Curriculum Vitae

Dr. Edgar Ouko Otumba

Department of Applied Statistics and Actuarial Science,
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EDUCATION

Ph.D. Applied Statistics, Maseno University, 2012.
(Recieved November 16, 2012)
Title of Thesis: *Optimal Strategies and Territorial Dominance in Large Populations*

PGD in Mathematical Sciences, African Institute for Mathematical Sciences, Universiteit Stellenbosch, South Africa, 2011

M.Sc Applied Statistics, Maseno University, 2004.
(Received March 26, 2004)
Title of Thesis: *An Extension of the Leslie Matrix for Estimating population sizes of Migrating Species*

B.Sc. Mathematics, Kenyatta University, 2000.
(Received October 13, 2000)

RESEARCH EXPERIENCE

MU-LISA 2020 Transforming Evidence to Action Capacity in Higher Education (TEACH) Fund Project, still ongoing.

Tupime Kaunti-Maseno University-USAID, Data Analytics Project, 2020 (Ongoing)

Statistical Analysis of Zimbabwe Presidential Election Results, August, 2018, Constitutional Court of Zimbabwe.

Baseline Survey for Kakuma Refugee Project, Institute for Policy and Government, sponsored by WorldVision Kenya, April 19th–25th, 2018.

Analysis of Kenya Presidential Election Results, August, 2017, Supreme Court of Kenya, Petition 1 (2018).

Analysis of the National Manpower Survey 2010/11, Kenya Youth Empowerment Programme, sponsored by the World Bank and Ministry of Labour and Social Services, Kenya, October, 2015–January, 2016.

Training on Interactive Data Analysis for Ministry of Labour and Social Services (MOLSS) Officers, April, 2015, August, 2015.

Mid Term review of the Country Strategic Plan and Country Programme implementation strategy 2011-2016, In Gulu, Kampala and Tororo implementation areas, Plan International, Uganda, January 2014.

Baseline study on the impact of child marriage on growth and development of Girl Child in East and Southern Africa. Study in Kenya, Uganda, Tanzania, Malawi, Zambia and Zimbabwe, PLAN International,November 2013.

Construction a Baseline reconstruction for Tanglubei LRP for their HIV/AIDS, FGM, Women and food security programs in Baringo East, Kenya, and Mwanza, Tanzania, ActionAid Kenya, January 2013.

Women Justice project in empowering the women in the Mau forest complex; project evaluation of the justice project for landesa in Narok North and Kuresoi Constituencies, September–December 2012.

Evaluation of Election process for Kenya Sugar Board Directors, 2005.

Monitoring and Evaluation of Referendum Process, RARIEDA Forum, 2005.

Documentation of SANA water and sanitation Projects in Nyando and Rachuonyo Districts, 2004.

Conducted research for the Centre for Gender and Consultancy on the Dfid Textbook Project in Primary schools of Siaya District, 2003.

Data collection and analysis of the CARE Kenya (YIER NGIMA) project in Siaya District, 2003.

TEACHING EXPERIENCE

Maseno University, Kenya: School of Mathematics, Applied Statistics and Actuarial Science

Senior Lecturer, Department of Applied Statistics and Actuarial Science, 2019–to date.

Lecturer, Department of Applied Statistics and Actuarial Science, 2012–2019

Assistant Lecturer, Department of Mathematics and Applied Statistics, July 2003– 2012

Graduate Assistant, September 2001–July 2003.

Courses Taught:

Descriptive Statistics; Probability and Distribution Theory; Sample Survey Methods; Statistical Computing; Analysis of Time Series; Analysis of Experimental Designs; Research Methodology; Fundamentals of Actuarial Mathematics; Survival Analysis; Actuarial Models; Stochastic Processes; Tests of Hypotheses; Matrix Population Models; Non-Parametric Methods; Bayesian Statistics; Bayesian Inference and Descision Theory; Quantitative Research Methods for Public Policy.

African Institute for Mathematical Sciences, South Africa

(As an Affiliated Phd Research student, Universiteit Stellenbosch, South Africa)

Teaching Assistant, PGD in Mathematics, 2010/2011.

Teaching Assistant, PGD in Mathematics, 2011/2012.

Postgraduate Students Supervision (Thesis)

1. Kaleli, James Musyoka (2018); Doctor of Philosophy in Applied Statistics, Maseno University.

2. Anyango, Cynthia Linet (2018); Doctor of Philosophy in Applied Statistics, Maseno University.

3. King'utu, Kevin (2018); Master of Science in Quantitative Research Methods, Maseno University.

4. Makokha, Florencio (2017); Master of Science in Applied Statistics, Masinde Muliro University of Science and Technology.

5. Malowa, Sylvester Ochol (2016); Master of Science in Applied Statistics, Maseno University.

6. Akoth, Everlyne Odero (2016); Doctor of Philosophy in Applied Statistics, Maseno University.

7. Ogol, Eliud Onyango (2016); Master of Science in Quantitative Research Methods,Maseno University.

8. Masake, Monicah Asirang (2016); Master of Science in Quantitative Research Methods, Maseno University.

9. Owuor, Kevin (2015); Master of Science in Quantitative Research Methods, Maseno University.

10. Ong'awa, Rhoda, (2014); Master of Science in Applied Mathematics, Maseno University.

Postgraduate Students Supervision (Research Projects)

1. Kanyiri, Mary Njoki (2019); Master of Science in Applied Statistics, Maseno University.

2. Kipkogey, Merary (2019); Master of Science in Applied Statistics, Maseno University.

3. Ariko, Caretas Aoko (2019); Master of Science in Applied Statistics, Maseno University.

4. Mwangi, Ken Njogu (2019); Master of Science in Quantitative Research Methods, Maseno University.

5. Kili, Muhindi Rop (2019); Master of Science in Quantitative Research Methods, Maseno University.

6. Kamwaro, Paul Ngati (2018); Master of Science in Quantitative Research Methods, Maseno University.

7. Koskei, Robert Kipkirui (2018); Master of Science in Quantitative Research Methods, Maseno University.

8. Muthoka, Japheth Kioko (2018); Master of Science in Quantitative Research Methods, Maseno University.

9. Obiero, Meshack Onyango (2018); Master of Science in Quantitative Research Methods, Maseno University.

10. Aoyi, Daniel (2017); Master of Science in Applied Statistics, Maseno University.

11. Rangara, Nelly Adhiambo (2017); Master of Science in Quantitative Research Methods, Maseno University.

12. Kiprotich, Peter Ng'eno (2017); Master of Science in Quantitative Research Methods, Maseno University.

13. Kagambo, Ayda, (2015); Master of Science in Mathematical Sciences, African Institute for Mathematical Sciences, Tanzania.

14. Boakyewaa, Opoku Baah, (2014); Master of Science in Mathematical Sciences, African Institute for Mathematical Sciences, Cameroon.

15. Tokpa, Darwolo Jamah Jr, (2014); Master of Science in Mathematical Sciences, African Institute for Mathematical Sciences, Cameroon.

16. Josua, Mwanyekange, (2014); Master of Science in Mathematical Sciences, African Institute for Mathematical Sciences, Cameroon.

17. Munezero, Jean Pierre, (2014); Master of Science in Mathematical Sciences, African Institute for Mathematical Sciences, Cameroon.

18. Mulingata, Martin Mati, (2014); Master of Science in Quantitative Research Methods, Maseno University.

19. Malinga, Sophie Chelagat, (2014); Master of Science in Quantitative Research Methods, Maseno University.

20. Ratemo, Cyprian Makiya, (2014); Master of Science in Quantitative Research Methods, Maseno University.

21. Nyabwanga, Robert Nyamao, (2014); Master of Science in Applied Statistics, Maseno University.

22. Otieno, Simeyo, (2014); Master of Science in Applied Statistics, Maseno University.

23. Ndichu, Catherine, (2013); Master of Science in Applied Statistics, Maseno University.

24. Wandera, Cyril, (2013); Master of Science in Applied Statistics, Maseno University.

25. Ojung'a, Samson, (2013); Master of Science in Applied Statistics, Maseno University.

26. Omollo, Thadeus, (2013); Master of Science in Applied Statistics, Maseno University.

27. Mango, Joash, (2013); Master of Science in Quantitative Research Methods, Maseno University.

28. Nuwagaba Savanna, (2011); Postgraduate Diploma in Mathematical Sciences, African Institute for Mathematical Sciences, South Africa.

29. Herve Dimy, (2011); Postgraduate Diploma in Mathematical Sciences, African Institute for Mathematical Sciences, South Africa.

HONORS AND AWARDS

Research Fellowship, University of Stellenbosch, 2010, 2011, 2012.

Graduate Assistantship, Maseno University, 2001–2003

PROFESSIONAL MEMBERSHIP

International Biometric Society, IBS, 2017–Present

Kenya National Statistical Society, KNSS, 2013–Present

Society for Industrial and Applied Mathematics, SIAM, 2010–Present.

South African Statistical Association, 2011–Present.

The Society for Mathematical Biology, 2011–Present.

SKILLS AND TRAINING

Computing Skills and Competencies

Proficiency in SPSS, SAS and R Statistical packages; Programming in SCIPY, SAGE, MATLAB, PYTHON; LaTeX Documentation; LINUX Operating System.

Consultancy and Research Areas

Probability and Stochastic Modelling.

Statistical Modelling of Biological Systems.

Mathematical Biology.

Bayesian Statistical Modelling.

LEADERSHIP EXPERIENCE

Co-ordinator, Maseno University Laboratory for Inter-disciplinary Statistical Activities (MU-LISA), 2020–Present.

Chair, Postgraduate Committee, School of Mathematics and Statistics and Actuarial Sciences, Maseno University, 2012–2016; 2019–Present

Convenor, School Seminars, Workshops and Conferences, School of Mathematics, Statistics and Actuarial Sciences, Maseno University, 2014–2016; 2019–Present

Associate Director (Ag.), the eCampus, Maseno University, June–August, 2015, September–October, 2015, August–October, 2016.

eCampus Programmes Co-ordinator, School of Mathematics, Statistics and Actuarial Sciences, 2012–2016.

Departmental Examination and Timetable Co-ordinator, Department of Mathematics and Applied Statistics, Maseno University, 2007–2010.

CONFERENCES AND WORKSHOPS

LREB Trade, Investment & Blue Economy Conference. Bomet, October 21st–24th, 2018.

Inaugural Pedagogical Leadership in Africa (PedaL) Central Training. Nairobi, August 7th–14th, 2018.

1st Developing Excellence in Leadership and Genetic Training for Malaria Elimination in Sub-Saharan Africa (DELGEME) Mid-Term General Meeting. Bamako, Mali, July 18th–20th, 2018.

Lecturer, Probability and Statistics, African Institute for Mathematical Sciences, Cameroon, 8th November – 22nd November, 2015.

Lecturer, Statistical Modelling with R. African Institute for Mathematical Sciences, Tanzania, 1st December –19th December, 2014.

Lecturer, Statistical Modelling. African Institute for Mathematical Sciences, Cameroon, 21st October –8th November, 2013.

Lecturer, Statistical Modelling. African Institute for Mathematical Sciences, Ghana, 17th September–5th October, 2012.

Strathmore International Mathematics Research Meeting. Strathmore University, Kenya, 23rd–27^{Th} July, 2012.

Facilitator, Workshop on Introduction to R for Statistical Modelling. Venda University, Limpopo, South Africa, 5th–16th March 2012.

Fifth Summer School in Mathematical Finance. African Institute for Mathematical Sciences, South Africa. 16th–18th February 2012.

Otumba, E. O (2011). "An Aggregated Model for Optimal Harvesting of Fish". AIMS Journal Club, November 2011, African Institute for Mathematical Sciences, South Africa.

First International Conference in Mathematical Sciences. Strathmore University, Kenya, 18th–20th August, 2011.

Clinic on the Meaningful Modelling of Epidemiological data. African Institute for Mathematical Sciences, South Africa, 30th May – 10th June 2011.

Otumba, E. O (2010). "Sensitivity Analysis of a 3×3 Leslie Matrix". SA Statistical Association Conference, November 2010. North West University, Potchefstroom Campus.

Otumba, E. O (2001). "Estimation of Population Sizes of Migrating Species". Joint Maths and Physics Seminar, Maseno University, Kenya.

PUBLICATIONS

1. Mawora, .T. M., **Otumba, .E. O.** and Otieno, .J. A., (2020).Fitting Time-series Models to Kisumu Rainfall Data for the Period 1961-2014. Mathematical Modelling and Applications, Vol.5, No.1, pp. 39–46, February 2020.

2. Mawora, .T. M., **Otumba, .E. O.** and Otieno, .J. A., (2020). Spatial Comparison and Quality Check of Farmer-recorded Daily Rainfall Data; A Case of Nyakach and Soin-sigowett, Kenya. Science Journal of Applied Mathematics and Statistics, Vol. 8, No. 1, pp. 11–18, January 2020.

3. Nyabwanga, R. N., Onyango, .F. and **Otumba, E. O.**, (2019). Consistency Inference Property of QIC in Selecting the True Working Correlation Structure for Generalized Estimating Equations. American Journal of Theoretical and Applied Statistics, Vol. 8, No.2, pp. 77–84, June 2019.

4. Nyabwanga, R. N., Onyango, .F. and **Otumba, E. O.**, (2019). Inference Properties of QIC in the Selection of Covariates for Generalized Estimating Equations. International Mathematical Forum, Vol. 14, No.4, pp. 149–157, June 2019.

5. Oyala,.C.Okeyo, and **Otumba,.E. Ouko**, (2018). Modelling of Distribution of the "Matatu" Traffic Flow Using Poisson Distribution in a Highway in Kenya. International Mathematical Forum. Vol. 13, Issue 8, pp 385 – 392, July 2018.

6. Onyango, Eliud Ogol, and **Otumba, E. Ouko** (2018). Analysis of the effects of integrating ICT in teaching process in Primary Schools in Kisumu City. LAP LAMBERT Academic Publishing, Saarbrucken, Germany. ISBN 978-3-6598-9429-9

7. Anyango, .C., **Otumba,.E.** and Kihoro,.J. M., (2017). Recursive Relation for Zero Inflated Poisson Mixture Distributions. Applied Mathematical Sciences. Vol. 11, Issue 18, pp 849 – 858, April 2017.

8. Anyango, .C., **Otumba,.E.** and Kihoro,.J. M., (2017). Zero Inflated Poisson Mixture Distributions. Applied Mathematical Sciences. Vol. 11, Issue 17, pp 839 – 847, April 2017.

9. **Otumba, .E.,** and Musyoka,.J., (2016). Unlocking Daily Rainfall Records Held by Volunteer Weather Stations in Western Kenya. International Journal of Innovative Research and Development. Vol. 5, Issue 10, ISSN 2278 – 0211, October 2016.

10. Musyoka, .J, and **Otumba,.E,** (2016). Assessing Agricultural Risks related to the start, end and length of the March–May season in Nyando, Kenya. International Journal of Scientific Research and Management. Vol. 4, Issue 10, pp. 4657–4662, September 2016.

11. Nyabwanga, R. N., and **Otumba, E. O.**, (2016). Application of Seasonal Autoregressive Integrated Moving Average (SARIMA) to Model and Forecast Water Demand in Kisumu City, Kenya. International Journal of Ecological Economics and Statistics.Vol. 37, No.3, pp. 76–101, July 2016.

12. Odero, E. A., Onyango, F .O., and, **Otumba, E. O.**, (2016). Modelling fertility rate of Rwanda in the presence of interference: the 1994 genocide. International Journal of Academic Studies. Vol. 2, No.2, pp. 103–114, April 2016.

13. Odero, E. A., **Otumba, E .O.**, and, Onyango, F. O., (2016). Modelling fertility rate of Indonesia in the presence of interference: The 2004 Tsunami. International Journal of Research and Development Organisation. Vol. 2, No.3, pp. 16–27, March 2016.

14. Esilaba, R. O., **Otumba, E. O.**, Manyonge, A. W., (2015). Computation of Efficient Nash Equilibria for Experimental Economic Games. International Journal of Mathematics and Soft Computing. Vol. 5, No.2, pp. 197–212.

15. Otieno, S., **Otumba, E. O.**, and Nyabwanga, R. M., (2015). Application of Markov Chain to model and forecast stock market trend:A study of Safaricom shares in Nairobi Securities Exchange, Kenya. International Journal of Current Research Vol. 7, Issue 04, pp. 14712–14721, April 2015.

16. Nyabwanga, R. M., **Otumba, E. O.**, Onyango,F., and Otieno,S. (2015). Statistical Trend Analysis of Residential Water Demand in Kisumu City, Kenya. American Journal of Theoretical and Applied Statistics. Vol. 4, No. 3, pp. 112–117, April 2015.

17. Otulo, W. C., Ojung'a, O. S and **Otumba, E. O.** (2014). Screening of New strains of sugarcane using Augmented Block Designs. Mathematical Theory and Modelling, Volume 4, Issue 8, pp 153 – 161, July 2014.

18. Ndichu, C. W. and **Otumba, E. O.** (2014). Modeling Trailer-Traffic Flow on a Kenyan Highway. International Mathematical Forum, Volume 9, Issue 23, pp 1131 – 1137, July 2014.

19. Ojung'a, S. O., **Otumba, E. O.**, et al (2014). The application of logistic regression in modeling of survival chances of HIV-positive patients under highly active antiretroviral therapy (HAART): A Case of Nyakach District, Kenya. Basic Research Journal of Medicine and Clinical Sciences, Volume 3, Issue 3, pp. 14–20, March 2014.

20. **Otumba, E. O.**, Onyango, F., and Mwambi, H. (2012). An Aggregated Model for Optimal Harvesting of Fish. International Journal of Ecological Economics and Statistics, Volume 27, Issue 4, pp. 76-88, March 2012.

21. **Otumba, E. O.** (2011). The Extended Leslie Matrix Model: Estimation of Population sizes of Migrating species. LAP LAMBERT Academic Publishing, Saarbrucken, Germany. ISBN 978-3-8433-8311-0

22. **Otumba, E. O.** (2011). On the use of an Age-structured matrix for Estimating Population sizes of Migrating species. International Journal of Mathematical Archive, Volume 2, No.10, pp. 2027-2029, October, 2011.

23. **Otumba, E. O.** and Onyango, F.(2011). Fluctuations in Leslie Matrix Parameters and their effect on the stable population structure. International Journal of Current Research, Volume 3, Issue 11, pp.144-151, October, 2011.

24. **Otumba, E. O.** (2011). Evolutionary Stable Strategies: Territorial Dominance in Large Populations. LAP LAMBERT Academic Publishing, Saarbrucken, Germany. ISBN 978-3-8465-1600-3

25. **Otumba E. O** and Onyango, F. (2010). Sensitivity Analysis of Leslie Matrices. Journal of Mathematical Sciences. International Centre for Advance Studies, Volume 21, No.1,pp.101-112, December, 2010.