

International Collaboration and Research Data

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1. Active international research collaborations as of 30 June 2026

#	Collaboration	Responsibility
1	Saveetha Institute of Medical and Technical Sciences, India	External Examiner and Adjunct Lecturer, January 2025 to date, including research collaboration
2	Universitas Airlangga, Indonesia	Postdoctoral fellow 2022-2026; Travel grant - 2026, plus continuing 2025–2026 co-authored papers with Prof. Fatmawati
3	University of Oxford, United Kingdom	AfOx fellowship in 2024, IMU fellowship in 2025, An inviter Researcher for AfOx 10th year - travel grant.
4	Institut des Hautes Études Scientifiques (IHES), France	An inviter Researcher - 2026

Not counted as active on 30 June 2026:

- BIMSA, China: the visit had not started.
- STIAS Iso Lomso Fellowship: begins 2027.

2. Project titles and international collaborators

Title / research focus	Funder	Partner institution	Partner country	Start date	End date
Research collaboration and student mentoring (mathematical modelling, fluid dynamics, machine learning)	Saveetha Institute of Medical and Technical Sciences	Saveetha Institute of Medical and Technical Sciences	India	January 2025	Ongoing
Mathematical modelling of infectious diseases (COVID-19, TB, dengue, Lassa fever and others)	Travel grant (2026) - Indonesia Government	Universitas Airlangga	Indonesia	2022 (postdoc); 2026 grant	Ongoing
Onchocerciasis modelling and climate effects	Travel grant (2026) - AfOx. IMU grant (2024–2025) AfOx fellowship (2023–2024)	University of Oxford, Mathematical Institute	United Kingdom	December 2023	Fellowship ended December 2025; 2026
Mpox modelling and climate effects	Institut des Hautes Études Scientifiques (IHES) – Invited Researcher	Institut des Hautes Études Scientifiques (IHES) Center	France	February 2026	Ongoing

3. Active partnerships and linkages with local and regional industries as of 30 June 2026

None

4. Five MoUs verifiable as active

None

5. Joint research papers in international outlets on Africa-priority themes

All papers below are co-authored, published, and address disease control or social problems relevant to Africa. Single-author papers and the paper in a Nigerian-published journal (JNSPS) are excluded.

1. Chukwu, C. W., Madubueze, C. E., Nnakwe, M. O., Akanni, J. O., Chazuka, Z., & Fatmawati. (2026). Mathematical analysis and numerical simulation of campylobacteriosis dynamics: Assessing the roles of house flies and contaminated food products as mechanical vectors. *Journal of Biosafety and Biosecurity*, 8(2), 91–110. <https://doi.org/10.1016/j.jobb.2026.03.005>
2. Ajao, S., Akanni, J. O., Opoku, N. K. D. O., Enegesele, D., & Madubueze, C. E. (2026). Optimal control and cost-effectiveness analysis of Ebola virus disease dynamics in a population. *Iranian Journal of Science*. Advance online publication. <https://doi.org/10.1007/s40995-026-01992-5>
3. Yunus, A. O., Akanni, J. O., & Olanrewaju, O. A. (2026). Bifurcation analysis and optimal control of a Dengue fever model with saturated nonlinear incidence and dual time delays. *Scientific African*, 34, e03603. <https://doi.org/10.1016/j.sciaf.2026.e03603>
4. Madubueze, C. E., Ajao, S., Akanni, J. O., Chazuka, Z., & Madubueze, S. C. (2025). Mathematical modelling of the impact of environmental contamination on Lassa fever: Optimal control and economic analysis. *The European Physical Journal Plus*, 140, 699. <https://doi.org/10.1140/epjp/s13360-025-06639-9>
5. Madubueze, C. E., Ajao, S., Akanni, J. O., Fatmawati, F., & Chazuka, Z. (2025). Impact of environmental contamination on Lassa fever transmission dynamics: A mathematical modelling approach. *The European Physical Journal Plus*, 140, 202. <https://doi.org/10.1140/epjp/s13360-025-06123-4>
6. Olayiwola, M. O., Akanni, J. O., Alaje, I. A., Gambo, A., & Yunus, A. O. (2025). Effect of vertical transmission and environmental contamination on nonlinear fractional order model of monkeypox incorporating vaccination using Atangana–Baleanu–Caputo derivative. *Modeling Earth Systems and Environment*, 11, 321. <https://doi.org/10.1007/s40808-025-02437-5>
7. Akanni, J. O., Ajao, S., Ayoade, A. A., Madubueze, C. E., & Fatmawati, F. (2025). Analysis of fractional-order model for COVID-19: Implications for transmission, hospitalisation, and recovery trends. *Progress in Fractional Differentiation and Applications*, 11(3), 467–489. <http://dx.doi.org/10.18576/pfda/110304>
8. Akanni, J. O., Fatmawati, F., Ajao, S., Asamoah, J. K. K., & Abimbade, S. F. (2024). Mathematical model of COVID-19 dynamics in the presence of multiple controls. *Quality & Quantity*. <https://doi.org/10.1007/s11135-024-01975-x>
9. Akanni, J. O., Ajao, S., Abimbade, S. F., & Fatmawati, F. (2024). Dynamical analysis of COVID-19 and tuberculosis co-infection using mathematical modeling approach. *Mathematical Modelling and Control*, 4(2), 208–229. <https://doi.org/10.3934/mmc.2024018>
10. Akanni, J. O., Enegesele, D., Ayoade, A. A., Madubueze, C. E., & Fatmawati, F. (2024). Mathematical analysis of an alcohol addiction and poverty dynamics in a population: An insight from optimal control and cost-effectiveness. *Applied Mathematics & Information Sciences*, 13(4), 757–776. <https://doi.org/10.18576/isl/130403> [Check: the "isl" in this DOI suggests Information Sciences Letters.]
11. Akanni, J. O., Fatmawati, F., & Chukwu, C. W. (2023). On the fractional-order modeling of COVID-19 dynamics in a population with limited resources. *Communications in Mathematical Biology and Neuroscience*, 2023, Article 13. <https://doi.org/10.28919/cmbn/7875>
12. Abidemi, A., & Akanni, J. O. (2022). Dynamics of illicit drug use and banditry population with optimal control strategies and cost-effectiveness analysis. *Computational and Applied Mathematics*, 41, 53. <https://doi.org/10.1007/s40314-022-01760-2>
13. Akanni, J. O., Olaniyi, S., & Akinpelu, F. O. (2020). Global asymptotic dynamics of a nonlinear illicit drug use system. *Journal of Applied Mathematics and Computing*. <https://doi.org/10.1007/s12190-020-01423-7>
14. Ayoade, A. A., Odetunde, O., & Akanni, J. O. (2026). A compartmental approach for effective control and possible elimination of gonorrhea. *Journal of Nonlinear Modeling and Analysis*, 8(3), 733–763.

15. Ajao, S., Akanni, J. O., Akinwumi, T., Omoloye, M. A., Olopade, I., & Odebiyi, O. A. (2026). A mathematical approach to malaria eradication: Insights from vaccine strategies. *Journal of Prime Research in Mathematics*, 41–67.
16. Chukwu, C. W., Akanni, J. O., Madubueze, C. E., & Nnakwe, M. O. (2026). Assessing intervention strategies to mitigate campylobacteriosis dynamics: An optimal control analysis and applications. *Brazilian Journal of Physics*, 56(2), 99.
17. Makinde, O. D., Akanni, J. O., & Abidemi, A. (2023). Modelling the impact of drug abuse on a nation's education sector. *Journal of Applied Nonlinear Dynamics*, 12(1), 53–73.
18. Abidemi, A., Akanni, J. O., & Makinde, O. D. (2023). A non-linear mathematical model for analysing the impact of COVID-19 disease on higher education in developing countries. *Healthcare Analytics*, 3, 100193.
19. Akanni, J. O., & Abidemi, A. (2023). Relationship between illicit drug users and bandits in a population: Mathematical modelling approach. *Applied Mathematics and Information Sciences*, 17(3), 475–492.
20. Olaniyi, S., Akanni, J. O., & Adepoju, O. A. (2023). Optimal control and cost-effectiveness analysis of illicit drug use population dynamics. *Journal of Applied Nonlinear Dynamics*, 12(1), 133–146.
21. Akanni, J. O., Adediipo, D. A., Kehinde, O. O., Ayanrinola, O. W., & Adeyemo, O. A. (2022). Mathematical modelling of the co-dynamics of illicit drug use and terrorism. *Information Sciences Letters*, 11(2), 559–572.
22. Akanni, J. O., Akinpelu, F. O., Olaniyi, S., Oladipo, A. T., & Ogunsola, A. W. (2020). Modeling financial crime population dynamics: Optimal control and cost-effectiveness analysis. *International Journal of Dynamics and Control*, 8, 531–544.

6. Joint research papers with scholars from other African countries in international outlets

1. Akanni, J. O., Fatmawati, F., Ajao, S., Asamoah, J. K. K., & Abimbade, S. F. (2024). Mathematical model of COVID-19 dynamics in the presence of multiple controls. *Quality & Quantity*. <https://doi.org/10.1007/s11135-024-01975-x> *African co-author: J. K. K. Asamoah (Ghana)*.
2. Ajao, S., Akanni, J. O., Opoku, N. K. D. O., Enegesele, D., & Madubueze, C. E. (2026). Optimal control and cost-effectiveness analysis of Ebola virus disease dynamics in a population. *Iranian Journal of Science*. Advance online publication. <https://doi.org/10.1007/s40995-026-01992-5> *African co-author: N. K. D. O. Opoku (Ghana)*.
3. Madubueze, C. E., Ajao, S., Akanni, J. O., Chazuka, Z., & Madubueze, S. C. (2025). Mathematical modelling of the impact of environmental contamination on Lassa fever: Optimal control and economic analysis. *The European Physical Journal Plus*, 140, 699. <https://doi.org/10.1140/epjp/s13360-025-06639-9> *African co-author: Z. Chazuka (Zimbabwe)*.
4. Madubueze, C. E., Ajao, S., Akanni, J. O., Fatmawati, F., & Chazuka, Z. (2025). Impact of environmental contamination on Lassa fever transmission dynamics: A mathematical modelling approach. *The European Physical Journal Plus*, 140, 202. <https://doi.org/10.1140/epjp/s13360-025-06123-4> *African co-author: Z. Chazuka (Zimbabwe)*.
5. Chukwu, C. W., Madubueze, C. E., Nnakwe, M. O., Akanni, J. O., Chazuka, Z., & Fatmawati. (2026). Mathematical analysis and numerical simulation of campylobacteriosis dynamics: Assessing the roles of house flies and contaminated food products as mechanical vectors. *Journal of Biosafety and Biosecurity*, 8(2), 91–110. <https://doi.org/10.1016/j.jobbb.2026.03.005> *African co-author: Z. Chazuka (Zimbabwe)*.
6. Makinde, O. D., Akanni, J. O., & Abidemi, A. (2023). Modelling the impact of drug abuse on a nation's education sector. *Journal of Applied Nonlinear Dynamics*, 12(1), 53–73.(DOI not given in the CV) *African co-author: O. D. Makinde (South Africa)*.
7. Abidemi, A., Akanni, J. O., & Makinde, O. D. (2023). A non-linear mathematical model for analysing the impact of COVID-19 disease on higher education in developing countries. *Healthcare Analytics*, 3, 100193.(DOI not given in the CV) *African co-author: O. D. Makinde (South Africa)*.