the agreement of Supervisor.

BE (Civil Engineering) Passed Bachelors degree (**BE**) in Civil Engineering from NED University of Engineering and Technology, Karachi, Pakistan in Mar 2002.

Secured 7th Position in First year of Engineering
Secured 2nd Position in Second year of Engineering
Secured 3rd Position in Third year of Engineering
Secured 5th Position in Final year of Engineering

3 SCIENTIFIC ACHIEVEMENTS

3.1 Own Research

PhD Research

The objective of my PhD work is, essentially to integrate two fields of analysis that each have their own theory and methods and are rarely combined on a theoretical level. The fields are **Activity-based modeling** and **dynamic network assignment modelling**. After development of a conceptual framework for the combined modeling problem, I proposed number of candidate modeling approach that can fit in this framework and then I implemented the problem by developing small-scale software in the MATLAB. Several numerical tests were conducted for different solution algorithms, and for different traffic demand management policies utilizing the developed software in MATLAB.

Masters Research

My Master’s Research Project titled “**Travel Decision Economic Model**” aimed at development of theoretical travel demand model for the Rural Areas of Developing Countries. The Model development was

based on the notions of Accessibility and Household Economics. Data of 400 households was collected from Rural areas of Pakistan, where activity participation decisions were concerned with very practical life-sustaining activities such as frequency of travel to obtain water, food and other essentials. Detailed statistical analyses were carried out along with development of models by utilizing models within the family of discrete choice models using HIELOW (logit models estimation package). Transportation Planning Software **Emme/2** was also used to support model results.

3.2 Publications

Journals and Book Chapter (Refereed)

Adnan, M., (2011), Modelling daily tours scheduling dimensions using stochastic dynamic user equilibrium approach. NED University Journal of Research, Vol. VIII, No. 1 pg. 35-50

Adnan, M., Watling, D., Fowkes, A.S., **(2009)**, *A model for Integrating home-work tour scheduling with time varying network congestion and marginal utility profiles for home and work activities*. Transportation Research Record, Journal of Transportation Research Board, No. 2134, pp:21-30

Adnan, M., (2009), *Linking Macro-level dynamic network loading models with scheduling of individual's daily activity travel-pattern*. Chapter 13 of the book "New development in Transport Planning: Advances in Dynamic Traffic Assignments". Tempère C. M. J., Viti F., and Immers L.H., (Eds), Edward Elgar, Cheltenham, U.K.

International Refereed Conferences

Adnan M, and Watling D.P. **(2011)**, A model for joint choice of Activity timing, duration, sequence and route for daily tours with dynamic network congestion incorporating multiple user classes. In proceedings of 90th Annual TRB meeting, 23-25 January, 2011, Washington DC USA.

Adnan M, and Ali M.S **(2010)**, A model for travel decision of household based on household needs, In 3rd International symposium on Infrastructure Engineering in Developing countries (IEDC) held in Paksitan, Karachi, July 2010.

Adnan M., and Fowkes A.S. **(2010)**, A 3-state macroscopic dynamic traffic loading model for use in dynamic traffic assignment. In 3rd International symposium on Infrastructure Engineering in Developing countries (IEDC) held in Paksitan, Karachi, July 2010.

Memon A.Q., Sano K., **Adnan M., (2005)**, *Comparison of the coefficients of RP and SP models for modal choice (a case study of Karachi City, Pakistan)*. In proceedings of Urban Transport XI held in Portugal, Vol. 77, pp: 47-54. Brebbia C. A. and Wadhwa L.,(Eds), WIT press UK.

Ali, M.S, and **Adnan M., (2004)**, "An approach for modeling travel decision economics for Rural areas of developing countries". In proceedings of the 10th World Conference of Transportation Research (WCTR) held in Istanbul, Turkey in July 2004(CD-Rom).

International Conferences (Based on Abstract review)

Adnan M. (2009), *A combined weekly activity scheduling model with time varying network congestion*, presented at 4th Kuhmo-Nectar Summer school and conference held at Lyngby, Denmark in July 2009.

Adnan M., (2008)., *Scheduling of Individual's daily activity travel pattern with macro-level dynamic network loading models*. Presented in dynamic traffic assignment (DTA 2008) conference held at Leuven, Belgium in June 2008

Adnan M., and Ali M. S., **(2007)**, *Need based Paradigm to Model Household Travel Decisions*. Presented in UTSG Conference held at Leeds, UK in January 2007.

Working Paper

Adnan M., Fowkes A.S., **(2009)**, *A novel macroscopic dynamic loading model and its properties (unpublished)*, Institute for transport studies working paper No. 593, URL: <http://eprints.whiterose.ac.uk/10090/>

3.3 Other scientific Achievements

Part of the **Technical Committee** of the third international symposia on Infrastructure Engineering in Developing Countries (IEDC-2010). Responsible for reviewing submitted research papers for the conference on travel behaviour modelling. Also part of the editorial team of the conference proceedings.

The conference is organizing by Urban and Infrastructure Engineering Department, NED University of Engineering and Technology. This conference will be held in July 2010. Conference website: <http://www.neduet.edu.pk/UE/IEDC-2010/Home.html>

National and International Awards

Awarded funding for tuition fee support from Government of Pakistan to pursue PhD Study from University of Leeds. UK.

Awarded Institute for Transport Studies fellowship for pursuing PhD study.

Awarded Strategic funding from ITS, Leeds to attend and participate in four International Conferences i.e. UTSG 2007, DTA 2008, UTSG 2009, & Kuhmo-Nectar 2009

Awarded funding from NED University to attend and participate in 10th WCTR conference.

Awarded funding of Rs. 1 Million for M.Engg (Research) project from NED University of Engg and Tech.

Awarded Merit scholarship twice from NED University in four years of bachelors study.

Computer Literacy

Transport Softwares EMME/2, SATURN, OMNITRANS, S-PARAMICS, DRACULA, ALOGIT, HIELOW

Statistical Packages SPSS, MINITAB

Languages MATLAB, JAVA, FORTRAN

Office Work Packages MS Office, MS Project, Primavera

Languages English fluent in all forms (i.e. Reading, Speaking and Writing), (Scored 7.5 Band in IELTS in year 2005)
Urdu fluent in all forms and Sindhi fluent in all forms

4 PEDAGOGICAL ACHIEVEMENTS

4.1 Teaching Efforts

Oct 2004 to May 2006 Taught the following courses as to Undergraduate students in the Department of Civil Engineering at NED University

1. Engineering Surveying –I (first year undergraduate students)
2. Engineering Surveying-II (second year undergraduate students)
3. Transportation Engineering-I (third year undergraduate students)

**Sept 2006 to Jan 2010
(during PhD Study)**

Involved in teaching assistance ship during PhD study in various masters level courses in the Institute for Transport Studies, University of Leeds. These are as follows:

1. Network Modelling (Act as a demonstrator to provide technical support of the software SATURN with Prof. David Watling as a course leader)
2. Introduction to Transport Modelling (Act as a demonstrator to provide technical support of the software OMNITRANS with Dr. Haibo Chen as a course leader)
3. Traffic Data Collection and Analysis (Act as a demonstrator in the field to collect some basic traffic data such as traffic Speed, traffic Queue length, Parking study, Classified traffic counts etc. with Dr. Paul Firmin as a course leader)
4. Computing Skills Development (Act as a demonstrator to provide technical support on advanced aspects of various computer packages such as MS Excel, SPSS, Dream Weaver etc. with Dr. Paul Firmin as a course leader)

May 2010 to date

Undergraduate

Currently teaching the following undergraduate courses in Urban and Infrastructure Engineering Deptt. of NED University of Engg. & Tech.

1. Transportation-II (Final year undergraduate students)
2. Urban Mass Transportation (Final year undergraduate students)
3. Traffic Engineering and Management (Third year undergraduate students)
4. Engineering Surveying-I (First year Undergraduate students)

Postgraduate

Following subjects have been taught at post graduate level in Department of Civil Engineering of NED University

1. Probability and Statistics
2. Traffic Engineering and Management
3. Urban Transport Planning

4.2 Development Efforts

Undertook various trainings in the University of Leeds, in order to qualify for the job of module demonstrator, Exam invigilator, Exam supervisor etc. These trainings are part of programmes of skills development unit of the university of Leeds.

1. Effective Teaching methods in class rooms environment
2. Advanced Academic Writings

3. How to manage a Research project
4. Exam Invigilator responsibilities
5. Exam Supervision responsibilities
6. Speed PhD Training

Attended Remote Sensing training held in Architectural and Town Planning Department of NED University of Engineering and Technology, Karachi, Pakistan

Attended a Conference on **Sustainable Transport Issues**, held in Islamabad, Pakistan

A two-day course on **Road and Traffic Safety Engineering** has been **designed and conducted as an Instructor** in Centre for Continuing Engineering Education (CCEE) of NED University. Course held in September 2010.

4.3 Academic Supervision

Final year undergraduate projects under my supervision in the department of Civil Engineering and Urban and Infrastructure Engineering, NED university during are as follows;

1. Trip Generation Modelling for selected area of Karachi city (2005)
2. Traffic Network modelling of selected area of Karachi using Emme/2 (2005)
3. Development of Parking Demand models for high rise commercial buildings (2006)
4. Trip rate analysis and socio-economic profiling of Karachi city (2011)
5. Design and Placement of Traffic Control Devices for Sharah-e-Faisal, Karachi (2011)
6. Scenario based analysis for road network of Karachi (2011)

Master level Thesis:

1. Calibration of Car Following Models for different Traffic Stream Scenarios of Karachi City (Completed by Ms. Madiha) (2011)
2. Macroscopic Dynamic traffic network loading models and their validation with real traffic data from Karachi. (Currently underway, Mr. Rizwan) (2011)

5. INDUSTRY EXPERIENCE

5.1 Joint Efforts with Industry

Mar 2005 to Jan 2006

Worked on Traffic Network Analysis for the Project named as “DHA Traffic Management and Plan”. EMME/2 Software was used to develop the network model for DHA area. This project completed in Association with **National Engineering Services Pakistan (NESPAK)** Karachi as a Part time employee.

Feb 2006

Devised data Collection Methodology for KMTC of CDGK for estimation of Ridership for Karachi Mass Transit Program in conjunction with PCI and **M/S Engineering Associates (EA)** as part time employee.

Oct 2005 to Mar 2006

Successfully completed Travel Demand Analysis and Traffic Study of

- Capital Development Authority (CDA) Islamabad Flyover/Underpass Project on Jinnah Avenue. Economic Analysis and Feasibility study were also part of this traffic Study. Project completed in Association with EA.
- April 2006** Completed Traffic Study of Peshawar Torkham Express way including Data Collection and Data Analysis, Operational and Delay Analysis with Economic Assessment. (with EA)
- May 2006** Completed Traffic Study of Fateh Jang Interchange including Data Collection and Data Analysis, Operational and Delay Analysis with Economic Assessment. (with EA)
- May 2006** Completed Traffic Study Review report of Indus Highway Project including Data Collection and Data Analysis, Operational and Delay Analysis with Economic Assessment. (with EA)
- June 2011** Completed a Study on Assessment of Developmental Impacts of Pakistan Trade Information Gateway Real Time Exchange (TIGRE) project. (Using In-house resources of NED University).