



6TH BIENNIAL INTERNATIONAL CONFERENCE



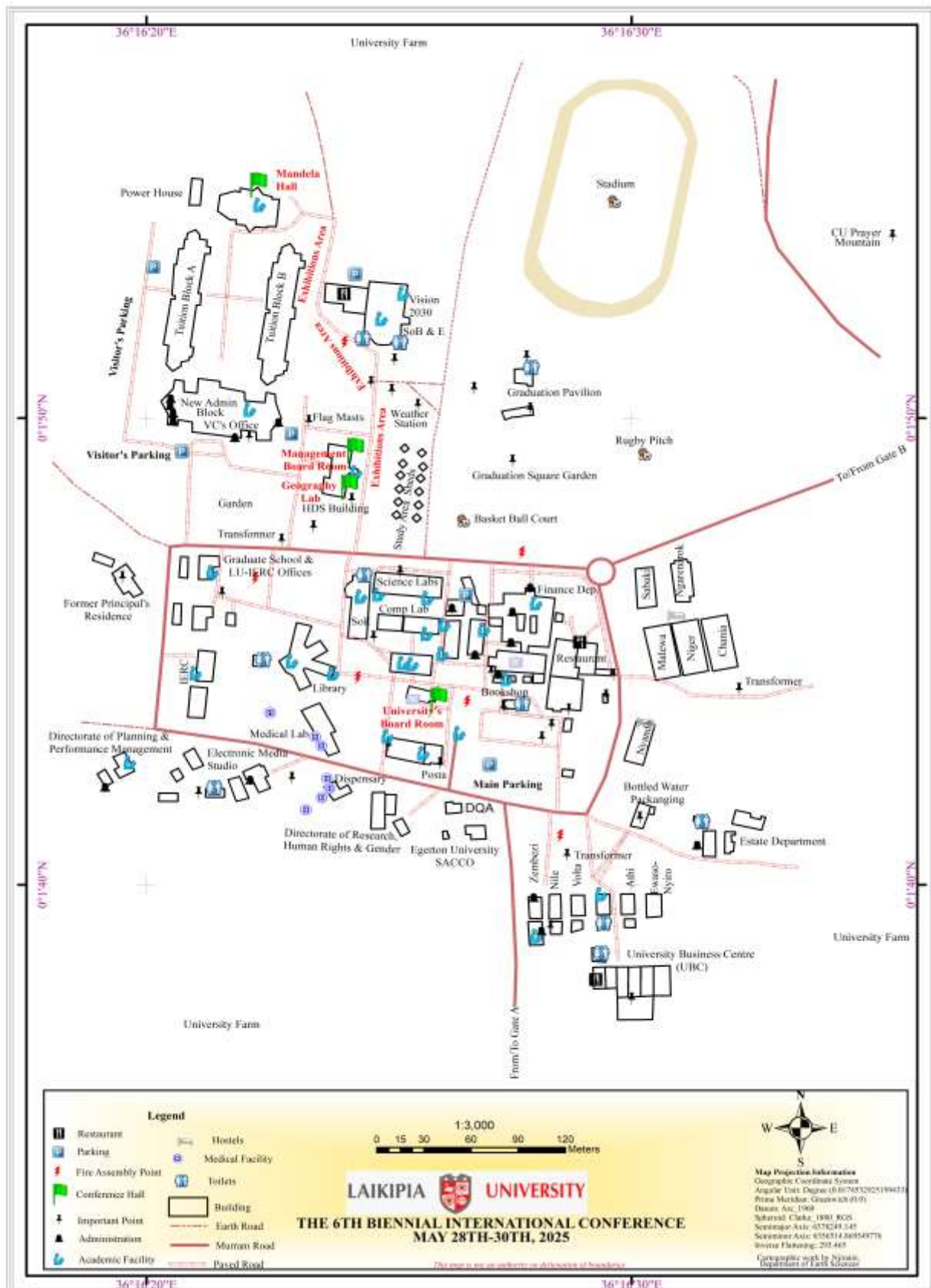
PROGRAMME AND BOOK OF ABSTRACTS

**RESEARCH AND INNOVATIONS: NAVIGATING
GLOBAL CHALLENGES & BUILDING RESILIENCE**

28TH TO 30TH MAY, 2025 | LAIKIPIA UNIVERSITY – MAIN CAMPUS

LAIKIPIA UNIVERSITY MAP

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CONFERENCE ORGANISING COMMITTEE

1. Prof. John Kiumi Kanjogu – Chair/Ag. Deputy Vice Chancellor, Academic, Research and Student Affairs
2. Dr. Barnabas Kurgat – Co-Chair/Ag. Director, Research, Human Rights and Gender
3. Prof. Felicia Arudo Yieke
4. Prof. Wendo Nabea
5. Dr. Florence Mwithi
6. Dr. Peter Githae
7. Dr. Emily Cheshari
8. Rev. Fr. Dr. Peterson Kabugi
9. Dr. Fred Buluma
10. Dr. BenJack Otieno Ochieng'
11. Dr. John Njiraini
12. CPA Samuel Murage
13. CPA Sophia Muchiri
14. Mr. Patrick Wambua
15. Ms. Roselyn Mulefu
16. Ms. Carolyne Kimani
17. Ms. Irene Odhiambo
18. Ms. Lucy Mugo
19. Mr. Kevin Osala
20. Mr. Jackson Kabuchwa

LAIKIPIA UNIVERSITY PARTNERS



Vision: Nurture and Transform for the World

Mission: To contribute to the world through Education, Research, Consultancy, Innovation, Outreach and Collaboration.



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PREAMBLE

Laikipia University's 6th Biennial International Conference focuses on the vital role of research and innovation in addressing 21st-century global challenges such as climate change, pandemics, inequality, and technological disruption. The conference aims to foster resilience, social inclusion, and sustainable development by promoting interdisciplinary collaboration and investment in science and technology. It brings together scholars, practitioners, and policymakers to share insights, best practices, and policy ideas on key topics including sustainable agriculture, renewable energy, climate resilience, education reform, economic transformation, health, and social equity. The conference is a platform for generating new ideas and partnerships that drive transformative and inclusive change for a secure and sustainable future.

SUB-THEMES

1. Digital, Creative, and Cross-Cultural Communication
2. Machine Learning and Data Science
3. Global Health for Equity, Sustainability, and Resilience
4. Nanotechnology and Material Science
5. Education and Knowledge Transfer
6. Governance and Policy Innovation for Social Justice and Equity
7. Climate-Smart Agriculture and Environmental Sustainability
8. Leveraging Indigenous Knowledge
9. Global Economic Transformation for Sustainable Business Practices
10. Innovating Sports for Global Impact



CONFERENCE PROGRAMME

**PROGRAMME COORDINATORS
PROF. FELICIA YIEKE AND DR. BARNABAS KURGAT**

DAY ONE	WEDNESDAY, 28TH MAY 2025
8.30 – 9.00	Registration: Secretariat, Directorate of Research, Human Rights and Gender
EVENT	OPENING SESSION PLENARY
VENUE	ROOM ONE
CHAIR	Prof. Patience Mshenga, Deputy Vice Chancellor, Administration, Finance and Planning
RAPPORTEUR	Ms. Irene Odhiambo, Assistant Registrar, Directorate of Research, Human Rights and Gender
9.00 - 9.05	Opening Prayers: University Chaplain, Rev. Fr. Dr. Peterson Thumi Kabugi
9.05 - 9.20	Welcoming Remarks and Introductions: Director of Research, Human Rights and Gender, Dr. Barnabas Kurgat
9.20 - 9.40	Opening Remarks: Ag. Deputy Vice Chancellor, Academics, Research and Student Affairs, Prof. John Kiumi Kanjogu
9.40 - 10.00	Conference Remarks and Introduction of Chief Guest: Vice Chancellor, Prof. Joseph Kibett Rotich
10.00 - 10.30	Official Opening: Chief Guest, Dr. David Ngigi, PhD Ag. Director General/CEO, National Commission for Science, Technology and Innovation (NACOSTI)
10.30 - 10.45	ENTERTAINMENT
10.45 - 11.30	Keynote Address: <i>Innovate to Elevate: Driving National Transformation through Research and Quality Education in Kenya</i> Prof. Stephen Onyango Odebero, PhD, Professor of Education Planning of Masinde Muliro University of Science and Technology (MMUST), Kenya, and the Director of Postgraduate Studies
11.30 - 12.00	GROUP PHOTO / TREE PLANTING / HEALTH BREAK

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EVENT	PARALLEL SESSIONS			
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [1]	EDUCATION AND KNOWLEDGE TRANSFER [1]	NANOTECHNOLOGY AND MATERIAL SCIENCE [1]	DIGITAL, CREATIVE, AND CROSS-CULTURAL COMMUNICATION [1]
CHAIR	Dr. Miriam Karwitha Charimbu <i>Egerton University</i>	Dr. Peter Githae <i>Laikipia University</i>	Dr. Emily Chebeyeo Cheshari <i>Laikipia University</i>	Prof. Wendo Nabea <i>Laikipia University</i>
RAPPORTEUR	Dr. John Njiraini	Mr. Wilson Kabucho	Dr. Jannet Nyukuri	Ms. Lucy Mugo
12.00-12.15	Willingness of Kale Farmers to Pay for Vermiliquid in Bungoma County, Kenya: An Application of Contingent Valuation Method <i>Maureen Elegwa, Margaret Ngigi, Florence Opondo</i>	Effect of Teachers' Working Conditions on Academic Performance of Pupils in Public Primary Schools in Kuresoi South Sub-County. <i>Naftal Michira Nyang'ara</i>	Development of Biodegradable Plastic Film from Cassava and Sweet Potato Starch Blend <i>Emmanuel Owino, Samuel Kipyegon Kirkok, Emily Chebeyeo Cheshari</i>	Pragmatics Meets Technology: Creative Solutions for Enhancing Meaning Transfer in Courtroom Interpretation <i>Nahashon Akungah O'Nyangeri</i>
12.15-12.30	Impacts of Sustainable Intensification of Vegetable Production on Farmers' Livelihoods in Kenya <i>Barnabas K. Kurgat</i>	Navigating Change: Challenges and Perspectives on Implementation of Competency-Based Education in Kenya <i>Sarah Roelker</i>	Nanocomposites based BC Plant Extracts Improve Wound Healing Without Exhibiting Toxic Effects. <i>Isaac Njagi Isaac Orina, Patrick Kareru, Peter Njenga, James Nyariki</i>	Digital Colonialism from the Ground Up: Tech Giants, Epistemic Power, and Knowledge Control in Kenya <i>Antony Kago Waithiru</i>
12.30-12.45	Harvesting Resilience: A Systematic Review of Climate-Smart Agriculture in Kenya <i>Esther Maina, Ronald Nyamwamu</i>	The Dynamics of Same Sex Sexual Behaviours and Associated Stigma Among University Undergraduate Students in Laikipia University <i>Rose Nyambura, Isaac Gitogo, Lucy Mureithi</i>	Zinc Oxide Nanoparticles as Efficient Photocatalysts for Organic Pollutant Degradation: Bromothymol Blue as a Model System <i>Naomi Kosgei, Samuel Kipyegon Kirkok, Emily Chebeyeo Cheshari</i>	The Functionality of Proverbs in Fostering Critical Thinking, Creativity, Communication and Collaboration <i>Eliud Kiruji Kirigia, Albert Mugambi Rutere</i>
12.45-13.00	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS

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13.00-13.50	HEALTH BREAK			
EVENT	AFTERNOON SESSION PLENARY			
VENUE	ROOM ONE			
CHAIR	Dr. Barnabas Kurgat <i>Laikipia University</i>			
RAPPORTEUR	Ms. Lucy Mugo			
14.00-14.40	Keynote Address: <i>Innovating Sports for Global Impact</i> Dr. Eliud Kipchoge, EGH, World-renowned Kenyan Marathoner, Olympic Gold Medalist (2016 & 2020), and the First Person to Run a Sub-Two-Hour Marathon (1:59:40, Vienna 2019 – Unofficial Record)			
14.40-14.55	The Integration of Technology in Sports Training and Talent Development in Kenyan TVET Institutions: A Case Study of Nyandarua County. <i>Lydia Nyaboke</i>			
EVENT	PARALLEL SESSIONS CONTINUATION			
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [2]	EDUCATION AND KNOWLEDGE TRANSFER [2]	GLOBAL HEALTH FOR EQUITY, SUSTAINABILITY, AND RESILIENCE [1]	DIGITAL, CREATIVE, AND CROSS-CULTURAL COMMUNICATION [2]
CHAIR	Dr. Maurice Oyoo <i>Egerton University</i>	Dr. Sarah Roelker <i>Comundo/St Martin CSA</i>	Dr. Alexander Mbeke <i>Laikipia University</i>	Prof. Babere Chacha <i>Laikipia University</i>
RAPPORTEUR	Ms. Irene Odhiambo	Dr. Fred Buluma	Dr. John Njiraini	Ms. Lucy Mugo
15.00-15.15	Determination of Adult and Seedling Stem Rust (Puccinia Graminis) Resistance Genes in CIMMYT Advanced Wheat (Triticum Aestivum L.) Lines. <i>Sammy Larry Madahana, Maurice Edwards Oyoo, James</i>	Teachers' Preparedness in Integrating Value-Based Education among Junior School Learners: A Case of Junior Schools in Laikipia County <i>Ronald O. Nyamwamu, Robert B. Mwebi, Emily C. Cheshari</i>	Effects of Economic Status on Exclusive Breastfeeding Among Working Women in Thika Subcounty, Kiambu County, Kenya. <i>Emma Mwakithii, Alex Mbeke Joseph Muchiri</i>	COVID-19 as A Catalyst for Technological Advancement and Educational Expansion: Reflecting on The Kenyan Experience <i>Peris Moraa Mokua,</i>

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	Otieno Owuoche, Godwin Kamau Macharia, Mandeep Singh Randhawa, Sridhar Bhavani			Patrick Michael Ogeto
15.15-15.30	The Influence of Water and Nitrogen Application on The Performance of Forage Grass Species in Drylands of Kenya Silas Ong'ayi, Maurice Edwards Oyoo, George Morara Ogendi	Transitioning to E-Learning: An Appraisal of Technology-Enabled Instruction in the Face of the COVID-19 Pandemic. A Case Study of Laikipia County Prisca Tarus, Mindo Kiroro, Lucy Mureithi	Diagnostic Accuracy of Body Mass Index for Assessing Obesity in Women of Reproductive Age in Kenya Wairegi Susan, Mbithe Kigaru Dorcas, Ndungu Zipporah, Waswa Judith	The Contribution of Kiswahili to Coordinated Climate Change Initiatives in the East African Community in the 21st Century Salyne Nyongesa, Patrick Michael Ogeto, Evelyne Mahero
15.30-15.45	Evaluating farmers' knowledge and occurrence of potato cyst nematode (<i>Globodera</i> spp.) in Narok and Elgeiyo Marakwet Counties, Kenya Saitieu Eunice Naitutae, Maurice Oyoo, Miriam Karwitha Charimbu	Perceptions of Students on the Effectiveness of Peer Counselling Services in the Management of Discipline in Public Secondary Schools in Nakuru East Sub-County, Kenya Barasa Loice Njeri, Naftal Michira Nyang'ara	Efficacy of Counselling Programmes on the Psychosocial Well-Being of Survivors of Child Sexual Abuse in Selected Child Rights Advocacy Centres in Nairobi, Kenya M. Kerata, I. W. Kingori, L.W. Mureithi, M. Ngunjiri	Creativity in Digital Protests: Exploring Thematic Expressions in Anti-Police Brutality Tweets by Kenyans on Twitter Community Jacquiline Ondimu
15.45-16.00	Evaluation of rice (<i>Oryza sativa</i> L.) Genotypes for Yield and Resistance to Blast Disease (<i>Magnaporthe Oryzae</i>) in Kenya Grace Ruiru, Paul Kimurto, Miriam Karwitha Charimbu, John Kimani	E Peer Mentorship Programme Self-Efficacy for Improved Mental Health Among University Students Engaging in Transactional Sex in Laikipia University Enos Barasa Mukadi	A Gendered Policy Landscape for Access to Nutritious Foods among Low-Income Groups in Kenya and Malawi: A Scoping Review Florence Achieng' Opondo, Kevin Okoth Ouko, Lilian Chesikaw, Clarietta Chagwiza, Emmanuel Vellemu, Maureen Cheserek	Linguistic Strategies in Digital Discourse: Identity Construction and Ideological Framing in Kenyan Women's Magazines Job Nyamamba Maoncha

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16.00-16.15	Unlocking Cyanide Dynamics in Cassava (<i>Manihot esculenta</i> Crantz): Pathways, Challenges, and Innovations Ruth Wangari Muriuki, Maurice Oyoo, Joshua Ogendo, Richard Mulwa	Academic Motivation and Student Backgrounds: Laying Foundations for Resilient Education Systems at Laikipia University Isaac G. Gitogo	The Evaluation Report of St Martin CSA's Addiction Treatment Approach and Intensive Outpatient Rehabilitation Programme Simon Kingori, Joseph Gakunga	Ufaafu wa Tafsiri ya Ombi la <i>Baba Yetu</i> kutoka Kiingereza hadi Kiswahili na <i>Wimbo wa Taifa</i> la Kenya kutoka Kiswahili hadi Kiingereza. Virginia Mwathi, Larry Ndivo
16.15-16.30	Evaluation of the Response of Maize Inbred Lines to Agroinfection by Three Virulent Maize Streak Virus Isolates Daniel Pande, Darren Patrick Martin, Mathews Mito Dida	Blockchain Model for Secure Academic Transcript Transfer Daisy Jeruto, Alex Kibet, Nelson Masese	Placental foetal–maternal Innate Immune Responses to Placental Malaria Francis Kobia	Arki Za Utaifa Wa Jamii Ya Akamba Munyao Josephine Kanini
16.30-16.45	Borrow Pits Conversion for Aquaculture Promotion in Kenyan ASALs Joseph Mwangi Kiragu, Wanjiku Chiuri, Sheila Jepchirchir	Understanding Mental Illness: A Comprehensive Review of The Effect of Mental Illnesses on Academic Achievement in High School Students, Nakuru County, Kenya Susan Moraa Abuya, Naftal Michira Nyang'ara	Assessment of Fluoride, Phosphates and Selected Physico–Chemical Parameters of Water and Sediments in River Kerio, Elgeyo Marakwet County, Kenya Rotino X. Y., Nguta C. M.	Bridging the Knowledge Gap: Evaluating Communication Strategies for Substance Abuse Prevention Through Student Perceptions Juliet Atieno Oduor
16.45-17.15	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS
17.15 - 17.45	HEALTH BREAK AND DEPARTURE FOR THE DAY			

DAY TWO	THURSDAY, 29TH MAY 2025			
8.30 – 9.00	Registration: Secretariat, Directorate of Research, Human Rights and Gender RECAP OF DAY ONE			
EVENT	MORNING SESSION PLENARY			
VENUE	ROOM ONE			
CHAIR	Dr. Emily Chebeyeo Cheshari <i>Laikipia University</i>			
RAPPORTEUR	Dr. Florence Mwithi			
	Opening Prayers: Rev. Fr. Dr. Peterson Thumi Kabugi			
9.00 – 9.15	ENTERTAINMENT			
9.15 - 9.55	Keynote Address: <i>Research and Innovation: Pathway for Addressing Global Challenges</i> Dr. Frank Ndakala, PhD, Assistant Director, State Department for Higher Education and Research (SDHE&R), Ministry of Education, and Member of Laikipia University Council			
9.55 – 10.10	Engaging Alumni in Collaborative Partnerships and Institutional Linkages Mr. Jesse Mwangi Ndegwa, The Chair, Laikipia University Alumni Association			
EVENT	PARALLEL SESSIONS			
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [3]	EDUCATION AND KNOWLEDGE TRANSFER [3]	GLOBAL HEALTH FOR EQUITY, SUSTAINABILITY, AND RESILIENCE [2]	GOVERNANCE AND POLICY INNOVATION FOR SOCIAL JUSTICE AND EQUITY [1]
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
CHAIR	Prof. Paul Kimurto <i>Egerton University</i>	Ms. Pauline Kariuki <i>Nyandarua National Polytechnic</i>	Prof. Wendo Nabea <i>Laikipia University</i>	Prof. Babere Chacha <i>Laikipia University</i>
RAPPORTEUR	Mr. Kevin Osala	Ms. Serah Mugure Mbae	Dr. John Njiraini	Mr. Patrick Ogeto
10.30 - 10.45	Effect of Selected Chicken Manure-Charged Biochar on Growth of <i>Ralstonia Solanacearum</i> in Vitro	Quality and Relevance of Vocational Education and Training in Laikipia County, Kenya	Community-Based Interventions to Address Teenage Girls' Mental Health Risks: A Case of	Historical Land Injustice in Mwea: Colonial Policies and The Quest for Social-

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	<i>Ernestine Niyonsaba, Joseph J. Mafurah, Patrick Murerwa</i>	<i>Sarah Roelker, Peter Githae, Lucy Mugo, Paul Mathubi</i>	Laikipia County, Kenya <i>Lucy Wangechi, Lucy Mugo, James Njoroge</i>	Economic Justice <i>Thomas Njiru Gichobi</i>
10.45 – 11.00	Phytochemical Screening of Cucumber (<i>Cucumis sativus</i> L.) Root Extracts and Their Effects on the Biofilm Matrix of Plant Beneficial <i>Bacillus Amyloliquefaciens</i> SQR9. <i>Kimani Veronicah Njeri</i>	Antecedents of Sustainable Development Goals (SDGs) in Curriculum Implementation: A Review of Selected University Academic Programmes <i>Tumwebaze Alicon Auf</i>	Self-Efficacy Implications on Self-Stigma among Students with Lived Experience of Mental Disorder Under St. Martin Mental Health Programme in Nyahururu Town, Kenya <i>Nancy Njoki Irungu, Prisca Tarus, Isacc Kingori</i>	A Tool Kit for Mainstreaming Gender in Community Development <i>Wanjiku Chiuri</i>
11.00 - 11.15	Mapping the Distribution and Diversity of Aflatoxin Producing Fungus Isolates from Groundnut (<i>Arachis Hypogaea</i>) in Kenya and Ethiopia <i>Ogotu Omori, Miriam Karwitha Charimbu, Abdi Mohammed, Paul Kimurto</i>	Digital Technologies for Competency-Based Education and Training in TVET Institutions in Kenya <i>Monica Wahu Ndirangu</i>	Health Literacy Barriers in NCD Communication in Walk-In Walk-Out Clinics among Lactating Mothers in a Nakuru City Slum: A Language Ecology Approach <i>Eliud K. Kirigia</i>	Do Audit Reforms Influence Financial Performance of County Governments in Kenya? The Moderating Role of Legal Framework <i>Titus Kiplagat Kemboi, Samuel O. Onyuma, Kipkemoi Cheruiyot</i>
11.15 – 11.30	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS
11.30 - 12.00	HEALTH BREAK			
EVENT	PARALLEL SESSIONS			
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [4]	GLOBAL ECONOMIC TRANSFORMATION FOR SUSTAINABLE BUSINESS PRACTICES [1]	GOVERNANCE AND POLICY INNOVATION FOR SOCIAL JUSTICE AND EQUITY [2]	DIGITAL, CREATIVE, AND CROSS-CULTURAL COMMUNICATION [3]
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
CHAIR	Dr. Miriam Karwitha Charimbu Egerton University	Dr. Lucy Wangechi Mureithi Laikipia University	Dr. Benjack Ochieng Laikipia University	Prof. Wendo Nabea Laikipia University
RAPPORTEUR	Ms. Irene Odhiambo	Mr. Jackson Kabuchwa	Mr. Kevin Osala	Dr. Fred Buluma

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12.00 - 12.15	Exiled at the Shoreline: Gender, Climate Change, and the Loss of Intertidal Livelihoods among Small-Scale Women Pelagic Fishers on Lake Victoria Patrick Asango Okanga	Trans-border Data Flows and AI Innovation Challenges in the Data Localization Landscape: A Kenyan Perspective Edwin Agata, Alex Kibet	Foucault's Panopticon: The Impact of Surveillance upon the Self-identity of the Child Inmate within the School Centres in Borstal Institutions in Kenya David Asule Mukoba, Felicia Arudo Yieke, Jacintah M. Ndambuki	Taking the lead: How Kenyan universities have taken leadership in digital communication to create a competitive edge James Momanyi, Robert Bisonga Mwebi
12.15 - 12.30	Effects of Inorganic Fertilizer and Rice Husk Biochar on Growth and Yield of Paddy Rice in Ahero, Kenya Anthony AC Mendy, Erick Cheruiyot, Samuel Mwonga	Developing a Cybersecurity Human Vulnerabilities Exposure Index (CSHVEI) Model: A Comprehensive Approach to Assessing Human-Induced Cyber Threats Evaline Waweru, Alex Kibet, Simon Karume	The Institution of the Presidency under Siege: Power, Patronage, and Representation in Kenya Babere Kerata Chacha, Shahid Mubari	Hashtag Politics: Social Media Influencers and The Re-Shaping of the 2022 Presidential Elections in Kenya Thomas Njiru Gichobi, B.K. Chacha
12.30 - 12.45	The Role of Digital Systems in the Dissemination of Crop Production Technologies and the Effects of Climate-Smart Agricultural Practices on the Productivity of Cape Gooseberry in Baringo County Kandagor, J. C., Udoto, M. O., Pande D. O., Ngesa F. U.	Optimal Wealth Allocation to Interest-Bearing Central Bank Digital Currency in Investor Portfolios: A Merton Model Approach Michael Ochieng Obuya Samuel O. Onyuma	Gendered Land Ownership and Labour in Mwea Irrigation Scheme Thomas Njiru Gichobi, John Ndungu Kungu	Exploring Multimodal Literacy Through Digital and Cross-Cultural Communication Eliud Kirigia, Nelson Nderitu
12.45 – 13.00	Effects of Moisture Retention Pit Planting Technique on Growth and Yield of Upland-	A Bibliometric Review of Moderating and Mediating Variables Within a Conceptual	The Paradox of Academic Freedom: The Implications of Curriculum Change and	Digital Citizenship Education and Media and Information Literacy: A

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	Grown Arrowroot: A Climate-Smart Approach <i>Macharia, Joseph Kinyoro</i>	Framework in Business Research <i>Fred C. O. Buluma</i>	University Funding Model on the Marginalized in Kenya <i>Patrick Michael Ogeto, Evelyn Mahero, Peterson Kabugi</i>	Linguistic Analysis of Fake News on Facebook <i>Florence Mwithi</i>
13.00 – 13.15	Characterization of Endophytic Fungi for Inorganic Phosphate Solubilization in Finger Millet (Eleusine Coracana) in Kenya <i>Edinah Chepkemai, Joseph Mafurah, Paul Kimurto</i>			Discursive Construction of Health Narratives: Post-COVID-19 Discourse in Selected East African Newspapers <i>Nancy C. Langat, Jacinta Ndambuki, Florence Mwithi</i>
13.15 – 13.45	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS
13.45 – 14.45	HEALTH BREAK			
15.00 – 19.00	EXCURSION: A WALK THROUGH LAIKIPIA UNIVERSITY ENVIRONS *THE SUBUKIA SHRINE* COCKTAIL			
19.00	DEPARTURE FOR THE DAY			

DAY THREE	FRIDAY, 30 TH MAY 2025			
8.30 – 9.00	Registration: Secretariat, Directorate of Research, Human Rights and Gender RECAP OF DAY TWO			
EVENT	MORNING SESSION PLENARY			
VENUE	ROOM ONE			
CHAIR	Dr. Peter Githae <i>Laikipia University</i>			
RAPPORTEUR	Dr. Florence Mwithi			
	Opening Prayers: Volunteer			
9.00 – 9.15	ENTERTAINMENT			
9.15 - 9.55	Keynote Address: <i>Topic: Systems Approaches to Agricultural Innovations: Insights from the CGIAR</i> Dr. Josey Kamanda, PhD, Researcher on Innovation Scaling and Agribusiness Acceleration - The International Water Management Institute (IMWI)			
EVENT	PARALLEL SESSIONS			
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [5]	EDUCATION AND KNOWLEDGE TRANSFER [5]	LEVERAGING INDIGENOUS K] KNOWLEDGE [1]	GLOBAL ECONOMIC TRANSFORMATION FOR SUSTAINABLE BUSINESS PRACTICES [2]
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
CHAIR	Dr. Mercy Wamalwa <i>Egerton University</i>	Dr. Lucy Wangechi Mureithi <i>Laikipia University</i>	Dr. Peter Githae <i>Laikipia University</i>	Dr. Benjack Ochieng <i>Laikipia University</i>
RAPPORTEUR	Dr. Jannet Nyukuri	Mr. Jackson Kabuchwa	Mr. Patrick Ogeto	Dr. Fred Buluma
10.15 - 10.30	Effects of Gamma Irradiation on the Morphological Properties of Wheat (<i>Triticum aestivum</i> L.) <i>Njoroge J. Wamuyu, Muga C. Ope, Miriam K.</i>	Influence of Occupational Stress on Work Performance Among Kenya Police Officers in Njoro Sub-County, Kenya	Echoes of Wisdom: The Use of Proverbs in Kikuyu Secular Songs to Sustain Indigenous Knowledge <i>Lucy Mugo</i>	Effect of Social Norms on The Efficiency of Cash Transfer Programs by National Government in Mukuru

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	Charimbu, Wamalwa M. Nasimiyu	Biwott S. Noah, Naftal Nyang'ara		Kwa Njenga, Kenya Lesilamba Samson, Asaneth Lagat, Clement Achimba, Fred Buluma
10.30 – 10.45	Establishing the Spatial Distribution of Fusarium Head Blight Disease in Wheat (<i>Triticum Aestivum</i> L.) Growing Areas in Kenya Benson Atambo Ogaro, Mercy Nasimiyu Wamalwa, Miriam Karwitha Charimbu	The Role of International Organizations in Equity-Based Policy Reform in TVET Institutions: A Case Study of Nyandarua County TVETs, Kenya Rhodah Ndung'u	Indigenous Psychological Wisdom Expressed in Keiyo Proverbs and riddles: Towards leveraging indigenous knowledge in navigating Global Challenges Prisca Tarus	Do Governance Reforms have Influence on Securities Market Performance? Evidence from Kenya Kipkemoi Cheruiyot, Samuel O. Onyuma, Titus K. Kemboi
10.45 - 11.00	Screening of Finger Millet (<i>Eleusine Coracana</i>) Genotypes for Resistance to Blast (<i>Pyricularia Grisea</i>) Disease in Kenya Lilian Jeptanui Samoei, Miriam Charimbu Henry Ojulong Paul Kimurto	Integration of ICT on Security in TVET Institutions. A Case Study of Nyandarua National Polytechnic Serah Mugure Mbae	Kaya Kauma Forest Shrine Indigenous Ecological Knowledge; Contemporary Lessons for Resilience and Conservation in Anthropocene John Mwangi, B.K. Chacha, Peterson Kabugi	Bayesian Estimation of the Nexus between Adaptation to Climate Change and Agriculture Production in Kenya Stella Muhanji
11.00 – 11.15	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS
11.15 – 11.45	HEALTH BREAK			
EVENT	PARALLEL SESSIONS			
SUB-THEME	CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY [6]	EDUCATION AND KNOWLEDGE TRANSFER [5]	MACHINE LEARNING AND DATA SCIENCE [1]	GLOBAL ECONOMIC TRANSFORMATION FOR SUSTAINABLE BUSINESS PRACTICES [3]
VENUE	ROOM ONE	ROOM TWO	ROOM THREE	ROOM FOUR
CHAIR	Prof. Paul Kimurto Egerton University	Dr. Lucy Wangechi Mureithi	Dr. Emily Chebeyeo Cheshari	Prof. Stella Muhanji Laikipia University

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		<i>Laikipia University</i>	<i>Laikipia University</i>	
RAPPORTEUR	Dr. Jannet Nyukuri	Ms. Rhoda Ndung'u	Mr. Jackson Kabuchwa	Mr. Kevin Osala
11.45 - 12.00	Genotype by Environment Interaction on Resistance to Cassava Mosaic and Cassava Brown Streak Diseases and Root Trait Agronomic Performance in Western Kenya <i>Obare Ivan, Charimbu Miriam Charimbu, Mafurah Joseph, Morag E. Ferguson, Woyengo V. W., Mutoni C.</i>	The Impact of TVET on Industry Labour Demands for Sustainable Development in Kenya: An Investigative Study <i>Pauline W. Kariuki</i>	Market Factors Influencing Contraceptive Products Switching Behaviour by University Students in Kenya: A Case Study of Laikipia University <i>Njuguna, P.M., Kariuki, J.N., Ndung'u, M.J., Siwa, D.</i>	Financial Literacy, Self-Efficacy, and Retirement Savings Behaviour: A Systematic Review <i>Damaris Wanjiku, Samuel O. Onyuma</i>
12.00 - 12.15	Economic Benefit Analysis of IR Maize Technology over Local Landraces in Maize Production in Western Kenya <i>Sibuti M.S., Kimurto P.K., Ogendo J.O.</i>	Integration of Expert Systems in TVET Libraries Amidst the 4IR Era in Kenya <i>Wilson Kabucho Wambui</i>	Leveraging Artificial Intelligence in Academic Libraries: Unveiling Its Application and Challenges in Enhancing Service Delivery <i>Dancan M. Waiguru, Emily Musembi</i>	A Literature Review on Investment-Risk Management Practices and Financial Performance of Pension Funds in Kenya <i>Richard M. Savali, Samuel Onyuma</i>
12.15 - 12.30	Efficacy and Economics of Bio-pesticides in the Management of Fall Armyworm (<i>Spodoptera frugiperda</i>) in Sorghum (<i>Sorghum bicolor</i>) in Semi-arid Tropics <i>Njogu, N.W, Kimurto, P.K., Kamau, A., Manyasa, E., Gangarao Rao, Charimbu M.K, Towett, B. K.</i>		Integration of Artificial Intelligence in Corporate Financial Management: Transformations, Challenges, and Future Prospects in the Financial Industry <i>Mwaka S. Musembi, Samuel Onyuma</i>	Adoption of Cryptocurrency in Kenya: What Are the Emerging Opportunities, Challenges and Policy Implications? <i>Daniel O. Siwa, Samuel Onyuma</i>
12.30 - 12.45	The Effects of Legume-Vegetable Intercropping and Different Nitrogen Rates on Nitrous Oxide Emissions and		Predictive Model for Forecasting Success Rate in Implementation of	Audit Trail Efficiency in the Blockchain Era: Leveraging Decentralized Ledgers

Vision: Nurture and Transform for the World

Mission: To contribute to the world through Education, Research, Consultancy, Innovation, Outreach and Collaboration.



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	Land Use Efficiency Ruth Obara, Joyce J. Lelei, Paul K. Kimurto, Lukas Pawera		County Integrated Development Plans: A Case Study of Laikipia County. Alex Kibet, Silas Kamanda Wataki, Kevin Mwaniki, Leah Letunta, Jackson Kabuchwa, Susan Karaya, Jeremiah Kihanya	for Enhanced Transparency and Accountability in Financial Services Anne Lodenyi Bulimu, Samuel O. Onyuma
12.45 - 13.00	Primary Causes of Environmental Degradation and Sustainability in Kenya: Do Energy Poverty and Tourism Matter? Poti Owili Abaja		Influence of Artificial Intelligence on The Efficiency and Accuracy of Credit Scoring in Digital Lending in Kenya Benjack Ochieng, Rael Onyango	The Role of Market Perception in the Sustainability of Public Universities in Kenya Amy Ndunge Vundi
13.00 - 13.25	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS	SESSION DISCUSSIONS
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VENUE	ROOM ONE			
CHAIR	Prof. John Kiumi Kanjogu, Deputy Vice Chancellor, Academic, Research and Student Affairs			
RAPPORTEUR	Dr. Florence Mwithi, Member of the Abstracts and Programmes Sub-Committee			
13.25- 13.35	Preparing Quality Papers for Publication, Prof. Felicia Arudo Yieke			
13.35 - 13.45	Closing Remarks: Abstracts and Programmes Sub-Committee Vice Chair, Dr. Peter Githae			
13.45- 14.05	Official Closing: Deputy Vice Chancellor, Administration, Finance and Planning, Prof. Patience Mshenga			
14.05 – 14.10	Vote of Thanks: Director, Research, Human Rights and Gender, Dr. Barnabas Kurgat			
14.10 - 14.20	Closing Prayers: University Chaplain, Rev. Fr. Dr. Peterson Thumi Kabugi			
14.20 - 15.00	LATE LUNCH AND DEPARTURE			

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ABSTRACTS



THEMATIC AREA:

DIGITAL, CREATIVE, AND CROSS-CULTURAL COMMUNICATION



Digital Colonialism from the Ground Up: Tech Giants, Epistemic Power, and Knowledge Control in Kenya

Antony Kago Waithiru

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This paper critically examines how global technology corporations exert epistemic power and shape knowledge hierarchies in Kenya, revealing the contemporary face of digital colonialism. The objective is to interrogate how these corporations shape digital knowledge production and reinforce neocolonial hierarchies through algorithmic and platform-based systems. While tech giants such as Google, Meta, and Microsoft present themselves as engines of connectivity and innovation, their platforms often reproduce asymmetrical structures of knowledge production, access, and authority, particularly in formerly colonized regions such as Kenya. Through a grounded analysis rooted in Kenya's digital education landscape, language practices, search engine behaviours, and AI-powered content moderation, the study interrogates how these corporations determine what is seen, heard, and validated as "knowledge." Drawing from postcolonial theory, critical data studies, and epistemic injustice frameworks, the paper explores how algorithmic infrastructures, broadly trained on Western-centric data, marginalize local languages, epistemologies, and content creators. The research employs a qualitative methodology that combines digital ethnography, policy analysis, and interviews with educators, developers, and digital users in Kenya. By centring local experiences and narratives, the study reveals how algorithmic systems are not neutral tools but agents of cultural encoding, reinforcing neocolonial relations under the guise of digital progress. This work argues for the urgent need to reclaim digital agency through localized infrastructures, culturally aware AI systems, and equitable data governance frameworks. In doing so, it challenges dominant techno-utopian narratives and contributes to a broader conversation on decolonizing digital futures. Ultimately, this paper positions Kenya not just as a site of extraction or intervention, but as a critical node in the global struggle for epistemic sovereignty.

Keywords: Algorithmic infrastructure, decolonization, epistemic justice, knowledge production, neocolonialism

COVID-19 as A Catalyst for Technological Advancement and Educational Expansion: Reflecting on The Kenyan Experience

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The COVID-19 pandemic significantly accelerated technological advancement and educational expansion in Kenya, reshaping traditional systems and fostering digital transformation. With the closure of physical institutions, e-learning platforms, virtual classrooms, and digital collaboration tools became indispensable, compelling educational institutions to adopt innovative teaching methods. Government initiatives, such as the Kenya Education Cloud and digital learning programs, were strengthened to bridge accessibility gaps, though challenges such as the digital divide and infrastructure

limitations persisted. The crisis also spurred telemedicine, e-commerce, and fintech advancements, enhancing service delivery across various sectors. Mobile technology played a crucial role, with increased reliance on mobile banking, online transactions, and digital health services, further integrating technology into daily life. Public and private partnerships emerged to support internet accessibility and device affordability, ensuring broader inclusion in digital learning and economic activities. However, connectivity and socioeconomic status disparities created inequalities in access to education and technology, highlighting the need for sustained investment in ICT infrastructure. Despite these challenges, COVID-19 catalysed a shift towards a more tech-driven society, demonstrating the resilience and adaptability of Kenya's educational and technological landscape. The long-term implications include a more hybrid approach to education, increased digital literacy, and a strengthened framework for future crises. Kenya's experience underscores the role of crises in driving innovation and policy reforms, positioning technology as a fundamental pillar for socio-economic development.

Keywords: COVID-19, e-learning, digital transformation, Kenya, technological advancement

Digital Citizenship Education and Media and Information Literacy: A Linguistic Analysis of Fake News on Facebook

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Digital communication and social media have reshaped fake news, increasing access to information while amplifying misinformation. During crises like the COVID-19 pandemic and the Myanmar earthquake, false and AI-generated content spread widely, highlighting the enduring and widespread impact of fake news. This study explores the linguistic dimensions of fake news by addressing key questions: What linguistic features define fake news texts, and how can their language be meaningfully analyzed? What is the importance of fake news? Elections are typically magnets for disinformation. Given the situation, it is likely that a surge of false information is bound to wind up on social media. It emphasizes that fake news is inherently a linguistic issue and thus requires linguistic tools for effective analysis. This study investigates the fake news surrounding the African Union Commission Chair elections leading to the February 2025 polls. Five Facebook texts were analyzed, revealing a surge of misinformation during the campaign period. Notably, on the eve of the AUC-hosted "Mjadala Afrika" debate on December 13, 2024, a fake opinion poll circulated on Kenyan social media, using the logo of Amani Africa, falsely showing Odinga leading with 80 percent, while Djibouti's Mahamoud Ali Youssouf had 8 percent, and Madagascar's Richard Randriamandrato had 2 percent. Amani Africa later discredited the graphic, labeling it "fake." Despite limited linguistic analysis of fake news, it is inherently a linguistic issue. This study will examine it using a multimodal approach, combining textual and visual analysis, and grounded in linguistic theory. The study aims to enhance understanding of how language is used to construct fake news and its broader societal implications. It contributes to Digital Citizenship Education and Media and Information Literacy, equipping individuals with critical thinking skills to navigate misinformation, particularly in the era of AI-driven communication.

Keywords: Digital citizenship education, fake news, misinformation and disinformation, media and information literacy

Creativity in Digital Protests: Exploring Thematic Expressions in Anti-Police Brutality Tweets by Kenyans on Twitter Community

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In the face of rising social injustices, particularly incidents of police brutality, citizens across the world are increasingly turning to digital platforms to voice dissent, mobilize support, and demand accountability. As an interactive and public platform, Twitter has become a powerful tool for digital protests. This paper investigates how Kenyans on Twitter creatively utilize the platform to protest and demand accountability for police brutality. Situated within the broader discourse of digital activism, the study focuses on identifying the dominant themes communicated in anti-police brutality tweets and analysing how these themes are creatively expressed through Twitter's unique technological affordances. Using a hashtag-based case study approach, the study purposively samples a corpus of tweets associated with a highly publicized incident of police brutality in Kenya, under the hashtag #JusticeforKianjokomaBrothers. A qualitative thematic analysis is employed to identify and interpret the key themes communicated in the tweets. The findings reveal a range of persuasive and affective themes, including calls to action, critiques of authority, information sharing, emotional expression, solidarity, social commentary, and collective mourning and memorialization. The themes are communicated through a blend of creative strategies such as unconventional orthography, ideologically charged lexical choices, hashtags, emojis, images, and video clips. The findings demonstrate how Twitter functions not only as a tool for communication but also as a platform for creative civic expression. By foregrounding the communicative ingenuity of digital protests, this study enhances the understanding of how users reimagine the Twitter platform as a site for advocacy. It highlights the potential of digital spaces to support civic participation in contexts marked by repression and inequality, contributing to broader conversations on the critical role of innovation in digital communication for navigating global challenges and building social resilience.

Keywords: Digital activism, hashtag-based protest, police brutality, thematic analysis, Twitter

Taking The Lead: How Kenyan Universities Have Taken Leadership in Digital Communication to Create a Competitive Edge

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In an increasingly digitalized world, effective communication in higher education has become pivotal in shaping institutional visibility, stakeholder engagement, and global competitiveness. This study explores how Kenyan universities have demonstrated leadership in digital communication to gain a competitive edge in the face of evolving global challenges. This study aims to investigate how digital communication has become integral in navigating various challenges and building resilience in Kenya's higher education ecosystem. The research is grounded on the theory of Diffusion of Innovations, which examines how new technologies are adopted within organizations. It will discuss the impact of three potential variables and the influence of their usage on leveraging universities' operations and students' learning outcomes in Kenya. The three variables include: user-friendly student admission portals, online learning platforms, and digital media communication for students and



communities. The study will use a mixed-methods approach involving content analysis of institutional digital platforms, in-depth interviews with communication and PR officers, and selected university case studies to uncover innovative strategies adopted to enhance online presence, brand reputation, and stakeholder connectivity. The study will highlight the unique approaches of Kenyan institutions in navigating the complex landscape of digital communication and contribute to the discourse on digital innovation and resilience-building in the Global South. The findings from the study will offer practical implications for universities worldwide seeking to strengthen their communication frameworks amid uncertainty and competition.

Keywords: Content delivery, digital communication, Kenyan universities, leadership communication, social media platforms

Linguistic Strategies in Digital Discourse: Identity Construction and Ideological Framing in Kenyan Women's Magazines

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This paper examines the linguistic strategies employed in Kenyan women's magazines to construct identity and frame ideological stances in digital communication contexts. Through critical discourse analysis of *True Love East Africa* and *The Parents Magazines* of Kenya, the study investigates three key linguistic features: code-switching, hashtags, and word stringing (compound word formation). The findings reveal that these linguistic strategies serve as powerful tools for identity construction, ideological positioning, and cross-cultural communication. Analysis of magazine content published between 2019-2020 reveals these linguistic devices serve multiple functions: code-switching between English and Swahili functions as a mechanism for cultural authentication, resistance against patriarchal norms, and inclusivity enabling cultural navigation between global and local identities; hashtags create communities of practice, engagement and frame ideological stances on social issues particularly in environmental activism and women's rights movements, while reinforcing brand ideologies; and word stringing techniques generate powerful ideological statements that foster collective identities and amplify emotional resonance allowing linguistic innovation that challenges traditional gender narratives. The findings demonstrate how digital communication practices in print media reflect broader sociocultural negotiations of women's identities in contemporary Kenyan society, situated at the intersection of traditional values and global feminist discourses. This research contributes to understanding how digital linguistic practices transmit cultural meaning and shape gender identities in African media contexts in an increasingly globalized communication landscape.

Keywords: Code-switching, critical discourse analysis, hashtags, identity construction, word stringing

Arki Za Utaifa Wa Jamii Ya Akamba

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Utaifa wa kijamii hujitokeza katika tanzu mbalimbali za sanaa. Wanadamu hutumia fasihi yao kuendeleza utaifa wa kijamii ili kuelezea asili yao, changamoto zinazowakabili, maadili ya kijamii, maono na ushindi wao. Pana haja ya kuhifadhi fasihi simulizi ya Akamba kama msingi wa utamaduni wa jamii ya Akamba katika ulimwengu ambao unazidi kubadilika, ambapo nafasi ya utambulisho wa kijamii inachukuliwa na utambulisho wa kimataifa. Lengo la utafiti huu lilikuwa kuchunguza jinsi nyimbo pendwa za mwanamuziki Ken wa Maria zinavyoendeleza utaifa wa jamii ya Akamba. Madhumuni ya utafiti huu yalikuwa kuchunguza arki za utaifa wa jamii ya Akamba katika nyimbo pendwa teule za Ken wa Maria. Utafiti huu uliongozwa na Nadharia ya Utaifa iliyoasisiwa na David Smith. Nadharia ya Utaifa hueleza kwamba ili utaifa wa jamii uwepo lazima jamii hiyo iweze kumiliki utamaduni mmoja, lugha, imani ya dini na historia. Mihimili ya nadharia hii ndiyo iliyoelekeza utafiti huu wakati wa kukusanya, kuchanganua na kuwasilisha data kwa kuzingatia madhumuni ya utafiti. Muundo wa utafiti huu ni muundo elezi. Utafiti huu ulifanyiwa katika maktaba ili kupata data. Sampuli ya kimakusudi ilitumika ili kupata nyimbo 24 ambazo zilipakuliwa kutoka mtandao wa YouTube na Mdundo.com. Nyimbo hizi zilitafsiriwa katika lugha ya Kiswahili kisha kuchanganuliwa ili kubainisha arki za utaifa wa jamii ya Akamba. Data ilichanganuliwa na matokeo yake kufafanuliwa kwa kutumia mbinu ya kimaelezo. Uwasilishaji wa data ya utafiti ulifanywa kwa njia ya kimaelezo. Utafiti huu ulibaini kwamba kunazo arki za utaifa katika nyimbo pendwa za Ken wa Maria kama vile utambulisho wa kiutamaduni na kijamii, utamaduni, historia na ikolojia. Utafiti huu ulionyesha nafasi ya nyimbo pendwa katika makuzi ya utaifa wa jamii. Vilevile utafiti huu utaongezea maarifa ya kinadharia kuhusu utunzi wa nyimbo pendwa. Utafiti huu utawafaidi watafiti wa fasihi simulizi katika kutambua mchango wa nyimbo pendwa katika fasihi simulizi. Utafiti zaidi unaweza kufanywa kuhusiana na mada hii hasa jinsi wasanii wengine kutoka jamii ya Akamba wanavyotalii suala la ujenzi wa utaifa wa jamii.

Ililahi Muhimu: Arki za utaifa, nyimbo pendwa, utafa, utaifa wa kijamii, utamaduni

English Translation

This study examines how popular songs by Ken wa Maria promote nationalism among the Akamba community, highlighting the role of music in conveying shared origins, values, threats, and cultural identity. Rooted in David Smith's nationalism theory, which posits that ethno-nationalism thrives on shared culture, religion, history, and language, the research investigates elements of nationalism within 24 purposively sampled songs. These were transcribed, translated into Kiswahili, and analyzed qualitatively. The findings reveal recurring themes such as Kamba cultural practices, gendered identity, historical references, and geographic markers. The study underscores the role of popular music in fostering ethno-nationalism and contributes to the discourse on music in oral literature, offering valuable insights for scholars in the field.

Ufaafu wa Tafsiri ya Ombi la *Baba Yetu* kutoka Kiingereza hadi Kiswahili na *Wimbo wa Taifa* la Kenya kutoka Kiswahili hadi Kiingereza

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Makala hii itachunguza ufaafu wa tafsiri ya ombi la *Baba Yetu* na *Wimbo wa Taifa* wa Kenya kutoka Kiingereza hadi Kiswahili. Lengo letu ni kudhihirisha ufaafu na udhaifu wa tafsiri hizi. Sanaa ya tafsiri ni muhimu sana katika ulimwengu wa sasa. Imewezesha mawasiliano ya kimataifa hasa katika elimu, biashara na shughuli za kidiplomasia. Kwa upande mwingine, tafsiri tunakubali kuwa mchakato wa tafsiri hukumbwa na vizuizi kama vile vya kitamaduni na kimuktadha na hata tofauti za kisarufi katika lugha tofauti. Kwa hayo yote, tunaamini kuwa tafsiri ina ufanifu mkubwa kuliko udhaifu. Katika makala hii, matini asili na matini lengwa zitasomwa, vipengele vya ufaafu na udhaifu kudondolewa kisha mtafiti atatoa msimamo wake akiongozwa na Nadharia ya Tafsiri ya Newmark. Utafiti huu utakuwa wenye manufaa kwa wanafunzi, wahadhiri na wasomi wengine katika uwanja wa tafsiri kwa vile utakuwa rejeleo muhimu katika kazi za tafsiri. Kwa kufanya hivi, tunaamini kuwa tafsiri sahihi ni kichocheo katika mafanikio ya mawasiliano.

Istilahi muhimu: Lugha asili, lugha lengwa, tafsiri, udhaifu, ufaafu

English Translation

This article will research the appropriateness of the translation of the *Lord's Prayer* from English to Kiswahili and the *Kenyan National Anthem* from Kiswahili to English. The researchers' objective is to show the appropriateness and weaknesses of these translations. The art of translation is vital in the modern world. It has enabled international communication, especially in education, business, and diplomatic activities. On the other hand, the researchers agree that the process of translation is usually affected by barriers that include cultural and contextual ones, plus differences in grammar in different languages. Above all, the researcher holds that translation should have more successes than weaknesses. In this article, the source texts and target texts will be read, features of successes and weaknesses extracted, and from there, the researchers will give their stand while being guided by Newmark's Theory of Translation. The researchers hypothesize that the results of the research will be meaning loss and meaning gain in the target text in greater quantities than maintenance of the original meaning. These can be a result of the translator failing to observe or understand properly the context and culture of the source text and the culture of the target text. This research will be of great importance to students, lecturers, and other scholars who are in the field of translation, for it will be an essential reference in translation work. By doing this, the researchers believe that appropriate translation is a critical factor in successful communication.

Keywords: Appropriateness, target text, translation, source text, weakness

Bridging The Knowledge Gap: Evaluating Communication Strategies for Substance Abuse Prevention Through Student Perceptions

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Persistent Substance Abuse (SA) among university students, despite advocacy efforts, has been linked to communication inefficiencies. Conversely, while Social Networking Sites (SNSs) are increasingly being used for such messaging, audience perceptions of these platforms can influence their message reception. Applying a convergent mixed-methods design and using Laikipia University as a case study, this study examined first- and second-year students' perceptions of the institution's communication approaches on substance abuse prevention. The objective was to assess the students' perceived effectiveness, clarity, and relevance of these communication efforts to identify potential areas for improvement to enhance prevention outcomes. The results revealed that while the students acknowledged the university's use of both traditional and online channels, they preferred online platforms and desired content tailored to the affordances of the SNSs. This suggests a potential disconnect between the university's current communication strategies and student preferences.

Keywords: Communication strategies, perceptions, Social Networking Sites (SNSs), substance abuse, university students

Exploring Multimodal Literacy Through Digital and Cross-Cultural Communication

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In an increasingly digital and globalized world, traditional forms of communication are often inadequate for conveying meaning across diverse cultural and linguistic contexts. This highlights the growing need to understand how individuals use digital tools to navigate meaning-making in multicultural settings. This study explores how digital technologies support the development of multimodal literacy in cross-cultural communication. Multimodal literacy, which involves interpreting and producing meaning through various modes such as text, visuals, audio, and video, is essential in today's media-rich environments. The proposed research focuses on emojis and Graphics Interchange Format (GIFs) as visual tools that enable creative and culturally inclusive expression beyond language barriers. Grounded in Symbolic Interactionism theory, the study examines how young people use these tools to construct meaning and engage with others across cultural divides. The key objectives of this study are to investigate how digital tools like emojis and GIFs enhance multimodal literacy, examine how these tools facilitate intercultural communication among young people, and establish the challenges and benefits of using visual digital tools in cross-cultural contexts. A mixed-methods approach is used, involving 50 participants aged 18 to 25 from diverse academic backgrounds. Data will be gathered through questionnaires and semi-structured interviews with a subset of 10 participants to gain deeper insights into their experiences. Findings aim to contribute to broader discussions in digital communication, creative expression, and intercultural literacy, emphasizing the growing influence of digital media on global interaction.

Keywords: Creative expression, digital tools, Emojis and GIFs, intercultural communication, multimodal literacy

Pragmatics Meets Technology: Creative Solutions for Enhancing Meaning Transfer in Courtroom Interpretation

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In multilingual courtrooms, the interpretation of legal discourse goes beyond the literal transfer of words; it demands a nuanced understanding of context, intention, and cultural framing. This paper explores the intersection of pragmatic theory and digital innovation to address persistent challenges in courtroom translation and interpretation. Drawing from Mey's Pragmatic Act Theory and real courtroom data from Kenyan courts, the study examines how meaning is co-constructed between litigants, interpreters, and judicial officers, and how digital tools can support or hinder this process. The paper critically evaluates existing digital interpreting tools, including speech recognition software, machine translation, and transcription services, assessing their capacity to capture pragmatic meaning. It proposes a creative, human-centred framework for integrating pragmatic awareness into technology design, focusing on interpreter-aided platforms, AI-enhanced legal corpora, and culturally adaptive interfaces. Ultimately, the study advocates for a blended model where technology enhances, rather than replaces human interpretation. This approach not only preserves communicative integrity across languages and cultures but also strengthens access to justice in an era of digital transformation.

Keywords: Courtroom interpretation, digital tools, pragmatic act, meaning transfer, multilingual justice

Discursive Construction of Health Narratives: Post COVID-19 Discourse in Selected East African Newspapers

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The aftermath of the COVID-19 pandemic has significantly influenced the discourse on health, diseases, and treatment. This study investigates how post-pandemic narratives are constructed, focusing on the language used to discuss physical, mental, and relational health. Data is drawn from two mainstream East African newspapers, namely, The Daily Nation and The Citizen. A corpus of 300,000 tokens published between March 2023 and March 2024 is analysed using corpus linguistics as a methodology. Schema theory is employed as a framework. Data analysis uncovers prevalent themes and linguistic patterns that shape public understanding and response to health issues. The findings indicate that post COVID-19 discourse is marked by a dual focus on the lingering impacts of the pandemic and the resilience of communities. Physical health narratives continue to emphasize the importance of vaccination and preventive measures, while addressing the effects of the virus. Mental health discussions have become more prominent, highlighting the psychological challenges faced by individuals and the need for accessible mental health services. Relational health themes explore the evolving dynamics of social interactions, with a particular focus on the strain and adaptation with families and communities. The study further reveals that the media play a crucial role in framing health narratives, often balancing between alarming reports and stories of hope and recovery. However, the media’s tendency towards sensationalism is evident. This sensationalism can exacerbate public anxiety, but it also underscores the importance of critical media literacy among readers. The research findings

highlight the role of media in disseminating crucial health information and fostering public awareness, while also promoting a sense of collective resilience. The research outcomes contribute to a deeper understanding of how media discourse can influence health perceptions and behaviour in the post-pandemic era.

Keywords: Corpus, discourse, framing, health, media

Hashtag Politics: Social Media Influencers and the Re-Shaping of the 2022 Presidential Elections in Kenya

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During Kenya's 2022 presidential elections, social media influencers significantly shaped political discourse, particularly among youth and urban populations. Traditionally known for their influence in sectors like fashion, entertainment, and lifestyle, many influencers ventured into political commentary, advocacy, and campaign promotion, signalling a shift in political communication in the digital age. These digital actors used platforms like Twitter, TikTok, and Instagram to amplify political messages, promote voter engagement, and endorse candidates. Their content, often framed through humour, storytelling, or personal experiences, resonated widely, especially with young voters disillusioned by traditional media and mainstream political narratives. The study will explore how influencers harnessed their online credibility, relatability, and reach to disseminate political messages and how their content shaped public perception and voter behaviour. Particular attention will be given to the blurred boundaries between organic political expression and sponsored political communication, as political campaigns directly contracted some influencers while others acted independently. By focusing on the 2022 presidential elections, the research aims to assess the authenticity, effectiveness, and ethical implications of influencer-driven political discourse in Kenya. It will also evaluate how these digital actors contributed to broader themes such as civic education, misinformation, issue framing, and youth mobilization. Through content analysis, interviews, and digital ethnography, this study will contribute to a deeper understanding of the intersection between digital culture and democratic processes. It seeks to fill a critical gap in existing scholarship on political communication in Africa and provide insights into how social media influencers reshape electoral politics in contemporary Kenya.

Keywords: Digital democracy, electoral discourse, Kenyan politics, political communication, social media influencers

The Contribution of Kiswahili to Coordinated Climate Change Initiatives in the East African Community in the 21st Century

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Climate change is a critical issue affecting the East African region, with severe impacts on agriculture, water resources, and biodiversity. The East African Community (EAC) has been working collaboratively to implement climate change adaptation and mitigation strategies. However, language barriers often impede effective communication and coordination among member states. In exploring



the role of Kiswahili in the East African Community's (EAC) integrated climate change efforts, this paper employs the Linguistic Relativity Theory and the Communication for Development (C4D) Framework. These theories help elucidate how language shapes perceptions, facilitates information exchange, and drives collective action in the context of climate adaptation and mitigation. Methodologically, an in-depth desktop review was conducted and involved the systematic analysis of existing literature, documents, and data sources relevant to this study. This paper explores how Kiswahili, as a widely spoken lingua franca in the EAC, plays a crucial role in bridging communication gaps, disseminating climate information, and enhancing public participation and diplomacy in climate action. By leveraging Kiswahili, the EAC can foster greater regional integration and more effective responses to the challenges posed by climate change.

Keywords: Adaptation and mitigation strategies, climate change initiatives, communication, Kiswahili, East African Community (EAC)

The Functionality of Proverbs in Fostering Critical Thinking, Creativity, Communication and Collaboration

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The current study addresses the limited exploration of proverbs' functionality, particularly in promoting societal values that enable individuals to function effectively within their communities. Existing research tends to focus on the surface-level aspects of proverbs, such as their form, content, and role in entertainment and knowledge transfer. However, there is a knowledge gap concerning their utility in fostering essential contemporary skills like critical thinking, creativity, communication, and collaboration. The study sets out to: examine a typology of proverbs to identify thematic concerns; analyze their practical application in developing key intellectual and social competencies; investigate their usage in daily life; and propose strategies for sustaining their relevance. It adopts a qualitative, ethnographic approach, grounded in several theoretical frameworks: cultural theory (proverbs as cultural artifacts), cognitive theory (universal human cognition), sociolinguistic theory (social communication), structural theory (proverbial structure), pragmatic theory (practical usage), and rhetorical theory (persuasive power). The methodology involved purposively sampling 30 Ameru individuals across age and gender, using interviews, focus group discussions, participant observation, and textual analysis for data collection. Findings reveal that proverbs play critical societal roles, from preserving knowledge to serving as educational tools for value transmission. The study concludes that proverbs remain vital across all societal sectors and should be preserved and promoted. Beneficiaries include literary scholars, policymakers, cultural advocates, and the general public, all of whom can gain from a deeper understanding of proverbs' enduring functionality.

Keywords: Critical thinking, functionality, knowledge transfer, proverbs, tradition

THEMATIC AREA:

MACHINE LEARNING AND DATA SCIENCE



Predictive Model for Forecasting Success Rate in Implementation of County Integrated Development Plans: A Case Study of Laikipia County

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This paper presents the development of a predictive model for forecasting the success rate of county integrated development plans (CIDPs), focusing on Laikipia County, Kenya. In Kenya's devolved governance system, CIDPs serve as critical five-year strategic frameworks guiding local development in the 47 counties, including Laikipia County, a region marked by agricultural and tourism potential yet challenged by resource constraints. County governments face numerous challenges in implementing CIDPs, often identifying issues post-implementation, which limits their ability to take timely corrective action, underscoring the need for predictive tools. We propose a machine learning-based predictive model to forecast potential outcomes and risks based on historical data, focusing on Laikipia County, allowing for proactive decision-making. The research reviews existing literature on machine learning applications in strategic planning to identify best practices and key factors influencing success. A comprehensive literature review identified XGBoost as the primary algorithm, valued for its 5–10 percent higher accuracy over alternatives like Random Forest in similar strategic planning contexts. Preliminary findings suggest budget execution (30% contribution), stakeholder engagement (25%), and project monitoring (20%) as key predictors of county integrated development plan implementation success, with a prototype model targeted to be completed by first quarter of 2025/2026 financial year with potential benefits of higher project completion rates and enhanced governance. Targeted at policymakers, county officials, and data scientists, this scalable model offers a blueprint for improving strategic planning across Kenya's counties and similar devolved systems globally.

Keywords: CIDP, Laikipia County, machine learning, predictive model, strategic planning

Influence of Artificial Intelligence on The Efficiency and Accuracy of Credit Scoring in Digital Lending in Kenya

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Kenya has witnessed a rapid evolution in its financial services sector, with digital lending playing a crucial role in fostering economic growth and financial inclusion. However, despite the ease of access to financing through digital lending, the sector has faced many challenges, including increased default rates, collection of loans using unorthodox means, and limited information about the borrower's characteristics to minimize repayment risks, credit risk, fraud, and operational inefficiencies. Based on the frugal innovation theory, this study aims to examine the influence of artificial intelligence on the efficiency and accuracy of credit scoring in digital lending in Kenya. Specifically, the credit scoring accuracy and effectiveness of AI, as well as its efficiency in processing credits/loans and its role in aiding customer and institutional outcomes, will be assessed. A mixed-method approach, incorporating structured surveys and interviews, will be used to gather data from Kenya's 32 regulated digital lenders

by adopting a descriptive research design. Information to be gathered will cover the period that each firm adopted AI technology up to 2025. Validity and reliability will be tested using content validity and Cronbach alpha. This study aims to provide insights into how AI-powered digital lending can be leveraged to reach and include the unbanked population. Similarly, the solutions that will be generated are aimed at maximizing AI's effectiveness and relevance within Kenya's socio-economic and cultural context.

Keywords: Artificial intelligence, credit scoring, digital lending

Leveraging Artificial Intelligence in Academic Libraries: Unveiling Its Application and Challenges in Enhancing Service Delivery

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Artificial intelligence (AI) is one of the major developments of the Fourth Industrial Revolution, specifically in the service delivery frameworks of companies and organizations. As higher education institutions embrace emerging technologies to improve service delivery and increase productivity, academic libraries face the pressure to adapt and innovate. Research examined the applications of artificial intelligence-powered tools in enhancing service delivery in Kenyan academic libraries, alongside emerging opportunities and institutional challenges. Objectives included exploring the application and use of artificial intelligence for effective service delivery in academic libraries, analyzing awareness and perception of artificial intelligence in service delivery among academic librarians and students, and finally, examining the challenges encountered in the application of artificial intelligence for effective service delivery in academic libraries. The study employed a mixed methods research approach that incorporated data collection together with empirical studies, thematic, and content analysis. The researchers collected data using a Google form questionnaire, with responses solicited from a purposively selected Kenyan university library. The data was analysed using both descriptive and inferential statistics. Descriptive statistics consisted of frequencies, percentages, means, standard deviation, and visual representations such as pie charts and graphs were employed to summarize the responses. Inferential analysis using a Chi-square test revealed no significant difference in AI awareness between librarians and students ($\chi^2 = 0.65$, $P = 0.42$), indicating relatively similar awareness levels across the two groups. The findings revealed that the most AI-powered academic library tools used and applied to enhance library service were AI writing assistance and AI-based search engines. Findings also indicated a knowledge gap in AI literacy, as the study showed a large number of librarians and students were unaware of AI applications. Additionally, the findings highlighted that the majority of both students and librarians had a positive perception by acknowledging that AI can improve academic library service delivery. However, fear of job loss, lack of trained expertise, inadequate infrastructure, inadequate training, privacy and security concerns, and high cost of AI implementation were discovered as the major challenges hindering artificial intelligence in academic libraries. Findings contribute to the discourse on AI adoption and implementation in developing countries, where policy recommendations and strategic insights seek to align with global digital trends, and addressing local contextual realities is fundamental.

Keywords: Academic library, AI challenges and application, Artificial Intelligence (AI), service delivery, Kenya

Integration of Artificial Intelligence in Corporate Financial Management: Transformations, Challenges, and Future Prospects in the Financial Industry

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This paper critically examines the role of Artificial Intelligence (AI) in corporate financial management by analyzing its emerging transformations, challenges, and prospects. Even though AI has emerged as a transformative force in organizational management, reshaping traditional practices and enhancing efficiency, accuracy, and decision-making, little is known about how its emergence is transforming the corporate financial management landscape. This paper analyzes the literature and is guided by the customer relationship management theory and Christensen's disruptions theory, and uses a multi-scenario integrative review methodology. It examines the emerging shift in financial management practice by exploring interdisciplinary streams of literature. The paper identifies, discusses, and synthesizes these trends and their implications for corporate financial management. The integrative review revealed that AI-driven technologies such as machine learning, natural language processing, and robotic process automation are adoptable in areas including risk assessment and management, fraud detection, financial forecasting, automatic tax planning, investment advisory, investment management, and financial market sentiment analysis. These innovations enable financial institutions to process vast datasets, automate complex workflows, improve efficiency and data accuracy, and generate real-time insights that will enhance operational performance and customer experience. Despite its immense potential, the integration of AI in corporate financial management presents several challenges. Concerns related to data security, regulatory compliance, algorithmic bias, and ethical implications remain significant obstacles to widespread adoption. Additionally, the financial industry faces a growing need for skilled professionals who interpret AI-driven insights and ensure transparency in AI-based decision-making. Regulatory frameworks are also evolving to address the risks associated with AI, balancing innovation with accountability. The findings provide insights into best practices for AI adoption in businesses. The findings can guide financial institutions, policymakers, and industry practitioners in leveraging AI responsibly while mitigating associated risks.

Keywords: Artificial Intelligence, financial industry, fraud detection, machine learning, risk assessment

JEL Classification: C45, O33, D53, G17

Market Factors Influencing Contraceptive Products Switching Behaviour by University Students in Kenya: A Case Study of Laikipia University

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Approximately 40 to 45 percent of the youth in Kenya have unmet family planning needs. The market factors influencing contraceptive product switching behaviour among the youth have remained unclear to stakeholders. To address this gap, the study investigated the market factors influencing contraceptive product switching behaviour by students at Laikipia University. A descriptive case study research design was adopted. The target population was 8,000 students, leading to a sample size of 380 as

determined by the Cochran sampling formula. Simple random and purposive sampling techniques were adopted for selecting participants. Data collection instruments included an interview guide and a self-administered questionnaire. Both qualitative and quantitative data were collected through in-depth interviews (IDIs) and a survey, respectively. Data analysis was conducted using Python™ software. The findings from IDIs were triangulated with quantitative data using rigorous analyses (multidimensional scaling and hierarchical cluster analysis). The response rate for the survey was 96.3 percent, while the male-to-female ratio was 1:2. 98.6 percent of the respondents were aged between 18 and 35 years. The results indicated that 54.1 percent of the respondents had an intimate partner, 96.1 percent reported good health status, and 49.7 percent to 67.5 percent of respondents were undecided on contraceptive use. Further, the study established that market factors influencing contraceptive products switching behaviour by university students as: side effects/health concerns (23.5%); effectiveness of the product (20.8%); cost/affordability (13.7%); availability and accessibility (12.3%), peer influence (8.5%), experimentation and preference (8.3%); convenience and ease of use (4.5%); education and professional advice (3%); pleasure and experience (2.7%); marketing and external Factors (2.7%). The study concluded that health concerns and the effectiveness of the product were the key factors influencing contraceptive products switching behaviour by university students. It recommends targeted marketing of contraceptives and rigorous sexual-health education programmes that focus on the undecided segment rather than those already against the use of contraceptives.

Keywords: Contraceptive product-switching behaviour, market factors, preventive marketing

THEMATIC AREA:

**GLOBAL HEALTH FOR EQUITY,
SUSTAINABILITY, AND RESILIENCE**



Health Literacy Barriers in NCD Communication in Walk-In Walk-Out Clinics among Lactating Mothers in a Nakuru City Slum: A Language Ecology Approach

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Effective communication is crucial for preventing and managing non-communicable diseases (NCDs). In low-resource, linguistically diverse settings like Nakuru's informal settlements, health literacy barriers, including challenges with digital technology, hinder patient comprehension and engagement. This study applies the Integrated Health Literacy Model by Sørensen et al. (2007) to examine how individuals access, understand, evaluate, and apply health information related to NCDs in walk-in, walk-out clinics. Using a language ecology approach, the research explores how multiple languages, such as Kiswahili, English, local dialects, and Sheng, interact within clinical settings and affect health literacy. It also investigates the role of digital tools, such as mobile health apps and electronic health records, focusing on accessibility and digital literacy barriers. A qualitative design, including observational fieldwork, semi-structured interviews with 20 patients living with NCDs and five healthcare providers, will offer insights. Language and literacy mapping will assess the accessibility of both verbal and digital communication materials. The study aims to identify challenges across the four domains of the Sørensen model: accessing language-appropriate information, understanding medical terms, evaluating advice, and applying health instructions under social and economic constraints. By examining how digital technology impacts these barriers, the study will inform interventions, such as simplified multilingual materials and training for healthcare workers. The findings will benefit scholars in applied linguistics, public health promoters, policymakers, and the general public by improving understanding of how language, literacy, and digital tools shape health outcomes in low-income urban communities, leading to more equitable public health strategies.

Keywords: Digital health communication, health literacy, language ecology, non-communicable diseases

Effects of Economic Status on Exclusive Breastfeeding Among Working Women on Thika Subcounty, Kiambu County, Kenya

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Breastfeeding is essential for infant health, with exclusive breastfeeding (EBF) from birth to six months recommended by the World Health Organization (WHO). EBF involves feeding infants only breast milk, without additional liquids or solids. This study investigated the factors influencing EBF among working-class mothers in Thika Sub-County, Kiambu County, with a specific focus on the impact of economic status. The target population included employed women with infants aged up to six months, in both public and private sectors. Using Yamane's formula, a sample of 222 women was selected. A cross-sectional design was employed, with data collected through questionnaires at Thika Level 5 Hospital. Data analysis was conducted using SPSS version 21, applying both descriptive and inferential statistics to draw conclusions. Tables and figures displayed descriptive results, while chi-square tests of association, regression, correlation, and inferential statistics were used to infer from the data. P Value of

<0.05 was considered significant. The following were the findings., Household income ($p=0.001$), employment status ($p=0.03$). The Odds ratio (OR) indicates that there is also significance in the likelihood that the economic status of a household has an effect on EBF and is also further influenced by other factors like education level. Employment status also had a notable impact, prompting the use of multivariate analysis. Logistic regression revealed that both income level and employment sector significantly influence EBF. The study concluded that economic factors play a critical role in EBF practices. It is recommended that stakeholders support mothers facing economic challenges, particularly through community programmes, to enable low-income working mothers to practice EBF. Further research is suggested to monitor the ongoing impact of economic factors on EBF.

Keyword: Economic status, employment, Exclusive Breastfeeding (EBF), logistic regression, working mothers

A Gendered Policy Landscape for Access to Nutritious Foods among Low-Income Groups in Kenya and Malawi: A Scoping Review

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This scoping review synthesizes literature describing policy approaches to access to nutritious foods among low-income people in Kenya and Malawi from 2015 to March 2024. This is when the United Nations members adopted the Sustainable Development Goals, and the African Union (AU) Heads of State and Governments also implemented the Malabo Declaration, in which the two countries are both signatories. The PRISMA reporting guidelines were adopted, and three electronic databases (Google Scholar, Scopus, and Web of Science) were searched for peer-reviewed articles published in English from 2015 to 2024. A grey literature search was conducted using Google Advanced Search. Drawing upon 25 peer-reviewed journal articles and 17 grey literature documents, the analysis was based on drivers of access to nutritious foods, acquisition, and consumption. The WHO Gender Assessment tool was used to analyse the gender responsiveness of policy documents. The findings in Kenya and Malawi show that most policy texts are gender-blind since the differing nutrition needs of men and women have not been articulated. Notably, women play a central role in healthy eating, particularly in ensuring access to and acquisition of nutritious foods from markets. Yet, they often face challenges in accessing resources such as finances, land, labour, and decision-making power. Men are the primary owners of productive assets and decision-making, while women have a heavy workload that diverts them from more productive activities. Moreover, the review emphasizes the significance of food markets as crucial points for shaping food access and consumption patterns. While both Kenya and Malawi have developed various policy documents addressing food and nutrition security, there is a need for greater integration of gender considerations and food markets. The review concludes by recommending policies that take a gender-responsive approach to addressing food security and promoting the consumption of diverse nutritious foods in these regions.

Keywords: Access, gender, low-income, nutritious diet, policy

Placental Foetal-Maternal Innate Immune Responses to Placental Malaria

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During malaria in pregnancy (MiP), *Plasmodium falciparum*-infected erythrocytes sequester in the placenta, causing placental malaria (PM) and poor pregnancy outcomes, including low birthweight, preterm birth, and stillbirth. Mouse data indicate that the innate immune response to PM on the placenta's maternal side adversely affects the foetus. In response, the placenta's foetal side mounts an innate counterresponse that improves foetal outcomes. However, this has not been observed in human PM. We used histological and molecular analyses to characterize the PM status of bio-banked placentas and corresponding maternal sera. Molecular tools were used to describe innate immune responses to human PM in the foetal and maternal sides of the placenta. Histology and molecular assays showed that 50 percent of women with no history of MiP and received malaria chemoprophylaxis had PM. Among women with MiP history, the PM rate was 70%. RT-qPCR revealed that foetal sides of PM-negative samples had lower levels of Toll-like receptor (TLR)- 4 and 9 when compared with maternal sides of the same placentas. However, in PM-positive placentas, their levels were higher in the foetal sides than the maternal sides of the same placentas. Moreover, TLR4 was significantly upregulated in the maternal sides of PM-positive placentas versus the maternal sides of PM-negative placentas. Intriguingly, TLR4 was significantly upregulated in foetal sides of PM-positive placentas versus foetal sides of PM-free placentas. Immunohistochemical analysis revealed that when compared with PM-negative tissue, PM-positive samples expressed markedly higher levels of 8-hydroxy-2'-deoxyguanosine, a marker of oxidative DNA damage. RT-qPCR showed that this was accompanied by the upregulation of p21, a marker of DNA damage repair. Our data indicate that human PM drives differential innate immune response in foetal vs maternal sides of the placenta, and triggers placental oxidative DNA damage. These observations may have implications for the diagnosis and management of PM.

Keywords: Diagnosis, innate immune response, placental malaria, placenta health, maternal and child health

Community-Based Interventions to Address Teenage Girls' Mental Health Risks: A Case of Laikipia County, Kenya

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This study addressed the critical issues of mental health among teenage girls in Kenya, with a particular focus on Laikipia County. The mental well-being of teenage girls in Kenya is under threat due to various psychosocial factors, including but not limited to gender-based violence, menstrual hygiene, poverty, cultural beliefs, and harmful social norms. These factors have a negative impact on girls' psychological well-being, emotional stability, and self-esteem. Consequently, teenage girls are disproportionately predisposed to mental illnesses such as depression, substance abuse disorders, anxiety, and other behavioral disorders. However, there is a significant gap in data concerning the mental health status of teenage girls in Laikipia despite their heightened vulnerability to numerous risk

factors. The study sought to fill the data gap by conducting research on the mental health status of teenage girls in Laikipia County, identifying key risk factors, and providing actionable community interventions to address these challenges. The study employed a mixed-methods approach, including surveys, interviews, and focus group discussions with teenage girls, their caregivers, mental health professionals, and community stakeholders. According to this study, teenage girls in this region faced higher rates of sexual and physical violence, with 32 percent of girls reporting such experiences compared to 18 percent of boys. Additionally, poverty exacerbated those challenges, as girls from low-income households were more likely to drop out of school and engage in risky behaviors, further affecting their mental health and overall well-being. The consequences of these issues included hindering teenage girls' ability to reach their full potential and contribute meaningfully to society. By focusing on mental health support, the project aimed to improve the resilience and well-being of teenage girls in the region, contributing directly to Sustainable Development Goal (SDG) 3, which promotes good health and well-being for all. Further, the study developed and recommended actionable community interventions such as mental health awareness campaigns, peer support, girls circle groups, and life skills and resilience-building programmes. The study also revealed a deeper understanding of the prevalence and specific psychosocial risks faced by teenage girls in Laikipia County. Ultimately, it is expected that these findings will improve stakeholder awareness, reduce stigma around mental health, foster collaboration among mental health practitioners, educators, and community leaders, and inform policy on improving the lives of teenage girls in Laikipia County.

Keywords: Community-based interventions, mental health, teenage girls, well-being

Efficacy of Counselling Programmes on The Psychosocial Well-being of Survivors of Child Sexual Abuse in Selected Child Rights Advocacy Centres in Nairobi, Kenya

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Child sexual abuse is a serious problem and a challenge to society due to its adverse effects on the psychosocial well-being of survivors. The high prevalence of child maltreatment in Kenya has called for the establishment of Child Rights Advocacy Centres (CRACs) to respond to the psychosocial needs of the survivors through counselling. This study sought to establish whether the existing counselling programs were efficacious in addressing the needs of survivors of child sexual abuse. The study utilized a descriptive survey research design. Purposive sampling was used to obtain a sample size of 172 respondents (78 survivors of CSA (6 to 18 years), 78 parents/caregivers, and 16 counsellors. Data was analysed using both descriptive and inferential statistics. The hypotheses were tested using simple regression analysis at the .05 level of significance. Results on efficacy of counselling programmes were ($F(1,146) = 35.660, p = 0.000$) for individual counselling, $F(1,146) = 26.959, p = 0.000$) for group counselling, $F(1,146) = 35.179, p = 0.000$) for family counselling and $F(1,146) = 44.494, p = 0.000$) for telephone counselling. Hence, the null hypotheses were rejected at .05 level of significance, concluding that individual, group, family, and telephone counselling programmes were statistically significant on the psychosocial wellbeing of child sexual abuse. Overall, respondents felt that their personal needs were generally met within the respective settings. Findings of this study are expected to benefit practicing counsellors/social workers, children, parents/guardians, and other government stakeholders to improve/modify child counselling programmes. The study recommended that the child rights advocacy centres prioritize additional training for therapists to address strategies for mitigating children's fears

during individual and group counselling sessions. There is also a need to develop targeted interventions to increase parental engagement, as well as develop strategies to build trust and establish a sense of safety within telephone counselling sessions.

Keywords: Child rights advocacy, children, counselling programmes, sexual abuse, wellbeing

Self-Efficacy Implications on Self-Stigma among Students with Lived Experience of Mental Disorder Under St. Martín Mental Health Programme in Nyahururu Town, Kenya

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Mental disorder self-stigma among students with lived experience of mental disorder has been highlighted widely. Students are a vulnerable segment of the youth at risk of mental disorder self-stigma, being at the academic, vocational, and social transitional adjustment stage of life. Mental disorder self-stigma may disrupt academic, employment, and social engagement among affected students; thus, their contribution to a country's economic development. The objective of this study was to find out whether self-efficacy has any implications on self-stigma among student beneficiaries with lived experience of mental disorder under the St Martin Mental Health Programme in Nyahururu Town, Kenya. The study was guided by Rational Emotive Behavioural and Person-Centered theories. An Interpretive Phenomenological research design was utilized. The target population was 29 student beneficiaries with lived experience of stress, depression, anxiety, substance abuse, and attempted suicide, and four (4) mental health service providers who attend to beneficiaries under the Mental Health Programme. The sample size was 10 students and all four (4) mental health service providers. Sampling was done by a Proportionate simple random procedure for student participants and a purposive procedure for mental health service providers. Data was collected through an interview schedule, and recorded by audio and field notes, analyzed manually, and subjected to Interpretive Phenomenological Analysis six-step procedures, including data immersion, initial coding, thematic clustering, interpretation of themes, contextualization, and write-up of findings. Findings showed that self-efficacy had some implications on self-stigma among student beneficiaries with lived experiences of mental disorder; so did the nature of mental disorder and whether there was use of prescribed psychiatric medication. Recommendations were: Mental Health Support initiatives in secondary and tertiary institutions should boost positive self-efficacy narratives and consequently address possible self-stigmatization.

Keywords: Lived experience, mental disorder, self-stigma, self-efficacy

Assessment of Fluoride, Phosphates and Selected Physico-Chemical Parameters of Water and Sediments in River Kerio, Elgeyo Marakwet County, Kenya

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The physicochemical characteristics, as well as the fluoride and phosphate levels, for the river Kerio were measured during the dry and wet seasons. Levels of pH, conductivity, turbidity, dissolved oxygen, fluoride, and phosphates in water and sediments were determined using standard analytical methods. The drinking water quality parameters were compared with standards set by the World Health Organization (WHO). The pH of the river water ranged between 7.28 and 9.47, with a mean of 8.05, which was within the range 6.5 – 8.5, the WHO recommended value for potable water. Concentrations of fluoride in water ranged from 0.25 to 5.1 mg/L with a mean of 1.48 mg/L, while that of phosphates ranged from 1 to 3 mg/L with a mean of 2 mg/L. Conductivity of water ranged from 67 to 547 μ S with a mean of 167 μ S, while turbidity ranged from 4.8 to 213 NTU with a mean of 42.45 NTU. Dissolved oxygen levels ranged from 4.3 to 6.7 mg/L with a mean of 5.82 mg/L. Fluorides and phosphates were found to have exceeded WHO guidelines for potable water. The study found that both water and sediments, sampling sites close to the Fluorspar factory effluent discharge point, had the most elevated levels for all parameters except oxygen, indicating a high level of pollution. Although most of the parameters had values that did not exceed WHO maximum limits, consumption of the water may pose a threat to the health of humans, animals, and plants in the long run. Agricultural wastes and poor waste management from the Fluorspar mines are major contributors to the pollution of this river. These elevated concentrations may not only serve as precursors of waterborne diseases, including fluorosis, but also may have a negative effect on the flora and fauna, reducing the river's capacity to support life.

Keywords: Fluoride, phosphates, physico-chemical parameters, sediments, water quality

The Evaluation Report of St Martin CSA's Addiction Treatment Approach and Intensive Outpatient Rehabilitation Programme

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Substance use addiction and recovery are a challenge globally and locally, with a rise in drug use in Laikipia County. St. Martin (CSA) addresses this gap through its community-based mixed approach addiction treatment implemented as the Intensive Outpatient Rehabilitation Programme (IOP). Integrating the biopsychosocial, 12-step Alcoholics Anonymous (AA), and disease models is informed by understanding that addiction stems from the interplay of biological, psychological, and social factors, aiming to provide a holistic, client-centered pathway to recovery. Guided by the principle of evidence-based practice, there arose a need for the effectiveness of the programme. Employing a mixed-method research design, the study involved 133 program beneficiaries and key stakeholders. Percentages, means, and one-way ANOVA inferential statistics were used in the analysis and interpretation of quantitative data, while qualitative data were analyzed thematically to identify emerging trends. Key findings indicate significant improvements in clients' mental and physical health, social wellbeing, self-

esteem, and overall quality of life post-rehabilitation. The evaluation revealed that the hybrid outpatient model, characterized by structured weekend inpatient engagements and community-based support, was very effective in fostering the application of recovery skills in real-world environments while benefiting from intensive weekend interventions. Relapse in the first three months was at 55 percent of respondents, but was short-lived, with 86 percent of clients achieving sustained sobriety at the time of data collection. Community involvement, peer support, and family therapy were instrumental in long-term recovery and reintegration into society. The program demonstrates significant potential as a cost-effective and adaptable model for addiction rehabilitation. By addressing biological, psychological, and social dimensions of addiction, the program effectively bridges gaps in traditional rehabilitation methods. The study's findings give insights into addiction recovery and the refinement of community-based rehabilitation programs. Beyond immediate program improvements, the evaluation underscores the important role of integrated, community-supported interventions in addressing substance use disorders, benefiting individuals, families, and society as a whole.

Keywords: Addiction, intensive-outpatient-program, mental health, physical health, recovery

Diagnostic Accuracy of Body Mass Index for Assessing Obesity in Women of Reproductive Age in Kenya

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Obesity poses a global health threat due to its strong link to increased morbidity and mortality. The World Health Organization (WHO) defines obesity as a body mass index (BMI) of ≥ 30 kg/m². Of concern is the excess body fat, rather than body weight, as it is the primary contributor to various health conditions. Obesity is rising rapidly worldwide, including in Kenya, with projections estimating that by 2035, nearly half the global population will be overweight or obese, especially in low- and middle-income countries (LMICs). Despite its wide use in LMICs, studies show BMI accuracy varies across populations. This study assessed the diagnostic accuracy of BMI in detecting obesity among Kenyan women of reproductive age (20-49 years), using the isotope dilution technique -the IAEA's 'gold standard' -as the reference. A cross-sectional descriptive study involving 304 women from Nyeri County was conducted in 2022. Anthropometric and saliva samples were collected according to WHO and IAEA guidelines. The study found the prevalence of obesity based on BMI was 25.8 percent, exceeding the national estimate of 17 percent in 2022, but significantly lower than the 41.8 percent found using isotope dilution. BMI had a low sensitivity (Sen= 46.7%) and high specificity (Spec = 89.3%), indicating that BMI underestimated obesity in the target population. The receiver operating characteristic (ROC) area under the curve (AUC) for BMI was 0.810, indicating its good overall discriminatory ability. However, the standard BMI threshold may have missed many individuals with true obesity, leading to false negatives and potentially delaying intervention for at-risk individuals. This pattern has been noted in other populations, across Africa and Asians. The study concludes that BMI is not useful as a first-line method for ruling out obesity, but may help confirm it. It recommends further validation studies among men in the same age group to inform future policy.

Keywords: BMI (kg/m²), diagnostic accuracy, isotope-dilution technique, validation, women of reproductive age

THEMATIC AREA:

NANOTECHNOLOGY AND MATERIAL SCIENCE



Development of Biodegradable Plastic Film from Cassava and Sweet Potato Starch Blend

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The world grapples with environmental contamination caused by petroleum-based plastics, primarily due to their resistance to natural degradation. Furthermore, the incineration of these plastics after use releases carbon emissions, making them a major environmental concern. The development of starch-based biodegradable plastics offers a promising remedy for these challenges. This study produced a starch-based biodegradable plastic from an equimass blend of cassava and sweet potato starch. The physical properties of the developed bioplastic, specifically tensile strength and biodegradability, were evaluated. The starch was modified using an acetic acid–glycerol plasticizer blend and cast into a film. Acetic acid also facilitated starch gelatinization. To determine their comparative biodegradability, blended starch, cassava starch, and sweet potato starch were buried in garden and compost soils. The percentage degradation was evaluated. Additionally, the tensile strengths (MPa) of the three starch categories were measured and compared. The tensile strength of the starch blend was the lowest at 1.175 MPa, while sweet potato starch exhibited the highest tensile strength at 2.378 MPa, followed by cassava starch at 2.18 MPa. The comparative biodegradability test revealed that the starch blend achieved 100 percent degradability in compost soil and 61.53 percent in garden soil, and was the most biodegradable. These findings revealed that the starch-based bioplastic film synthesized from cassava and sweet potato blends demonstrated promising biodegradability and material strength properties. The blend exhibited the highest biodegradability, particularly in compost soil, indicating strong environmental compatibility and sustainable alternative to petroleum-based plastics. While sweet potato starch showed superior tensile strength, the starch blend offers a balanced combination of hydrophobicity, film-forming capabilities, and flexibility, making it a viable candidate for bioplastic production. These findings underscore the potential of using locally available, indigenous, and starch-rich crops as viable raw materials in the sustainable production of environmentally benign alternatives to conventional petroleum-based plastics.

Keywords: Biodegradable, bioplastics, plasticizer, starch blend, tensile strength

Zinc Oxide Nanoparticles as Efficient Photocatalysts for Organic Pollutant Degradation: Bromothymol Blue as a Model System

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The release of synthetic dyes and organic contaminants into water bodies from industrial effluents poses significant environmental threats. Photocatalysis using semiconductor nanoparticles, such as zinc oxide (ZnO), offers a sustainable solution due to its high photocatalytic activity and eco-friendliness. This study reports the synthesis of ZnO nanoparticles via a chemical precipitation reaction using zinc nitrate and sodium hydroxide at 80°C, followed by the evaluation of their photocatalytic efficiency in degrading bromothymol blue (BTB) as a model organic pollutant. BTB's degradation was monitored by measuring absorbance at 616 nm, corresponding to its deprotonated form (pH ~7.6). A linear decrease in

absorbance over time ($R^2 = 0.9997$) indicated efficient degradation, with ANOVA confirming statistical significance ($R^2 = 0.9996$, $SE = 0.310$). These findings highlight the efficiency of ZnO nanoparticles in photocatalytically degrading BTB under visible light irradiation, showcasing their potential application in wastewater treatment. This efficiency is likely due to the generation of reactive oxygen species by ZnO under visible light. Notably, the ZnO nanoparticles exhibited superior performance compared to TiO_2 under identical conditions, as documented in previous related studies. While these results highlight ZnO's promise for wastewater treatment, future studies should characterize the nanoparticles to correlate structure with activity. Overall, this study demonstrates the promising application of ZnO nanoparticles as a practical, cost-effective, and reliable photocatalytic solution for the degradation of organic pollutants in environmental cleanup processes.

Keywords: Bromothymol blue, organic pollutants, photocatalysis, wastewater, ZnO nanoparticles

Nanocomposites Based BC Plant Extracts Improve Wound Healing Without Exhibiting Toxic Effects

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Bacterial cellulose (BC) is a nano-cellulose polymer that is produced by some non-pathogenic bacteria via a fermentation process. Its unique properties, such as Biodegradability, biocompatibility, high strength, high purity, and porosity, make it a very versatile nano material for wide applications in fields such as food, cosmetics, and Biomedicine. Native BC lacks the antimicrobial or healing ability when used alone. We designed an innovative wound healing material at the nano level by incorporating plant extracts from aloe and Turmeric into BC mat via a composite development strategy. The traditional plant extracts were meant to infer the healing ability to BC. The BC/Aloe, BC/Aloe/Turmeric, and BC/Turmeric compounds were impregnated into the BC matrix through impregnation techniques and subsequently tested on the Swiss mice model against commercial omeoplast, BC/Bacitracin, and control for their healing and anti-inflammatory ability. BC/Aloe, BC/Turmeric, and BC/Al/Turmeric nano composites proved effective on mice incision wounds, with complete healing, tissue regeneration confirmed on day 6. BC/Aloe and BC/turmeric nano composites proved their healing properties individually by reducing wound size by day 3 and complete wound closure without scar by Day 9 as compared to control BC/Bacitracin and commercial omeoplast. The use of BC nano-composites can be considered a promising alternative for the treatment of incised wounds. However, further clinical studies are required to determine the safety and efficacy in humans.

Keyword: Bacterial cellulose, Nanocomposites, plant extracts, wound healing

THEMATIC AREA:

EDUCATION AND KNOWLEDGE TRANSFER



Antecedents of Sustainable Development Goals (SDGs) in Curriculum Implementation: A Review of Selected University Academic Programmes

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This study explored the integration of Sustainable Development Goals (SDGs) into curriculum implementation processes through a dual methodology, combining questionnaire administration and academic programme curriculum objective analysis. The underlying rationale was that incorporating select SDGs into relevant programmes can enrich and diversify curriculum implementation processes, thereby enhancing their relevance and effectiveness. By administering a questionnaire to students and reviewing academic programme curriculum objectives, this study investigated the inclusion of aspects of SDGs in curriculum implementation processes. The sample comprised 600 students in three faculties of management studies, education, and social science, and 340 students filled and returned the questionnaire. The rationale was that the processes of curriculum implementation could be enriched and diversified by including contemporary aspects like some of the 17 SDGs goals in related programmes. Limited attention is paid to promoting SDGs in curriculum development processes in Uganda's higher education institutions. Engaging higher education institutions (HEIs) in pursuing Sustainable Development Goals (SDGs) can significantly facilitate attaining these objectives. As centres of diverse stakeholders, including students, faculty, researchers, and community partners, HEIs possess a unique capacity to leverage their collective expertise, resources, and influence to drive SDG implementation. The study espouses existing literature that highlights numerous gaps in higher education training. These include a high degree of indigenization of knowledge through geographically-influenced curriculum design and implementation, as well as deficiencies in graduate competencies and skills, all of which call for a highly diversified intervention

Keywords: Academic programmes, curriculum, development, goals, sustainable

Perceptions of Students on the Effectiveness of Peer Counselling Services in the Management of Discipline in Public Secondary Schools in Nakuru East Sub-County, Kenya

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Teacher counsellors and other educationists have come up with ways of managing discipline. Some of the ways of dealing with student indiscipline are by preventing it as well as teaching appropriate behaviour and coping skills. Peer counselling has been adopted as one of the methods of behaviour management. The purpose of this study was to determine the perceptions of students by gender on the effectiveness of peer counselling services in the management of discipline in public secondary schools in Nakuru East sub-county, Kenya. The study was guided by the Social Cognitive Theory (SCT), which posits that learning occurs in a social context within a dynamic and reciprocal interaction of the person, environment, and behaviour. The study used a descriptive survey research design. The population under the study comprised 346 students, 181 males and 165 females, who were chosen through proportionate sampling from 19 public secondary schools in Nakuru East Sub-County. Students from the selected



schools were chosen by simple random sampling. Student Questionnaires (SQ) were used to collect data. The instruments were pilot tested in one public secondary school to establish the validity and reliability of the instruments. The scale measuring students' perception had a Cronbach alpha of 0.907. The questionnaire items were considered to be reliable after yielding a reliability coefficient of 0.70. Data was analysed using descriptive statistics that included frequencies and percentages. The Statistical Package for Social Sciences (SPSS) version 22 was used in the analysis. Participants gave an aggregate effectiveness rating (mean= 2.81). Based on these findings, the study concludes that peer counselling services have a moderate effect on the management of discipline in public. The study concluded that student and peer mentors in high schools should get professional training in counselling and supervision of peer counsellors. The study recommends that there is a need to get qualified trainers and enhance the effectiveness of peer counselling services.

Keywords: Counselling services, discipline, peer counsellors, perceptions, students

Influence of Occupational Stress on Work Performance Among Kenya Police Officers in Njoro Sub-County, Kenya

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Police Officers are exposed to high levels of stress due to heavy workloads, long working hours, and exposure to traumatic experiences emanating from daily duties. The primary objective of this study was to examine the impact of occupational stress on work performance among Kenyan police officers in Njoro Sub-County. The study was based on the role stress theory, which explains how individual roles and expectations influence the outcome of particular responsibilities and how these functions cause occupational stress and affect work performance among police officers. The study adopts a descriptive survey design. The study targeted a population of 367 police officers. Stratified sampling was used to select a sample size of 104 respondents. The data were collected through self-administered structured questionnaires. Descriptive statistics were used to analyze the data, and the results were presented in tables, graphs, charts, frequencies, and percentages to give meaning to the study. The results show that out of 104 questionnaires administered, 81 were returned, indicating a response rate of 77.88 percent. The study established that the majority of the respondents, 77.8 percent, performed poorly due to work overload and a shortage of staff in their respective police stations. Work-related stress experienced by these police officers was found to have a strong influence on work performance, which is attributed to autocratic administrative policy, lack of support network, role conflicts, heavy workloads, and long working hours. The study recommends that the National Police Service should focus on the causes of poor performance among police officers and develop a strategy for addressing the gap to better and enhance service delivery, develop counseling programs and integrate them in the police syllabus, and sensitize officers to share problems that affect their work performance. Finally, the government should increase the budgetary allocation, mobilize more resources to address staff shortfalls, and purchase modern equipment for training offices to acquire skills and learn effective ways of coping with daily stressors, and to improve work performance. The study therefore recommended that a similar study be conducted in the national police service in other Sub-Counties in Kenya to compare the findings.

Keywords: Counselling clubs, discipline, peer counsellors, perceptions, student

Blockchain Model for Secure Academic Transcript Transfer

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This paper presents a blockchain-enabled model for transferring academic transcripts, addressing the growing need for secure, efficient, and interoperable systems in response to the increasing mobility of students across institutions. Traditional methods such as manual requests, email exchanges, and third-party services are plagued by inefficiencies, security vulnerabilities, and a lack of interoperability, often resulting in administrative delays, data breaches, and reduced trust among institutions. To overcome these challenges, this study leverages the decentralized and immutable nature of blockchain technology to ensure the integrity, security, and timely transfer of student records. The study aims to identify the limitations of current systems, design a blockchain-based model, evaluate its performance, and provide practical recommendations for implementation in higher education. Adopting a mixed-methods research design, the study integrates both qualitative and quantitative approaches. The qualitative component involves purposive sampling of academic registrars and administrators from Kabarak University, Laikipia University, Mount Kenya University, and Egerton University to gather insights on institutional workflows, reasoning patterns, and problem-solving strategies related to student record transfers. The quantitative component focuses on evaluating the proposed blockchain model through metrics such as transaction speed, data accuracy, security robustness, and user satisfaction. By combining technical performance evaluation with institutional perspectives, the study offers a comprehensive understanding of academic record transfer challenges. It demonstrates the feasibility and benefits of a blockchain-based approach. The findings are intended to inform policy, enhance institutional collaboration, and improve service delivery in academic record management across higher education institutions.

Keywords: Academic records, blockchain, data integrity, efficiency, security

E-Peer Mentorship Programme Self-Efficacy for Improved Mental Health Among University Students Engaging in Transactional Sex in Laikipia University

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University students who engage in Transactional Sex (TS) frequently face mental health issues as well as physiological and psychological burdens. Students at a higher level of education often choose to engage in TS as a strategy for coping with various problems in their lives, such as ameliorating economic shocks arising from the high cost of living. The purpose of this study is to determine the influence of e-peer mentorship program self-efficacy for improved mental health among university students engaging in transactional sex in Laikipia University. The research team recruited and trained 35 peer mentors to empower 35 university students (18-24 years) who engage in transactional sex, to improve mental health for sustainable psycho-social status. Research experts imparted peer relations, counseling, communication, and social skills to peer mentees. The peer mentor trainees underwent the e-Peer Mentorship Model training. The research team developed indicators that were used to rate the targeted outputs and outcomes from time to time. The research undertook a baseline survey of the mental issues affecting female students engaging in TS to track the progress in behavioral change. The study undertook mid-term and end-of-project evaluations to establish differences in mental health issues affecting mentees over the project lifespan. The project

model might benefit the students by identifying, educating, and providing mental health literacy to USETS and knowledge about their mental health and a life paradigm shift. Universities and other tertiary institutions might use the project model to handle issues of transactional sex.

Keywords: Baseline survey, behavioral change, e-peer mentorship model, mental health, peer relations

Academic Motivation and Student Backgrounds: Laying Foundations for Resilient Education Systems at Laikipia University

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Aligned with the conference sub-theme *Education and Knowledge Transfer*, this study explores the interplay between academic motivation, student backgrounds, and their implications for fostering resilient higher education systems. Focusing on Laikipia University undergraduates in Kenya, the research adopts Tinto's Student Integration Model within a longitudinal design, tracking 1,200 students (from a target cohort of 1,800) to investigate how motivation at admission interacts with sociodemographic factors to shape academic trajectories. Preliminary data reveal diverse educational pathways: 60 percent of students attended public day primary schools, while 43 percent graduated from extra-county secondary schools. Notably, 70 percent prioritized teacher education among their top three course choices, suggesting alignment between career aspirations and academic enrollment. The study examines relationships between academic motivation (measured at admission) and five variables: primary and secondary school categories inclusion of Bachelor of Education in course preferences, and parental education levels. While full data analysis remains ongoing, this presentation will outline the methodological framework, preliminary descriptive insights, and the study's potential to inform equitable interventions. By identifying how student backgrounds correlate with initial motivation levels, the research highlights systemic barriers and enablers in Kenya's higher education reforms. Anticipated findings aim to guide policies on mentorship, resource allocation, and curriculum design, critical for addressing global challenges such as educational inequity and dropout risks in resource-constrained settings. The study underscores the role of academic motivation as a catalyst for resilience, emphasizing knowledge transfer through tailored support systems. Future analysis will culminate in a predictive model to enable early interventions, ensuring timely graduation and equitable outcomes. This work aligns with global efforts to strengthen education systems by centering student voices and contextual realities.

Keywords: Academic motivation, academic trajectories, longitudinal study, resilience in higher education, student backgrounds

Digital Technologies for Competency-Based Education and Training in TVET Institutions in Kenya

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The paper explores the extent to which digital technologies have been employed for education and training in Competency-Based Education and Training (CBET) in Technical and Vocational Education and Training (TVET) institutions in Kenya. The study was inspired by related studies elsewhere, which point to the challenges of employing more innovative instructional strategies in TVET institutions despite the emphasis on the same. Some studies suggest that the pressure to incorporate new technology in teaching and learning is not always matched with adequate training and support. The introduction of CBET in Kenya has come with the call to apply active learning strategies in its implementation to enhance skills acquisition among technical education trainees, which is its sole principle. The objective of the study was to establish the extent to which these strategies have been employed in the TVET institutions and the factors determining their application. The study was conducted among trainers and trainees in Nyandarua National Polytechnic in Kenya early last year and was descriptive in design. Both qualitative and quantitative approaches were employed for data collection and analysis. Data was collected through questionnaires, which were administered online for the trainees and self-administered for the trainers. The theory of constructivism and the cognitive theory of multimedia learning guided the study. The trainers and trainees were sampled from nine academic departments in Nyandarua National Polytechnic. Both trainers and trainees in the institution confirmed having used video in learning at 90 percent and 88 percent respectively. These positive observations came amidst myriad challenges that both groups cited as impeding the use of video learning in the institution. The study thus concluded that significant effort had been made to apply digital technologies as innovative instructional strategies in TVET institutions in Kenya. However, their employment is still engulfed in myriad challenges that need to be addressed to fully realize the benefits of innovative instructional strategies, which have been documented.

Keywords: Active Learning Strategies, CBET, digital technologies, TVET institutions, video learning

Effect of Teachers' Working Conditions on Academic Performance of Pupils in Public Primary Schools in Kuresoi South Sub-County

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Many primary schools face “a teacher motivation crisis” due to low accountability, low pay, low vocational and occupational status, and poor working and living conditions. Working and living conditions affect teacher morale and motivation, and thus their performance. The key factors are workload, classroom conditions, management support, housing, and travel, which affect teacher morale and motivation. The high cost of travel contributes to teacher absenteeism and lateness in schools, while very large class sizes are the norm for most teachers in countries such as Kenya. This study aimed to establish the effect of teacher working conditions on the academic performance of pupils in public primary schools in Kuresoi South Sub-County, Nakuru County, Kenya. To achieve this objective, the study adopted an ex-post facto research design. The study's target population was 91 public primary

schools, 91 head teachers, and 784 primary school TSC teachers in Kuresoi South Sub County, Kenya. Simple random sampling was employed in the selection of the study sample, in which 273 participants were randomly selected from a target population of 875. The primary tool for data collection was the questionnaire. The data from the questionnaire was processed by editing, classifying, and coding before being analyzed by the computer using the Statistical Package for Social Sciences (SPSS) version 24.0. Inferential statistics took the form of Spearman rank correlation and multiple regressions. The results indicated that teachers' working conditions had a positive and significant influence on academic performance. The study found that the working conditions of teachers in Kuresoi South Sub-County were not good. The study, therefore, concluded that poor teacher working conditions had a negative impact on pupils' academic performance. Overall, it is recommended that good teacher working conditions should be emphasized as doing so brings about improved academic performance.

Keywords: Academic performance, primary schools, Kuresoi South sub-county, teacher motivation, working conditions

The Dynamics of Same-Sex Sexual Behaviours and Associated Stigma Among University Undergraduate Students at Laikipia University

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The study explored the dynamics of same-sex sexual behaviours and the associated stigma experienced by university undergraduate students at Laikipia University. The study was guided by Psychoanalytic theory developed by Sigmund Freud and employed a descriptive survey design. A snowballing (Chain-referral) sampling method was used to obtain a representative sample of undergraduate students from Laikipia University to participate in the study. A questionnaire was administered online to collect data, and approximately 190 students handed in their complete responses online. Analysis was conducted according to themes, and data presented as percentages, tables, and various graphs. The innovation in this study is self-actualization for all learners irrespective of sexual orientation prevalence due to the creation of a more inclusive and equitable campus environment where every student can thrive. The study aims to highlight connections between findings and transformative actions, which include the development of appropriate interventions and policies to create a more inclusive and supportive campus environment to be implemented by the Office of the Dean of Students at Laikipia University.

Keywords: Appropriate interventions, associated stigma, same-sex behaviour, supportive learning environment, undergraduate students

Teachers' Preparedness in Integrating Value-Based Education among Junior School Learners: A Case of Junior Schools in Laikipia County

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Since independence, Kenya's education system has undergone significant reforms. The 7-4-2-3 system inherited at independence was replaced in 1985 by the 8-4-4 system, which aimed to produce more practical and self-reliant graduates. After the 2010 Constitution, a presidential task force recommended a new 2-6-6-3 structure, leading to the introduction of the Competency-Based Curriculum (CBC). CBC focuses on equipping learners with knowledge, skills, values, and competencies—particularly in technology, innovation, and entrepreneurship—to meet constitutional demands and Vision 2030 goals. While value-based education is emphasized, there is limited literature on teachers' preparedness to instill these values in learners. This study sought to evaluate teachers' preparedness to integrate value-based education among learners at junior schools in Laikipia County. Primary data was collected using questionnaires from headteachers and Junior School teachers. The reliability for head teachers' and Junior School teachers' questionnaires was 0.82 and 0.85 respectively of Cronbach alpha. The target population was 850 junior school teachers and 280 head teachers. A table of random numbers was used to sample schools to get the principals and the junior school teachers who would participate in the study. A sample size of 146, comprising 110 junior school teachers and 36 head teachers, was involved in the study. The results indicated that junior school teachers integrate values such as respect, unity, responsibility, integrity, empathy, and teamwork in their teaching. Additionally, 87.8 percent of the teachers were found to be effective in applying the necessary attributes to deliver value-based education. These findings can help head teachers, curriculum support officers, and the Teachers Service Commission in designing targeted teacher training to improve the integration of value-based education. The study also recommends further research to assess the competency levels of junior school teachers in imparting value-based education.

Key words: Competency-based curriculum (CBC), education reforms, junior school teachers, teacher preparedness, value-based education

The Impact of TVET on Industry Labour Demands for Sustainable Development in Kenya: An Investigative Study

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Technical Vocational Education and Training (TVET) programmes are designed to equip individuals with the necessary skills and knowledge to meet the demands of the labour market, promote economic growth, and address social and environmental challenges. Despite the importance of TVET in promoting sustainable development in Kenya, its impact on industry labour demand towards sustainable development remains a significant challenge. The study aimed to investigate the impact of TVET on industry labour demand towards sustainable development. Quantitative research design was used. Simple random, Purposive, and Convenient techniques were used. A sample of 200 trainers and 100 trainees was obtained from sampled TVET Institutions. Open and closed Questionnaires were used.

Descriptive analysis and inferential statistics were used. Eighty-five percent agreed on the existence of policies on industry collaborations, 80 percent concurred that industry linkages and training contribute to youth employability, and 55 percent disagreed that TVET Institutions have industry regulatory frameworks. In conclusion, TVET and industry players' collaborations, industry training, and linkages policies are mandatory for sustainable development. In recommendation, TVET institutions should develop policies on industrial linkages, partnerships, and frameworks on youth employability, to promote and increase collaborations with industry players for sustainable development.

Keywords: Industry, labour demand, linkages, partnerships, sustainable development,

Navigating Change: Challenges and Perspectives on Implementation of Competency-Based Education in Kenya

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In Kenya, competency-based education was introduced in 2017 and is now being implemented at all levels of the education system. A key shift in this initiative is the transition from teacher-centred to learner-centred education, which emphasizes constructivist learning theories and the development of core competencies such as critical thinking, collaboration, self-efficacy, and problem-solving, competencies needed to thrive globally. This shift calls for participatory teaching approaches and a transformation of the teacher's role. Despite ongoing curriculum reforms, adopting learner-centred teaching methods within African educational contexts remains a significant challenge. By examining teachers' perspectives in Laikipia County, this paper highlights a persistent preference for teacher-centred methods, driven by perceptions of learner-centeredness as time-consuming and resource-intensive. It explores the complexities involved in transitioning from teacher-centred approaches to learner-centred pedagogies. Utilizing change management theories, the paper investigates the underlying reasons for resistance to change and offers insights into the challenges educators face during this transition. Additionally, the paper explores the historical context of education in Africa, examining the impact of colonialism and the ongoing discourse surrounding the necessity of Africanizing educational practices to better align with local cultures and values. It further raises questions about the importance of contextualized pedagogical frameworks and whether they could facilitate the transition to more relevant teaching methods.

Keywords: Africanizing educational practices, competency-based education, curriculum reform, learner-centred teaching, Kenya

Quality and Relevance of Vocational Education and Training in Laikipia County, Kenya

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Vocational Education and Training (VET) is recognised worldwide as critical for increasing employability, better job prospects, and potentially enhancing social inclusion. This study investigated the courses, curriculum, and institutional effectiveness of Vocational Training Centres (VTCs) in Laikipia County, Kenya. Employing a mixed-methods approach, the study gathered quantitative and qualitative data from trainers, VTC administrators, industry stakeholders, county officials, trainees, and graduates to identify gaps and provide actionable recommendations for improvement. The study revealed several key findings. Many courses are misaligned with local labour market needs due to insufficient modern equipment. Operational challenges included delays in funding, which affected training quality due to inadequate learning resources. In addition, training is affected by the limited pedagogical skills of trainers. VTCs also suffer from a negative community perception. Recommendations include enhancing financial support, developing an efficient financing model that ensures quality training, improving instructor qualifications, and improving outcomes and recognition of Vocational Education and Training. Further, the study recommends developing a VET policy as a roadmap for the governance and management of VTCs and for enhancing the quality and relevance of training.

Keywords: County government, labour market needs, quality, relevance, vocational education and training

ICT Integration of ICT on Security in TVET Institutions: A Case Study of the Nyandarua National Polytechnic

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The need to identify all staff and students in an institution has become universal. However, the loss of identification documents such as staff and student ID, class attendance sheet, and class monitoring forms has become a security risk not only for the individual but also to the entire institution. Studies have shown that these challenges can be solved by embracing modern technology. This study examined the factors that limit the integration of Information Technology Communications (ICT) in the protection of staff and students' documents and proposes measures that should be taken towards its integration. The study targeted a population of 7000 individuals from the institution from which a sample of 3700 respondents was selected using simple random sampling. A descriptive research design applied both qualitative and quantitative research methods to collect and analyze primary and secondary data. Self-administered questionnaires were distributed to the respondents using simple random sampling. Semi-structured interviews were also used to collect primary data. Secondary data was collected through reviewing information from previous related studies. The Statistical Package for Social Sciences (SPSS) was used for quantitative data, while meaning condensation and categorization were used for qualitative

data analysis. The study revealed that the lack of an integrated ICT system is a challenge in tracking missing identities or even verifying the validity of provided information, thus compromising the productivity and security of businesses and institutions. Results from this research study highlight the significant role of integrated ICT systems in enhancing the tracing of missing identity documents and in making corrections to inaccurate personal data. Implementing the ICT system will enhance the tracing of missing identity documents and make corrections to inaccurate personal data. This case study recommends that TVET institutions implement security-integrated systems.

Keywords: Identification documents, Information and Communication Technology (ICT), integrated systems, security, TVET institutions

Understanding Mental Illness: A Comprehensive Review of The Effect of Mental Illnesses on Academic Achievement in High School Students, Nakuru County, Kenya

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Mental illness is a health condition that significantly affects a person's thinking, mood, and behavior, leading to distress and difficulty in functioning well in daily activities. In Kenya, mental illness is a common health challenge. It touches on a wide range of conditions that affect mental well-being and potentiality, leading to challenges in almost all aspects of life. Various studies have shown that the prevalent mental illnesses among high school students in Kenya are anxiety and depression. About 10-20 percent of students in Kenya suffer from mental illnesses emanating from depression, anxiety, and substance and drug abuse. Nakuru County has a big challenge of mental illnesses. Effective prevention of mental illness and treatment exist in the world, though prevention is only possible in some types of mental illnesses, such as depression and panic disorders, among many. Medication and psychological counselling are the best way of treating mental illnesses in society. Cognitive behavioral therapy and person-centered therapy, among others, are used to counsel patients with mental illnesses. Though mental illnesses are treatable, most students shy away from seeking medication and counseling services because of stigma around mental illnesses and treatment. This has prevented many students from seeking needed treatment, thus negatively affecting their academic performance. This study seeks to find out the effect of mental illnesses on the academic performance of high school students in Nakuru County, Kenya, and how to alleviate these mental challenges.

Keywords: Academic performance, depression and anxiety, high school students, mental illness, stigma

Transitioning to E-Learning: An Appraisal of Technology-enabled Instruction in the Face of the COVID-19 Pandemic. A Case Study of Laikipia County

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This study is an appraisal of the current instructional status after the face of the COVID-19 pandemic in public schools in Laikipia County, Kenya, so as to provide a policy framework for transitioning into an effective and efficient e-learning system. Education forms the basic component upon which the economic, social, and political development of any nation is founded. Kenya has made major strides and reforms in the education sector. It comprises an integral part of Kenya's Vision 2030, which was, however, under threat after the indefinite closure of learning institutions due to the unprecedented effects of COVID-19 for the better part of 2020 and early 2021. In the wake of the COVID-19 pandemic, it became imperative that e-learning was the only meaningful option available for learning continuity against the numerous challenges that Kenya faced. As Kenya embraces a Competency-Based Curriculum which emphasizes, among others, communication, collaboration, creative and critical thinking, and digital literacy skills to all learners, ICT offers an unparalleled platform for curriculum takeoff. E-learning has become the protagonist for change in the education sector and a potential ladder for developing countries to leapfrog to the knowledge economy. Against this backdrop, this study was conceived to examine the level of technology-based instruction preparedness and transferrable e-learning skills offered to students in Public Secondary Schools in Laikipia County. The findings of this research study indicated varying availability and proficiency levels in different e-learning resources among students at school. While Microsoft Word and Excel are widely accessible and extensively used, other resources such as PowerPoint, Publisher, and Access are less frequently utilized. These results may provide a policy framework for transitioning into an effective and efficient e-learning system in Kenya.

Keywords: Competency-based curriculum, covid-19, e-learning, transferrable e-earning skills

Integration of Expert Systems in TVET Libraries Amidst the 4IR Era in Kenya

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The fourth Industrial Revolution era has, without doubt, been a driver for change in the Digital world. The digital era provides libraries with an opportunity to reprofile their competencies and reinvent themselves to remain relevant in the dissemination of information. The research sought to investigate the integration of expert systems in Technical and Vocational training institutions in Kenya to promote the shaping of digitalization in the fourth industrial revolution. The research design adopted was descriptive. The target population was small. Therefore, a census of 48 percent of respondents was done. The questionnaire was tested for validity and reliability. The items were reliable with a Cronbach alpha score of 0.7853, exceeding 0.7. The researcher did content and face validity; the Data was quantitatively analyzed and presented in the form of tables and charts. In conclusion, it was established that 98 percent of the TVET Libraries in Mt Kenya region have not integrated the Expert systems. The low Integration was attributed to a lack of Qualified and techno-serving librarians, few or no modern libraries. The study recommended that for an increase of expert system integration in TVET libraries, libraries should

construct modern libraries, employ more qualified and techno-serving librarians, and encourage the Integration of Expert Systems in TVET libraries in Kenya.

Keywords: 4IR, Access to information, expert system, library service, TVET libraries



THEMATIC AREA:

GOVERNANCE AND POLICY INNOVATION FOR SOCIAL JUSTICE AND EQUITY



Foucault's Panopticon: The Impact of Surveillance upon the Self-identity of the Learner in Borstal Institutions in Kenya

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Some adolescents in conflict with the law as well as some who need care and protection in Kenya, are placed in borstal institutions. There are three such facilities in Kenya: Shikusa and Shimo La Tewa Borstal Institutions for boys, and Kamae Girls Borstal Institution. The borstal institution system is designed to rehabilitate the child inmate through both formal and informal programmes. The formal programme constitutes the school system. The child inmate is between 15 and 17 years old. Engagement in exploration is the hallmark of adolescence. In these correction centres, there is the inevitable intensive and extensive use of surveillance mechanisms. This adversely affects the development of the child inmate. The embodiment of surveillance is the borstal institution officer. In the school programme, these officers double as guards and as teachers. There are no Teachers Service Commission employees. This interdisciplinary paper is based on findings of a qualitative study conducted within the three borstal institutions targeting the discursive construction of the self-identity of the child inmate. The specific objectives of this paper were to: describe surveillance mechanisms in the borstal institutions in Kenya; examine the linguistic forms used by the child inmate in borstal institutions in Kenya to construct their self-identity; and interrogate the impact of the surveillance mechanisms upon the self-identity of the learner. The data was gathered mainly through in-depth interviews of 29 child inmates. Three theories were used in analyzing this data: Wodak and Reisigl's Discourse-Historical Approach, Edward and Potter's Discursive Psychology, and Foucault's Constructionist Theory of Meaning and Representation. The surveillance mechanisms, epitomized by the teacher, normalize the siege mentality of the learner in the classroom. This adversely affects the learner's discursive construction of their self-identity.

Keywords: Borstal institution, child inmate, discursive construction of self-identity, Foucault's Panopticon, normalised

The Institution of The Presidency Under Siege: Power, Patronage, and Representation in Kenya

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The institution of the presidency in Kenya has historically functioned as the apex of executive authority and as a central node in the distribution of power and national resources. This paper critically examines how the presidency has shaped and been shaped by ethnic politics, focusing on the intersections of power, patronage, and representation. Drawing on historical, constitutional, and political analyses, the study explores how successive regimes from independence to the present have utilized the presidency to consolidate power through ethnically skewed appointments, regional development disparities, and selective state investment. While Kenya's 2010 Constitution aimed to redress historical injustices and promote inclusive governance, the persistence of ethnic-based mobilization and elite capture of the presidency continues to undermine the promise of equity and national cohesion. By interrogating the

political economy of the presidency, the paper reveals how ethnic favouritism is institutionalized and reproduced within democratic structures, exacerbating feelings of exclusion among communities outside the ruling coalition. The study concludes by assessing contemporary debates around electoral reform, devolution, and power-sharing as pathways toward a more equitable and socially just Kenyan state.

Keywords: Ethnic politics, inclusive governance, political economy, power and patronage, presidency

The Paradox of Academic Freedom: The Implications of Curriculum Change and the University Funding Model on the Marginalized in Kenya

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This paper critically examines the paradox of academic freedom in Kenya's education system, focusing on how curriculum reforms, university placement, and funding models disadvantage marginalized communities. While academic freedom ideally guarantees the liberty to teach, learn, and research, it often fails to address structural inequities affecting pastoralist learners. The study connects academic freedom to equitable educational access by drawing from Kwame Nkrumah's notion of freedom as self-determination and intellectual empowerment. The transition from the 8-4-4 system to the Competency-Based Curriculum (CBC) is scrutinized, revealing how its rigid structure overlooks the nomadic lifestyle of pastoralists. It highlights gaps in mobile schooling, culturally relevant curricula, and teacher training. The Kenya Universities and Colleges Central Placement Service (KUCCPS) is critiqued for using standardized tests that ignore the distinct challenges of nomadic learners. Moreover, the recent need-based funding model, while seemingly inclusive, often excludes pastoralists due to misclassified socio-economic profiles. Digital illiteracy and a lack of internet access further marginalize these communities. The paper argues that poverty and systemic inequality continue to undermine academic freedom for the marginalized. It concludes by advocating for mobile schools, inclusive curricula, and affirmative action policies to transform academic freedom from an abstract ideal into a lived reality for all learners, in line with Nkrumah's vision of intellectual liberation.

Keywords: Academic freedom, curriculum change, education system, inequality, pastoralists, university funding

The Role of International Organizations in Equity-Based Policy Reform in TVET Institutions: A Case Study of Nyandarua County TVETs, Kenya

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This study examines the impact of international organizations (IOs) on equity-based policy reforms in Kenya's education sector, specifically within Technical and Vocational Education and Training (TVET) institutions. Despite IOs' advocacy for social justice, their interventions have had mixed outcomes, sometimes promoting equity and at other times reinforcing inequalities. Focusing on TVET in Nyandarua County, the research explores how IOs have influenced reforms related to access to quality education,

gender equality, skills development, and poverty reduction. Using a mixed-methods approach, data was collected through surveys and interviews with 100 individuals, including policymakers, educators, community leaders, and beneficiaries. The study's three key objectives were to: assess the impact of IO interventions on equity-based reforms in Kenya's TVET sector; examine the alignment of global norms promoted by IOs with local educational needs and priorities; and evaluate the effectiveness of participatory and locally led approaches in fostering equitable educational outcomes. The findings highlight both the potential and limitations of externally driven reforms in Kenya's TVET sector, emphasizing the tension between global norms and local realities. The study questions whether social justice in education can be "imported" or must emerge from local processes. It concludes that IO interventions should adopt participatory, context-sensitive approaches, viewing equity as a co-created goal. The study recommends that IOs tailor policies to local contexts, avoid one-size-fits-all solutions, and prioritize local participation in policy development.

Keywords: Education, gender equality, international organizations, social justice, TVET institutions

Gendered Land Ownership and Labour in Mwea Irrigation Scheme

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This paper analyses how gender-based inequalities affect women's land access and resource usage within the Mwea Irrigation Scheme of Kenya. The implementation of gender equity policies fails to achieve its objectives because women maintain limited access to formal land ownership while making significant contributions to rice cultivation and agricultural production, as shown through surveys, along with interviews and leader investigations. The research investigates historical land distribution methods, contemporary ownership arrangements, and household farming tasks to show how male-dominated social norms maintain their strong influence over productive asset possession and management. The study employs surveys, interviews of farmers and local leaders, and an evaluation of essential land and agricultural policies to assess economic, social, and institutional barriers that have historically prevented women's empowerment in agricultural activities in Mwea. The study demonstrates that women complete most field labour tasks in rice agriculture but receive insufficient recognition and poor pay, which sustains their economic disadvantage. The progressive legal and institutional frameworks that exist on paper fall short in real-life implementation because cultural resistance combines with weak enforcement. The research delivers specific policy recommendations that can enhance women's land ownership rights, ensure fair agricultural governance access for all, and develop comprehensive irrigation schemes. The results of this study demonstrate how essential it is to transform systemic approaches that will establish justice and good treatment of women in agricultural settings, not only in Mwea but across Kenya and the world at large.

Keywords: Agricultural labour, gender, irrigation schemes, land ownership, women farmers

Historical Land Injustice in Mwea: Colonial Policies and the Quest for Social-Economic Justice

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The paper explores Mwea, Kenya's historical land injustice, which stems from British colonial practices, to uncover the ongoing effects on local socio-economic conditions on the people of Mwea. The Mwea Irrigation Scheme received its land through the forcible seizure of native land, which British officials accomplished with legislative power during colonial times. The Scheme delivered agricultural productivity benefits to colonizers through its operation, which dismantled indigenous land use and ownership systems, thus damaging local communities' way of making a living. An examination of colonial archival documents and contemporary governmental records, together with interviews from local people, reveals that initial land distribution and management strategies in the Mwea Irrigation Scheme became the base for years of continuing injustice throughout the area, even after independence, since successive governments of Kenya did little to fix these injustices. The continued unjust stories in the Scheme forced the farmers to stage a revolt against the management of the Mwea Irrigation Scheme by the National Irrigation Board (NIB) in 1998. This work concludes by highlighting the need for land reforms guided by historical realities and principles of equity combined with justice for affected communities and dedicated political support for historical reconciliation efforts. This paper examines the Mwea case to boost knowledge about post-colonial land reform alongside transitional justice issues in Kenya and Africa.

Keywords: Colonial policies, land injustice, land reform, Mwea irrigation scheme, social justice

Do Audit Reforms Influence Financial Performance of County Governments in Kenya? The Moderating Role of Legal Framework

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Globally, the performance of government institutions is imperative in ensuring economic growth and the enhancement of standards of living. County governments were introduced in Kenya to enhance the provision of public services. However, this objective has not been fully attained as evidenced by low revenue collection, low absorption rate of development budget, high rising pending bills, and recurrent expenditure. This paper examined the effect of audit reforms on the financial performance of county governments in Kenya and how the legal framework could be moderating this relationship. It was grounded on the New Public Management theory, applied a positivist research philosophy, and utilized a correlational research design. The target population was the 47 county governments in Kenya, which were clustered into seven regional economic blocs. As per the Controller of Budget report of 2023, a county with the least budget absorption rate was picked per economic regional bloc. The top and middle level management staff in the finance and economic planning department were selected, resulting in 229 target respondents, upon which a sample size of 144 was determined based on Krejcie and Morgan. A pilot study was conducted to determine the reliability of principal component analysis and confirmatory factor analysis to evaluate the associations between latent variables. Data was analyzed using the SPSS Analysis of Moments Structure employing factor analysis and structured equation modelling to evaluate



any inherent relationship between the study variables. Results revealed that audit reforms had a statistically significant effect on the financial performance of county governments ($\beta=0.340$, $t=3.343$, $p<0.05$). However, the legal framework also had an insignificant moderating effect on the relationship between audit reforms and this performance ($\beta=-0.148$, $t=-1.768$, $p>0.05$). The study concludes that audit reforms drive devolved governments in Kenya. Any policy meant to improve the performance of devolved government units must consider the need to strengthen the independence of the internal audit function and provide adequate resources to ensure effectiveness and efficiency in service delivery.

Keywords: Audit Reforms, county government, financial performance, legal framework, structural equation modelling

JEL Classification: K20, M42, M48, R51

A Tool Kit for Mainstreaming Gender in Community Development

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Gender mainstreaming is a process for gender transformation. A process that helps us address the root causes of inequalities in our societies at different levels, from the self, through households, institutions, to the public sphere. This is the process of ensuring that women, men, boys, and girls, as well as marginalized and differently enabled persons, are aware of who they are, their capabilities, their rights, and privileges. It is a process that ensures their concerns and knowledge are included in the development of policies, plans, legislations, as well as in the design and planning of programmes and projects. It is an approach that make women and men's concerns and experiences an integral part of the design/plan, implementation, monitoring and evaluation of policies, plans, programmes and projects in all political, economic, environment and societal spheres so that women and men participate fairly and benefit equally from the accrued results of goods and services. The involvement of both women and men in the design or planning stage of any policies, plans, programmes, and projects ensures that inequality is not perpetuated. The goal is to achieve both gender equity and equality in all development endeavours from personal, through households, and into the public spheres. Several tools have been developed over the years to help in gender mainstreaming. The discussion in this paper provides some of them that institutions with a community development mandate can utilize to achieve gender equity and equality.

Keywords: Development, equality, equity, gender, mainstreaming

THEMATIC AREA:

CLIMATE-SMART AGRICULTURE AND ENVIRONMENTAL SUSTAINABILITY



Effects of Inorganic Fertilizer and Rice Husk Biochar on Growth and Yield of Paddy Rice in Ahero, Kenya

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Rice (*Oryza sativa* L.) is a staple food for billions of people worldwide. In Kenya, it ranks fourth after maize, beans, and potatoes. Despite its importance, rice production is constrained by several factors that contribute to low yield compared to its demand. These constraints include overuse of land without adequate fertilizer application and soil amendment, leading to nutrient depletion, resulting in low yields. This study aimed to determine the effect of NPK fertilizer and biochar on the growth and yield of rice. The study was conducted at Ahero paddy rice in Kenya for two seasons: May to September 2024 and September 2024 to January 2025, respectively. The treatments included NPK 17-17-17 four levels (0, 100, 200 and 300 kg/ha) and Rice husk biochar 0, 5, 10 and 15 t/ha. The experiment was laid out in a split plot in a Randomized complete block design (RCBD) with three replications. Data collected include: tiller number at 30 and 60 days after transplanting, above-ground biomass, plant height, yield, and yield components. Data was analyzed using R software version 4.4.1, and the general linear model (GLM) technique was employed for analysis of variance (ANOVA) and mean separated using Fisher's Least Significant Difference at $P \leq 0.05$. The results showed that all NPK fertilizer rates significantly increased the growth, especially tillering at 21.87 percent, 26.71 percent, and 33.15 percent for 100, 200, and 300 respectively compared to the negative control without fertilizer or biochar. In comparison, plant height was increased at 3.97 percent, 6.98 percent and 9.45 percent. NPK fertilizer contributed to 30.1 percent, 42.7 percent, 37.5 percent increase for 100, 200, and 300 kg/ha, respectively. Biochar did not show any significant effect on growth and yield at all levels.

Keywords: Biochar, fertilizer, growth, NPK, rice, yield

Establishing the Spatial Distribution of Fusarium Head Blight Disease in Wheat (*Triticum aestivum* L.) Growing Areas in Kenya

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Fusarium head blight (FHB) is among the biotic stresses affecting wheat production, causing grain yield losses, quality reduction, and mycotoxin contamination. This disease is particularly problematic in regions with warm, humid climates and is exacerbated by climate change and other biotic stresses. Yield losses from FHB are due to sterility of the florets and formation of shriveled, lightweight kernels. This study investigated the prevalence and spatial distribution of Fusarium Head Blight (FHB) across wheat-growing regions in Meru, Nakuru, and Nyeri counties of Kenya. Field surveys were conducted during the growing seasons of 2024, with systematic sampling of 90 wheat fields across diverse agroecological zones. Disease assessment was performed at the flowering to soft dough stages using a standardized

scoring system. Results revealed significant regional variations in FHB incidence and severity, with Nakuru recording the highest mean incidence (63.5%) and severity (52.8%), followed by Nyeri (57.3% incidence, 41.6% severity) and Meru (45.9% incidence, 31.7% severity). (GIS) analysis demonstrated distinct spatial patterns, with disease hotspots concentrated in areas characterized by higher rainfall and humidity during anthesis. Mycological analysis identified *Fusarium graminearum* as the predominant pathogen (81.5%), with *F. culmorum* and *F. poae* occurring at lower frequencies. Environmental factors, including precipitation, temperature, and relative humidity, significantly influenced disease distribution. This study provides essential baseline data on FHB epidemiology in Kenya's wheat-growing regions. This information is crucial for developing region-specific disease management strategies and breeding programs targeting FHB resistance.

Keywords: Disease, Fusarium Head Blight, Geographical Information System, mapping, spatial

Impacts of Sustainable Intensification of Vegetable Production on Farmers' Livelihoods in Kenya

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The sustainable intensification (SI) approach aims to increase agricultural productivity and farmers' livelihoods. However, there is limited empirical evidence of the impact of adopting SI practices (SIPs) on farmers' livelihoods in SSA. Therefore, there is a need to assess whether the adoption of SIPs in the actual sense improves farmers' livelihoods and, if so, by what magnitude. Using a treatment effect model, this study evaluated the impact of adopting SIPs on household income based on 685 household-level data from rural and pre-urban vegetable production in Kenya. Results show that the correlation coefficients were statistically significant. Hence, the adoption of SIPs was influenced by both observed and unobserved factors. Further, the findings revealed that adopting SIP increased crop income by 53.3 percent, while total household income increased by 12.9 percent. These findings highlight the need for continued public and private investments in programs and policies supporting the adoption of SIPs in smallholder vegetable production as one potential option for a sustainable improvement of vegetable production and smallholder farmers' livelihoods in SSA.

Keywords: Livelihoods, smallholder farmers, sustainable intensification, vegetable production, Kenya

Characterization of Endophytic Fungi for Inorganic Phosphate Solubilization in Finger Millet (*Eleusine coracana*) in Kenya

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Inorganic phosphate fixation in the soil with calcium, iron, and aluminium is very high and hence makes only 10-20 percent of the applied phosphorus available to the plant. Endophytic fungi can solubilize phosphate and are the largest contributors to P-solubilizing fungi, which is 0.1 to 0.5 percent of the total fungal population. Therefore, this study aimed to evaluate phosphate solubilizing efficiency of endophytic fungi in finger millet plants. The study was carried out at Egerton University Biotechnology lab, and the

treatments were arranged in a completely randomized design. Finger millet plant samples were collected from Busia and Nakuru regions. The endophytes were isolated on PDA by using the serial dilution method from the stems, leaves, and roots. The culture plates were incubated for 14 days at 280 °C. Pure cultures were obtained and put into Pikovskayas media and incubated for 72 hours and the rate of phosphorus solubilization efficiency (PSE) was determined. The data was then analyzed using statistical analysis software, and further mean separation done using least significance difference at $p \leq 0.05$. The results showed that 38 species of endophytic fungi were isolated from the two regions, and only 5 species were able to solubilize phosphorus. The phosphorus solubilization efficiency range was 178.79 percent, 58.75 percent, 29.79, 24.49 percent, and 14.29 percent for species *Fusarium nygamai*, *Aspergillus* spp, *Fusarium proliferatum*, *Aspergillus* spp and *Botrytis* spp respectively. The highest PSE was obtained from two root endophytes from Busia, while the last two species were obtained from Nakuru and were isolated from the leaf and stem respectively. This study will highly contribute to improved crop growth of finger millet by availing phosphorus to the crop and at the same time unfix phosphate in the soil, hence reducing climate change.

Keywords: Finger millet, endophytic fungi, phosphorus solubilization efficiency, Pikovskaya media, serial dilution

Effect of Selected Chicken Manure-Charged Biochar on Growth of *Ralstonia Solanacearum* in Vitro

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Ralstonia solanacearum, which causes bacterial wilt, is one of the devastating pathogens that cause yield losses for crops in Solanaceae family. Its management is challenging due to its genetic variability and environmental adaptability. The objective of this study was to determine the antibacterial effect of different chicken-manure charged biochar extracts on *R. solanacearum* in vitro. A study was conducted at the microbiology laboratory of Egerton University in August 2024. The extracts consisted of plain biochar and biochar charged with chicken manure. Biochar was charged by mixing it with chicken manure in a 1:1 ratio. The Physico-chemical properties of biochar were assessed according to established standard procedures. In contrast, the antibacterial efficacy of charged biochar extract was evaluated by mixing nutrient agar (NA) in petri dishes with 0.5 ml of the extracts before solidification, followed by the spread of 0.1 ml of bacterial suspension on each plate. The petri dishes were incubated at 28°C for 48 hours in a growth chamber. The experiment was arranged in a completely randomized design (CRD) with three replicates. Data was collected on the number of colonies from each plate and the percentage inhibition. Data were analyzed using analysis of variance (ANOVA), and the mean separated using Fisher's Least Significant Difference (LSD) test at $p \leq 0.05$. Charged biochar extracts significantly suppressed the growth of *R. solanacearum* compared to the negative control. Charged eucalyptus biochar reduced pathogen growth the most by 100 percent; bean waste, 98 percent; rice husk, 87 percent; maize straw, 81 percent; while maize cobs exhibited the least percent inhibition of 57 percent. Charged bean waste and eucalyptus biochar can be used by farmers to control bacterial wilt.

Keywords: Charged biochar extracts, chicken manure, *Ralstonia solanacearum*

Harvesting Resilience: A Systematic Review of Climate-Smart Agriculture in Kenya

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Agriculture in Kenya employs 40 percent of the workforce and contributes 26 percent to the GDP. However, climate change threatens this sector through climate variation and extreme weather patterns. Climate-smart agriculture (CSA) practices like drought-resistant crops and efficient water management have been introduced to reduce carbon footprints and enhance the resilience of the agriculture sector. Despite the potential of CSA to enhance resilience and sustainability, there is no clear evidence regarding the extent to which these practices have been adopted in Kenya. Literature on CSA in Kenya is disjointed and fragmented. This study sought to address this gap by synthesizing studies on CSA in Kenya to provide a comprehensive overview that can guide national and regional policies. A search was conducted on the Google Scholar database using the search phrase “Climate Smart Agriculture in Kenya,” which yielded 138 results, of which 31 articles met the inclusion criteria and were included in the synthesis. Results showed that some CSA practices, like drought-resistant crops, verified seed varieties, intercropping, and crop rotation, were prevalent across the country. However, other practices like cover-cropping, efficient water management, and precision technologies have low adoption rates. Adoption of CSA is hampered by inadequate access to finance, lack of knowledge among farmers, and inadequate technologies. Based on the findings, the study concludes that farmers are willing to adopt CSA practices, but a knowledge gap and a lack of resources hamper their efforts. There is a need to address these barriers to enhance the adoption of CSA. This study may aid policymakers in the national and county governments in formulating policies for improving the adoption of CSA practices. It may also help practitioners in agriculture develop interventions to enhance the adoption of CSA.

Keywords: Climate change, climate-smart agriculture, environmental sustainability, Kenya

Evaluation of Rice (*Oryza Sativa* L.) Genotypes for Yield and Resistance to Blast Disease (*Magnaporthe Oryzae*) in Kenya

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Rice blast (*Magnaporthe oryzae*) is one of the most limiting factors of production across the world, and in Kenya it affects rice production up to 70-80 percent in disease-favourable weather conditions. Twenty-five lowland and upland rice genotypes were evaluated for two seasons at the National Irrigation Board (NIB) Ahero, the Kenya Agricultural and Livestock Research Organization (KARLO), and the Industrial Crops Research Institute (ICRI) Mwea. Genotype NIBAM 11 (Basmati 370) was used as a check. The experiment was laid out in a partially balanced lattice design (5 x 5) replicated three times, and the rice crop was established by direct seeding with rows measuring 0.2m. Data was collected on growth, yield and yield components, and rice leaf blast disease score. A visual subjective scoring scale 0-9 was used in scoring for leaf blast disease. The data was subjected to analysis of variance (ANOVA) using statistical analysis software (SAS) version 9.1 and means were separated using Duncan's multiple range test at

$\alpha=0.05$. The rice genotypes were significantly different in yield, agronomic traits, and in blast disease scores. Combined results of the two sites did show that 08FAN 10 was high in yield with a total plot weight of 9.37tonnes/hectare followed by KOMBOKA with 9.00 tonnes/hectare and thirdly ARIZE TEJ GOLD at 8.82 tonnes/hectare while BW196 performed poorly with a total of 3.74 tonnes/hectare despite having the highest number of tillers at an average of 33 tillers per hill. In Mwea, the genotypes ARIZE TEJ GOLD, KOMBOKA and 08FAN 10 with had an average yield of 5.11, 4.45 and 4.02 tonnes/hectare respectively. In Ahero 08FAN 10 9.37 tonnes/hectare, KOMBOKA 9.00 tonnes/hectare ARIZE TEJ GOLD 8.82 tonnes/hectare. The poor performance experienced in Mwea may be due to the cold stress during season one of the study. Blast disease was more prevalent in the Mwea site and BASMATI 217 was the most susceptible, followed by MWUR 4, SARO 5 and KOMBOKA, whereas ARIZE TEJ GOLD, ITA 310 and 1RAT 109 being the most resistant. In conclusion, farmers should embrace hybrid varieties ARIZE TEJ GOLD, KOMBOKA, and 08FAN 10, which showed high yields and tolerance to rice leaf blast.

Keywords: Blast disease, genotype, rice, yield

The Role of Digital Systems in the Dissemination of Crop Production Technologies and the Effects of Climate-Smart Agricultural Practices on the Productivity of Cape Gooseberry in Baringo County

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Cape gooseberry (*Physalis peruviana* L.) is a fruit crop that originated in South American countries. The crop has documented nutritional, medicinal, and industrial values. In Baringo County, Kenya, the crop grows naturally in the wild, and the level of domestication of the crop is low. The purpose of the study, therefore, was to introduce the crop in Baringo County for cultivation using digital technologies, which included documentary audio-visuals, online training, and a mobile app. Additionally, since agriculturalists are currently stressing the essence of climate-smart agricultural technologies, the use of organic manure and intercropping with beans was incorporated during the introduction of the crop. The research designs used were participatory action research and quasi-experimental. The sample size for the study was 120 farming families. Three Sub-counties in the County were purposively selected. From each Sub-County, one ward was selected. The sample was distributed equally among the three wards. Random sampling was used to select 40 farming families from each ward. Within each ward, sampled farming families were assigned to four treatments as follows: The first group received crop technologies through digital systems and incorporated climate smart agriculture; the second group received technologies through digital systems; the third group incorporated climate smart agriculture and relied on regular extension services; and the last group relied on regular extension services. The farming families were issued with Cape gooseberry seedlings. The data collection instrument was the crop productivity templates. The data was subjected to Analysis of Variance (ANOVA) at 0.05 level of significance. The major finding was: Improved productivity levels due to the combined integration of digital systems and climate-smart agricultural technologies. The study recommends that extension systems integrate the use of ICT resources and climate-smart agriculture.

Keywords: Audio-visual, digital farming, mobile app, technology adoption, online training

Borrow Pits Conversion for Aquaculture Promotion in Kenyan ASALs

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Water scarcity in ASALs has severe implications for human health, agriculture, livestock, wildlife, and aquaculture potential. Livestock husbandry, which is the primary source of income and food security for many communities in ASALs, equally depends on water availability. Without it, the full potential of ASALs is not exploited. This study documents the well-being of converted borrow pits into water pans and how they contribute to the collection of over 1.2 million m³ of road surface runoff. This amount of water, which is spread across various borrow pits, has the potential to support aquaculture for different types of fish, such as Tilapia and mudfish. The introduction of fish to pastoral communities in Laikipia is expected to improve food security, curb human-wildlife conflicts, and also empower marginalized women and youths.

Keywords: Aquaculture, borrow pits, water scarcity

Screening of Finger Millet (*Eleusine Coracana*) Genotypes for Resistance to Blast (*Pyricularia Grisea*) Disease in Kenya

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Finger millet (*Eleusine coracana* L.) is a drought-tolerant and nutritious cereal. Yields are low due to several biotic and abiotic stresses. Blast disease, caused by *Pyricularia grisea* is the most devastating disease, causing up to 80 percent yield losses. Management strategies for blast include host plant resistance, biological, cultural, and chemical control. The objective of the study was to evaluate resistance to blast disease in sixty-four selected finger millet genotypes. The genotypes were evaluated in two sites: Busia-Alupe County and Koibatek-Baringo County of Kenya, for two seasons (March-July and September-December 2021), long and short rains respectively. The experiments were laid out in a partially balanced 8×8 lattice design with three replications. Blast disease severity was scored on a scale of 1-9, and the Area under Disease Progress curve (AUDPC) was calculated. Results showed that genotype × environment (G×E) interaction was significant for AUDPC, blast score, severity at $P < 0.001$. GGE Biplot analysis revealed that 81.64 percent of the total variation of blast score was explained by Principal Components (PC1) and (PC2), which accounted for 41.36 percent and 40.28.00 percent respectively. Genotypes KNE 624XGBK 029749A-P7/3-2-1, P224XGBK 033513A-2-2-1-1-1 and U15 were identified as the most resistant and stable to blast disease. The study recommended further evaluation of the best-performing varieties for release as improved varieties after national performance trials or used as breeding lines.

Keywords: AUDPC, blast disease, finger millet, resistance, yield

Effects of Moisture Retention Pit Planting Technique on Growth and Yield of Upland-Grown Arrowroot: A Climate-Smart Approach

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Climate change and unpredictable rainfall patterns present significant challenges to sustainable agriculture, highlighting the need to adopt climate-smart, innovative technologies to enhance productivity and environmental resilience. Arrowroot (*Colocasia esculenta* L. Schott) is a high-value but underutilized tuber crop in Kenya, traditionally cultivated in wetland ecosystems. This dependence limits its expansion into upland farming systems and hinders efforts to meet the growing demand for arrowroot products. This study investigates the potential of the moisture retention pit planting technique as a climate-adaptive strategy to optimize water use efficiency and improve upland arrowroot production. To increase the area under cultivation and develop methods to enhance yields, a factorial experiment was conducted in a randomized complete block design (RCBD) for two growing seasons. This experiment assessed the effects of four pit depths (20, 30, 45, and 60 cm) on the growth and yield. The findings indicate that deeper pits significantly improved soil moisture retention, which, in turn, facilitated better shoot and corm development. A positive correlation was established between pit depth and key growth parameters, with the 60 cm depth yielding the highest fresh corm weight per plant (2.67 kg) and total yield (44.63 t ha⁻¹). This innovative technique enhances crop resilience to water stress and optimizes nutrient absorption. The results demonstrate the potential for cultivating upland arrowroots, yielding greater corm and cormel than wetland cultivation. Therefore, this study recommends establishing moisture retention pits ranging from 30 to 60 cm for planting upland arrowroots, tailored to specific site attributes.

Keywords: *Colocasia esculenta*, upland arrowroot, technologies

Determination of Adult and Seedling Stem Rust (*Puccinia graminis*) Resistance Genes in CIMMYT Advanced Wheat (*Triticum aestivum* L.) Lines

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Stem rust (*Puccinia graminis* f. sp. *tritici*) virulence on multiple genes has resulted in severe yield losses on wheat (*Triticum aestivum* L.) genotypes worldwide. A study was conducted to determine (i) seedling resistance to stem rust races, (ii) resistance to stem rust at adult plant stage and (iii) presence of stem rust resistant genes *Sr22*, *Sr26*, *Sr38*, *Sr2*, *Sr12*, *Sr13*, *Sr57* and *Sr8155B1* in CIMMYT advance wheat lines using 8 PCR based molecular markers. A set of 175 CIMMYT advance wheat lines was evaluated for seedling resistance to races *TTKSK*, *TTKST*, *TTKTT*, *TTTTF*, and *TRTTF* in the greenhouse and in a 3-season field experiment in a 25×7 alpha lattice design. At the seedling stage, 23.12 percent of the wheat lines were resistant to all races with infection types (IT) ranging from “;” to “2+”. At the adult plant resistant stage, 9.71 percent of the genotypes were resistant, with stem rust severity and reaction of 5R to 20MS over 3 seasons. About 15.29 percent of the lines were resistant both at the seedling and adult plant resistance stages, with a reaction of “;” to “2+”, and 5R to 40M, respectively. The highest frequency of *Sr* genes was observed for *Sr12* (155 lines) linked to marker *IWA6086*, and *Sr38* (144 lines) linked to marker *VENTRIUP/LN2*. The lines that possessed genes *Sr22* and *Sr26* were resistant to all the stem rust races at the seedling stage, with IT < 3 and reaction of 5R-40MS at the adult plant stage. This study showed that lines *KSRON 40* (*Sr22*), *KSRON 52* (*Sr8155B1*), *KSRON 78* (*Sr26*, *Sr12*, *Sr38*), *KSRON 129* (*Sr22*, *Sr12*, *Sr38*), *KSRON 142* (*Sr13*, *Sr12*, *Sr38*), *KSRON 144* (*Sr13*, *Sr22*, *Sr12*, *Sr38*), and *KSRON 155* (*Sr8155B1*, *Sr12*, *Sr38*) could be used as valuable genetic stock for stem rust resistance.

Keywords: Adult plant resistance, genes, seedling resistance, stem rust, wheat

Willingness of Kale Farmers to Pay for Vermiliquid in Bungoma County, Kenya: An Application of Contingent Valuation Method

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An increase in population in the Western parts of Kenya has resulted in extensive land subdivision due to ancestral inheritance, reducing available agricultural land. This pressure has resulted in inappropriate land use, soil degradation, and declining soil fertility, ultimately lowering crop yields and farm incomes. Government and private entities have introduced environmentally friendly agricultural technologies to address these challenges. However, smallholder farmers often struggle to afford sufficient synthetic fertilizers to sustain production. This study aims to examine the willingness of smallholder farmers to pay for Vermiliquid, an organic bio-fertilizer, and identify the key factors influencing their willingness to pay



(WTP). The study considers a broad range of Vermiliquid product attributes, including its safe use, ability to boost vegetative growth, increase yields, potential to repel crop pests, and environmental friendliness. The analysis used the contingent valuation method and the Logit model to assess farmers' willingness to pay (WTP) for Vermiliquid. The results indicated that 92.19 percent of the sampled farmers expressed a willingness to pay for the product, while about 7.81 percent of them stated that they were unwilling to pay. Findings revealed that key determinants of WTP included access to credit, off-farm income, and access to information. This highlights the role of financial capacity and knowledge dissemination in adoption decisions. The study concludes that there is significant demand for Vermiliquid and discusses relevant policy implications for enhancing accessibility and adoption among smallholder farmers.

Keywords: Contingent, valuation method, vermicompost, vermiculture, vermiliquid, willingness to pay

Efficacy and Economics of Bio-pesticides in the Management of Fall Armyworm (*Spodoptera frugiperda*) in Sorghum (*Sorghum bicolor*) in Semi-arid Tropics

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Fall armyworm (*Spodoptera frugiperda*) (FAW) continues to damage cereals such as sorghum and maize is globally threatening food security. Farmers continue to over-rely on inorganic insecticides to manage FAW, which can pollute the environment. A study was therefore conducted to evaluate the efficacy and economics of selected biopesticides against the fall armyworm in Sorghum. Experiments were carried out in Kiboko, ICRISAT and Koibatek ATC for two seasons. Biopesticides evaluated were: *Beauveria bassiana*, Diatomite, Nimbecidine (Azadirachtin), *Bacillus thuringiensis* and Control (Radiant)(Spinetoran). The experiment design used was a Randomized Complete Block Design with 3 reps. Data collected included grain yield, larval count, days to flowering, plant height, and stalk borer stem tunneling. Analysis of Variance (ANOVA) was done using Genstat, and means separated using LSD ($P \leq 0.05$). Biopesticide interaction was observed on percent pest reduction (%) ($p = 0.03$ and grain yield ($p = 0.05$). Overall mean percent pest reduction was 72.80 ± 5.79 percent. A higher percent pest reduction (%) was observed in Koibatek ($81.94 \pm 2.14\%$) compared to Kiboko ($59.45 \pm 3.06\%$). Radiant 120 SC had the highest percent pest reduction (100%) followed by Nimbecidine (*Azadirachta indica*) (78.06%), Diatomite (62.04%), *Bacillus thuringiensis* (58.53%), and *Beauveria Bassiana* (54.85%) as compared to the negative control. Significant differences were observed in grain yield and cost-benefit ratio in Koibatek and Kiboko. Diatomite-treated plots had a high-cost benefit ratio ranging between 1:98.44 and 1:153.82 in Kiboko and Koibatek. The results show high potential to utilize the selected biopesticides to manage Fall Armyworm in semi-arid tropical environments.

Keywords: *Bacillus thuringiensis*, *beauveria bassiana*, diatomite, nimbecidine, pest reduction

Effects of Gamma Irradiation on Morphological Properties of Wheat (*Triticum Aestivum* L.)

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Wheat (*Triticum aestivum* L.) is among the leading sources of food globally. There is an increased demand for wheat due to rapid growth in population and changes in food habits, as preference has shifted to wheat products. This research aimed to determine the optimum gamma irradiation dosage to improve production and wheat quality. To achieve this objective, *Njoro BW11* wheat seeds were irradiated at dosages of 80Gy, 100Gy, 120Gy, 150Gy, 200Gy, 250Gy and 300Gy while the control seeds were not irradiated. They were then sowed and the morphological properties; namely, germination rate, tillers, spike length, heights and kernel weight, measured for every replicate for two seasons. The data was subjected to a combined analysis of variance (ANOVA) using R-software. The results showed that higher radiation of 200Gy and above delays germination both for M₁ and M₂. The control seeds for M₁ generation exhibited a high value for the germination rate and 1000 kernel weight, while treatments at 80Gy recorded high values in a number of tillers, plant height, and spike length. In M₂ generation, plant height and 1000 kernel weight exhibited the highest value of 78cm and 33g respectively for 150Gy. Treatment of 250Gy produced wheat with the highest number of tillers while 100Gy had the longest spikes. In conclusion, the effect of gamma radiations on morphological properties cannot be achieved concurrently by a single dosage in M₁ and M₂ generations for *Njoro 11* wheat variety.

Keywords: Gamma radiations, morphological properties, mutation breeding, *Njoro BW11*, wheat (*Triticum aestivum* L.)

Genotype By Environment Interaction on Resistance to Cassava Mosaic and Cassava Brown Streak Diseases and Root Trait Agronomic Performance in Western Kenya

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Cassava, a food security crop grown in marginal areas, is increasingly being utilized, not only for subsistence but also as an industrial crop in Kenya. Cassava Mosaic and Cassava brown streak diseases are the major stresses affecting the production of cassava. To manage the diseases, urgent deployment of varieties with dual resistance is needed. This study aimed at evaluating genotype by environment interaction (GEI) on CMD, CBSD resistance, and root trait (Fresh root yield, Dry matter yield) performance of elite cassava genotypes at Kakamega and Busia, and to identify superior genotypes with high stability that combine dual resistance and root trait performance. A Randomized Complete Block

design with three replicates was used as the design in two locations and two seasons. Results revealed a significant difference in genotypes, environment, and GEI on disease resistance traits (CMDI, CMDS, CBSDI, and CBSDS) at $P \leq 0.001$. Genotype had a significant effect on fresh root yield and dry matter yield at $P \leq 0.001$. The environment had a significant effect on fresh root yield and dry matter yield at $P \leq 0.001$. GEI had a significant effect on fresh root yield and dry matter yield, $P \leq 0.001$. Decomposition of the treatment sum of squares revealed that genotype and GEI contributed equally to the disease resistance traits. The % variation due to genotype was higher than the % variation due to environment and GEI for fresh root yield and dry matter yield. According to the genotype stability index ranking, genotypes MM06/0138, Pwani, MM96/3567, and Mkumba were identified as the most stable and have dual resistance to CMD and CBD. These genotypes can be tested in more environments to determine their adaptability and potential release to farmers for growing.

Keywords: Elite cassava genotypes, genotype by environment interactions, genotype stability index

Mapping The Distribution and Diversity of Aflatoxin Producing Fungus Isolates from Groundnut (*Arachis Hypogaea*) in Kenya and Ethiopia

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Aflatoxin produced by *Aspergillus* species is one of the most significant groups of mycotoxins that affect groundnut production. Efforts have been made to manage aflatoxin contamination through proper drying, use of storage materials like Purdue Improved Crop Storage bags, host-plant resistant varieties, synthetic and organic fungicides. However, there are limitations because the pathogen occurs in pre- and post-harvest. This study aimed to characterize the distribution and diversity of aflatoxin-producing fungi on groundnut. *Aspergillus* species were isolated from groundnut seeds using potato dextrose agar media. Four groundnut seeds were surface sterilized using 1 percent sodium hypochlorite and then rinsed with distilled water. The plates with the seeds were then incubated at 28°C for seven days to allow for fungus to grow. Pure cultures were then obtained through single-spore isolation. Morphological identification of the *Aspergillus* species was done using Leica DM500 Trinocular Microscope. A total of 81 groundnut samples were collected from 6 groundnut growing regions in Kenya and Ethiopia. Results indicate that only 5 (6%) samples and 8 (10 %) samples from Ethiopia were not contaminated with *Aspergillus* spp. *Aspergillus flavus* recorded the highest distribution with Midhaga Tola in Ethiopia recording 60 percent while Meru, Rongai and Elgeyo Marakwet recorded 43 percent. Meru recorded the highest distribution of *Aspergillus parasiticus* (35%), followed by Babile, Midhaga Tola and Rongai (28%, 23%, and 15%) respectively. Rongai had the highest distribution of *Aspergillus niger* (45%) followed by Elgeyo Marakwet, Midhaga Tola, Meru and Fedis (28%, 28%, 23%, 15% and 8%) respectively. The study shows a wide distribution level of *Aspergillus* spp in all the sampled regions. This diversified distribution across the regions in Kenya and Ethiopia requires an inclusive and integrated management approach to ameliorate the menace of aflatoxin in Kenya and Ethiopia.

Keywords: Aflatoxin producing fungus, diversity, distribution, groundnut

Evaluation of the Response of Maize Inbred Lines to Agroinfection by Three Virulent Maize Streak Virus Isolates

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Originating in Central America and introduced into Africa by the Portuguese in the 16th century, Maize (*Zea mays* L.) has become the most important staple food crop in both Kenya and the rest of Africa. Its production is, however, threatened and attributed to both biotic and abiotic factors. Maize streak disease (MSD), caused by Maize streak virus (MSV), is the most critical disease in the maize growing regions. It reduces maize yields in an infected maize plant by up to 100 percent, even in high-potential zones. Very few natural sources of resistance or tolerance amongst maize genotypes have been developed, and therefore, there is need to screen more genotypes for resistance or tolerance. The objective of this study was to evaluate the levels of resistance or tolerance of selected maize genotypes. Maize inbred genotypes were screened under controlled agroinoculation conditions using three cloned MSV genotypes on a split-plot arrangement on a completely randomised design. Disease severity in growth rooms was scored using a completely objective computer-based image analysis system, and the data subjected to Analysis of variance (ANOVA), and means separated by Duncan's multiple range test. The study established that the Maseno University developed maize genotypes: AB2, ABLEP, and EX44/42-2 were found to possess degrees of MSV tolerance similar to previously described resistant genotypes, such as Pan77, and are potential sources of new MSV tolerance genes in Kenya. It is therefore recommended that the lines should be important sources of resistance for breeders in the region.

Keywords: Agroinoculation, inbred genotypes, maize streak virus, resistance, tolerance

Exiled at the Shoreline: Gender, Climate Change, and the Loss of Intertidal Livelihoods among Small-Scale Women Pelagic Fishers on Lake Victoria

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Climate change is remodelling the socio-ecological landscape of Lake Victoria, with extremely severe penalties for small-scale women pelagic fishers who rely on intertidal zones for their livelihoods. This theoretical review explores how gendered power dynamics interconnect with environmental changes to displace women from cultural fishing practices and pelagic fish-related economic activities. Drawing on documented case studies and secondary data from fishing communities in Kenya's Homa Bay and Migori counties bordering Lake Victoria, the paper synthesises existing literature to examine the loss of access to pelagic fish resources, infrastructure, and market participation due to shoreline degradation, declining fish stocks, and increasingly unpredictable weather patterns. The review applies a gender lens qualitative and a socio-ecological systems theory approach to analyse further how women's limited access to intertidal space, poor access to capital, exclusion from decision-making boards, and inability to access adaptive technologies intensifies their vulnerability. It also evaluates adaptation strategies such as the use of solar drying racks and gender-inclusive climate-smart innovations, assessing their effectiveness in building resilience. Empirical findings establish the presence of environmental stressors

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supported by the accelerated eutrophication process, which has caused a shift in pelagic fish distribution, marginalization in accessing fish inputs, and reduced production space. Furthermore, women are excluded from BMUs and fisheries co-management committees. In addition to resilience, challenges arise on account of uneven technology access due to low education, location, and social capital deficiencies. By integrating theoretical perspectives and empirical findings, the paper advocates for inclusive policies that recognise and strengthen the roles of women in sustaining lake-based livelihoods amidst shifting ecological realities.

Keywords: Climate change, intertidal livelihoods, Lake Victoria, pelagic fish, women fishers

Primary Causes of Environmental Degradation and Sustainability in Kenya: Do Energy Poverty and Tourism Matter?

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This study estimates the effects of several factors, namely: energy poverty, international tourism arrivals, gross domestic product (GDP), population, renewable energy consumption, fossil fuels, foreign direct investment (FDI), urban population growth on Kenya's carbon dioxide emissions by considering time series data from 2000 to 2023. This study uses SIPRAT (Stochastic Impacts by Regression on Population, Affluence, and Technology) and VAR (Vector Autoregressive Model) models to analyse the data. Based on the SIPRAT model, the study found that energy poverty, GDP, and fossil fuel energy consumption had significant positive effects on carbon emissions. In contrast, the importation of goods and services had a negative impact on CO₂ emissions. Tourism arrivals had no significant impact on environmental pollution. Further analysis on the ranking of the effects of these variables indicates that importation of goods and services has the highest impact on carbon dioxide emission, followed by fossil fuel energy consumption, then energy poverty, and GDP. Using the VAR model, the study found no evidence to support the long-run relationship between CO₂ and each of the explanatory variables. The study recommends that policymakers adopt policies ensuring more households have access to clean energy to mitigate the effects of environmental pollution.

Keywords: CO₂ emission, Douglas Cobb Model, energy poverty, tourism, Sipra Model

The Effects of Legume-Vegetable Intercropping and Different Nitrogen Rates on Nitrous Oxide Emissions and Land Use Efficiency

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Nitrous oxide (N₂O) emissions from agricultural soils are a major driver of climate change, escalated by excessive nitrogen (N) fertilization in conventional farming. Inefficient nutrient uptake leads to soil degradation and increased emissions. Legume-based intercropping, such as mungbean inclusion, can mitigate N₂O emissions and boost nutrient use efficiency through biological nitrogen fixation, reducing the environmental footprint of synthetic fertilizer. The impact of different intercropping patterns and

nitrogen rates on N₂O emissions and productivity remains an emerging research focus. This study evaluated the effects of nitrogen rates and intercropping patterns on N₂O emissions and productivity in an okra-mungbean intercropping system in Shanhua, Taiwan. A split-plot design was used with three N levels (0%, 50%, 100% recommended nitrogen dose, RND) as the main factor and four cropping patterns (monocropping, row, and mixed intercropping) as the sub-factor. Soil N₂O emissions were monitored every 10 days using a LI-7820 N₂O/H₂O trace gas analyzer. Data were subjected to ANOVA in R (4.4.1), with treatment means compared using Fisher's LSD test ($p \leq 0.05$). Okra monocropping at 100 percent RND had the highest N₂O emissions (0.60 nmol m⁻²s⁻¹), while mungbean monocropping recorded the lowest (0.38 nmol m⁻²s⁻¹). Mixed and row intercropping recorded intermediate lower emissions. The highest MAI (443.63 NTD) and LER (1.585) occurred in mixed intercropping at 100 percent RND. Mixed intercropping at 50 percent RND optimized sustainability, while 100 percent RND in mixed and row intercropping maximized yield and economic returns. Thus, mungbean inclusion in intercropping systems offers a sustainable approach to reducing N₂O emissions while maintaining productivity.

Keywords: Intercropping, land use efficiency, mungbean, nitrous oxide emissions, okra

Unlocking Cyanide Dynamics in Cassava (*Manihot esculenta* Crantz): Pathways, Challenges, and Innovations

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Cassava (*Manihot esculenta* Crantz) is a vital food security crop in sub-Saharan Africa due to its resilience to harsh climatic conditions and soils. However, the consumption of cassava poses significant health risks due to the presence of cyanogenic glycosides, which release hydrogen cyanide (HCN) upon hydrolysis. The study deployed narrative, systematic, and scoping approaches to explore the biosynthesis, accumulation, and mitigation of cyanide in cassava, highlighting genetic, environmental, and agronomic factors influencing HCN levels. Genetic interventions, including selective breeding and transgenic approaches, have been employed to develop low-cyanide cassava varieties. RNA interference (RNAi) technology has been successfully used to suppress the expression of *CYP79D1* and *CYP79D2* genes, reducing linamarin biosynthesis. Overexpression of hydroxynitrile lyase (HNL) in cassava roots has also been explored to accelerate cyanide detoxification during post-harvest processing. These genetic advancements, combined with optimized agronomic practices and post-harvest techniques, present promising solutions to mitigate cyanide toxicity while maintaining cassava's nutritional and agronomic benefits. This study also identified key research gaps in cyanide metabolism, epigenetic regulation, and enzymatic detoxification strategies for future cassava improvement.

Keywords: Cassava, hydrogen cyanide, cyanogenic glycosides, genetic modification, RNAi

Evaluating Farmers' Knowledge and Occurrence of Potato Cyst Nematode (*Globodera* Spp.) in Narok and Elgeiyo Marakwet Counties, Kenya

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Potato cyst nematode (*Globodera* spp.) is a quarantine pest of potato, causing yield losses of up to 80 percent and financial losses to farmers. *G. rostochiensis* was first reported in Kenya in 2015, and *G. pallida* was reported three years later, highlighting the urgent need to understand their distribution and impact. This study aimed to determine the prevalence and farmers' knowledge of potato cyst nematode (PCN) in Narok and Elgeiyo Marakwet counties. A survey was conducted across 60 Narok and 55 Elgeiyo Marakwet farms, where soil samples were collected and processed using the Fenwick can flotation method. PCN cysts were recovered from 85 percent of the samples in Narok and 67 percent in Elgeiyo Marakwet. Cyst counts varied widely, with some fields in Narok recording up to 440 cysts per 200g of soil sample, while the highest count in Elgeiyo Marakwet was 211 cysts per 200g of soil sample. Viability tests indicated a high proportion of viable eggs, averaging 72 percent in both counties, suggesting a strong potential for reinfection and persistence in the soil. A total of 188 farmers were engaged through structured questionnaires and key informant interviews (KIIs) to assess their knowledge of PCN. The study revealed that while 107 farmers had heard of PCN, only 13.9 percent in Narok and 14.3 percent in Elgeiyo Marakwet had a detailed understanding of its biology, symptoms, management strategies, and its impacts on potato production and yield. Formal training on PCN management and soil testing was both low, with only 21.8 percent of farmers in Narok and 10.9 percent in Elgeiyo Marakwet receiving training, and 14.3 percent in Narok and 10.9 percent in Elgeiyo Marakwet having tested their soil for PCN, limiting early detection and management. The study highlights a critical gap in knowledge and PCN management among farmers, suggesting that there is a need for enhanced farmer education, improved access to resistant potato varieties, and widespread adoption of integrated PCN management techniques to safeguard potato production in Kenya.

Keywords: Farmers' knowledge, management, occurrence, potato cyst nematode

Economic Benefit Analysis of IR Maize Technology Over Local Landraces in Maize Production in Western Kenya

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Witchweed, (*Striga hermonthica* (Del.) Benth) is a major threat to the realization of yield potentials of cereal crops, especially maize. This study was designed to determine the economic benefits of IR coated hybrids against local landraces in western Kenya. The experiment was laid out in a Randomized Complete Block Design with three replications. Data on the prices of fertilizer and seed was collected from the Agro-shops around the study site. Labour cost was taken as the price that ICRISAT pays per Monday at the station. In addition, the overall yields of IR and local landrace were measured on the on-station and on-farm experiments conducted in Alupe and Rangwe during the consecutive 2018 and 2019 cropping seasons. Data collected was analysed using SAS analysis tool (Version 9), and the treatment

means were further subjected to T-test to determine their significant differences. Gross margins and cost to benefit ratios were also used in data analysis. Yield results indicated higher grain yields on FR425IR of 2.4376 t ha⁻² compared to 1.152 t ha⁻² in local landraces. In contrast, most hybrid varieties, H513, DK8031, Duma43, and DH04, recorded grains less than 1 t/ha. Further, results indicated higher gross margin on treatments of Kes 12,400 in FRC425IR compared to a net loss of Kes 17,550 on local landrace. Additionally, there was a higher benefit-cost ratio of 4.3 and a net marginal rate of 3.3. Evaluation of the use of IRM indicated that the technology is profitable and viable. Overall, this study's findings indicated that using IR technology in maize production would increase farmer income and food security.

Keywords: Benefit cost ratio, imidazolinone resistant, marginal rate of return, parasitic weed

Influence of Water and Nitrogen Application on The Performance of Forage Grass Species in Drylands of Kenya

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Nutrients and water significantly influence biomass and seed production in forage grass, especially in arid and semi-arid environments. Efficient uptake and utilization of nutrients is critical for sustainable forage production in the era of global climate change. This study aimed to determine the effects of irrigation and nitrogen on biomass and seed yield of *Cenchrus ciliaris*, *Enteropogon macrostachyus* and *Chloris gayana* grass species at Chemeron Dryland Research Station in Baringo and Kenya Agricultural Research Organization (KALRO), Naivasha. The experiment was laid out in a randomized complete block design, split-split plot arrangement with three replications. Irrigated and rainfed regimes were the main plot, nitrogen application at the rates N0, N100, and N200 Kg ha⁻¹ were the sub-plots. Grass species were the sub-sub plots. Data on biomass, seed yield, tiller numbers, and height, root length of the grass species were collected. The PROC GLM procedure of SAS Software version 9.4 was used to analyze variance at 95 percent level of confidence. Water application significantly ($p \leq 0.05$) increased seed and forage production in the two environments. *Enteropogon macrostachyus* had significantly ($p \leq 0.05$) highest mean biomass of 18.92 t ha⁻¹ compared to the other two species. Maximum biomass of 18.72 t ha⁻¹ was achieved by the application of fertilizer at N200 Kg ha⁻¹. Both N100 Kg ha⁻¹ and N200 Kg ha⁻¹ significantly ($p \leq 0.05$) increased tiller production. Species grown in Naivasha had significantly higher seed and biomass yields than those grown in Baringo. *Cenchrus ciliaris* under N200 Kg ha⁻¹ of fertilizer resulted in significantly ($p \leq 0.05$) highest biomass 48.26 t ha⁻¹ and seed yield of 24.23 g m⁻². Based on these results, it was indicative that severely low precipitation environments like Baringo need to be supplemented with irrigation water and N fertilization to increase seed and forage production. Thus, farmers can increase seed yield and biomass production by growing *Cenchrus ciliaris* and *Enteropogon macrostachyus* species under a combination of N200 Kg ha⁻¹ and irrigated conditions. Further research is also required to quantify the specific amount of precipitation needed for each pasture species for seed and forage production in both environments for water-saving purposes.

Keywords: Climate change, drought, grass species, irrigation, nitrogen

Phytochemical Screening of Cucumber (*Cucumis sativus* L.) Root Extracts and Their Effects on the Biofilm Matrix of Plant Beneficial *Bacillus amyloliquefaciens* SQR9

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This study, which investigates the phytochemicals that are pivotal in plant-microbe interactions from the roots of *Cucumis sativus* L. and their influence on the production of biofilms in *Bacillus amyloliquefaciens* SQR9, represents a significant leap towards understanding sustainable agriculture. The bacteria, which form a group of beneficial plant growth-promoting rhizobacteria, enhance plant growth by increasing nutrient availability. The study, conducted using a hydroponic system to cultivate cucumber plants, determined SQR9's ability to utilise root extracts and other substrates as energy sources through in vitro testing. The biofilm matrix of SQR9 was examined both qualitatively and quantitatively, and its monosaccharide compositional analysis was conducted using gas chromatography/liquid chromatography. The root extracts of cucumber analysed showed phenolic compounds, organic acids, and amino acids, with their concentration increasing with the plant's age. Root extracts obtained at later development stages stimulated the formation of thicker biofilms in SQR9, resulting in higher quantities of extracted extracellular polymeric substances than those obtained during earlier growth stages. The qualitative examination of the SQR9 biofilm matrix revealed that the variations observed in the biofilm matrices were due to developmental factors, while its exopolysaccharide consisted of six sugars. Conclusively, the chemical makeup of cucumber roots changes as they progress through their developmental stages, and these variations have varying effects on the creation of biofilms by SQR9. This study demonstrates the potential application of plant polysaccharides as substrates or environmental signals for SQR9, which is crucial in producing bio-fertilizers. The practical implications of this study's findings are significant, as they can guide the development of more effective and sustainable farming practices, contributing to achieving Sustainable Development Goal 2: Zero Hunger, 3: Good Health and Well-being, and 13: Climate Action.

Keywords: *Bacillus amyloliquefaciens* SQR9, *cucumis sativus* L., exopolysaccharides, extracellular polymeric substances, phytochemicals

THEMATIC AREA:

LEVERAGING INDIGENOUS KNOWLEDGE



Kaya Kauma Forest Shrine Indigenous Ecological Knowledge: Contemporary Lessons for Resilience and Conservation in Anthropocene

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Unprecedented environmental challenges, ranging from extreme flooding in arid and semi-arid regions to rapid desertification of rainforests, are evidence of the Anthropocene times in Kenya. Pope Francis leads Global leaders in *Laudato Si'*, calling for urgent, multi-sectoral approaches to environmental conservation, which include integrating indigenous knowledge systems, that have historically been instrumental in ecosystem management and resilience-building. This study explored the indigenous ecological wisdom of the Kauma people in environmental conservation within Kenya's coastal region. This study examined the Kauma, part of the larger Mijikenda community, sacred Kaya forests conservation that have long employed sustainable land-use practices, and forest protection strategies that align with contemporary climate adaptation and mitigation measures. The significance of this study is in underlining the relevance of indigenous knowledge in addressing climate change. This study employed an ethnographic design which focuses on the indigenous knowledge of the Kauma people, and allows an in-depth exploration of their environmental conservation practices through direct interaction, observation, and engagement with the community, which provides for the capture of the cultural, historical, and environmental dimensions of their traditional ecological knowledge (TEK). The study used **Political Ecology Theory**, which examined the power dynamics between local communities, governments, and global environmental policies. This theory was complemented by **Traditional Ecological Knowledge (TEK) Theory**, which focuses on indigenous environmental wisdom accumulated through generations. Purposive and snowball sampling techniques were used for data collection, which was analyzed historically from oral narratives and archival records.

Keywords: Environmental Conservation, indigenous knowledge, Kauma people, Kaya forests, Traditional Ecological Knowledge (TEK)

Echoes of Wisdom: The Use of Proverbs Kikuyu Secular Songs to Sustain Indigenous Knowledge

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Secular music, often perceived as merely entertainment, functions as an informal yet powerful archive of indigenous knowledge. Artists actively participate in the cultural continuity through embedding proverbs into their music, which is accessible and popular to the community. This study explores the strategic use of proverbs in Kikuyu secular songs as a vital means of preserving and transmitting indigenous knowledge. Proverbs, deeply rooted in Kikuyu oral traditions, express cultural values, historical wisdom, and social norms that have guided the community for generations. While much scholarly attention has been directed towards proverbs in folktales and formal discourse, their presence in contemporary secular music remains underexplored. This research focused on how Kikuyu artists embed traditional proverbs within modern musical narratives to sustain cultural identity amidst changing socio-political landscapes. Drawing on Samuel Muchoki's (Samidoh) popular Kikuyu secular song *Urumwe Mbere*, the study

analyzed the lyrical content to identify recurring proverbial expressions and interpret their meanings within social contexts. The study used qualitative content analysis and semiotic approaches to music to analyse the symbolic and metaphorical meanings of the proverbs embedded in the song lyrics. The research revealed how the artist employs proverbs to comment on issues such as morality, social cohesion, generational shifts, and economic hardship. These expressions serve not only as poetic devices but also as vehicles of intergenerational dialogue, subtly reaffirming community ethics and indigenous knowledge. The research contributes to broader discourses on African oral literature, semiotics, and cultural sustainability, advocating for the recognition of modern artistic expressions as legitimate sites of indigenous knowledge production and preservation. Ultimately, it highlights the harmonic interplay between tradition and modernity, reinforcing the role of music as a powerful tool to preserve and transmit wisdom across generations in African communities.

Keywords: African communities, indigenous knowledge, proverbs, secular songs, wisdom

Indigenous Psychological Wisdom Expressed in Keiyo Proverbs and Riddles: Towards Leveraging Indigenous Knowledge in Navigating Global Challenges

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Psychological wisdom, encompassing cognitive abilities, experience, and emotional intelligence, plays a crucial role in navigating global challenges by fostering empathy, promoting understanding, and enabling effective decision-making for a more just and sustainable world. A myriad of challenges, including climate change, global health, biodiversity, unemployment, and poverty, plague the globe, resulting in people struggling with mental health issues, with anxiety and depression being particularly prevalent, impacting daily life and potentially leading to increased disability and earlier mortality. The young generations are greatly affected. The role played by Indigenous knowledge in addressing global challenges cannot be underestimated. Keiyo proverbs and riddles play a significant role in firming the individual in emotional intelligence that facilitates resilience. Among the Keiyo people, proverbs and riddles often reflect resilience, emphasizing enduring hardship and drawing strength from adversity; an example of a proverb is "*ngoputyi tany kering, komawekse ak kororik tugul*" (when a cow falls in a pit, it does not come back with all its fur), meaning challenges make us more experienced and stronger, despite the bruises incurred. Riddles include "*Chelebele mi saos, Abuch ma ba, ang nin ang ni*", (someone is busy clearing water weeds at the river bank, it is upside down but the fluid cannot pour out, it is there and here at once) meaning work continues all the time, nature is under control, and an event may not be predicted. Proverbs and riddles communicate wisdom that facilitates emotional intelligence that has been found to enhance resilience by fostering self-awareness, enabling better emotional regulation, promoting empathy and strong social skills, and ultimately equipping individuals with the tools to navigate adversity and bounce back from challenges.

Keywords: Emotional intelligence, Keiyo, proverbs, psychological, riddles, wisdom

THEMATIC AREA:

GLOBAL ECONOMIC TRANSFORMATION FOR SUSTAINABLE BUSINESS PRACTICES



The Role of Market Perception in The Sustainability of Public Universities in Kenya

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Understanding market perception is crucial for the sustainability of public universities in Kenya, given the increasing competition in higher education. This study aimed to assess the effect of market perception on the sustainability of public universities in Kenya. The dynamic capabilities theory, resource-based view theory, institutional theory, and the triple bottom line model guided the study. Adopting a pragmatic research philosophy and a cross-sectional research design, the study targeted all 35 chartered public universities in Kenya. Data were collected from 154 senior managers, including 79 Deputy Vice Chancellors (DVCs) and 75 Registrars, using structured questionnaires. Descriptive statistics, Pearson correlation coefficients, and multiple regression analysis were used to analyze the data. The findings demonstrated a significant positive relationship between market perception and university sustainability. Universities with a strong market perception, characterized by positive student and stakeholder attitudes, enhanced reputation, and brand value, experienced improved sustainability. The study concludes that universities should actively shape their public image by improving service quality, enhancing communication strategies, and strengthening stakeholder relationships. The study recommends regular assessment of student and stakeholder perceptions, investment in branding initiatives, and transparent engagement with the public to reinforce a positive institutional image and sustain long-term viability.

Keywords: Branding, competitive positioning, market perception, sustainability, stakeholder engagement

Audit Trail Efficiency in the Blockchain Era: Leveraging Decentralized Ledgers for Enhanced Transparency and Accountability in Financial Services

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Blockchain applications in financial accounting and auditing hold the potential to revolutionize financial record-keeping by enhancing transparency, security, and efficiency. Each transaction is recorded as a timestamped block linked sequentially to previous ones, creating a blockchain that preserves the complete history of transactions and automatically generates an audit trail. However, how this technology achieves such outcomes remains not fully understood in accounting and auditing. Guided by the creative destruction theory, transaction theory, and Christensen's disruptions theory, this paper used a systematic review to analyze the literature and examine the emerging shift in the practice of accounting and auditing in the wake of blockchain technology. Based on an analysis of 35 documents, this paper highlights the capability of blockchain distributed ledger technology in accounting and auditing to enable the identification of directions for future research. Findings show that by utilizing a blockchain, financial service firms can create an immutable record of all transactions from the moment they are entered into the ledger. Due to blockchain's ability to safeguard data integrity, it ensures auditors can rely on the accuracy of information when reviewing the ledger since once a transaction is added to the blockchain, it becomes permanent and cannot be altered or deleted, providing a transparent



and traceable audit trail for all activities. Such distributed ledger technology also facilitates continuous or frequent audit controls with heightened trust and efficiency as transactions can be validated in real time, preventing modifications before audits occur, thus ensuring data security and reliability. Moreover, blockchain's tamper-proof nature makes it an ideal solution for maintaining transparent audit trails. Its decentralized structure also eliminates the need for central authorities (regulators or governments), enhancing credibility while reducing transaction costs. As blockchain continues to develop, its transformative potential may extend beyond auditing into broader financial services. To harness these benefits, accountants and auditors must embrace the technology, adapt their roles to become strategic advisors, and promote sustainable practices. This adaptation is crucial for driving business success in an increasingly dynamic and complex environment.

Keywords: Accounting, audit trail, blockchain technology, distributed ledger

JEL Classification: M15, M41, M42

A Bibliometric Review of Moderating and Mediating Variables Within a Conceptual Framework in Business Research

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Conceptual frameworks are essential tools that play a fundamental role in bridging the gap between theoretical research and its practical applications, acting as a cornerstone that guides researchers and professionals in structuring their ideas, recognizing relationships, and utilizing a comprehensive approach that takes into account moderating and mediating variables. With the aid of these frameworks, a plethora of suggestions have been put forth to assist researchers in navigating through intricate business dilemmas and striving towards viable solutions. The primary objective of this paper is to function as a detailed manual for students, concentrating specifically on the intricate process of constructing a conceptual framework that incorporates a blend of moderating and mediating variables for research proposals and subsequent research activities. By stressing the significance of employing a scientifically sound approach to data interpretation in business research, this paper endeavours to provide researchers with the essential resources to design resilient frameworks capable of effectively handling the intricacies of business challenges. Ultimately, the overarching aim is to empower researchers to formulate clear and well-defined conceptual frameworks that enrich the calibre and breadth of their research ventures, enabling them to make significant contributions to the realm of business studies.

Keywords: Concepts, conceptual framework, dependent, independent, mediating/intervening variables

JEL Classification: O3

Do Governance Reforms have Influence on Securities Market Performance? Evidence from Kenya

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The Kenyan securities market is undergoing significant transformation through regulatory, governance, and structural reforms. Governance reforms aim to enhance securities market efficiency by accelerating new firm listings, increasing trading volume, and improving market liquidity. Regulatory reforms by the Capital Markets Authority, including stricter governance systems at the Nairobi Securities Exchange, aim to improve transparency and accountability among market players. However, market performance remains low due to various contributing factors. This study used an exploratory research design and collected primary data from 154 firms and 238 respondents from financial service firms in the Kenyan securities market. Data analysis was performed using SPSS AMOS, employing principal component analysis and confirmatory factor analysis to evaluate relationships between latent variables. Results show a positive and statistically significant relationship between governance reforms and securities market performance in Kenya, as the implementation of governance reforms positively and significantly influences securities market performance in Kenya ($\beta=0.449$, $t=4.683$, $p<0.05$, $R^2=0.125$), and the t-value of 5.636, exceeding 1.96. The governance reforms improve protection for minority shareholders, timely communication, and regulatory effectiveness, which in turn fosters investor confidence and improves market performance. Governance reforms, therefore, play a vital role in enhancing securities market performance by boosting investor confidence, attracting IPOs, and improving market liquidity. Strengthened regulations ensure minority shareholder protection, enhance accountability and transparency, thus fostering trust in the market. These findings emphasize the need for continuous regulatory improvements to sustain long-term market growth and market performance, as well as economic development. Finally, clear disclosure requirements and robust legal protections for minority shareholders are crucial to fostering trust and promoting equitable market participation.

Keywords: Governance reforms, investor protection, initial public offering, securities market performance, structural equation modelling

Financial Literacy, Self-Efficacy, and Retirement Savings Behaviour: A Systematic Review

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Financial literacy and self-efficacy are critical determinants of retirement savings behaviour, influencing individuals' ability to plan and secure their financial future. This study systematically reviews existing literature to examine how financial knowledge and confidence in financial decision-making shape retirement savings patterns. The review also explores the interaction between these factors and the role of behavioural interventions in improving retirement preparedness. On methodology, this study systematically reviewed 125 peer-reviewed studies published between 2020 and 2025. The studies were sourced from Emerald Insight, Taylor and Francis, Scopus, Web of Science, and Google Scholar databases. The selection process focused on empirical studies, theoretical models, and policy

evaluations examining the relationship between financial literacy, self-efficacy, and retirement savings behaviour. The review also assessed recent developments in financial education, behavioural finance, and policy initiatives to enhance financial preparedness for retirement. Three major themes emerged from the findings. First, on financial literacy and retirement savings, individuals with higher financial literacy demonstrate better retirement planning, engage more actively in long-term savings, and are more likely to invest in financial instruments that secure their future. Second, on self-efficacy and financial decision-making, confidence in managing personal finances significantly influences the ability to set retirement goals, adopt disciplined saving habits, and overcome psychological barriers related to financial planning. Third, regarding the interaction between financial literacy and self-efficacy, financial knowledge alone is insufficient; self-efficacy plays a crucial role in applying financial literacy to decision-making. Programmes integrating financial education with confidence-building strategies yield more effective retirement savings outcomes. Additionally, content analysis of recent studies highlights emerging trends in financial education, digital financial tools, and policy measures designed to enhance self-efficacy in retirement planning. These findings suggest that policymakers and financial institutions should adopt a more holistic approach that combines knowledge dissemination with strategies to build confidence in financial decision-making.

Keywords: Financial literacy, retirement savings behaviour, self-efficacy

Adoption of Cryptocurrency in Kenya: What Are the Emerging Opportunities, Challenges, and Policy Implications

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Money is undergoing unprecedented evolution. Cryptocurrencies, powered by blockchain technology, are transforming global finance by enabling decentralized, transparent, and secure digital transactions. Unlike traditional financial systems reliant on centralized authorities, cryptocurrencies operate on peer-to-peer networks, making them particularly appealing in regions with limited access to conventional banking services. Recently, the adoption of cryptocurrency has proliferated across emerging markets. Kenya has not been left behind, as it has positioned itself as one of Africa's leading economies in adopting these digital currencies. Guided by Rogers' innovation diffusion theory and the theory of technology acceptance, and using an integrated literature synthesis, this paper analyses the cryptocurrency landscape in Kenya to identify the existing opportunities, challenges, and policy implications. The integrative review reveals socioeconomic drivers behind adoption, including financial inclusion and cost-effective remittances, as well as the challenges posed by regulatory uncertainty, market volatility, and limited public awareness. The findings further indicate that while cryptocurrency offers significant opportunities for enhancing financial inclusion, fostering financial innovation, and money revolution, risks related to fraud, technological barriers, and lack of clear regulatory frameworks remain critical concerns. Despite these challenges, the future of cryptocurrencies in Kenya looks promising, given the growing interest from policymakers and financial institutions, pointing to a shift toward exploring blockchain technology's potential to drive financial system development. To achieve this, there is a need for balanced policies that promote innovation while safeguarding users and the broader economy. This paper contributes to the growing body of literature on cryptocurrency adoption in emerging markets like Kenya by situating Kenya within the broader African and global context. It provides actionable insights for policymakers and other stakeholders.

Keywords: Cryptocurrency, digital currency, financial inclusion, financial innovation, technology adoption theories

JEL Classification: G15, O30, E32

Trans-border Data Flows and AI Innovation Challenges in the Data Localization Landscape: A Kenyan Perspective

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Concerns over the rise of data localization regulations are growing worldwide. Data localization requirements impede cross-border data flows and connectivity, which are essential for digital commerce, democracy, human rights protection, and AI innovation. Countries facing the need to protect national security interests and citizens' privacy have implemented various laws dictating how and where data must be stored and processed. Following the EU's GDPR, similar regulations have emerged globally, asserting control over data generated within national borders. This paper explores challenges these localization trends pose to trans-border data flows and AI innovation, addressing issues relating to democracy, human rights, and legal compliance. Drawing on a range of academic and legal sources, the paper emphasizes the need to review the data protection landscape. It advocates for establishing global rules that balance public policy objectives while minimizing data protectionism and promoting Data Free Flow with Trust (DFFT).

Keywords: Artificial intelligence (AI), Data localization Requirements (DLRs), Human Rights, Democracy, Trans-border data flows

Developing a Cybersecurity Human Vulnerabilities Exposure Index (CSHVEI) Model: A Comprehensive Approach to Assessing Human-Induced Cyber Threats

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The fundamental components of a cyber-secure and resilient organization encompass people, processes, and technology. However, the existing body of research predominantly concentrates on technology and processes, often overlooking the critical aspect of people, which can serve as a vulnerable point of attack. This research seeks to develop a comprehensive model to determine the cybersecurity human factor exposure index (HFEI). This review will critically examine existing cybersecurity exposure models, weighing their advantages and disadvantages. In assessing human-related cybersecurity risks. Next, it will present the Cybersecurity Human Vulnerabilities Exposure Index (CSHVEI), a novel model designed to quantify human-induced cyber-hazards by categorizing them into three primary vulnerabilities: ignorance, negligence, and human errors. The research will outline the model's

derivation, methodology, operational framework, and practical application. The study will further provide recommendations for organizations to mitigate these vulnerabilities effectively.

Keywords: Cybersecurity, exposure index, framework, human factors, model

Effect of Social Norms on The Efficiency of Cash Transfer Programs by National Government in Mukuru Kwa Njenga, Kenya

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Cash transfer programmes have gained significant traction as the primary government welfare strategy in numerous developing nations like Kenya during the current millennium. They are increasingly recognized as an innovative framework focused on proactively addressing future poverty through the facilitation of education, improved healthcare accessibility, enhanced food security, and the upliftment of marginalized communities. Despite their potential benefits, the efficacy of cash transfer initiatives within challenging environments such as Mukuru Kwa Njenga, a Kenyan slum setting, often encounters obstacles. This study will assess the effect of social norms on the efficiency of cash transfer programs by the national government in Mukuru Kwa Njenga, Kenya. The research will be underpinned by agency, institutional, and contingency theories principles, while employing a descriptive research model. The study's scope will encompass the vital 252 management personnel crucial to the successful administration and execution of cash transfer schemes in Mukuru Kwa Njenga. The primary data collection process will involve the utilization of precisely structured questionnaires, with subsequent analysis conducted through the Statistical Package for Social Sciences (SPSS Version 28.0). Ultimately, this research endeavours to be an invaluable reference tool for financial managers, accountants, risk managers, program implementers, and governmental entities seeking comprehensive insights into the effective implementation of cash transfer programs.

Keywords: Cash transfer programmes, efficiency, vulnerable populations, welfare paradigm

JEL: H53, G38

Optimal Wealth Allocation to Interest-Bearing Central Bank Digital Currency in Investor Portfolios: A Merton Model Approach

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Floating interest Central Bank Digital Currency (CBDC) is a moderately risky financial asset. Given the risks involved and the returns attached, a rational investor must determine the optimal allocation of wealth to the CBDC portfolio. The paper sought to establish the optimal wealth allocation to floating interest rate CBDC and a risk-free asset. Using data collected from the Central Bank of Kenya and the Kenya National Bureau of Statistics, the paper applied the Merton model to a hypothetical proxy for CBDC, and real-world data on inflation, interest, and 91-day T-bill, to allocate investors' wealth to floating interest CBDC and a risk-free asset. The results show that optimal wealth allocation to floating interest rate CBDC was a function of the risk premium, the degree of investor risk aversion, and the



volatility of the floating interest rate CBDC. Consequently, the results further demonstrate that whenever CBDC offered a higher interest rate than a risk-free asset, investors would shift wealth to CBDC and vice versa. Further, whenever the volatility on CBDC returns increased, investors tended to hold fewer units of interest-bearing CBDCs and more of risk-free assets, and vice versa. The optimal monthly consumption for the risk-averse investor was a function of subjective discounting rate, degree of investor risk aversion, and previous wealth. A higher subjective discounting rate was associated with increased optimal consumption, and vice versa. Our results, therefore, suggest that financial markets investment portfolios are sensitive to CBDC volatility that can originate another strand of CBDC literature. These findings provide more valuable insights to individual and institutional investors. They can guide policymakers and market regulators on the important link between CBDC and financial markets in the new digital-currency era. For example, policymakers and regulators can adjust fiscal and monetary policy by considering the possible impact on investor portfolios. This can guide investors in adjusting their financial assets' net long portfolio positions.

Keywords: Central Bank, digital currency, investor portfolio, optimal wealth allocation

JEL Classification: E42, E58, G21

A Literature Review on Investment-Risk Management Practices and Financial Performance of Pension Funds in Kenya

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Recent changes in market liberalization, investment strategy, and regulations have significantly impacted Kenya's pension sector. Through a comprehensive review of existing literature, this paper provides insights into the current state of investment risk management in Kenyan pension funds, identifies best practices, and highlights further research and improvement areas. It is a desktop review that explores the strategies and challenges associated with managing investment risks within the context of pension schemes in Kenya. It also examines the impact of risk management practices on the country's financial performance and the sustainability of pension funds. The theoretical framework for this study was premised on three theories: Modern Portfolio Theory (MPT), Capital Asset Pricing Model (CAPM), and Efficient Market Hypothesis (EMH), which were the guiding theories in this review. It discussed three strategies; Asset Allocation, Due Diligence, Risk Measurement and Monitoring and Hedging Strategies. It adopted a systematic research design to compile, examine, and assess the extant literature, reports, and pertinent documents of the subject matter. The study revealed that pension plans that diversify their investments over a variety of asset classes, including bonds, equities, real estate, and alternative investments, can reduce the negative consequences of a particular asset class's swings on the portfolio as a whole. It also revealed that the stringent due diligence procedures improve Kenyan pension funds' risk management capabilities, which will enhance financial performance and ensure long-term pension obligations are met. In addition, stakeholders in pension funds rely on transparency and accountability, both of which are improved by efficient risk measuring and monitoring procedures. It has also been shown that sensible risk management of assets and greater profitability for Kenyan pension funds are both rendered possible by efficient hedge strategies.

Keywords: Capital asset pricing model (CAPM), efficient market hypothesis (EMH), modern portfolio theory (MPT)

Bayesian Estimation of the Nexus between Adaptation to Climate Change and Agriculture Production in Kenya

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The agricultural sector suffers from the devastating consequences of climate change. Adaptation to climate change is vital for sustainable productivity in this sector, but this adaptation comes with immense investment costs. This study empirically examines how adaptation investments at the macroeconomic level affect production in the agricultural sector using a battery of methods, including time-series regression analysis and the Bayesian Estimation approach. The study findings reveal that climate change adaptation investments enhance agriculture as a percentage of GDP. This means that the more investments are made to mitigate the effects of climate change, the higher the output produced in the agricultural sector. The climate change vulnerability index results reveal a negative relationship with agricultural production. This implies that the higher the climate change risk, as captured by the climate vulnerability index, the lower the output produced in the agricultural sector.

Keywords: Agriculture, Bayesian estimation, climate change adaptation index, climate vulnerability index

THEMATIC AREA:

INNOVATING SPORTS FOR GLOBAL IMPACT



The Integration of Technology in Sports Training and Talent Development in Kenyan TVET Institutions: A Case Study of Nyandarua County

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This study examines the role of technological innovations in sports training and talent development within Kenyan Technical and Vocational Education and Training (TVET) institutions. With the growing importance of sports in global competitiveness and resilience, the integration of technology into sports training can significantly enhance athlete performance and development. The specific objectives of the study were to evaluate the extent of technology adoption in sports training, identify barriers to innovation, assess the impact of digital tools on athlete performance, and provide recommendations for fostering sports innovation in TVET institutions. A descriptive research design was employed, utilizing stratified random sampling for students and trainers, and purposive sampling for sports officers and administrators. The sample consisted of 80 participants drawn from three TVET institutions in Nyandarua County in Kenya. Data was collected using a structured, closed-ended questionnaire. The research found that while 70 percent of institutions had access to basic digital tools, only 45 percent had fully integrated these technologies into their sports training programmes. Major barriers to technology adoption included inadequate funding, limited technical expertise, and resistance to change. However, institutions that embraced innovation demonstrated a significant improvement in talent development outcomes. The study recommends increased investment in sports technology infrastructure, capacity-building programs for trainers, and stronger policy support for integrating technology into TVET sports curricula. It concludes that effective adoption of technology in sports training can enhance athlete performance, foster inclusivity, and improve global competitiveness among Kenyan trainees.

Keywords: Athlete performance, sports innovation, talent development, technology adoption, TVET