



9th International Multidisciplinary Research Conference

Book of Abstracts and Programme

Theme:

*Unfolding Emerging Issues and Innovations for Strategic
Adaptation in an Era of Global Uncertainty*

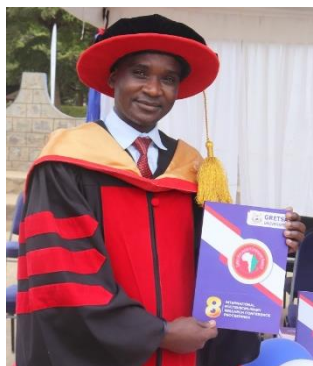
Dates & Time zone:

**Monday 10th – Tuesday 11th August 2026
East Africa Time Zone**

Conference Meeting link:

<https://meet.google.com/gou-ruao-ekz?hs=224>

REMARKS FROM THE CONFERENCE SECRETARIAT



Distinguished guests, esteemed researchers and participants, it is with great honor and immense pleasure that I welcome you all to Grets University's 9th International Multidisciplinary Research Conference. The conference is guided by the theme “**Unfolding Emerging Issues and Innovations for Strategic Adaptation in an Era of Global Uncertainty.**”

Today, we stand at a pivotal crossroads in human history. The world faces unprecedented challenges and uncertainties—climate change, global health crises, resource scarcity, geopolitical tensions, and rapid technological transformation. Yet, within these challenges and uncertainties lies an extraordinary opportunity driven by the power of human creativity, enhanced by the capabilities of artificial intelligence and innovation that have emerged as defining forces of our era.

With participants drawn from China, Nigeria, Zimbabwe, Zambia, Tanzania, and Kenya, this conference is an essential platform for rigorous academic exchange and arguments, knowledge dissemination, and collaborative engagement. Here, we have the opportunity to share cutting-edge research, draw from diverse scholarly perspectives, and build networks for sustainable development. As we begin, I urge us to approach this shared dialogue with openness, intellectual curiosity, and a deep commitment to addressing global uncertainties.

On behalf of the entire Conference Organizing Committee, I extend our heartfelt gratitude to all participants, keynote speakers, and supporters who have made this event possible. Your commitment to progress and global well-being is the driving force behind this initiative. Your contributions to this conference—whether through ideas, research, dialogue, or solutions—are the lifeblood of this gathering. I also extend sincere thanks to the University Management, Governing Council, and Board of Trustees for their immense support, without which this conference would not have been possible.

Let us use this occasion to challenge conventional thinking, explore bold solutions, and commit ourselves to the shared goal of building a more sustainable, inclusive, and resilient future for all. Let this conference be not only a platform for knowledge sharing but also a catalyst for action and impact.

Welcome to the 9th International Multidisciplinary Research Conference of Grets University, 2026.

Dr. Gilbert Omedi

Director of Graduate Studies, Research and Publication

Conference Secretariat

REMARKS FROM THE VICE CHANCELLOR



It is my great honour and privilege, on behalf of Greta University, to warmly welcome you to the 9th International Multidisciplinary Research Conference, being held virtually from the 10th to the 11th of August 2026.

This year's conference theme, **"Unfolding Emerging Issues and Innovations for Strategic Adaptation in an Era of Global Uncertainty,"** calls on scholars to identify emerging challenges, develop innovative solutions, and help society adapt effectively to an increasingly unpredictable world. Currently, a lot is going on in the world, from rapid digital transformation and climate change to global health security and economic uncertainty, among others. The theme reminds us that while uncertainty has become a defining feature of our time, it also presents opportunities for innovation. The theme of this conference resonates strongly with Greta University's vision of being a distinctive university that provides quality education relevant to society. Relevance requires us to remain responsive to the changing world around us. As new challenges emerge, so must new ideas, innovative research, and practical solutions.

The objective of this conference is to provide an opportunity for scholars from diverse disciplines and different regions of the world to exchange ideas, challenge conventional thinking, and establish collaborations that transcend institutional and national boundaries. Indeed, every significant advancement, whether in healthcare, technology, education, agriculture, or economic development, has been made possible because someone dared to ask a question, investigate it systematically, and share the findings with the world.

As we engage in this conference, I encourage all participants, particularly our early-career researchers and postgraduate students, to actively share ideas, ask thought-provoking questions, learn from one another, and build meaningful collaborations. Let this conference be a platform for professional growth, constructive dialogue, and partnerships that extend beyond these sessions as, together, we advance research, innovation, and excellence for the benefit of society. I wish to commend the Conference Organizing Committee for assembling such a diverse and rich programme from all the countries represented. I humbly recognize all our presenters and participants, your ideas, findings, and perspectives are the reason why we gather here today.

As we embark on these two days of engagement, I trust that the discussions and insights shared will inspire fresh perspectives, strengthen evidence-based solutions, and reinforce the vital role of research in addressing the complex challenges facing our world. May this conference leave us better informed, better connected, and better equipped to make a meaningful impact in our respective fields and communities.

With these few remarks, it is my pleasure now to officially declare the 9th International Multidisciplinary Research Conference open. I wish you all fruitful deliberations and a truly enriching experience.

Dr. Peter N. Karanja, Ph.D

Vice Chancellor- Greta University

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CONFERENCE ORGANISING COMMITTEE

1. Dr. Peter Karanja – Vice Chancellor
2. Dr. George Ooko – Deputy Vice Chancellor, Academic and Students Affairs
3. Dr. Gilbert Omedi – Director of Graduate Studies, Research and Publication
4. Ms. Pascaline Ndila – University Librarian
5. Mr. Samwel Ongeru – Quality Assurance Officer
6. Mr. Edwin Muna – Dean, School of Education, Humanities and Social Sciences
7. Mr. Moses Kioko – Dean, School of Computing and Informatics
8. Mr. Hillary Mutugi – Representative of the School of Health Sciences
9. Ms. Ann Kamau – Representative of the School of Hospitality, Tourism and Leisure Studies
10. Mr. John Ngahu – Head of Marketing
11. Mr. Joseck Omwoyo – Head of ICT
12. Ms. Jackline Mumbi – Head of Finance

CLUSTERS

CLUSTER 1

Session chairpersons: Prof. Rosemary James & Dr. Purdul John

Rapporteur: Ann Kamau & Nellyne Winnie

Papers:

1. AI-Assisted Sovereign Educational Intelligence: Reimagining Curriculum Transformation for Strategic Educational Adaptation in Africa, by Kalungwishi Elijah Kabemba
2. African Cognitive Sovereignty: Reimagining Artificial Intelligence Governance through Indigenous Knowledge Systems, by Kalungwishi Elijah Kabemba
3. Leveraging Artificial Intelligence to Enhance Innovation in Zimbabwean Universities, by Tom Muzenda and Munashe F. Chakamanga
4. Intelligent IoT-Based Solar Management System with Automated Tracking and Predictive Maintenance, by Luckmore Furidze, Hildah Nyamunokora, Munashe Chakamanga
5. Christianity and Good Governance in Nigeria: A Theological Evaluation of Church Participation in Nation Building, by Silas B. Akande
6. Fostering Critical Thinking in Pre-Service Teachers: A Systematic Review of Pedagogical Innovations and Strategic Adaptations for Teacher Education in an Era of Uncertainty, by Hnin Nu Nu Hlaing
7. Harnessing Indigenous Knowledge to Enhance Smart Coffee Farming Knowledge Adoption in Kenya: A Literature Review, by John Muriuki
8. Architecture of Ecological Injustice: Climate Change, Land Scarcity, and the Criminalization of Pastoralist Survival in Laikipia County, Kenya, by Ndumia Koigi
9. Participatory and Inclusive Governance and its outcomes, by Omulako Eman Jairo & Damary Atieno Mukabane
10. Influence of Artificial Intelligence Integration on Teacher Autonomy among Senior School Teachers in Kenya, by Jared Momanyi & John Purdul
11. Education Premium Across Industries: Does Human Capital Matter More in Knowledge-Intensive Sectors? A Secondary-Data Analysis of Workforce Education, Industry Knowledge Intensity, and Organizational Performance, by Faith Wanja Kilaku, Victor Malimu & Cyrus M. Muhanga
12. Beyond Diagnostic Expansion: Operational Capacity Gaps in Kenya's Public Laboratory System, by Walter Kipngetich Lelei
13. Effect of Organization Resources as a Determinant of Strategy Implementation on Service Delivery in County Government of Mandera, Kenya, by Ibrahim Ali Shabure, Ooko George & Ibrahim Haji

CLUSTER 2

Session chairpersons: Prof. Kihima Bonface & Dr. Anna Maua

Rapporteur: Hillary Mutugi & Sharon Mose

Papers:

1. AI Governance Through the GPS–DALE Macrophage–SEOS*:FGS v2.0 Ecosystem: A Sovereign Framework for Transparent Human–AI Decision Support, by Kalungwishi Elijah Kabemba
2. Transforming Public Healthcare Delivery through Artificial Intelligence and Data Analytics: Evidence from Kajiado County, Kenya, by Jeffrey Luswetli Wafubwa, Okwiri Minado Saad, Mapema Nelson
3. Beyond Information Abundance: Repositioning Librarians as Trusted Navigators in Addressing Information Disorder and Trust Erosion in the Scholarly Sphere, by Pauline Njagi & Gitau Njoroge
4. Impact of Climate Change on Sustainable Development, by Adan Maalim Hussein
5. An Assessment of the Role of Religious Institutions in Shaping Participatory and Inclusive Governance Practices in Kenya, by Aduda Amos Omollo
6. Evaluating the effectiveness of participatory green education on adapting sustainable natural resource management in Kajiado County – a case study of Kajiado East sub-County, by Kwiri Minado Saad & Koech Alex
7. Curriculum Management for Chinese Language Education in Tanzanian Secondary Schools: Current Practices, Emerging Challenges, and Future Directions by Jivitius Ching'oro Sabatho
8. Effect of Class Size on Student Engagement in Secondary Schools in Thika West Sub-County, Kiambu County, Kenya, by Joan Koech, Salim Onyango & Omedi Gilbert
9. Inclusive Educational Practices for Enhancing Curriculum Accessibility for Children with Autism Spectrum Disorder in Tanzanian Primary Schools, by Neema Bestone Matingo & Jivitius Ching'oro Sabatho
10. Augmented Tools to Enhance O-Level Chemistry Learning at Njube High School, by Dzinemarira Tanya. C., Munashe Chakamanga, Mapira Tafadzwa, Mapfumo Ephraim
11. Influence of multiple career paths as a professional development dynamic on teacher attrition in public secondary schools in Mombasa County, Kenya, by Rebecca Bwari Arogo & John Ng'eda Purdul
12. Counselling or Cancelled: Reviewing Handling of Mental Health of Students in Kenyan Public Universities, by Wamondo Thomas Chikati
13. Supply chain reengineering as a strategic driver of operational performance in manufacturing firms in Kenya, by Abigael Chepkwemai Ndiema

CLUSTER 3

Session chairpersons: Dr. Geoffrey Mariga & Dr. Muniko Marwa

Rapporteurs: Serah Waggio & Peter Irungu

Papers:

1. AI-Assisted Sovereign Psychosocial Intelligence (ASPI): A Sovereign Framework for Psychosocial Wellbeing, Mental Health Governance and Sustainable Human Development in Africa, by Kalungwishi Elijah Kabemba
2. Digital Transformation in Higher Education: Leveraging Information Systems for Governance, Quality Assurance, and Academic Excellence, by Stanley Muli
3. Generative AI Governance in Higher Education for Ethical Adoption and Strategic Institutional Adaptation, by Stella Migide Madete
4. Science Educators' Perceptions on Decolonizing Biology Laboratories through Indigenous Knowledge Systems Integration: A case of A Level School's in Chitungwiza, by Chakamanga, Munashe, Tanya Dzinemarira, Masuka Lovejoy, Mapfumo Ephraim
5. Effect of Climate Variability on Rainfall and River Discharge, by Joel Aholi & Mary Makokha
6. Use of Assistive Technologies by head-teachers and their influence on the inclusion of learners with special needs in regular Public primary schools in Vihiga County, Kenya, by Alex Ang'undo Vigatsi
7. Digital Readiness and Curriculum Sustainability in Chinese Language Education: Lessons from Tanzania's Emerging Secondary School Programme, by Jivitus Ching'oro Sabatho
8. Leveraging AI-Powered pedagogy in Kenyan Universities, by Jackton Otieno Midigo & George Mugwe
9. Effect of Rainfall Timing on Select Food Crop Production in Nyando sub-County, Kisumu County, Kenya, by Odundo Tom & Omedi Gilbert
10. Code mixing and switching as a means of enhancing inclusivity in governance: A case study of William Ruto's political campaign speeches, by Akello Odiaga Walter
11. Decision-Making Strategies in an Era of Uncertainty: A Systematic Review of Organizational Agility Frameworks, by Bashir M. Maalim & George M. Wanjobi
12. Antenatal care, place of delivery and neonatal death nexus: Analysis of 2003-2022 Kenya demographic and health survey data, by Omedi Gilbert & Mwaila Margaret
13. Social determinants of access to reproductive health services by youths in Laikipa County, by Charles Kimani

KEYNOTE SPEAKERS' PROFILES

Keynote Speaker 1: Prof. Ruth N. Wanjau, Ph. D



Prof. Ruth N. Wanjau is an Associate Professor in the Department of Chemistry, Kenyatta University, Kenya. She is passionate on mentoring youths and young ladies in Science, Technology, Engineering and Medicine (STEM). She is the current student coordinator for peer counselors; Former Chairperson of Kiambu County Education Board, BOG Chairperson Githunguri TVC and BOM Chairperson Gathiruni Secondary School. Prof. is a Co-PI to British Council Project on "Intersectional Approaches to Disability Inclusion: Examining the Impacts of Ethnicity, Gender, and Disability on Access to Learning and Research Opportunities in Higher Education Institutions in Kenya (2025-2026), PI of the KU VC Research Grant on Inclusive education made easy: an interactive learning resource for visually challenged learners in secondary schools in Kenya (2021), Co-PI KU VC research grant on Soil improvement using leaves and leaves extract for the growth of crops project (2014)- PI NACOSTI Women's research grant, (2013/2014), PI TOWA HIV and AIDS activities in KU (2013), Coordinated AAU-EASRN HIV project 2011/2014 among other grants, and a researcher in the KU-Women Economic Empowerment Project funded by Bill and Melinda Gates. She is also a Principal Researcher in Scholar Spark Solutions a consultancy that provides valuable insights and data-driven strategies that help schools and universities enhance their teaching methods, improve student outcomes, and optimize their overall operations She is a life member of KCS and KAFSAP. She has been a keynote speaker in several conferences in Kigali University, Rwanda, Kenyatta University and twice at Turkana University College.

Her research interests are but not limited to: Gender and inclusivity, education, development of products for agriculture, health and quality life; climate change; environmental and chemical analysis. She is currently working on incorporating entrepreneurship activities from innovative findings she has drawn from her research experience over the years. She also gives mentorship talks to students in high schools, colleges, churches, communities and universities.

Keynote Speaker 2: Dr. Agnes Anyango Andollo, Ph. D



Dr. Agnes Anyango Andollo is an accomplished Kenyan academic, researcher, and international education leader. She serves as a Lecturer and Researcher at the University of Nairobi. Her work centers on the Department of Educational and Distance Studies. There, she excels in teaching, supervising postgraduate research, and driving curriculum innovation. She stands out as a project management specialist and development practitioner. Her extensive career spans higher education, educational research, international cooperation, and youth empowerment. She actively shapes policy-oriented scholarship to foster equitable and quality education across the African continent.

Dr. Andollo possesses a robust, interdisciplinary educational background. She holds a Doctor of Philosophy (Ph. D) in Distance Education from the University of Nairobi. To enrich her global perspective, she completed advanced doctoral studies abroad. These include Applied Pedagogy at the Autonomous University of Barcelona in Spain. She also studied Educational Sciences and Comparative Education at the University of Porto in Portugal. Furthermore, she holds a Master of Arts in Project Planning and Management; a Bachelor of Education (Arts); and a Diploma in Human Resource Management. This deep academic foundation fuels her vast areas of expertise. She is widely recognized for her mastery of open, distance, and digital learning.

Dr. Andollo actively leads pioneering initiatives that transform higher education. She is the principal investigator for an innovative research project titled "*Co-Creating a Student-Led Skills Passport to Foster Autonomous Learning in Kenyan Universities.*" Supported by the international Learning Mindset Small Grants Programme, it enhances student agency and graduate readiness. Nationally, she serves as a Socio-Emotional Skills Development (SESD) Expert. She contributes directly to the Government of Kenya's flagship NYOTA Project that empowers youth with critical competencies like teamwork, resilience, and leadership. Her work bridges the gap between graduation and sustainable employment or entrepreneurship.

A passionate champion of internationalization, Dr. Andollo strengthens ties between African and European institutions. She actively participates in Erasmus+ programmes and European Union-funded mobility initiatives. These efforts cultivate vital knowledge exchange and capacity-building across borders. Dr. Andollo serves as the ASAF Eastern Africa Regional Coordinator, overseeing activities across ten countries. She is also the ASAF Co-Ambassador for Kenya for the 2024–2028 term. In these roles, she mentors emerging scholars and builds strategic partnerships with EU Delegations.

Dr. Andollo serves as Chancellor of the Universities Student Leaders Association (USLA) and Patron of USLA Kenya. Additionally, she chairs the Welfare Committee of the Kenya Diaspora Alliance.

PROGRAMME

Monday 10/08/2026

SESSION I: OFFICIAL OPENING CEREMONY

Master of Ceremonies: Dr. George Ooko

Time	Event	Facilitator
8:30-9:00am	Virtual registration	Joseck Omwoyo
9:00-9:20am	Opening Ceremony 1. National Anthem 2. East Africa Anthem 3. Opening Prayer	George Mugwe Apostle John Ngahu
9:20-10:00am	Opening Remarks from the Vice Chancellor, Gretsai University	Dr. Peter Karanja
10:00-11:00am	First Keynote Speech Aligning University Education to Competence-Based Curriculum	Prof. Ruth N. Wanjau
11:00-11:30am	Reactions to the First Keynote Speech	Dr. Omedi Gilbert
11:30-12:00noon	Second Keynote Speech Preparing University Graduands Relevant to Industry Needs	Dr. Agnes Anyango Andollo
12:00-12:30pm	Reactions to the Second Keynote Speech	Dr. Omedi Gilbert
12:30-1:00pm	Health Break	

SESSION II: PAPER PRESENTATIONS

CLUSTER I

Time	Paper Title	Presenter
1:00-1:30pm	AI-Assisted Sovereign Educational Intelligence: Reimagining Curriculum Transformation for Strategic Educational Adaptation in Africa	Kalungwishi Elijah Kabemba
1:30-2:00pm	Intelligent IoT-Based Solar Management System with Automated Tracking and Predictive Maintenance	Luckmore Furidze, Hildah Nyamunokora, Munashe Chakamanga
2:00-2:30pm	Christianity and Good Governance in Nigeria: A Theological Evaluation of Church Participation in Nation Building	Silas B. Akande
2:30-3:00pm	Leveraging Artificial Intelligence to Enhance Innovation in Zimbabwean Universities	Tom Muzenda and Munashe F. Chakamanga
3:00-3:30pm	African Cognitive Sovereignty: Reimagining Artificial Intelligence Governance through Indigenous Knowledge Systems	Kalungwishi Elijah Kabemba

3:30-4:00pm	Harnessing Indigenous Knowledge to Enhance Smart Coffee Farming Knowledge Adoption in Kenya: A Literature Review	John Muriuki
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CLUSTER 2

Time	Paper Title	Presenter
1:00-1:30pm	Transforming Public Healthcare Delivery through Artificial Intelligence and Data Analytics: Evidence from Kajiado County, Kenya	Jeffrey Lusweti Wafubwa, Okwiri Minado Saad, Mapema Nelson
1:30-2:00pm	An Assessment of the Role of Religious Institutions in Shaping Participatory and Inclusive Governance Practices in Kenya	Aduda Amos Omollo
2:00-2:30pm	Beyond Information Abundance: Repositioning Librarians as Trusted Navigators in Addressing Information Disorder and Trust Erosion in the Scholarly Sphere	Pauline Njagi & Gitau Njoroge
2:30-3:00pm	Impact of Climate Change on Sustainable Development	Adan Maalim Hussein
3:00-3:30pm	AI Governance Through the GPS–DALE Macrophage–SEOS*:FGS v2.0 Ecosystem: A Sovereign Framework for Transparent Human–AI Decision Support	Kalungwishi Elijah Kabemba
3:30-4:00pm	Evaluating the effectiveness of participatory green education on adapting sustainable natural resource management in Kajiado County – a case study of Kajiado East sub-County	Kwiri Minado Saad & Koech Alex

CLUSTER 3

Time	Paper Title	Presenter
1:00-1:30pm	Generative AI Governance in Higher Education for Ethical Adoption and Strategic Institutional Adaptation	Stella Migide Madete
1:30-2:00pm	Use of Assistive Technologies by head-teachers and their influence on the inclusion of learners with special needs in regular Public primary schools in Vihiga County, Kenya	Alex Ang'undo Vigatsi
2:00-2:30pm	Science Educators' Perceptions on Decolonizing Biology Laboratories through Indigenous Knowledge Systems Integration: A case of A Level School's in Chitungwiza	Chakamanga, Munashe, Tanya Dzinemarira, Masuka Lovejoy, Mapfumo Ephraim
2:30-3:00pm	Effect of Climate Variability on Rainfall and River Discharge	Joel Aholi & Mary Makokha
3:00-3:30pm	Digital Readiness and Curriculum Sustainability in Chinese Language Education: Lessons from Tanzania's Emerging Secondary School Programme	Jivitus Ching'oro Sabatho
3:30-4:00pm	Social determinants of access to reproductive health	Charles Kimani

	services by youths in Laikipia County	
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Tuesday 11/08/2026

SESSION I: OPENING SESSION

Time	Event	Facilitator
8:30-8:50am	Virtual Registration National Anthem East Africa Anthem Prayer	George Mugwe Dr. Anna Maua
8:50-9:00am	Remarks from the Conference Secretariat	Dr. Omedi Gilbert

SESSION II: PAPER PRESENTATION

CLUSTER I

Time	Paper Title	Presenter
9:00-9:30am	Fostering Critical Thinking in Pre-Service Teachers: A Systematic Review of Pedagogical Innovations and Strategic Adaptations for Teacher Education in an Era of Uncertainty	Hnin Nu Nu Hlaing
9:30-10:00am	Architecture of Ecological Injustice: Climate Change, Land Scarcity, and the Criminalization of Pastoralist Survival in Laikipia County, Kenya	<u>Ndumia Koigi</u>
10:00-10:30am	Participatory and Inclusive Governance and its outcomes	Omulako Eman Jairo & Damary Atieno Mukabane
10:30-11:00am	Influence of Artificial Intelligence Integration on Teacher Autonomy among Senior School Teachers in Kenya	Jared Momanyi & John Purdul
11:00-11:30am	Education Premium Across Industries: Does Human Capital Matter More in Knowledge-Intensive Sectors? A Secondary-Data Analysis of Workforce Education, Industry Knowledge Intensity, and Organizational Performance	Faith Wanja Kilaku, Victor Malimu & Cyrus M. Muhanga
11:30-12:00pm	Beyond Diagnostic Expansion: Operational Capacity Gaps in Kenya's Public Laboratory System	Walter Kipngetich Lelei
12:00-12:30pm	Effect of Organization Resources as a Determinant of Strategy Implementation on Service Delivery in County Government of Mandera, Kenya	Ibrahim Ali Shabure, Ooko George & Ibrahim Haji

CLUSTER II

Time	Paper Title	Presenter
9:00-9:30am	Curriculum Management for Chinese Language Education in Tanzanian Secondary Schools: Current Practices, Emerging Challenges, and Future Directions	Jivitus Ching'oro Sabatho
9:30-10:00am	Effect of Class Size on Student Engagement in Secondary Schools in Thika West Sub-County, Kiambu County, Kenya	Joan Koech, Salim Onyango & Omedi Gilbert
10:00-10:30am	Augmented Tools to Enhance O-Level Chemistry Learning at Njube High School	Dzinemarira Tanya. C., Munashe Chakamanga, Mapira Tafadzwa, Mapfumo Ephraim
10:30-11:00am	Inclusive Educational Practices for Enhancing Curriculum Accessibility for Children with Autism Spectrum Disorder in Tanzanian Primary Schools	Neema Bestone Matingo & Jivitus Ching'oro Sabatho
11:00-11:30am	Influence of multiple career paths as a professional development dynamic on teacher attrition in public secondary schools in Mombasa County, Kenya	Rebecca Bwari Arogo & John Ng'eda Purdul
11:30-12:00pm	Counselled or Cancelled: Reviewing Handling of Mental Health of Students in Kenyan Public Universities	Wamondo Thomas Chikati
12:00-12:30pm	Supply chain reengineering as a strategic driver of operational performance in manufacturing firms in Kenya	Abigael Chepkwemoi Ndiema

CLUSTER III

Time	Paper Title	Presenter
9:00-9:30am	Effect of Rainfall Timing on Select Food Crop Production in Nyando sub-County, Kisumu County, Kenya	Odundo Tom & Omedi Gilbert
9:30-10:00am	AI-Assisted Sovereign Psychosocial Intelligence (ASPI): A Sovereign Framework for Psychosocial Wellbeing, Mental Health Governance and Sustainable Human Development in Africa	Kalungwishi Elijah Kabemba
10:00-10:30am	Leveraging AI-Powered pedagogy in Kenyan Universities	Jackton Otieno Midigo & George Mugwe
10:30-11:00am	Decision-Making Strategies in an Era of Uncertainty: A Systematic Review of Organizational Agility Frameworks	Bashir M. Maalim & George M. Wanjobi
11:00-11:30am	Antenatal care, place of delivery and neonatal death nexus: Analysis of 2003-2022 Kenya demographic and health survey data	Omedi Gilbert & Mwaila Margaret
11:30-12:00pm	Code mixing and switching as a means of enhancing inclusivity in governance: A case study of William Ruto's political campaign speeches	Akello Odiaga Walter
12:00-12:30pm	Digital Transformation in Higher Education: Leveraging Information Systems for Governance,	Stanley Muli

	Quality Assurance, and Academic Excellence	
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OFFICIAL CLOSING CEREMONY

Master of Ceremonies: Dr. Jackton Midigo

Time	Event	Facilitator
12:30-12:40pm	Remarks from the Conference Secretariat	Dr. Omedi Gilbert
12:40-12:50pm	Closing Remarks from the Vice Chancellor, Gretsai University	Dr. Peter Karanja
12:50-1:00pm	National Anthem East Africa Anthem Prayer	George Mugwe Overseer Edwin Muna

AI-Assisted Sovereign Educational Intelligence: Reimagining Curriculum Transformation for Strategic Educational Adaptation in Africa

Kalungwishi Elijah Kabemba

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Abstract

Rapid technological change, climate uncertainty, demographic transitions and evolving labour-market demands have exposed growing limitations in conventional curriculum evaluation systems, which frequently emphasise educational inputs and learner performance while overlooking implementation realities and long-term societal transformation (UNESCO, 2020; United Nations, 2015). As UNESCO (2020) emphasises, "education is a key enabler of sustainable development." Yet, across Africa, substantial curriculum reforms do not consistently produce sustainable educational or developmental outcomes because educational capabilities remain insufficiently synchronised with implementation realities and strategic societal priorities. This paper conceptualises this disconnect as the African Educational Adaptation Paradox. This paper introduces AI-Assisted Sovereign Educational Intelligence (ASEI), the first educational application of the *GPS-DALE Macrophage-SEOS:FGS v2.0 Ecosystem**, as an African-centred framework for curriculum transformation and strategic educational adaptation. Guided by transparent human-AI collaborative evidence synthesis consistent with human-centred AI principles (UNESCO, 2021), the framework integrates Educational Capability Vectors, Implementation Reality Vectors, normative synchronisation matrices, the Longitudinal Multi-Scale Consequence Evaluation Scale (LMSCE-S), the Longitudinal Multi-Scale Consequence Evaluation Time Projection (LMSCE-T), and the Resolution of Observation Model (ROM⁶) to evaluate how educational capabilities translate into societal transformation across individual, institutional, national, continental, global and generational scales. The paper demonstrates how AI can strengthen curriculum governance by supporting transparent evidence synthesis, implementation diagnosis, strategic prioritisation and policy adaptation while preserving human judgement, contextual relevance and African cognitive sovereignty. The framework advances a transferable methodology for curriculum evaluation that aligns educational capabilities with Agenda 2063 (African Union Commission, 2015), the Sustainable Development Goals (United Nations, 2015), Education 5.0, and future-ready competence development. It offers policymakers, curriculum developers and educational leaders a robust AI-assisted decision-support architecture for strengthening educational resilience, strategic adaptation and sustainable transformation across African education systems.

Keywords: AI-Assisted Sovereign Educational Intelligence; Curriculum Transformation; Strategic Educational Adaptation; Educational Intelligence; Agenda 2063

AI Governance Through the GPS–DALE Macrophage–SEOS*:FGS v2.0 Ecosystem: A Sovereign Framework for Transparent Human–AI Decision Support

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Abstract

Artificial Intelligence (AI) is increasingly transforming decision-making across education, health, governance and public administration. However, many AI systems continue to face significant challenges relating to transparency, explainability, contextual relevance, accountability and human oversight, particularly within African contexts where governance priorities, implementation realities and indigenous knowledge systems are often underrepresented. These limitations contribute to an African AI Governance Paradox, whereby increasingly sophisticated AI systems do not necessarily produce trustworthy, context-sensitive or societally transformative decisions because algorithmic outputs remain insufficiently synchronised with implementation realities, normative priorities and human judgement. This paper introduces the *GPS–DALE Macrophage–SEOS*:FGS v2.0 Ecosystem* as a sovereign framework for transparent human–AI decision support. Rather than replacing human expertise, the framework employs AI-assisted evidence synthesis integrated with human reasoning to strengthen transparency, explainability, accountability and context-sensitive decision-making. The ecosystem combines Educational Capability Vectors, Implementation Reality Vectors, normative synchronisation matrices, the Longitudinal Multi-Scale Consequence Evaluation Scale (LMSCE-S), the Longitudinal Multi-Scale Consequence Evaluation Time Projection (LMSCE-T), and the Resolution of Observation Model (ROM⁶) to evaluate how AI-assisted recommendations translate into individual, institutional, national, continental, global and generational consequences. The framework proposes Sovereign AI Governance, in which AI functions as an evidence-analysis partner while final judgement remains under accountable human authority. This architecture supports transparent implementation diagnosis, policy adaptation, strategic prioritisation and evidence-informed governance while preserving African cognitive sovereignty and contextual relevance. The paper demonstrates the transferability of the GPS–DALE Macrophage–SEOS*:FGS v2.0 Ecosystem beyond educational evaluation into AI governance and presents a transferable decision-support methodology for strengthening trustworthy, explainable and ethically grounded AI across multiple sectors in Africa.

Keywords: Artificial Intelligence Governance; Human–AI Collaboration; Explainable AI; Sovereign AI; Decision Support

AI-Assisted Sovereign Psychosocial Intelligence (ASPI): A Sovereign Framework for Psychosocial Wellbeing, Mental Health Governance and Sustainable Human Development in Africa

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Abstract

Psychosocial wellbeing has become a strategic determinant of health system resilience, social cohesion and sustainable human development. However, conventional psychosocial and mental health assessment approaches frequently evaluate psychological, behavioural and health indicators independently, providing limited understanding of how psychosocial capabilities interact with implementation realities, governance systems and long-term societal transformation. This disconnect contributes to an African Psychosocial Governance Paradox, whereby increasing investments in mental health services, psychosocial interventions and AI-enabled health technologies do not consistently produce sustainable psychosocial wellbeing because implementation realities, governance structures and human-centred decision-making remain insufficiently synchronised. This paper presents AI-Assisted Sovereign Psychosocial Intelligence (ASPI) as the first health-sector application of the *GPS-DALE Macrophage-SEOS:FGS v2.0 Ecosystem**. Guided by transparent human-AI collaborative evidence synthesis and human-centred AI principles (UNESCO, 2021), the framework integrates Psychosocial Capability Vectors, Implementation Reality Vectors, normative synchronisation matrices, the Longitudinal Multi-Scale Consequence Evaluation Scale (LMSCE-S), the Longitudinal Multi-Scale Consequence Evaluation Time Projection (LMSCE-T), and the Resolution of Observation Model (ROM⁶) to evaluate how psychosocial capabilities translate into individual, community, institutional, national, continental, global and generational wellbeing. The framework demonstrates how AI can strengthen mental health governance by supporting transparent evidence synthesis, implementation diagnosis, strategic prioritisation and policy adaptation while preserving professional judgement, contextual relevance and African cognitive sovereignty. It advances a transferable methodology for integrating psychosocial evidence, implementation realities and long-term societal consequences into trustworthy AI-assisted decision support. The paper provides policymakers, health professionals and development practitioners with a sovereign governance architecture for strengthening psychosocial wellbeing, resilient health systems and sustainable human development across Africa.

Keywords: AI-Assisted Sovereign Psychosocial Intelligence; Psychosocial Wellbeing; Mental Health Governance; Human-AI Collaboration; Sustainable Human Development

African Cognitive Sovereignty: Reimagining Artificial Intelligence Governance through Indigenous Knowledge Systems

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Abstract

Artificial Intelligence is increasingly influencing governance, education, healthcare, economic development and public decision-making across Africa. However, contemporary AI governance frameworks remain predominantly informed by technological, regulatory and ethical paradigms developed outside African epistemological traditions, limiting their contextual legitimacy, cultural responsiveness and societal relevance. This paper identifies this challenge as the African Cognitive Sovereignty Gap, whereby advances in computational intelligence do not necessarily translate into cognitively sovereign or culturally legitimate governance because indigenous knowledge systems, African values and contextual implementation realities remain insufficiently integrated into AI governance architectures. This paper introduces the African Cognitive Sovereignty Doctrine (ACSD) as a philosophical foundation for sovereign AI governance and demonstrates its operationalisation through the *GPS–DALE Macrophage–SEOS:FGS v2.0 Ecosystem**. Guided by transparent human–AI collaborative evidence synthesis and human-centred AI principles (UNESCO, 2021), the framework integrates indigenous knowledge, implementation realities, normative synchronisation, longitudinal consequence evaluation and multi-scale observation to support transparent, accountable and culturally responsive AI-assisted decision-making. Rather than positioning AI as an autonomous decision-maker, the framework establishes Sovereign Human–AI Governance, in which artificial intelligence functions as an evidence-analysis partner while human judgement remains the final locus of accountability. The paper demonstrates how African Cognitive Sovereignty provides a transferable governance philosophy capable of strengthening trustworthy AI, indigenous knowledge integration, digital sovereignty and sustainable development across multiple sectors. It contributes a decolonial and African-centred approach to AI governance that aligns technological innovation with cultural legitimacy, societal transformation and the aspirations of Agenda 2063.

Keywords: African Cognitive Sovereignty; Indigenous Knowledge Systems; Artificial Intelligence Governance; Human–AI Collaboration; Digital Sovereignty

Transforming Public Healthcare Delivery through Artificial Intelligence and Data Analytics: Evidence from Kajiado County, Kenya

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Abstract

Public health systems in sub-national regions face challenges in real-time monitoring, efficient service delivery, and timely responses to health crises. This paper explores the impact of integrating Artificial Intelligence (AI) and Mobile Data Analytics (MDA) into health management systems, with a case study of Kajiado County. The study will empirically validate a conceptual and implementation framework for leveraging AI algorithms and mobile-based data to track disease patterns, monitor health system efficiency, and enhance the delivery of healthcare services. Drawing on global best practices and contextualized to local realities in Kajiado County, the results will demonstrate that the integration of AI and mobile technologies generates significant improvements in data-driven decision-making and advances more inclusive and equitable health outcomes. The study will adopt a mixed-methods approach combining both qualitative and quantitative techniques to ensure a comprehensive understanding of the research problem. This will provide a holistic and nuanced understanding of the research problem. The quantitative methods will allow for the collection of measurable, statistically analyzable data, while qualitative methods will offer in-depth insights into participants' experiences, perceptions, and contextual factors. By triangulating findings from both approaches, the study will enhance the validity and richness of the results, ensuring a more comprehensive and balanced interpretation.

Keywords; Artificial Intelligence, Data Analytics, Public Health, Mobile Technologies, AI Algorithms, Mobile-based data

Digital Transformation in Higher Education: Leveraging Information Systems for Governance, Quality Assurance, and Academic Excellence

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Abstract

The rapid expansion of digital technologies has reshaped the governance and delivery of higher education worldwide. Universities face increasing pressure to modernize administrative processes, enhance quality assurance mechanisms, and improve student learning outcomes through robust information systems. This study investigates how digital transformation strategies, anchored in enterprise information systems, can strengthen institutional governance, accreditation processes, and academic excellence in higher learning institutions. Using a mixed-methods approach, the research combines case studies of universities in Sub-Saharan Africa with quantitative analysis of digital adoption metrics. The findings are expected to provide a framework for integrating digital platforms into higher education governance, offering actionable insights for policymakers, administrators, and development partners seeking to advance sustainable and inclusive academic excellence.

Leveraging Artificial Intelligence to Enhance Innovation in Zimbabwean Universities

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Abstract

The dissertation examines systemic obstacles to Artificial Intelligence (AI)-driven innovation in Zimbabwean universities within the Education 5.0 framework, which mandates tertiary institutions to lead industrialisation and socio-economic development through innovation. The study employs a pragmatic mixed-methods design, incorporating surveys of 100 stakeholders and qualitative interviews at five public universities, to elucidate a self-reinforcing spiral of stagnation. Some of the biggest problems are a lack of infrastructure (unreliable electricity, spotty internet, and limited computing facilities that make up a "resource desert"), a lack of money that makes it hard to invest in sustainability, a lack of AI literacy that hides underlying problems with applied skills and teaching integration, a lack of policy that shows how little people know about institutional AI strategies and the lack of ethical governance frameworks, and a cultural resistance that comes from fears of losing jobs and cynicism. These interrelated challenges impede universities from formulating industrializable solutions to national exigencies such as climate resilience and unemployment. Findings identify infrastructural vulnerability and financial uncertainty as impediments to pilot scalability, whereas inadequate literacy and fragmented policy hinder ethical implementation and responsiveness to the innovation pillar of Education 5.0. To break this cycle, the study suggests that policymakers create national AI strategies with separate budgets and ethical rules; universities build infrastructure that can withstand climate change (like labs powered by solar energy), teach AI literacy in all subjects, and start demonstration projects; industry partners work together to create local AI solutions; and global stakeholders provide tools that can be used without an internet connection. Finally, it is important for everyone to work together to get rid of these systemic barriers so that AI can be used as a tool for long-term social and economic change in line with Education 5.0.

Keywords: Artificial intelligence, education 5.0, universities, innovation

Beyond Information Abundance: Repositioning Librarians as Trusted Navigators in Addressing Information Disorder and Trust Erosion in the Scholarly Sphere

Pauline Njagi & Gitau Njoroge

Abstract

The proliferation of digital information platforms, artificial intelligence technologies, and open-access scholarly resources has significantly transformed the scholarly communication landscape. While the abundance of information has enhanced access to knowledge, it has also contributed to increasing levels of information disorder, misinformation, disinformation, and declining trust in scholarly communication ecosystems. Consequently, librarians and information professionals are being called upon to assume more strategic roles as trusted navigators, knowledge curators, and facilitators of information credibility and integrity. This paper examines the evolving role of librarians in addressing information disorder and rebuilding trust within the scholarly sphere amid unprecedented information abundance. Specifically, the paper explores how librarians can leverage their expertise in information literacy instruction, scholarly communication, research support and evidence-based information practices to enhance users' ability to identify, evaluate, and utilize credible scholarly sources. The study adopts a qualitative conceptual research design based on an extensive review and critical synthesis of contemporary literature on information disorder, trust in scholarly communication, information literacy, artificial intelligence, and the evolving role of libraries and information professionals. Drawing on recent scholarly discourse and emerging professional practices, the paper provides a conceptual framework for repositioning librarians as trusted intermediaries and knowledge navigators within increasingly complex digital information environments. The paper contributes to ongoing discussions on the future of librarianship and the strategic role of information professionals in promoting information integrity, scholarly trust, and informed knowledge engagement.

Keywords: Information disorder; scholarly

Generative AI Governance in Higher Education for Ethical Adoption and Strategic Institutional Adaptation

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Abstract

Generative artificial intelligence is rapidly reshaping higher education by transforming teaching, learning, assessment, research support, and institutional administration. It's increasing use offers opportunities to innovate, be more efficient, and access more knowledge, but it also raises complex governance issues. Academic integrity, data privacy, algorithmic bias, transparency, accountability, and the acceptable use of AI-generated content are increasingly concerns in universities. In many institutions, the pace of technological uptake has exceeded the development of clear policies, oversight mechanisms, and implementation guidelines. This gap has created uncertainty for students, academic staff, administrators, and regulators, making governance a central issue in ensuring that generative AI is adopted responsibly and effectively across institutions today. This paper will examine generative AI governance in higher education as a strategic response to ethical, academic, and institutional risks associated with accelerated digital transformation. It will focus on the policy, operational, and leadership measures required to regulate acceptable use, strengthen oversight, build stakeholder awareness, and protect trust in academic processes. The paper argues that good governance must go beyond restrictive control and instead offer adaptive structures that balance innovation with responsibility, transparency, and institutional accountability. This type of strategy can assist universities in aligning AI applications with educational values, reducing governance gaps, and enhancing long-term resilience. Strong governance is thus critical for institutions aiming to achieve credible, future-oriented, and ethically grounded adaptation in uncertain environments.

Keywords: Generative AI, AI governance, higher education, ethical adoption, institutional adaptation, digital transformation

Intelligent IoT-Based Solar Management System with Automated Tracking and Predictive Maintenance

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Abstract

Fixed solar panels lose a measurable fraction of available irradiance simply because they cannot follow the sun. To this end, this dissertation proposes HELIOS.OS, an intelligent IoT based solar management system that overcomes this challenge through integrated dual-axis tracking, real-time environmental monitoring, automatic failure detection, and web-based remote control. The hardware prototype is based on an ESP32 microcontroller, two LDR sensors in differential configuration, a servo actuator that rotates the panel in a single axis, an INA219 current sensor for measuring output current and computing power, an LM35 temperature sensor, a GP2Y1010AU0F dust sensor, and an MPU6050 inertial measurement unit that detects panel tilt. A threshold-based dead-band technique is used to prevent servo hunting and mechanical wear. The companion web dashboard HELIOS.OS v3.1 CONTROL runs locally on Node.js and receives live telemetry at 115200 baud over a USB serial link, displaying power, battery state-of-charge, solar tracking status, environmental readings, and a fault diagnostics panel with eleven monitored conditions. Test findings show that the LDR differential approach can get the panel to within $\pm 5^\circ$ of ideal orientation, and the real-time dashboard correctly reports all injected fault conditions. The system demonstrates that a low cost, integrated solar management platform is feasible for off-grid applications in developing country environments.

Keywords: Solar tracking, IoT, ESP32, LDR differential sensing, HELIOS.OS, predictive maintenance, off-grid energy, INA219, fault detection, embedded systems.

EDUCATION AND SOCIAL SCIENCES

Impact of Climate Change on Sustainable Development

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Abstract

This investigation explored the impacts of climate change on the economic activities and well-being of agricultural workers, fishing communities, small business proprietors, and households within the designated region. The research was structured around four key inquiries: the consequences of climate change for various population groups, its specific implications for agricultural output, fishing operations, and local enterprises, how communities perceive and react to these changes, and the adjustment methods employed to manage climate-related difficulties. An observational survey methodology was utilized. A total of 150 participants were randomly chosen from an overall group of 200 individuals. These participants represented four primary categories: agricultural practitioners, fishing professionals, owners of local businesses, and private residences. Information was gathered via structured questionnaires and assessed using descriptive statistics, including frequencies and percentages, presented in tables for enhanced clarity. The results indicated that climate change exerts substantial and diverse impacts across all occupational sectors within the studied locality. Specifically, agricultural workers were severely impacted by unpredictable precipitation and diminished crop yields. Fishing communities observed decreasing seafood harvests and reduced earnings, attributed to altered aquatic conditions and changes in marine life migration. Local enterprises were consequentially affected by decreased consumer spending and lower revenue. Meanwhile, households contended with a higher cost of daily life, scarcity of water, and insufficient access to food. Furthermore, the research revealed that residents primarily recognize climate change through discernible ecological shifts and react by employing diverse coping mechanisms, such as varying their sources of income, adopting environmentally conscious farming methods, and modifying production processes. Nevertheless, these efforts are constrained by insufficient resources, inadequate organizational assistance, and restricted availability of relevant climate data. The investigation concludes that climate change presents a substantial danger to the long-term economic stability of the region, influencing both primary and secondary economic endeavors. It advocates for reinforcing adjustment methods, enhancing organizational backing, encouraging varied economic pursuits, and increasing public understanding to foster resistance against the consequences of climate change.

Keywords: Climate change, livelihoods, adaptation strategies, farmers, fishermen, vulnerability, sustainable development

Science Educators' Perceptions on Decolonizing Biology Laboratories through Indigenous Knowledge Systems Integration: A case of A Level School's in Chitungwiza

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Abstract

This qualitative case study explored science educators' perceptions on decolonizing Biology laboratories through the integration of Indigenous Knowledge Systems (IKS) in A-Level schools in Chitungwiza, Zimbabwe. The study was grounded in the recognition that despite Zimbabwe's Education 5.0 policy promoting heritage-based education, Biology laboratory practices remain predominantly Western-oriented, creating a gap between policy intent and classroom implementation. The research was guided by three main questions: (1) What are the perceptions of science educators on the integration of IKS into A-Level Biology laboratory practices? (2) What challenges do science educators face when integrating IKS into A-Level Biology laboratory practices? and (3) What strategies can be used to integrate IKS into A-Level Biology laboratory practices? The study was underpinned by Constructivist Learning Theory and Afrocentric Theory, which provided a framework for understanding how learners construct knowledge through cultural experiences and the importance of centering African knowledge systems in education. A qualitative case study design was employed, involving ten A-Level Biology teachers purposively selected from seven secondary schools in Chitungwiza district. Data were collected through semi-structured interviews and document analysis. Thematic analysis, following Braun and Clarke's six-phase framework, was used to analyze the data, revealing three major themes: educators' perceptions of IKS integration, challenges affecting integration, and strategies for improving integration. Findings revealed that while educators held generally positive perceptions towards IKS integration, viewing it as a tool for cultural affirmation, contextualized learning, and epistemic justice, they expressed significant reservations regarding scientific validity, examination demands, and implementation feasibility. Major challenges identified included examination-driven curricula, syllabus overload, inadequate teacher training, lack of validated IKS laboratory protocols, shortage of resource materials, socio-cultural barriers, and safety concerns. Participants recommended pedagogical strategies such as co-teaching with Indigenous knowledge holders and modifying existing experiments, alongside systemic reforms including incorporating IKS in ZIMSEC examinations, developing laboratory manuals, strengthening teacher education, and enhancing Education 5.0 policy implementation. The study concludes that while educators are ideologically supportive of decolonizing Biology laboratories, successful integration requires comprehensive systemic reform addressing curriculum, assessment, teacher preparation, resources, and community engagement. Recommendations are provided for policy-makers, curriculum developers, teacher education institutions, and school administrators to facilitate meaningful IKS integration in Biology laboratory practices. This study contributes to the growing body of knowledge on decolonizing science education in African contexts and offers practical insights for implementing heritage-based education in Zimbabwe.

Keywords: Indigenous Knowledge Systems, decolonization, Biology laboratories, Education 5.0, science educators, A-Level Biology, Zimbabwe

An Assessment of the Role of Religious Institutions in Shaping Participatory and Inclusive Governance Practices in Kenya

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Abstract

The growth of a nation can be judged through the overall well-being of its citizens. Globally, it is estimated that 85% of the global population profess adherence to a religious belief system hence making religion a major cultural, social, political and economic factor in many official development assistance. However, the modern-day society is bedeviled with a lot of social and mental turbulence, corruption, and insincerity which makes the pursuit of good governance a pressing concern for every nation and community. Acknowledging the fact that in order to make life worth living, every human being depends on fellow humans to sustain a good standard of living hence, there is a significant need for collaboration between the stakeholders, including the religious leaders in shaping values and actions of humanity. Historically, religion and governance have been recognized as good bedfellows. People all over the world look to religion and belief systems for guidance on how to live their lives. Therefore, understanding religious dynamics and the role of faith communities and actors is crucial in enhancing participatory and inclusive governance. The study was guided by two objectives; to identify religious beliefs that influence participatory and inclusive governance and determine the role of religious leaders in championing for participatory and inclusive governance. The paper's main argument was motivated with the fact that exploring the role of religious institutions on governance contributes to the existing literature on the topic and provides insight on the potential role of religious institutions in combating governance challenges among its membership. Secondary data was collected through extensive examination of academic journals, books, published theses, and reports and other relevant online sources addressing religious strategies on governance issues and their attributed impact on good governance systems. The paper revealed that religious communities and faith inspired organizations are key players in the efforts to address governance challenges by shaping morals values and cultural practices and also serving as a platform for social cohesion and public engagement. The study recommends a more collaborative engagement across all sectors of human welfare and social well-being in the fight against bad governance systems in our communities.

Keywords: Religion, Governance, Participatory and Inclusive Governance

Effect of Climate Variability on Rainfall and River Discharge

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Abstract

Globally, climate change and anthropogenic activities have resulted in rainfall variability that has affected the discharge of most rivers and therefore the hydrological response of river basins. The objectives of this study, conducted at Zaaba watershed in western Kenya, were to determine trends in rainfall for 1991 to 2020; to establish land cover changes for 2001 to 2020 and to determine hydrological response of the watershed to rainfall variability and changes in land cover. Rainfall data was sourced from Kenya Meteorological Department, Land cover data was downloaded from USGS website <https://www.earthexplorer.usgs.gov/> while qualitative interviews, Focus Group Discussions and questionnaires were used to determine factors influencing hydrologic response like encroachment into forested, riparian and the steep slope areas. Data analysis involved trend analysis of rainfall data and detection of change in land cover, computation of totals, percentages and drawing of tables, graphs and charts. Regression analysis determined the correlation between land cover changes and variability in quantity of water. Rainfall trends existed at $\alpha = 0.05$ in which MAM season had a declining trend with p -value = 0.043 and Kendall slope = - 0.030 while OND season had increasing trend with p -value = 0.046 and Kendall slope = 0.136. Annual rainfall had an increasing trend with p -value = 0.010 and Kendall slope = 0.503. The study found that agricultural area decreased from 50.05% in 2001 to 41.07% in 2011 and 32.8% in 2020 as buildup areas increased from 5.06% in 2001 to 9.29% in 2011 and 17.68% in 2020 while riparian area decreased from 5.18% in 2001 to 1.18% in 2011 and 0.87% in 2020. The changes were attributed to increased population, expansion of urban centers and encroachment into riparian and forested areas and eventually resulted in variation in quantities of water resources available and reduction in size of cultivable land. The study recommended for capacity building for citizens to protect riparian and forested areas for sustainable agricultural productivity and management of water resources.

Keywords: rainfall trends, discharge trends, land cover changes and hydrologic response

Christianity and Good Governance in Nigeria: A Theological Evaluation of Church Participation in Nation Building

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Abstract

This study investigates the relationship between Christianity and good governance in Nigeria through a theological evaluation of church involvement in nation building. Despite Nigeria's deep religiosity and the significant presence of Christianity, the nation is still battling with corruption, insecurity, political instability, poverty, electoral malpractice, and weak leadership structures. The thrust of the study is to investigate the extent to which Christian teachings and church involvement contribute to ethical governance and national transformation. The study uses public theology as the framework to explore biblical foundation for good and effective governance, the historical and contemporary roles of the church in Nigeria, and the challenges limiting effective Christian engagement in governance. The study adopts a qualitative and theological research methodology rooted in biblical texts, scholarly literature, and historical analysis. The findings of the study reveal that Christianity possesses strong ethical resources capable of promoting justice, accountability, servant leadership, and social responsibility. However, the influence of the Church has been weakened by political compromise, prosperity-centered teachings, denomination rivalry, and inadequate prophetic witness. The study concludes that the Church remains a vital moral institution for national transformation, and recommends a renewed theological commitment to public engagement, ethical leadership, and prophetic advocacy.

Keywords: Good governance, public theology, nation building, ethical leadership, Christianity

Evaluating the effectiveness of participatory green education on adapting sustainable natural resource management in Kajiado County – a case study of Kajiado East sub-County

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Abstract

Kajiado County is one of the predominantly semi-arid counties in Kenya. The county has experienced significant environmental degradation which includes habitat loss, water scarcity, and over-harvesting of natural resources which in turn is aggravated by climate change. Despite the high potential for green economic ventures and sustainable tourism, there is a distinct shortage of localized skills and behavioral approaches necessary for adaptation. Participatory Green Education (PGE) serves as a vital community-based, experiential learning approach for fostering sustainable natural resource management practices. In Kenya, driven by the integration of climate change studies into the Competency-Based Curriculum (CBC) for grades 3-12, the education model shifts focus from mere theoretical knowledge to actionable environmental stewardship. By empowering youth with practical skills such as composting and sustainable agriculture-learning institutions are transformed into "green zones" and local hubs for environmental awareness which is not the case in Kajiado East Sub County. Further, the approach should align with the Kenya Green Economy Strategy and Implementation Plan (GESIP 2016-2030) and Vision 2030, which emphasize human capital development, environmental sustainability, and a transition to a low-carbon economy. Hence, the strategy highlights the need for national and county investments in education to strengthen green skills, research, and technology, ultimately building capacity at all levels to mitigate climate challenges and enhance resource efficiency. This study will adopt a mixed methods approach to gather data notably-field group discussions with community leaders and relevant stakeholders which includes structured questionnaires administered to 100 respondents comprising of 20 households in each of the five wards to measure knowledge levels, frequency of adopting key Natural Resource Management practices & demographic factors. The study will use both correlation and regression analysis e.g., system GMM to determine the strength of the relationship between education level and adoption rate.

Keywords: Green Education, Environmental Sustainability, Natural Resource Management, Adaptation, Environmental Degradation, Participatory

Use of Assistive Technologies by head-teachers and their influence on the inclusion of learners with special needs in regular Public primary schools in Vihiga County, Kenya

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Abstract

The inclusion of learners with special needs in public primary schools continues to face significant challenges despite global and national efforts to promote inclusive education. In Vihiga County, learners with special needs still experience limited access to appropriate support services, inadequate resource allocation, and inconsistent implementation of inclusive practices, which undermines their right to equitable and quality education. This study aimed to investigate the influence of headteachers' intervention strategies on the inclusion of learners with special needs in public primary schools in Vihiga County, Kenya. The specific objectives were to examine the influence of funds utilization strategies, motivation strategies, communication strategies, and the use of assistive technologies on inclusion outcomes. The study was anchored on the Social Model of Disability theory and the Transformational Leadership theory. A convergent parallel mixed-methods research design was adopted. The target population comprised headteachers, teachers, learners with special needs, and parents in public primary schools in Vihiga County. A sample size of 354 respondents was obtained, including 10 headteachers, 101 teachers, 126 learners, and 117 parents. Data was collected using questionnaires, interview guides, and observation checklists. Quantitative data was analysed using descriptive and inferential statistics, including regression analysis, with the aid of SPSS version 28 and advanced Excel, while qualitative data was analysed thematically. The findings revealed that all the intervention strategies positively influenced inclusion of learners with special needs. Particularly, funds utilization strategies ($\beta = 0.293$, $p = 0.000$) and the use of assistive technology strategies ($\beta = 0.230$, $p = 0.011$) had a positive and statistically significant influence on inclusion outcomes, indicating that they were the key drivers of inclusive education. On the other hand, motivation strategies ($\beta = 0.024$, $p = 0.763$) and communication strategies ($\beta = 0.054$, $p = 0.497$) were found to be statistically insignificant, suggesting that they play a supportive rather than a direct role in influencing inclusion. The study also established that while inclusive practices were generally present in schools, their effectiveness was constrained by inadequate funding, limited assistive devices, and inconsistencies in implementation. The study concludes that effective funds utilization and investment in assistive technologies are critical for enhancing inclusion of learners with special needs, while motivation and communication strategies play a complementary role in supporting inclusive environments. Based on these findings, the study recommends that school leadership and policymakers should prioritize funding for inclusive education, strengthen financial management systems, expand access to assistive technologies, and enhance capacity building for teachers. Additionally, collaboration between schools, parents, and external stakeholders such as NGOs should be strengthened to support inclusive practices. Further research should focus on longitudinal studies to assess the long-term impact of intervention strategies on inclusion outcomes, as well as explore additional factors such as school culture, teacher attitudes, and policy implementation gaps. Comparative studies across regions and school types are also recommended to provide deeper insights

into inclusive education practices in Kenya.

Fostering Critical Thinking in Pre-Service Teachers: A Systematic Review of Pedagogical Innovations and Strategic Adaptations for Teacher Education in an Era of Uncertainty

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Abstract

Background: Critical thinking (CT) is foundational to effective teaching, yet its development in pre-service teacher education remains fragmented across disparate research traditions.

Purpose: This systematic review examines (1) descriptive characteristics of the literature, (2) qualitative themes in pre-service teachers' CT, (3) consistent demographic and psychological correlates of CT, and (4) effective instructional interventions, to inform strategic adaptations in teacher education under conditions of global uncertainty. It synthesises 40 empirical studies to address the following questions: (1) What descriptive features characterise the included studies? (2) What qualitative themes and insights emerge? (3) Which demographic and psychological variables are consistently associated with pre-service teachers' CT? (4) Which instructional interventions effectively improve CT?

Methods: Following PRISMA 2020 guidelines, 40 peer-reviewed studies (2019–2025) were extracted from the Web of Science Core Collection. A convergent segregated mixed-methods synthesis was employed: quantitative findings were analysed narratively, and qualitative data underwent thematic analysis. Intervention studies were classified by their primary pedagogical mechanism.

Results: Small sample sizes (<100 participants) characterized 70% of the corpus. Thirty-two distinct CT instruments were used, limiting cross-study comparability. Qualitative synthesis revealed a central macro-theme (“Perceived Growth vs Persistent Constraints”). CT is teachable in protected coursework, but its transfer to practicum is systematically undermined by exam-oriented school cultures, rigid curricula, and unsupportive mentors. Eight subthemes elaborate on this tension. Metacognitive awareness, self-regulation, and self-efficacy were the strongest positive psychological predictors; gender did not show significant differences. Twenty-five intervention studies were categorised into six types. The largest effect sizes were found for Multiple Representation Lesson Study ($r = 0.844$), Argumentation-Based Inquiry ($\eta^2 = 0.401$), Computer-Assisted Argument Mapping ($\eta^2 = 0.44$), and Literature Circles ($d = 0.80$). Unstructured generative AI use did not improve CT; structured scaffolding (e.g., the CLEAR framework and concept mapping) was essential.

Conclusions: Strategic adaptation in teacher education requires embedding structured, collaborative, and iterative CT interventions with explicit feedback, reflection, and authentic problem-solving. Sustainable transfer demands systemic changes in school cultures and stronger university–practicum partnerships. Future research should adopt standardised instruments, true experimental designs, and longitudinal follow-up.

Keywords: critical thinking; pre-service teacher education; systematic review; instructional innovations; strategic adaptation; AI-supported scaffolding.

Curriculum Management for Chinese Language Education in Tanzanian Secondary Schools: Current Practices, Emerging Challenges, and Future Directions

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Abstract

Chinese language education has become an important part of Tanzania's expanding engagement with global languages, international cooperation, and educational diversification. Since its introduction into selected Tanzanian secondary schools, the programme has created new opportunities for learners, teachers, and institutions. However, its long-term sustainability depends not only on classroom teaching, but also on effective curriculum management, including planning, implementation, monitoring, evaluation, and resource allocation. This study examines the current practices, emerging challenges, and future directions of Chinese language curriculum management in Tanzanian secondary schools. Using a descriptive case study approach, the study draws on curriculum documents, policy-related materials, teacher perspectives, and institutional experiences to explore how key stakeholders participate in managing the Chinese language curriculum. The study focuses on the roles of national institutions, school leadership, teachers, and partner organizations in supporting curriculum design, teacher preparation, instructional delivery, assessment, and resource provision. The findings are expected to show that while Chinese language education has gained institutional recognition and created valuable opportunities for students, it still faces challenges related to teacher supply, teaching and learning resources, assessment alignment, stakeholder coordination, and sustainable financing. The study argues that strengthening curriculum management mechanisms is essential for improving quality, equity, and sustainability in Chinese language education. It recommends clearer stakeholder coordination, continuous teacher professional development, improved resource allocation, and stronger monitoring and evaluation systems. The study contributes to debates on curriculum transformation, international language education, and strategic adaptation in African education systems.

Keywords: Chinese language education; curriculum management; secondary education; curriculum transformation; Tanzania; sustainability

Digital Readiness and Curriculum Sustainability in Chinese Language Education: Lessons from Tanzania's Emerging Secondary School Programme

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Abstract

Chinese language education in Tanzania has expanded as part of the country's efforts to strengthen international cooperation, broaden learners' global competencies, and diversify foreign language learning in secondary education. However, the sustainability of this emerging programme depends increasingly on the capacity of schools and education systems to adapt to digital transformation, resource constraints, and changing pedagogical demands. This paper examines digital readiness and curriculum sustainability in Chinese language education in Tanzanian secondary schools. It focuses on how digital tools, teacher preparedness, teaching and learning resources, institutional support, and curriculum management practices influence the implementation and long-term development of Chinese language education. Using a descriptive case study approach, the paper draws on curriculum documents, policy-related materials, teacher perspectives, and school-level experiences to explore the opportunities and constraints associated with digital integration in Chinese language teaching and learning. The paper argues that digital readiness is not limited to the availability of devices or internet access, but also includes teacher competence, leadership support, assessment alignment, relevant digital content, and sustainable coordination among stakeholders. The expected findings suggest that while digital technologies offer opportunities for improving access to authentic language materials, pronunciation practice, student engagement, and teacher professional development, their effective use remains constrained by limited infrastructure, uneven teacher capacity, inadequate localized digital resources, and weak integration into curriculum management systems. The paper recommends strengthening digital capacity-building for Chinese language teachers, developing localized digital learning materials, improving school-level infrastructure, and integrating digital innovation into curriculum planning, monitoring, and evaluation. The paper contributes to discussions on curriculum sustainability, digital transformation, and strategic adaptation in African secondary education systems.

Keywords: Digital readiness; curriculum sustainability; Chinese language education; digital transformation; secondary education; Tanzania

Harnessing Indigenous Knowledge to Enhance Smart Coffee Farming Knowledge Adoption in Kenya: A Literature Review

John Muriuki

Abstract

Smart coffee farming knowledge has increasingly been recognized as a key facilitator of improved coffee productivity globally. When effectively adopted and put into practice, smart coffee farming knowledge holds the potential to improve yields, enhance quality, and promote sustainable farming practices. However, its adoption in Kenya has remained limited, partly because it is often developed and disseminated with little or no regard for the indigenous knowledge that coffee farmers already possess and rely on. This paper explores how indigenous knowledge can be harnessed to enhance the uptake of smart coffee farming knowledge among coffee farmers in Kenya. The study will employ a systematic literature review approach, drawing from peer-reviewed journals, conference papers, and grey literature accessed through databases including Google Scholar, Scopus, and Web of Science. Literature for review will be selected based on predefined inclusion and exclusion criteria focused on indigenous knowledge systems, smart agriculture, knowledge assimilation, and smallholder coffee farming in Kenya and comparable Sub-Saharan African contexts. Thematic analysis will be used to synthesize findings across the reviewed literature and identify patterns, contradictions, and gaps. The findings will contribute to the growing body of literature on indigenous knowledge and smart agriculture, while offering insights into the potential for addressing smart coffee farming adoption challenges in Kenya. The study will also inform policymakers and stakeholders about the importance of recognizing and promoting indigenous knowledge as an enabler of smart coffee farming knowledge adoption.

Keywords: Indigenous knowledge, smart coffee farming, knowledge assimilation, knowledge adoption, smallholder farmers, Kenya

Effect of Class Size on Student Engagement in Secondary Schools in Thika West Sub-County, Kiambu County, Kenya

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Abstract

This study examined the effect of class size on student engagement in secondary schools in Thika West Sub-County, Kiambu County, Kenya. Using Yamane's formula, data was obtained from a minimum sample size of 97 learners. Analytic findings indicated that there was a statistically significant relationship between class size and engagement ($\chi^2 = 33.438, p < 0.001$). Regression analysis further showed a strong positive relationship between class size and student engagement ($r = 0.802$), with class size explaining 64.3% of variation in engagement ($r^2 = 0.643$). ANOVA results confirmed that class size was a significant predictor of engagement ($F = 14.400, t = 3.795, p = 0.005$). Correlation findings revealed significant positive relationships between quality interaction and engagement indicators including one-on-one interaction improving engagement ($r = 0.503, p < 0.001$), provision of opportunities for interaction during lessons ($r = 0.466, p < 0.001$), frequency of interaction on motivation and participation ($r = 0.398, p < 0.001$), and teachers' ability to manage class size effectively ($r = 0.390, p = 0.002$). The study also established that students' characteristics significantly influenced engagement in large classes, with positive relationships observed between engagement and personal characteristics ($r = 0.371, p < 0.001$), valued individual contribution ($r = 0.364, p < 0.001$), class participation and engagement ($r = 0.241, p = 0.029$), and participation based on personal characteristics ($r = 0.221, p = 0.041$). The study concluded that smaller and manageable class sizes, effective student-teacher interaction, and supportive classroom environments significantly enhanced student engagement. The study recommends reduction of overcrowding in classrooms, employment of more teachers to have an acceptable student-teacher ratio, and adoption of learner-centered and interactive teaching strategies to improve student engagement and academic outcomes.

Keywords: Class size, Student engagement, Student-teacher interaction, Student characteristics

Leveraging AI-Powered pedagogy in Kenyan Universities

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Abstract

Artificial Intelligence (AI) technologies have become more visible in education sector across the globe. However, information on their actual use in Kenyan universities remains limited. This paper investigated how AI-powered pedagogy is adopted in Kenyan Universities. It focused on AI technology tools leveraged in education and how they shape student engagement. A descriptive research design with a mixed-method of qualitative and quantitative approaches was used to collect and analyze data. Data was collected using questionnaires issued to students and unstructured interview issued to lecturers to capture both statistical patterns and personal experiences. The study was conducted in Kiambu County where a sample size of 150 participants was selected through purposive sampling procedure. This included 50 lecturers and 100 students from five universities in Kiambu County. 92 students returned the questionnaires for data analysis and 46 lectures availed themselves for the unstructured interviews. Findings show that AI integration is still largely at a functional and supportive level rather than a fully pedagogical or transformative level. Further, several barriers persist such as limited digital infrastructure, inadequate technical support, and uneven staff preparedness which continue to hinder effective use of AI technologies. In some cases, the absence of clear institutional policies and implementation frameworks further slowdown the implementation progress. The study offers practical, context-aware recommendations to support integration of AI technologies for learning within Kenyan universities.

Keywords: Artificial Intelligence (AI), pedagogy, higher education, adaptive learning system, Intelligent tutoring platform, learning analytics

Architecture of Ecological Injustice: Climate Change, Land Scarcity, and the Criminalization of Pastoralist Survival in Laikipia County, Kenya

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Abstract

Background: Communities in the Global South have been disproportionately burdened by ecological breakdown brought on by human activity during the Anthropocene. This is most evident in the arid and semi-arid lands (ASALs) of Laikipia County, Kenya, where resource scarcity has been severely exacerbated by accelerating climate-induced drought cycles. By the 1990s and beyond, the frequency of droughts has increased from once every decade in the 1960s and 1970s to once every two to three years. Crucially though, this ecological pressure is not isolated. A deeply unfair "checkerboard" land tenure system, a direct legacy of colonial-era dispossession (most notably through the forced Maasai Agreements of 1904 and 1911), and subsequent post-colonial land policies have left only 48 private entities controlling 40.3% of the county's total land area, while the entire pastoralist population is restricted to thirteen communal group ranches that make up just 7.45% of the county. This spatial disparity is the structural prerequisite that transforms ecological scarcity into legal risk; it is not an accident.

Problem: Most of the current research on Laikipia's recurrent conflicts is conducted within the disciplinary frameworks of security studies, development economics, and conservation science; it frames pastoralist survival strategies as "banditry," "cattle rustling," or "ranch invasions" that call for law enforcement intervention. A crucial disciplinary blind hole results from this elite-centric, incident-focused paradigm, which examines what occurs in Laikipia without questioning why survival behaviors are classified as criminal and whose structural interest that classification serves. The fundamental question of how the legal system, which includes trespass law, the Wildlife Conservation and Management Act (2013), and private conservancy enforcement, functions not only to respond to environmental crime but also to actively create criminal categories that conceal pastoralist victimization remains unanswered because no study has yet applied a Southern Green Criminological framework to this context.

Aim and Objectives: This work critically analyzes the systemic architecture of ecological injustice in Laikipia County, guided by the combined deployment of Southern Green Criminology and Political Ecology through the organizational concept of Green Colonialism. In particular, it aims to: (1) analyze the relationship between the criminalization of pastoralist adaptation and climate-induced ecological change; (2) uncover the historical-structural foundations of criminalization within Laikipia's contested colonial land tenure system; (3) dissect how conservation law and its enforcement serve as mechanisms of social control and dispossession; and (4) critically examine how state, media, and elite conservation discourses collectively construct pastoralists as criminal invaders, thereby justifying criminalization and masking structural victimization.

Methodology & Framework: A qualitative, critical socio-legal approach is taken in this study. The structural and material basis is provided by Political Ecology, which sheds light on how historically particular arrangements of power, property, and colonial governance politically produce resource scarcity and spatial exclusion. By examining how structural exclusion is translated into criminal categories and enforced through legal mechanisms that present pastoralist survival as individual liability—constructing drought-driven boundary crossings as trespass, illegal grazing, and property damage—instead of acknowledging them as structurally

necessary reactions to some dispossession centuries in the making, Southern Green Criminology expands this analysis into the legal domain. Green colonialism serves as the unifying conceptual lens, revealing how modern frameworks for animal preservation and conservation replicate the colonial logics of resource enclosure, land alienation, and indigenous incarceration under new legitimizing rubrics.

Significance: By redefining pastoralists as victims of interconnected historical, ecological, and legal injustices rather than as perpetrators of environmental crimes, this study presents a novel empirical and theoretical contribution. It makes the structural claim that Laikipia's recurrent crises are not proof of innate criminality but rather the predictable and systemic results of an ecological injustice architecture created by colonialism, solidified by post-colonial land policy, exacerbated by climate change, and upheld by a legal system that equates crime with survival. This study closes a major gap in the criminological literature on the Global South by applying a Southern Green Criminological paradigm to the pastoralist context of Kenya for the first time. Practically speaking, the results offer a crucial basis for legislators, conservation organizations, and legal institutions to reconsider wildlife laws, trespass laws, and environmental governance, resulting in the advancement of more equitable, climate-adaptive, and conflict-sensitive resource management frameworks throughout the Global South.

Keywords: Laikipia County; Political Ecology; Green Colonialism; Criminalization of Survival; Pastoralism; Land Tenure; Climate Justice; Ecological Injustice; Post-Colonial Law; Southern Green Criminology

Inclusive Educational Practices for Enhancing Curriculum Accessibility for Children with Autism Spectrum Disorder in Tanzanian Primary Schools

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Abstract

Although inclusive education policies increasingly emphasise equal learning opportunities for all children, curriculum accessibility for learners with Autism Spectrum Disorder (ASD) remains a practical challenge in many Tanzanian primary schools. This paper examines the inclusive educational practices that teachers employ to enhance curriculum accessibility for children with ASD in primary schools with special education units in Dar es Salaam and Pwani regions. The paper is drawn from a broader doctoral study on curriculum accessibility for children with ASD in Tanzania. Guided by a socio-cultural perspective, the study adopted a convergent mixed-methods design involving questionnaires, semi-structured interviews, and focus group discussions. Participants included teachers, headteachers, and parents of children with ASD. Quantitative data were analysed descriptively using SPSS, while qualitative data were analysed thematically. The findings show that teachers use several adaptive practices, including simplified instructional materials, repetition of content, peer-assisted learning, improvised teaching resources, and life-skills-focused instruction. However, these practices are largely informal, teacher-dependent, and shaped by immediate classroom realities rather than by structured ASD-specific curriculum guidelines. Quantitative findings also indicate moderate to high reported use of inclusive practices, but with notable variation across classrooms, suggesting inconsistency in implementation. The paper argues that curriculum accessibility for children with ASD requires a shift from necessity-driven improvisation to planned, evidence-informed, and institutionally supported inclusive pedagogy. It recommends targeted professional development, clearer curriculum adaptation guidelines, stronger school leadership support, and sustained home-school collaboration. The paper contributes to the conference theme by showing how inclusive education can be strengthened through practical curriculum transformation models that respond to learner diversity in contexts of global uncertainty.

Keywords: Autism Spectrum Disorder; curriculum accessibility; inclusive education; special education units; Tanzania

Effect of Rainfall Timing on Select Food Crop Production in Nyando sub-County, Kisumu County, Kenya

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Abstract

A core pillar of the Bottom-Up Economic Transformation Agenda is agriculture and food security. Integrated Food Security Phase Classification reported that about 3.3 million Kenyans faced crisis-level food insecurity driven by consecutive failed rains, high food prices, and drought as of March 2026. This background yielded into this study on the effect of rainfall timing on select food-crop production in Nyando sub-County, Kisumu County, Kenya. A quasi-longitudinal research design was used. Primary data was collected from household heads. Secondary data was obtained from Kenya Meteorological Department and sub-County and County Agricultural Offices. Qualitative data was thematically analyzed. Quantitative data was analyzed using descriptive statistics and linear regression analysis. The study findings established a significant effect between rainfall timing and Maize, Beans and African nightshade yields, during the short and long rain seasons. About 65, 47 and 38 percent variation in the production of maize, beans and African nightshade was explained by change in rainfall timing. It is therefore imperative that rainfall timing had a great effect on production of these crops. As such, there is need to prioritize adapting food production systems to cope with and adapt to changing climate more so the timing of rainfall. This can be well-guided by having localized weather-prediction models, investing in region-specific research, and implementing adaptive technologies tailored to local conditions.

Participatory and Inclusive Governance and its outcomes

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Abstract

Participatory governance involves institutional processes that enable members of the public to exercise voice and vote in public policy decisions that produce real changes in citizens' lives. Inclusion in terms of both processes refers to how decisions are made and who is included in that process and how and why and the outcomes thereof. Building inclusive states and societies is widely understood as a central concern for international development, and evidence has shown that inclusive states and societies are more prosperous, effective and resilient in the long run. However, the process of altering power structures and redefining state-society relations is bound to be messy and contested, and although there may be enabling factors, there are no blueprints for change. It's against this backdrop that this paper highlights participatory and inclusive governance and its outcomes. The authors explore the relationship between inclusive governance and inclusive development. The adoption of participatory governance is often based on the perception that representative democracy is unable to improve the quality of state performance, educate and empower citizens, and make reasonably good use of scarce public resources. Furthermore, there is no automatic causal relationship between inclusion as process and inclusion as outcome in either direction. Few scholars have addressed the issue of citizen involvement and introduced participatory governance as the promising model of governance as a panacea for development. Hence the main aim of this paper is to champion the association of different stakeholders in the decision-making process in a multi-level perspective. Greater emphasis is placed on the fact that, more inclusive processes can in fact foster more inclusive development.

Keywords; Governance, Participatory, Inclusive

Augmented Tools to Enhance O-Level Chemistry Learning at Njube High School

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Abstract

The study investigated the potential of augmented learning tools, including visual laboratories, interactive three-dimensional (3D) models, and augmented reality (AR) applications, to improve the teaching and learning of O-Level Chemistry at Njube High School in Zimbabwe. The research was motivated by persistent challenges in Chemistry education, including limited laboratory resources, teacher-centred instructional approaches, and learners' difficulties in understanding abstract concepts. A descriptive mixed-methods research design was adopted, combining qualitative and quantitative approaches. Data were collected from 97 participants, comprising 77 respondents who completed online questionnaires and 20 participants who took part in semi-structured interviews. Quantitative data were analysed using descriptive statistics, while qualitative data were analysed thematically. Findings revealed that although awareness and previous use of augmented learning technologies were generally low, both learners and teachers held highly positive attitudes towards their integration into Chemistry teaching. Most respondents believed that augmented learning tools could improve conceptual understanding, increase learner engagement and motivation, and make abstract chemical concepts easier to visualise. However, inadequate ICT infrastructure, limited internet access, insufficient teacher training, and a lack of institutional support were identified as major barriers to successful implementation. The study concludes that augmented learning tools have significant potential to enhance Chemistry education in resource-constrained secondary schools when supported by adequate infrastructure, professional development, and appropriate educational policies. It recommends investment in ICT facilities, teacher capacity building, curriculum integration of augmented technologies, and stronger institutional support to promote technology-enhanced science education in Zimbabwe.

Keywords: Augmented Reality, Augmented Learning Tools, Chemistry Education, Visual Laboratories, Interactive 3D Models, O-Level Chemistry, ICT Integration, Student Engagement, Zimbabwe.

Code mixing and switching as a means of enhancing inclusivity in governance: A case study of William Ruto's political campaign speeches

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Abstract

The use of language in a political discourse is central in communicating policies and the government agenda to the people. In any political discourse, language is not only a tool for passing information but also a means through which unity, inclusivity and division in country is attained. Being a multilingual nation, politicians in Kenya tend to use more than one language while selling their policies during campaigns. This paper intends to investigate code mixing and switching in William Ruto's political speeches and how it enhances inclusivity in governance. The research will be guided by the Markedness Theory of Myers-Scotton and Audience Design Theory of Allan Bell. Data for the research will be obtained by analyzing two political speeches of H.E William Ruto which shall be downloaded from YouTube. After downloading, the speeches shall be listened to and by using timestamp, data of the research shall be recorded. The speeches shall be selected through purposive sampling. The data of the researcher shall be analyzed through content analysis. This research is important in explaining the role of local dialects in enhancing inclusivity in governance.

Keywords: Code mixing and switching, Political discourse, Multilingualism, William Ruto

Ikisiri

Matumizi ya lugha katika diskosi ya siasa ni muhimu sana katika kuwasilisha sera na ajenda za serikali kwa wananchi. Katika diskosi yoyote ya siasa, lugha si nyenzo tu ya kupitisha ujumbe ila pia ni njia inayotumiwa kuendeleza umoja, ushirikiano na utengano katika taifa. Kwa kuwa Kenya ni taifa lenye uwingi lugha, wanasiasa aghalabu hutumia zaidi ya lugha moja wanapouza sera zao wakati wa kampeni. Makala hii inalenga kuchunguza ubadilishaji na uhamishaji msimbo katika hotuba za kisiasa za mhe. William Ruto na namna unavyokuza umoja wa kitaifa katika uongozi. Utafiti huu uliongozwa na nadharia ya Maki iliyoasisiwa na Myers-Scotton na nadharia ya Usanifu wa Hadhira ya Allan Bell. Data ya utafiti utakusanywa kwa kuchanganua hotuba mbili za kisiasa za mhe. William Ruto kutoka kwa mtandao wa Youtube. Baada ya kupakua hotuba hizo, data ya utafiti itakusanywa kwa kuzisikiliza na kwa kutumia mbinu ya timestamp, mtafiti atarekodi kauli itakayojumuisha data. Mtafiti atateua hotuba zitakazochanganuliwa kupitia sampuli kusudio. Data ya utafiti itachanganuliwa kupitia mbinu ya uchanganuzi matini kwa kuongozwa na mihimili ya nadharia za utafiti. Utafiti huu ni muhimu kwa sababu utachangia katika kuelewa nafasi ya lugha za kienyeji katika kuendeleza umoja wa kitaifa katika uongozi.

Maneno Muhimu: Ubadilishaji na Uhamishaji msimbo, Diskosi ya siasa, Uwingi lugha, William Ruto

Influence of Artificial Intelligence Integration on Teacher Autonomy among Senior School Teachers in Kenya

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Abstract

Artificial Intelligence (AI) is increasingly reshaping instructional planning, assessment, learner support, and educational decision-making, raising important questions about its implications for teachers' professional autonomy. Although AI adoption in education continues to expand globally, empirical evidence on its influence on teacher autonomy remains limited, particularly in developing countries such as Kenya, where context-specific research is scarce. This knowledge gap limits the ability of policymakers, educational leaders, and schools to develop evidence-based strategies that harness AI to enhance teaching while preserving teachers' professional judgment. Against this background, this study examined the influence of Artificial Intelligence integration on teacher autonomy among senior school teachers in Kenya. The study was anchored on Technological Determinism Theory and adopted a mixed-methods approach within the pragmatist paradigm using a convergent parallel research design. The target population comprised 1,940 senior school teachers from Kisii, Nairobi, and Kiambu counties, together with three school administrators and three Curriculum Support Officers who participated in the qualitative strand of the study. A sample of 293 respondents, comprising 287 senior school teachers, three school administrators, and three Curriculum Support Officers, was selected using stratified random and purposive sampling techniques. Quantitative data were collected using structured questionnaires and analysed using descriptive statistics, Pearson product-moment correlation, and simple linear regression, while qualitative data were collected through semi-structured interviews and analysed thematically. The findings revealed that AI technologies were integrated into instructional practice to a moderate-to-high extent. A statistically significant positive relationship was established between AI integration and teacher autonomy. Qualitative findings corroborated the quantitative results by demonstrating that AI enhanced lesson planning, instructional flexibility, assessment practices, and teachers' capacity to make informed and independent pedagogical decisions. Participants, however, cautioned that uncritical reliance on AI-generated recommendations could gradually erode professional discretion. The study concludes that responsible AI integration is positively associated with teacher autonomy by enhancing instructional efficiency, supporting evidence-informed pedagogical decision-making, and strengthening teachers' professional agency in curriculum implementation. The study, therefore, recommends strengthening teachers' AI literacy, developing institutional guidelines for the ethical and responsible use of AI, and formulating national policies that position AI as a complementary tool that augments rather than replaces teachers' professional expertise and judgment.

Keywords: Artificial Intelligence integration, teacher autonomy, educational technology, teacher professionalism, senior school teachers.

Influence of multiple career paths as a professional development dynamic on teacher attrition in public secondary schools in Mombasa County, Kenya

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Abstract

The study focused on analyzing the influence of multiple career paths as a professional development dynamic on teacher attrition in public secondary schools in Mombasa County. The study was guided by the Human Capital theory, the Burnout theory, and the Appeal Theory. The study used the mixed research methodology and the concurrent triangulation design. The target population involved 1,544 respondents comprising 1,487 secondary school teachers, 45 principals, 6 Teachers Service Commission (TSC) human resource officers, and 6 education officers in public secondary schools from the coastal region. The sample size involved 11 principals, 225 teachers, 3 TSC Human Resource Officers (HRO's), and 4 Education Officers. Stratified random sampling was used to select the various public secondary schools from their strata. Primary data were collected using questionnaires and interview schedules. Descriptive statistics were analyzed using frequencies and percentages and presented using tables. Inferential statistics were analyzed using multiple regressions and presented in tables. Qualitative data were analyzed thematically and presented in narrative form and direct quotations. The study revealed that multiple career paths provide teachers with labour market opportunities outside teaching and have increased the marketability and employability of teachers with high qualification by offering them alternative forms of employment outside the TSC. The study concluded that the lack of recognition of higher academic qualifications acquired by teachers by TSC greatly influenced attrition, while the unpopular delocalization policy greatly influenced the rates of teachers exiting the teaching profession. The study recommended that the TSC needs to recognize higher academic qualifications from teachers, provide a conducive working environment, and improve terms of service for teachers in public secondary schools if it has to continue attracting new employees and retaining its current employees who are in service. The study further recommended that Career Progression Guidelines by the Teachers Service Commission should not be used to replace the gains made by teachers who have gone back to school and acquired higher academic qualifications.

Keywords: Professional advancement, teacher attrition, multiple career paths, teacher turnover, labour market opportunities

Social determinants of access to reproductive health services by youths in Laikipia County

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Abstract

Reproductive Health (RH) is the state of complete physical, mental and social well-being of the reproductive system and needs of a people. Despite the fact that RH has been highly pushed by the government and other organizations, there is still a gap among the youths as far as the access and utilization of the services is concerned. Kenyan government and non-governmental organizations have put a lot of effort in disseminating information on where and how to access reproductive health services. However, inequity to accessibility of the services and their general utilization by adolescents and youth is still a worrying trend especially among people of lower socio-economic status. The latter can be attributed to such factors as religion, peer influence, level of education, family values, sources of RH information, and the mode of dissemination. With some of these issues already explored, there is still need for further exploration on determinants of youth access to RH services. These factors are basically selected socio-cultural factors that influence access to RH services among youth and play a crucial role in determining access to RH services among young people. This study sought to evaluate social determinants of access to reproductive health services by youths. The study employed theory of reasoned action. A survey research method was used. Stratified random sampling was employed to select participants for the study, including those who participated in Focus Group Discussions (FGDs) with youth and Key Informant Interviews (KIIs). Quantitative data were analyzed using descriptive statistical techniques, while qualitative data were analyzed using thematic analysis to identify and interpret emerging themes. The study findings indicate that the relationship between the youth clients and healthcare provider is a major determinant of access and utilization of reproductive health services among the youth. Although youth are generally satisfied with the messages they get from the health care providers on reproductive health services, quantitative data shows difficult relationship. The study findings indicate that the relationship between the youth clients and healthcare provider is a major determinant of access and utilization of reproductive health services among the youth. Qualitative data showed that stigma can arise from the providers by negatively judging the youth. Access of reproductive health services among the youth is influenced significantly by poor family and social support, stigma, and waning provider-client relationship socio-economic determinants that collectively and in different combination affect service-seeking behavior. Based on the study findings, it is recommended that programs targeting to improve youth access to reproductive health services consider providing incentives such as youth-relevant and friendly services. Use of schools (reproductive health education), social media, and peer educators are strategic communication channels to increase awareness and knowledge level among youth. However, the use of social media among the youth is profound and well documented. Thus, stakeholders should leverage on packaging reproductive health information in the social media platforms for the consumption of the youth.

Keywords: Reproductive Health, Reproductive health Services, Reproductive health information and services, Youth

Decision-Making Strategies in an Era of Uncertainty: A Systematic Review of Organizational Agility Frameworks

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Abstract

Decision-making in contemporary organizations is increasingly constrained by volatile environments, incomplete information, and ambiguous risks, where leaders need to act despite uncertainty and limited data. The objective of this study aimed to synthesize theoretical and empirical insights on decision-making strategies under uncertainty, with a focus on organizational agility frameworks that enhance adaptability and responsiveness. The study pegged on key theories: Bounded Rationality, Prospect Theory, Adaptive and Robust Decision-Making, Dynamic Capabilities Theory and Organizational Agility Frameworks. Using the PRISMA 2020 systematic review methodology, relevant literature published between 2010 and 2026 was identified, screened, and synthesized from major academic databases, resulting in 63 high-quality studies that met the inclusion criteria. The findings revealed that cognitive biases such as overconfidence and anchoring significantly impair decision quality under uncertainty, while the tension between decision paralysis and premature action often complicates leadership judgment. Similarly, organizations adopting agility-driven approaches characterized by decentralized decision-making, shorter feedback loops, and cross-functional collaboration demonstrate improved responsiveness and resilience. Scenario planning, premortem analysis, and second-order thinking emerge as critical tools for anticipating risks and evaluating long-term implications, while iterative “test-and-learn” approaches help organizations convert uncertainty into opportunities for innovation. The study concludes that effective decision-making in uncertain environments depends less on predictive accuracy and more on adaptability, learning speed, and strategic flexibility. The study recommends the organizations to institutionalize agility by empowering decentralized decision authority, adopt structured decision-making frameworks, foster a culture that values decision quality over outcomes, invest in leadership development focused on cognitive bias awareness and emotional intelligence, balance data-driven insights with informed intuition, encourage experimentation and continuous learning, and strengthen cross-functional integration. The study suggests further studies on the role of artificial intelligence in augmenting human decision-making under uncertainty, examine cross-cultural variations in risk perception, develop robust metrics for assessing organizational agility maturity, and explore the long-term performance implications of adaptive decision-making frameworks in complex and rapidly evolving environments.

Keywords: Decision-making under uncertainty; organizational agility; adaptive leadership; dynamic capabilities; PRISMA systematic review

**Education Premium Across Industries: Does Human Capital Matter More in
Knowledge-Intensive Sectors? A Secondary-Data Analysis of Workforce Education,
Industry Knowledge Intensity, and Organizational Performance**

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Abstract

The positive relationship between human capital and organizational performance stands as one of the most robust findings in management and labor economics. Yet fundamental questions remain contested: does the magnitude of this relationship vary systematically across industries? Do investments in workforce education yield higher productivity returns in knowledge-intensive industries compared to less knowledge-intensive sectors? While human capital theory predicts higher returns in settings where knowledge, problem-solving, and creativity are central to production. This study provides the first systematic, industry knowledge intensity as a moderator of the human capital–firm performance relationship. Using secondary data from 47,362 firm-year observations (2010–2023) drawn from Compustat, OECD Structural Business Statistics, and PIAAC, the study estimated a moderated multilevel model with industry and year fixed effects. The results revealed a one-standard-deviation increase in workforce education is associated with a 12.4% increase in value-added per employee in high-knowledge-intensity industries (e.g., software, pharmaceuticals, finance) compared to only 3.7% in low-knowledge-intensity industries (e.g., retail, hospitality, construction) a moderating effect that is statistically significant ($\beta = 0.087$, $p < 0.001$) and economically substantial. The education premium gap persists across multiple performance measures (ROA, Tobin's Q, labor productivity) and robustness checks, including propensity score matching and instrumental variable estimation. However, the moderation effect reverses for routine-task-intensive occupations within high-knowledge sectors, suggesting a boundary condition based on task complexity. These findings refine human capital theory by demonstrating that the value of workforce education is not uniform but systematically varies with the knowledge intensity of the production function. For managers and policymakers, the results imply that industry context should guide human capital investment strategies: education-centric upskilling yields highest returns in knowledge-intensive sectors, whereas low-knowledge sectors may benefit more from process improvements or technology adoption. The study contributes to strategic human capital research by specifying an industry-level contingency that has been theoretically asserted but empirically contested.

Keywords: human capital, education premium, knowledge intensity, industry differences, firm performance, secondary data analysis

Supply Chain Reengineering as A Strategic Driver of Operational Performance in Manufacturing Firms in Kenya

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Abstract

Supply chain reengineering has become an essential strategic approach for manufacturing firms seeking to enhance efficiency, responsiveness, and competitiveness in an increasingly dynamic business environment. The growing complexity of global supply chains, technological advancements, and frequent market disruptions have compelled organizations to redesign and optimize their supply chain processes to achieve superior operational outcomes. Despite the increasing adoption of supply chain reengineering initiatives, empirical evidence on their influence on operational performance among manufacturing firms in developing economies remains limited. This study examined the effect of supply chain reengineering on operational performance among manufacturing firms in Nairobi City County, Kenya. Specifically, the study assessed the influence of process redesign, technology integration, workflow optimization, and supply chain restructuring on operational performance. The study adopted a descriptive research design and targeted manufacturing firms registered under the Kenya Association of Manufacturers (KAM). Data were collected using structured questionnaires administered to a sample of 240 manufacturing firms, yielding 235 valid responses. The collected data were analyzed using the Statistical Package for Social Sciences (SPSS) using descriptive statistics, Pearson correlation analysis, and regression analysis. The findings revealed that supply chain reengineering has a significant and positive effect on operational performance among manufacturing firms. Firms that embraced process redesign, digital technologies, and streamlined supply chain operations reported improvements in response time, customer satisfaction, inventory turnover, supplier lead times, and production efficiency. The study established that supply chain reengineering contributes significantly to enhancing operational performance and strengthening organizational competitiveness. The study underscores the importance of investing in supply chain process innovation, technological capabilities, and continuous improvement initiatives to enhance operational excellence. It recommends that manufacturing firms institutionalize supply chain reengineering practices as a strategic capability for improving resilience, operational performance, and long-term sustainability. The findings provide valuable insights for managers, policymakers, and researchers seeking to advance supply chain transformation within the manufacturing sector.

Keywords: Supply Chain Reengineering, Operational Performance, Manufacturing Firms, Process Redesign, Supply Chain Transformation, Kenya

Effect of Organization Resources as a Determinant of Strategy Implementation on Service Delivery in County Government of Mandera, Kenya

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Abstract

Failure to pay attention to resources allocations to county governments in Kenya continues to contribute to high failure rates in implementation of county governments projects and therefore affecting service delivery to the citizens. The study objective is to determine the effect of organization resources on service delivery in County Government of Mandera. The study was anchored on Resource Based Theory. The research employed correlational research design targeting 75 respondents out of which 63 respondents sampled for the study out of which 50 respondents returned the questionnaires. Data was collected by use of self-administered questionnaires. A pilot study was carried out in Wajir County Government. Validity and reliability of the research instrument were tested. Descriptive and inferential statistics were used to analyze the data using SPSS version 21. Descriptive analysis included; frequencies, mean and percentages while inferential analysis involved correlation and regression analyses. Frequency distribution tables were used to present the study data. Ethical issues were observed by obtaining permission from the University and respecting the confidentiality and privacy of the respondents' responses. The study found that organization resources have a positive and significant effect on services delivery ($r=0.716$). Since the study found out that organization resources have an effect on service delivery, the study recommends that the county governments should provide organization resources for better strategy implementations which will in turn results to service delivery. This can be done by allocating the funds properly, providing competent human resources and providing adequate infrastructure.

Keywords: County Government, Organizational Resources, Service Delivery, Strategy Implementation Determinant

Counselled or Cancelled: Reviewing Handling of Mental Health of Students in Kenyan Public Universities

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Abstract

This systematic review evaluates how religious communities within universities are harnessed to address students' mental health needs. According to the Kenya Population Situation Analysis Report (2025), the Kenyan population is predominantly young, with over 60% under age 25. The Kenya National Adolescence Mental Health Survey (K-NAMHS, 2021) notes that over two-fifths (44.3%) of adolescents had a mental health problem in the past 12 months. Statistics show that mental health is the leading cause of suicide among Kenyan youth aged 15-35 (where university students fall). According to the Kenya Ministry of Health's Suicide Prevention Strategy 2021-2026, mental illnesses are often associated with suicidal behavior. The Ministry of Health notes that Kenya lacks a national surveillance and reporting system for suicide, with the overall suicide rate in Kenya reported at 6.1 per 100,000 people and four suicide deaths daily. Goal 3 of the Sustainable Development Goals (SDGs) is to ensure healthy lives and promote well-being for all at all ages, with indicator 3.4 being to promote mental health and well-being. While most Kenyan universities have established counseling and wellness centers, suicide and attempted suicide cases continue to be reported. The role played by religious communities in providing wellness services for students has also been underexplored. Religious societies abound in universities, including Christian Unions as well as denomination-based fellowship groups. This theoretical paper focuses on how religious communities within universities can be a tool for disseminating information on mental health to members, with data for the review being sourced from peer-reviewed literature. Findings reveal that, with most students belonging to at least one denominational group, it's easier to disseminate information on mental wellness and to check on one another, akin to the 'Nyumba Kumi initiative'. The review concludes that religious communities within universities have deep networks with students and can easily be harnessed to impact the mental health of students.

Keywords: mental health, suicide, religion, new funding model

Antenatal care, place of delivery and neonatal death nexus: Analysis of 2003-2022

Kenya demographic and health survey data

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Abstract

Study purpose: To establish the existing relationship amongst antenatal care (ANC) uptake, place of delivery, and neonate death based on Kenya demographic and health surveys.

Methodology: This is a retrospective study using data obtained from the 2003, 2008-09, 2014 and 2022 Kenya demographic and health survey cycles. Descriptive analysis involved frequencies and cross-tabulation. Inferential analysis involved multinomial logistic regression and Kaplan-Meier survival analyses.

Results: There was about 10.02% rise in the uptake of ANC services between 2003 and 2022. Majority of child deliveries occurred at home pre-2014. However, by 2022 health facility-based deliveries were reported at 80.05% nationally albeit with county disparities. Age heaping at neonate death was rampant at days 7, 14 and 21. Across the study period, ANC uptake, place of residence, maternal education, wealth index, and birth order were significantly related to place of delivery. Unmarried women had higher odds of neonatal death in 2003 (aOR = 2.435, $p < 0.05$). In 2008-09, there were lower odds of neonate death among women who reported facility delivery, were working, and were of wealthy backgrounds. In 2014, delivery in a private health facility (aOR = 0.220, $p < 0.05$) and birth order 2-3 (aOR = 0.288, $p < 0.05$) were significantly associated with lower odds of neonate death. Maternal age of 35-49 years was associated with higher odds of neonatal death (aOR = 5.031, $p < 0.01$). In 2022, mothers who had ANC uptake (aOR = 0.216, $p < 0.01$) and delivered in a public health facility (aOR = 0.321, $p < 0.01$) had significantly lower odds of neonatal death. More than 7 ANC visits were associated with poor neonate survival.

Conclusion: While more antenatal care visits did not translate to neonate survival during the study period, health facility-based deliveries did. Advanced maternal age at pregnancy and delivery increased the risk of neonate death. There is need to strengthen the healthcare system and improve maternal and childcare service delivery and reporting.

Keywords: Antenatal care; Place of delivery; Neonate death; Kenya demographic and health survey

Beyond Diagnostic Expansion: Operational Capacity Gaps in Kenya's Public Laboratory System

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Abstract

Over the past decade, Kenya has significantly expanded diagnostic services through decentralization, post-COVID-19 investments, donor-supported programs, and the increased deployment of laboratory technologies across public health facilities. Although these efforts have improved access to diagnostic testing, limited attention has been directed toward the operational systems required to sustain reliable, equitable, and high-quality laboratory services. This paper argues that Kenya's public laboratory sector is facing a largely underrecognized systems crisis driven by the mismatch between rapid diagnostic expansion and inadequate operational capacity. Using a systems-thinking and qualitative policy analysis approach, the paper synthesizes evidence from published literature, policy documents, health sector reports, and contextual insights from laboratory systems practice in Kenya. The analysis identifies persistent operational weaknesses in workforce capacity, equipment maintenance, procurement and supply chain systems, quality assurance implementation, infrastructure readiness, and laboratory information management despite substantial growth in diagnostic platforms and testing demand. The paper demonstrates that expansion without proportional investment in operational support systems has contributed to equipment downtime, reagent stock-outs, workforce burnout, delayed turnaround times, fragmented quality management systems, and widening inequities between urban referral hospitals and resource-limited county laboratories. The analysis further highlights how donor-driven vertical disease programs, while improving disease-specific diagnostic capacity, may unintentionally reinforce fragmented and unsustainable laboratory ecosystems. The paper concludes that strengthening Kenya's diagnostic ecosystem requires a shift from infrastructure-centered expansion toward integrated laboratory systems planning that prioritizes workforce development, maintenance financing, supply chain resilience, digital interoperability, accreditation pathways, and sustainable domestic investment. Addressing these operational gaps is essential for improving patient outcomes, strengthening health system resilience, and advancing Universal Health Coverage in Kenya.

Keywords: Kenya; public laboratory systems; diagnostic expansion; operational capacity; health system resilience

