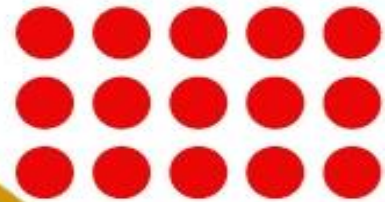




Maasai Mara University

# MMARAU INTERNATIONAL CONFERENCE - 2023

Date: 27th to 29th June 2023,  
Venue: Maasai Mara University; Narok, Kenya



**THEME**

**SCIENCE AND TECHNOLOGY  
FOR SUSTAINABLE  
DEVELOPMENT**



ISO 9001:2015 Certified

**THIS BOOK HAS BEEN AUTHORED  
BY  
THE 9<sup>TH</sup> MMARA-U INTERNATIONAL CONFERENCE, 2023  
ORGANIZING COMMITTEE  
THE BOOK WAS REVIEWED BY A TEAM OF EXPERTS  
FROM MAASAI MARA UNIVERSITY**



**BOOK OF ABSTRACTS**  
**THE 9<sup>TH</sup> MAASAI MARA INTERNATIONAL CONFERENCE, 2023**  
**27<sup>th</sup> – 29<sup>th</sup> June 2023, Narok, Kenya**

**THEME**

- ♣ Science and Technology for Sustainable Development

**Sub Themes:**

- ♣ Impacts of climate change on bio-diversity and sustainability
- ♣ Bio, medical, agricultural and environmental sciences and climate change research for
- ♣ Sustainable development
- ♣ Physical sciences, engineering and technology for sustainable development
- ♣ ICT and AI research in mitigating climate change
- ♣ Human & Management Sciences research in mitigating climate change
- ♣ Religion and philosophy nexus and climate change
- ♣ Business, Economy and Society, Leadership and Integrity; Challenges and Solutions.
- ♣ Cross-cutting issues

**Compiled by**

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## **BACKGROUND OF MAASAI MARA UNIVERSITY**

Maasai Mara University (MMARA-U) is located at the gateway to the world famous Maasai Mara National Reserve within the greater Mara-Mau Ecosystem. The University is in Narok Town, approximately two kilometers from Town center along the Narok-Bomet Highway. Narok Town, approximately 143 kilometers west of Nairobi City, is in the Southern part of the Kenyan part of the Rift Valley. The University is the successor to Narok University College (NUC), which started in 2007 as a college campus of Moi University. The College took over the then existing Narok Teachers Training College. NUC was later established as a constituent college of Moi University by the Narok University College Legal Order No. 101 of 2008. On 11<sup>th</sup> February, 2013 NUC was awarded a Charter and renamed Maasai Mara University.

### ***ISO Certification***

Maasai Mara University is ISO 9001:2015 Certified. The University continues to maintain its certification through a raft of internal Audits carried out by Internal Auditors and periodic Surveillance Audits by the Certification Body KEBS. The quality Audits provide a feedback on the performance of the Quality Management System, the feedback obtained is further used for continued improvement.

**An ISO 9001:2015 Certified Institution**



### ***Our Vision***

"To be a World Class University committed to academic excellence for development."

### ***Our Mission***

"To provide Quality University Education through innovative teaching, research and consultancy services for development."

### ***Core Values***

Excellence

Professionalism

Teamwork

Creativity and Innovativeness

Transparency and Accountability

Equity and Social Justice

### ***University Niche***

Environmental Resource Management  
and Conservation



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## WELCOMING REMARKS

### MESSAGE FROM THE UNIVERSITY COUNCIL CHAIR, MAASAI MARA UNIVERSITY



Dr. Kennedy Ole Kerei, PhD  
Chair, University Council

A very warm welcome to all of our participants from around the world are cordially invited to Maasai Mara University. Thank you for coming to share your varied experiences with us. This conference provides an important platform for directing our efforts toward achieving the SDGs.

We are very pleased to be hosting the **9<sup>th</sup> Maasai Mara University (MMARA-U) International Conference, 2023.**

Most importantly, this conference continues to technically adopt to growing actualization of global sustainable development through research dissemination. The theme of

the conference is: **Science and Technology for Sustainable Development.**

On behalf of the University Council, I take this opportunity to thank the conference organizers, , the members of academia, participants, researchers, students and other university community members for conducting research for presentation, publication and global dissemination. The University Council supports and takes great pride in this international conference.

Ladies and gentlemen, the 21st Century has experienced dynamic challenges. Science and technology plays a crucial role in achieving sustainable development by providing knowledge, tools, and solutions to address global challenges and promote long-term social, economic, and environmental well-being. Here are some key areas where science contributes to sustainable development:

1. **Climate Change:** Science and technology helps us understand the causes and impacts of climate change, and provides evidence for the urgent need to mitigate greenhouse gas emissions. It also supports the development of renewable energy sources, climate adaptation strategies, and the design of sustainable land-use practices.
2. **Biodiversity Conservation:** Science and technology informs the conservation and management of biodiversity by studying ecosystems, species, and their interactions. It helps identify threatened habitats, develop conservation strategies, and assess the ecological and economic value of biodiversity.
3. **Sustainable Agriculture:** Science and technology aims to contribute to sustainable food production by developing innovative farming practices that minimize environmental impacts, conserve soil and water resources, and enhance crop yields. It also explores alternative food sources, such as aquaculture and vertical farming, to meet the growing demand for food sustainably.





4. **Clean Energy:** Science and technology drives research and development in clean energy technologies, such as solar, wind, hydro, and geothermal power. It focuses on improving efficiency, reducing costs, and advancing energy storage solutions, aiming to transition from fossil fuels to sustainable and low-carbon energy sources.
5. **Water Resource Management:** Science and technology provides insights into water availability, quality, and usage patterns, helping optimize water resource management. It supports the development of efficient irrigation systems, water treatment technologies, and integrated water management approaches to ensure equitable access and sustainability.
6. **Waste Management:** Science and technology contributes to waste reduction, recycling, and waste-to-energy technologies. It studies waste generation patterns, develops sustainable waste management strategies, and promotes circular economy principles to minimize waste and maximize resource efficiency.
7. **Public Health:** Science and technology plays a crucial role in addressing health challenges and promoting well-being. It supports disease surveillance, the development of vaccines and medicines, and research on the environmental and social determinants of health, contributing to sustainable healthcare systems and improved public health outcomes.
8. **Sustainable Urbanization:** Science and technology informs urban planning and design to create sustainable cities and communities. It explores efficient transportation systems, green infrastructure, smart technologies, and sustainable building materials to improve urban livability, reduce environmental impacts, and enhance resilience.
9. **Ocean Conservation:** Science and technology contributes to understanding and protecting marine ecosystems and resources. It supports sustainable fisheries management, studies the impacts of pollution and climate change on oceans, and develops strategies for marine conservation and restoration.
10. **Science Education and Capacity Building:** Science and technology plays a vital role in educating and building capacity for sustainable development. It fosters scientific literacy, supports research and innovation, and promotes the engagement of diverse communities in finding sustainable solutions to global challenges.

By integrating scientific knowledge with policy, governance, and societal actions, we can harness the potential of science for sustainable development and create a more resilient and prosperous future for all. The unrealized Sustainable Development Goals (SDGs) were proposed as a cure to the problems. Kenya, like with other worldwide treaties, has domesticated the SDGs. We have national blueprints in place, such as Kenya Vision 2030 and the present Big 4



Agenda, which focuses on manufacturing, health, food security, and housing. However, the actual solution comes in research and innovation, which will enable Kenya and the rest of the world to overcome the ever-increasing obstacles.



**MESSAGE FROM THE CHAIRMAN OF THE ACADEMICS, SEALING AND HONORARY DEGREES COMMITTEE OF MAASAI MARA UNIVERSITY COUNCIL**



**Ms. Agnes Busienei**  
**Chair of Academics, Sealing**  
**and Honorary Degrees,**

We've assembled today for **The 9<sup>th</sup> Maasai Mara International Conference, 2023**. This year's conference is centered on a theme that addresses **Sustainable Development** directly through **Science and Technology**. The focus of this year's conference is the role of science and technology in accomplishing the seventeen (17) Sustainable Development Goals (SDGs).

Conferences are a significant undertaking in higher education because they provide a platform for scholars, students, and other stakeholders to learn, network, and collaborate on current and new knowledge and trends.

As a result, I'd like to thank the Organizing Committee and the University Management for ensuring that this conference went off without a hitch. The conference will add to our growing efforts to increase Maasai Mara University's awareness, and you can count on the University Councils' continuous assistance in implementing knowledge sharing through conferences and trainings.

The conference's multidisciplinary nature demonstrates the importance of a multidisciplinary approach to action-oriented and practical research. The 9<sup>th</sup> Maasai Mara University International Conference has attracted over eighty (80) plenary presentations with participants drawn from all over the world.

As the Chairman of the Academics, Sealing and Honorary Degrees Committee of Maasai Mara University Council, I urge the University fraternity to embrace this opportunity to, build sustainable networks and partnerships for research collaborations, joint fund-raising opportunities and outreach activities.

Finally, please allow me to extend a warm welcome to all participants and to wish you a pleasant three-day stay at Maasai Mara University and the very hospitable Narok County.



Thank you. Ahsanteni sana. God Bless you all.



## MESSAGE FROM THE VICE CHANCELLOR, MAASAI MARA UNIVERSITY



**Prof. Peninah Aloo Obudho,**  
*PhD*

**Ag. Vice Chancellor, Maasai  
Mara University**

It is a great pleasure to welcome you all to this Institution and to this **9<sup>th</sup> Maasai Mara University International Conference, 2023**. This is a truly unique platform for all of us to come together and shape the future of **Sustainable Development**. I have the honor as the Vice-Chancellor, to address this great audience. As University, we are privileged to host this Conference. This is indeed another unique International Conference to Maasai Mara University as we host both the physical and online audience.

As you all may be aware, the Conference focuses on **Science and Technology for Sustainable Development**. Against this backdrop, the Conference is a forum in which participants will present papers, network for future collaborations, publish, socialize, and travel (Maasai Mara University is adjacent to the Maasai Mara Game Reserve, so I hope you will not miss the opportunity to visit one of the world's seven wonders). Attending a conference has become a "must" to thrive in any academic area in today's fast-changing world as we look forward to developing synergies and collaborations.

**Honorable Guests, Ladies and Gentlemen,** Sustainable development refers to the concept of meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. Science and technology play a crucial role in achieving sustainable development by providing innovative solutions, promoting economic growth, and addressing environmental challenges. Overall, science and technology are vital drivers of sustainable development, providing innovative solutions to environmental, social, and economic challenges. By fostering research, promoting technological advancements, and supporting evidence-based decision-making, we can continue to harness the potential of science and technology for a more sustainable future.

**Ladies and Gentlemen,** I am glad to state that research broadens our knowledge base, provides us with up-to-date information, aids in the development of our credibility, introduces us to new ideas, and, most importantly, aids in issue resolution. One cannot claim intellectual monopoly because there is always more to learn from others on diverse issues. All of this is possible within the context of this International Conference. As a result, I'd want to take this opportunity to



thank everyone of the conference's researchers and authors, academics, and participants, without whom this Conference would not have been possible. Congratulations in advance for your great contribution to this wonderful Conference, from which we hope to learn more.

***Distinguished Guests, Ladies and Gentlemen***, As I end, please allow me to express my gratitude for the continuous support we have received from all of our stakeholders and the University Community at large. Thank you very much for agreeing to grace our occasion, Guest of Honor. Allow me to additionally thank our Keynote Speakers, Guest Speakers, participants, and all invited Guests. I'd also like to thank the Research & Innovation Directorate for working so hard to make this conference a success.

I wish you all a fruitful and successful Conference.

***Thank you, and God bless us all***



**MESSEGE FROM THE DVC (ACADEMICS & STUDENTS AFFAIRS), MAASAI MARA  
UNIVERSITY & CONFERENCE CHAIR**



**Prof. Bulitia Godrick  
Mathews, PhD, MIHRM  
Deputy Vice Chancellor  
(Academic and Students  
Affairs)  
Chair, Conference  
Preparation Committee**

It is my pleasure to welcome you all to the 9th MMARAU International Conference. This Conference is among others that the University has held with the sole purpose of providing a platform to internal and external researchers and scholars to deliberate on matters that are beneficial to society. I believe that it is the rightful role of universities to not only disseminate knowledge to students through teaching and learning but also through research which is a hallmark of all great universities in the world. It is, therefore, my hope that at the end of this

Conference, all of us are going to gain extensively in terms of knowledge and sharing of ideas that can positively transform our society and spark innovations. This Conference comes at the most opportune time as the Government is commitment to reforming the education system in Kenya. We must ask ourselves how we can fit in these reforms in terms of our research agenda, curriculum development and the overarching issues that the Government is laying emphasis on. Only if we align ourselves with the agenda of the day we will be able to be relevant in society and also attract research funding.

The Theme of this Conference “**Science and Technology for Sustainable Development**” is key pointer to universal challenges facing Africa and the world at large. Science and Technology are vital elements that cannot be ignored in any sector. For us in the higher education sub-sector, its place in the transformation of education enhances efficiency and delivery of pedagogy. We need more and more investors from different fields to partner with universities in order to make these more accessible. I challenge the researchers here today to think of transformative and revolutionary uses of technology that can help or organizations and institutions to improve service delivery. Sustainable development is a mode of human development in which the use of resources aims to meet human need. This is done while ensuring the sustainability of natural systems and the environment, so that these needs can be met not only by present but for



generations to come through technological resources, provision of basic needs, agricultural necessity and control of climate change.

The Sub-themes of this Conference address cross-cutting issues that are currently affecting society but a lot more focus has been placed on climate change. This is because climate change is at the centre of sustainable development in terms of its impacts on bio-diversity, bio, medical, agricultural and environmental sciences, physical sciences, engineering and technology, ICT and AI research in mitigating climate change. It also affects human and management sciences, religion and philosophy, business as well as the economy. I believe that by the end of the Conference, we will have opportunities to reflect on what has been happening, to share experiences, perspectives and responses to those challenges and at the same time to give thought to setting the directions for the future.

To those of you who might be visiting Kenya or Maasai Mara University for the first time, I invite you to feel at home. While here, please take time to look around and enjoy the beauty of our culture and the Maasai Mara Game reserve.

Once again welcome to Maasai Mara University.

Thank you.





**MESSEGE FROM THE DVC (ADMINISTRATION, FINANCE & STRATEGY), MAASAI MARA UNIVERSITY**



**Prof. James S. Nampushi,  
PhD, MKIM, DVC  
(Administration, Finance &  
Strategy)**

Kenya and the world now live in the reality of the new normal. A world that is in dire need for solutions the many occurring problems that can only be science driven. Solutions to problems brought about pandemics like Covid19, climate change crisis that has brought droughts and famines that are cyclic, heatwaves, wildfires whose only solution can be found in such a relevant conference where ideas are shared. The **9<sup>th</sup> Maasai Mara University International Conference 2023** whose theme: **Science and Technology for Sustainable Development** is quite on time in providing ideas and solutions to the problem the world is facing today.

The solution to world's problems can only come through growth and development that target every country, region, sector, gender and ages. As Kenya develops, so develops Africa and so develops the world in which we live in. Our Kenya's Vision 2030 intends to convert Kenya into a newly industrializing, middle-income country that provides a good quality of life to all of its residents in a clean and secure environment by 2030. This is not far from the seventeen (17) Sustainable Development Goals (SDGs), the goal of which is to make the world a better, fairer place by 2030. All these can only be achieved through ideas that are scientific and are presented in research conventions like this one here. These ideas are then turned into realities by the industry.

To the participants of this conference, feel at home at Maasai Mara University and enjoy the serene environment of our Narok City and County, the home of Maasai Mara Game Reserve - a world wonder, the Maasai Mau Forest Complex a world water tower and the globally renowned Maasai Culture. We continue to reaffirm our commitment to strong financial and administrative policies, practices, and strategies that will ensure the University fulfills her goal and objectives in sustaining our programs, research, and outreach activities.

I would like to thank the University Council, the University Management Board, the Senate and the Directorate of Research & Innovation, staff and our partners and all those involved in preparation of this conference, for their unending support to realizing this conference.

I wish you all an inspiring, informative and successful convention.

Thank you.

**PROF. JAMES SIMIREN NAMPUSHI, MKIM  
AG. DEPUTY VICE CHANCELLOR,  
ADMINISTRATION, FINANCE AND STRATEGY**



**MESSAGE FROM THE DIRECTOR, RESEARCH & INNOVATION, MAASAI MARA UNIVERSITY**



**Prof. Justus Simiyu  
Director Research &  
Innovation**

National and County government delegates, the University Management, conference organizers and participants, I warmly welcome you to the 9th Maasai Mara University International Conference, 2023. I am pleased that the conference finally saw the light of the day, despite numerous engagements in the current Financial Year. This notwithstanding, we are pleased to announce that the Conference attracted more than 100 abstracts from 30 institutions nationally and Internationally. Ladies and gentlemen, you are part of the 80 participants selected based on your research merits exhibited from the abstracts you submitted – which underwent vigorous review from our team of experts. For this feat,

congratulations!

The 9th MMARA-U International Conference, 2023 has particularly laid more emphasis on environmental conservation and climate change. The theme is not only relevant but fully augurs the University niche on Environment and Resource Conservation and Management. The ramifications of this choice, especially now that climate change has global focus has been of great benefit to the University. In particular, we are pleased to have within our midst officials from the National Environment Management Authority (NEMA), County government wings on environment conservation and climate change, Environment and wildlife conservancies from the corporate sector, Non-governmental organizations (NGOs), community-based organizations (CBOs) and other community social organizations (CSOs) in Narok County and nationally. To us, this is a feat we could only have dreamt of. My sincere appreciations to Narok County Director of NGOs Council, Ms Susan Ngumu Kasero for helping us realize such a feat.

Ladies and gentlemen, Climate Change is a reality which has led to a paradigm shift in resources and the norm. This conference has strived to collate multi-disciplinary and multi-sectoral researchers to not only discuss and critique environment-related projects, but also to forge partnerships and collaborations for joint research undertakings. Out of the eight funded projects received in the 2022/23 FY in the University, at least six were from natural resources and related sectors. Additionally, almost all the grant applications have a component of environment and biodiversity conservation. I therefore strongly urge you to take advantage of our niche and geographical location in a pastoral-Nilotic Arid and Semi-arid (ASAL) region; which is a hot cake for grant mobilization and jointly develop research projects. Ladies and gentlemen, within our midst are Prof. Rafael Munavu, the Chair of the Presidential Taskforce on Education Reforms and Prof. Dickson Andala, the CEO, National Research Fund – both extremely vital in research grants mobilization. Let us take advantage of their presence and advance our research agenda to their Offices.



On behalf of the entire Research and Innovation fraternity in Maasai Mara University, I cordially invite you to the MMARA-U International Conference, 2023. Karibuni sana!!

**ABSTRACT REVIEWERS AND SESSION MODERATORS**



1. Dr. Samson Mabwoga, PhD – COD, Department of Environmental Sciences, Geography & Agriculture (DESGA)
2. Dr. Charity Konana, PhD - Department of Environmental Sciences, Geography & Agriculture (DESGA)
3. Dr. George Rukaria, PhD - Dean, School of Business and Economics
4. Dr. Edmund Gathuru, PhD - Department of Business Management
5. Prof. Paul Maithya, PhD – COD, Department of Curriculum Implementation and Education Management (CIEM)
6. Dr. Sammy Mutisya, PhD - Director, Gender, Equity and Culture
7. Dr. Sr. Alice Sambu, PhD - Ag. Asst Dean of Students / Department of Social Studies
8. Dr. Isaac Motochi, PhD - Department of Mathematics and Physical Sciences
9. Dr. Meshack Sitati, PhD - Department of Mathematics and Physical Sciences



**GUEST SPEAKER**



**Prof. Raphael M. Munavu**  
**Guest Speaker**

**Chair, Presidential Working  
Party of Education Reforms  
in Kenya**

Raphael Munavu is a Professor Emeritus in the Department of Chemistry, University of Nairobi, Chairman of the Presidential Working Party of Education Reforms in Kenya from (September 2022 to present) and a Director at NACOSTI (October 2021 – present).

Prof. Munavu attended Kalamazoo College (B.A. 1967-1970), Wayne State University (M.Sc. 1970-1972), and the University of Detroit (Ph.D. 1972-1975) in the USA. His specialization is in Organic, Environmental, and Industrial Chemistry.

Prof. Munavu has had an illustrious career in academia and public service for the last 35 years. He served as the Chairman of the Kenya National Academy of Sciences (KNAS) for 19 years (2002- 2021), Chancellor of Laikipia University for five years (February 2013 – February 2018), and Commissioner at the Constitutional Commission on Revenue Allocation (CRA) for six years (December 2010 – December 2016).

He was the Dean of the Faculty of Science at the University of Nairobi (1987-1990), founding Principal of Laikipia College of Egerton University (1990-1992), Vice-Chancellor of Egerton University (1992-1994) Deputy Vice-Chancellor (Administration and Finance) at the University of Nairobi (1994-1998) and Vice-Chancellor of Moi University (July 14th, 1998 to September 19th, 2002). In addition to regular administrative responsibilities, Prof Munavu spearheaded the establishment of International Programs Offices at the University of Nairobi (1995) and at Moi University (1999) and Privately Sponsored Students Programs at Moi University (1998).

Prof. Munavu has published over ninety (90) refereed and commissioned papers and supervised twenty-one (21) postgraduate students. He has written extensively on the role of



Higher Education, Chemistry, Science, Technology, and Innovation in socioeconomic development. He has also undertaken many consultancies on the environmental impacts of utilizing various natural resources.

Prof. Munavu is extensively experienced in management and public service. He has held numerous high-impact leadership positions in the education sector. He was appointed Chairman of the Kenya National Examinations Council (KNEC) and served in that capacity for ten years (2000-2010). He also served as Hon. Secretary of the Association of Faculties of Science of African Universities (AFSAU, 1986-1992), a Member of the Presidential Task Force on Public Universities Inspection Board (PUIB, 2005-2007) and the Strategy for University Education in Kenya (2006-2008). Prof. Munavu was the founding Chairman of the Council of the South Eastern University College (SEUCO), the precursor of South Eastern Kenya University (SEKU) from 2008 to 2013.

Prof. Munavu has been conferred with the following National Honours: Order of the Grand Warrior (OGW, 1994), and the Elder of the Burning Spear (EBS, 2001) for his services in the Higher Education Sector. In 2000. He was conferred with an honorary doctorate of Humane Letters, Honoris causa (D.Litt) by Kalamazoo College (USA) in 2001 in recognition of his role in entrenching successful inter-university linkages between universities in Kenya and other foreign universities. He was also awarded the Hon. Doctor of Science degree by Laikipia University in 2013.

His social vision is to serve society by facilitating novel wealth-creating, empowering and capacity-building initiatives based on education, national heritage, indigenous knowledge, science and technology. He also champions value-adding enterprises based on readily available natural resources and human capacities in Kenya.



**KEYNOTE SPEAKERS**



1. Prof. Dickson Andala – CEO, National Research Fund, Kenya
2. Ms. Susan N. Kasero – County Director, NGOs Council of Kenya
3. Dr. Fanuel Mosago – County Director, National Environment Management Authority (NEMA)
4. Dr. Adekomaya Odulaisi – University of Witwatersrand, S. Africa
5. Dr. Kennedy Karani Onyiko – Maasai Mara University



THE 9<sup>TH</sup> MAASAI MARA UNIVERSITY INTERNATIONAL CONFERENCE, 2023

27<sup>TH</sup> - 29<sup>TH</sup> JUNE, 2023

**CONFERENCE PROGRAMME**

TUESDAY, 27<sup>TH</sup> JUNE, 2023

TIME	ACTIVITY	FACILITATOR
<b>CONFERENCE PRELIMINARIES – Room 1/Link 1 ( <a href="https://meet.google.com/izv-ugzn-cmi?hs=224">https://meet.google.com/izv-ugzn-cmi?hs=224</a>)</b>		
8:00 AM 8:30 AM	Participants Sign in/Delegates arrival and registration	Conference Secretariat/ Marketing Officials
8:30 AM 9:00 AM	Welcoming of Guests	VCs Office/Directorate of Linkages and Public Relations Office
9:00 AM 10:00 AM	Entertainment (Display of University Products)	Linkages
10.00 AM 10.30 AM	Tea Break	Catering & Hospitality
10:30 AM 10:45 AM	Chief Guest and Chairman of Council Pay a Courtesy Call to the VC	DVC ASA
10:45 AM 11:05 AM	Tree Planting	Estates, Mr. Fredrick Lugaliala, Mr. Nickson Odongo
11:05 AM 11:10 AM	Physical Group Photo for physical members (Online photo for virtual attendees members)	Mr. Nickson Odongo
11:10 AM 11:15 AM	National Anthem & Opening Prayer	Volunteer-1
<b>WELCOMING SPEECHES</b>		
11:15AM 11:20AM	Welcoming Remarks	Prof Bulitia M. Godrick, DVC (Academics & Students Affairs) / Conference Chair



11:20 AM 11:35 AM	Opening Remarks			Prof. Peninah Aloo Obudho, Ag. Vice Chancellor
11:35 AM 11:55 AM	Opening Remarks			Dr. Kennedy Ole Kerei Chair – Maasai Mara University Council
11:55 AM 12:35 PM	Guest Speaker			Prof. Raphael Munavu Chair – Presidential Taskforce on Education Reforms in Kenya
<b>12:35 PM 1:45 PM</b>	<b>LUNCH BREAK</b>			<b>Catering &amp; Hospitality</b>
1:45 PM 1:50 PM	Re-convergence to Room 1 (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> )			ICT/Secretariat
1:50 PM 2:30 PM	Maasai girl initiative			NGO 1
2:30 PM 2:35 PM	Breakout to Plenary Session Rooms (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> (Link 2: <a href="https://meet.google.com/xdp-hifi-kxy?hs=224">https://meet.google.com/xdp-hifi-kxy?hs=224</a> )			ICT/Secretariat
	<b>Session 1 (Hybrid) (Room 1/Link 1)</b>	<b>Session Chair (Dr Sammy Mutisya)</b>	<b>Session 2 (Hybrid) (Room 2/Link 2)</b>	<b>Session Chair (Prof Paul Maithya)</b>
2:35 PM 2:50 PM	Climate Change and Landscape Dynamics on Elephants' Distribution in Meru National Park Kenya	<b>Lynnette</b> Kiboro (Wildlife Research & Training Institute, Kenya)	Impacts of Climate Change on Biodiversity and Sustainability	<b>Dennis</b> Mutie (Maasai Mara University, Kenya)
2:50 PM 3:05 PM	Implications of Human Activities Carried Out in Urban Green Spaces of Slum-Dwelling Areas: A Case of Dandora Estates, Nairobi County, Kenya	<b>Namalwa</b> Silva Mgunda, Maurice Omollo & Charity Konana (Maasai Mara University, Kenya)	"The Crucial Role of Social Workers in Preventing Obstetric Fistula in Kisii County: Promoting Maternal Health, Advocacy, Counseling, Referral, and Follow- up"	<b>Orucho</b> Mark Rodgers & Orucho Justine Amadi (Maasai Mara University, Kenya)
3:05 PM 3:20 PM	Patient Satisfaction With Nursing Care At Narok County Referral Hospital, Kenya	<b>Emily</b> Akinyi & Winfridah Njunge (Maasai Mara University, Kenya)	Exploration of the Efficacy of Psychosocial Support for Terminal Ill Patients and their Caregivers in	<b>Orucho</b> Justine Amadi, Kimberly Miser Otieno, Emmanuel Aswani, Obed Jackson, Tabitha Onyari,





			Palliative Care Settings	Jacinta Bosibori, Patricia Kantai (Maasai Mara University, Kenya)
3:20 PM 3:35 PM	Quantitative analysis of phytochemical extracts of <i>hydnora africana</i> and <i>abyssinca</i> species in Narok County, Kenya	<b>Jim</b> Muthee, Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)	Incorporation of Green Synthesized Silver Nanoparticles and Eucalyptol Oil into Polymeric Nanoparticles for the Enhanced Mosquito Repellence	<b>Emmanuel</b> Kiptoo (Maasai Mara University, Kenya)
3:35 PM 3:40 PM	<b>Commercial Break</b>			
3:40 PM 3:55 PM	Factors Contributing to Maternal Mortality in Narok County Referral Hospital, Kenya	<b>Muoki</b> Miriam & Eucabeth Jabuya (Maasai Mara University, Kenya)	Breaking barriers and promoting education and awareness efforts in local communities as an intervention strategy to address myths, misconceptions, and religious beliefs	<b>Michael</b> Komba Kimani (Kenya Malaria Youth Army, Kenya)
3:55 PM 4:10 PM	Influence of Participative Leadership Style on Public Health Service Delivery in County Governments in Western Kenya Region	<b>Leonard</b> Momos Juma (Maasai Mara University, Kenya)	Socio-Economic Impacts of Stone Quarrying Activities in Narok Town Ward	<b>Festus</b> K. Barchok, Samson O. Mabwoga & Kirui Stella (Maasai Mara University, Kenya)
4:10 PM 4:25 PM	Effect of Mixed Cropping on Socio-Economic Welfare of Farmers in Uasin Gishu County, Kenya	<b>Olita</b> Faith, Asige Mmaitisi Lawrence, Obushe Dennis Omuse and Walter Kiboi (Maasai Mara University, Kenya)	Analysis and characterization of bio-slurry: fertilizer, fuel and pesticide potential of biogas slurry from Anaerobic Digestion systems	<b>Maxwel</b> Gitonga & Aloys Osano (Maasai Mara University, Kenya)
4:25 PM 4:40 PM	Efficiency of Citizen Participation on Healthcare Service Delivery in Sirisia sub-County, Bungoma County, Kenya	<b>Denis</b> Obushe (Maasai Mara University, Kenya)	Factors Influencing Immunization Uptake of Children Under Five Years in Limanet Location, Narok North Sub County, Kenya	<b>Joyce</b> Jepkirui & Eucabeth Jabuya (Maasai Mara University, Kenya)
4:40 PM 4:45 PM	<b>Re-convergence to Main Room 1 (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a>)</b>			<b>ICT/Secretariat</b>
4:45 PM 5:10 PM	Tareto Africa			<b>NGO - 2</b>



<b>5:10 PM</b> <b>5:50 PM</b>	<b>Keynote Presentation 1 – With Evening Tea</b>	<b>Dr. Daniel Mosago</b> <b>NEMA Narok County</b> <b>Director</b>
<b>5:50 PM</b> <b>6:00 PM</b>	<b>Q&amp;A for Keynote Speaker 1</b>	<b>Dr Sammy Mutisya</b> <b>Director – Gender, Equity &amp;</b> <b>Culture</b>
<b>6:00 PM</b> <b>6:05 PM</b>	<b>End of Day 1; Summary Lessons &amp; Remarks</b>	<b>Prof Justus Simiyu</b> <b>Director – Research &amp;</b> <b>Innovation</b>
<b>6:05 PM</b> <b>6:10 PM</b>	<b>Closing Prayers</b>	<b>Volunteer 1</b>
<b>6:10 PM</b> <b>-</b>	<b>Participants Leave</b>	<b>All</b>



WEDNESDAY, 28<sup>TH</sup> JUNE, 2023

TIME	ACTIVITY			FACILITATOR
<b>Day 2 Preliminaries – Room 1/Link 1 (<a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a>)</b>				
8:00 AM 8:20 AM	Participants Registration/online attendees sign in			Conference Secretariat/ICT
8:20 AM 8:25 AM	Opening Prayers			Volunteer - 2
8:25 AM 8:30 AM	Opening Remarks			Prof Justus Simiyu Director – Research & Innovation
8:30 AM 9:00 AM	<b>Sub-theme 2 Keynote Speech</b>			<b>Prof. Dickson Andala CEO – National Research Fund (NRF) Kenya</b>
9:00 AM 9:10 AM	<b>Q/A for Keynote speaker 2</b>			<b>Dr. Samson Mabwoga</b>
Breakout to Plenary Session Rooms (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> (Link 2: <a href="https://meet.google.com/xdp-hifi-kxy?hs=224">https://meet.google.com/xdp-hifi-kxy?hs=224</a> )				ICT/Secretariat
	<b>Session 3 (Hybrid) (Room 1/Link 1)</b>	<b>Session Chair (Dr Samson Mabwoga)</b>	<b>Session 4 (Hybrid) (Room 2/Link 2)</b>	<b>Session Chair (Dr Meshack Sitati)</b>
9:10 AM 9:25 AM	Adoption of climate smart agricultural technologies towards achievement of food security in Kenya	<b>Muuu</b> Wambua & Gladys Kemboi (Maasai Mara University, Kenya)	Spatio-Temporal Analysis of Land Use Contribution To Greenhouse Gas Emissions in Kiambu County	<b>Cyrus</b> Muimi ( Jomo Kenyatta University of Agriculture and Technology, Kenya)
9:25 AM 9:40 AM	Exploration of the Efficacy of Psychosocial Support for Terminal Ill Patients and their Caregivers in Palliative Care Settings	<b>Orucho</b> Justine Amadi, Kimberly Miser Otieno, Emmanuel Aswani, Obed Jackson, Tabitha Onyari, Jacinta Bosibori, Patricia Kantai (Maasai Mara University, Kenya)	On $(n+k,m)$ - $(\alpha,\beta)$ - class $(Q)$ Operators in Semi-Hilbertian space	<b>Wanjala</b> Victor, Edward Njuguna and John Wanyonyi Matuya (Maasai Mara University, Kenya)
9:40 AM 9:55 AM	Analysis of Antibiotics from Selected Steak and Stomach Bowels From Goat, Sheep and Cattle In	<b>Geoffrey</b> Karanja, Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)	Analysis of wind characteristics of Olderkesi region in Narok county	<b>Steven</b> Okoth Ochola & Fredrick Otieno (Maasai Mara University, Kenya)



	Narok County, Kenya			
9:55 AM 10:10 AM	Anthelmintic Potential of <i>Cucurbita pepo</i> Seeds and In Vitro Tests Against <i>Lumbricoides</i>	<b>Denis</b> Kiragu (Maasai Mara University, Kenya)	Ceramic Water Filters Impregnated with Silver Nanoparticles for the Removal of Lead and Chromium Ions from Water	<b>Tabitha</b> Alang'o, Fredrick Otieno, Isaac Motochi (Maasai Mara University, Kenya)
10:10 AM 10:35 AM	NGO - 3	Matasaru Ntoyie foundation	NGO - 4	Bomanoma Eco-lodge and community centre
10:30 AM 11:00 AM	<b>Tea Break</b>			<b>Catering/Secretariat</b>
11:00 AM 11:15 AM	On K* Quasi-n,m-Class (Q) Operators	<b>Wanjala</b> Victor, Edward Njuguna and John Wanyonyi Matuya (Maasai Mara University, Kenya)	Comparison of Organic Polymer P3HT Blended with Fullerene Acceptor PC61BM Vs Non-Fullerene Acceptor Coi8DFIC	<b>Frank</b> Wekesa, Motochi Isaac, Francis Otieno (Maasai Mara University, Kenya)
11:15 AM 11:30 AM	Determinants of 30-Day Pneumonia Readmissions in The Pediatric Wards in Narok County Referral Hospital	<b>Sammy</b> Kipruto & Winfridah Njunge (Maasai Mara University, Kenya)	Detection of malaria plasmodium falciparum parasites in dried human blood spots using light microscopy and OpenCV python library analysis	<b>Sankara</b> Aluko, Jared Ombiro Gwaro, Duke Oeba (Maasai Mara University, Kenya)
11:30 AM 11:45 AM	Inter-Ethnic Conflict Resolution Through Cultural Norms and Practices in Laisamis Sub-County, Marsabit County, Kenya	<b>Bursuna</b> Ejere (Maasai Mara University, Kenya)	Silver nanoparticles and Crude Extracts from <i>Senna didymobotrya</i> and <i>Tithonia diversifolia</i> embedded into Polyvinyl Alcohol and Chitosan (Ag/CE/PVA/CS) composite nanofibrous films through Electrospinning for Insecticidal Activity	<b>Mining</b> John (Vaal University, South Africa)
11:45 AM 12:00 PM	Tree Conservation Challenges among the Indigenous Pastoral Rendille Community in Marsabit, Kenya	<b>Janet</b> Ahatho Ekalo (Kenyatta University, Kenya)	Effects of Personnel Risk Management Strategies on Road Construction Project Delivery in Kenya	<b>George</b> Onyango Agumba, Patrick Gudda & Samuel Mwaura (Maasai Mara University, Kenya)
12:00 PM 12:15 PM	Extraction, Characterization and In-Vitro Efficacy test of <i>Jasminium spp.</i> on helminths'	<b>Janet</b> Oniang'o & Nathan Oyaro (Maasai Mara University, Kenya)	On n-power-class D(D) Operators	<b>Wanjala</b> Victor, Beatrice Obiero Adhiambo, Edward Njuguna and John Wanyonyi Matuya (Maasai Mara University, Kenya)
12:15 PM 12:20 PM	Re-convergence to Room 1 (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> )			ICT/Secretariat



12:20 PM 12:45 PM	Narok county resource network (conservancies)			NGO - 5
12:45 PM 1:40 PM	<b>LUNCH BREAK</b> <b>(Entertainment for virtual participants) /Poster exhibitions</b>			<b>Catering &amp; Hospitality</b>
1:40 PM 2:05 PM	Normad child Foundation			NGO - 6
2:05 PM 2:30 PM	Narok Albinism association			NGO - 7
2:30 PM 2:35 PM	Breakout to Plenary Session Rooms (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> (Link 2: <a href="https://meet.google.com/xdp-hifi-kxy?hs=224">https://meet.google.com/xdp-hifi-kxy?hs=224</a> )			ICT/Secretariat
	<b>Session 5 (Hybrid)</b> (Room 1/Link 1)	<b>Session Chair</b> (Dr Charity Konana)	<b>Session 6 (Hybrid)</b> (Room 2/Link 2)	<b>Session Chair</b> (Dr Edmund Gathuru)
2:35 PM 2:50 PM	Physicochemical characterization of Taita rock for flocculation properties in water treatment	<b>Eliud</b> Yego, Isaac Motochi, Fredrick Otieno, Nathan Oyaro (Maasai Mara University, Kenya)	Unraveling the Transformative Power of Trauma-Informed Therapy: A Philosophical Exploration Among Sexually Abused Children in Kisii County	<b>Orucho</b> Desmond Muregi & Orucho Justine Amadi (Maasai Mara University, Kenya)
2:50 PM 3:05 PM	Design and Implementation of a Product Expiry Alert Management System	<b>David</b> Kamau (Maasai Mara University, Kenya)	The Integration of Information Communication Technology in Teaching English in Secondary Schools in Thika Sub County in Kiambu County, Kenya	<b>Wilson</b> Waweru Mungai (College Of Peace Institute , Kenya)
3:05 PM 3:20 PM	Mitigating climate change Impact on learning: Lessons from marginalized regions of Kenya	<b>Florence</b> Kisirkoi (Maasai Mara University, Kenya)	Historical Evolution and Contextual Dynamics of Social Work in Kenya	<b>Elizabeth</b> Kwamboka Onkundi & Orucho Justine Amadi (Maasai Mara University, Kenya)
3:20 PM 3:35 PM	Fabrication and Electrochemical Analysis of a Bio-Slurry Based Microbial Fuel Cell at Cryo-Mesophilic Temperatures	<b>George</b> Ochieng', Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)	Understanding the Causes and Consequences of Missing Marks in Kenyan Universities	<b>Pauline</b> Maithya, Dennis Kipkorir, Kimberly Miser Otieno, Aswani Emmanuel, Faith Nafula, Iijah Kyalo, Janet Akinyi, Everlyne Kamene, Ngashar Leiyian, Koriata Nadala, Esther Njeru, Amadi Orucho (Maasai Mara University, Kenya)



3:35 PM 3:40 PM		<b>Commercial Break</b>		
3:40 PM 3:55 PM	The Effects of Computerized Accounting System on The Performance of Manufacturing Firms In Uasin Gishu County, Kenya	<b>Wilson</b> Waweru Mungai Life And Peace Institute, Kenya)	The 'Evil Eye' (Ebibiriri) in the Gusii Community: Origins, Manifestations and Effects	<b>Fredrick</b> Kayusi Ondabu & Orucho Justine Amadi (Pwani University, Kenya )
3:55 PM 4:10 PM	Designing a Smart Voltage and Current Monitoring System For a Single-Phase Inverter Using an Android Smartphone Application	<b>Njoki</b> Mwangi (Maasai Mara University, Kenya)	Influence of Human Resource Capacity on Public Health Service Delivery in the Western Kenya Region	<b>Leonard</b> Momos Juma (Maasai Mara University, Kenya)
4:10 PM 4:25 PM	Adopting Big Data in Creating Smart LREB's Economic Prosperity.	<b>David A. O. Njoga</b> (RisqPro Limited)	Solution based Journalism in Communicating Climate Change: A content analysis of Print media in Kenya	<b>Jane Malel</b> & Benard Malakwen, (Moi University, Kenya)
4:25 PM 4:40 PM	How can technology improve the lives of street children?	<b>Mercy</b> Njeri (University of Nairobi, Kenya)	Effect of Supplier Selection on The Procurement Performance of Steel Manufacturing Firms in Nairobi City County, Kenya	<b>Gudda</b> Kevin, Keitany Pauline, Mauricer Ombok (Maasai Mara University, Kenya)
4:40 PM 4:45 PM	Multi Branch School Management System	<b>Mutuku</b> Michael Nzioka ( Meru University).	Influence of Organizational Culture on Public Health Service Delivery in County Governments in Western Kenya Region	<b>Leonard</b> Momos Juma (Maasai Mara University, Kenya)
4:45 PM 4:50 PM	<b>Re-convergence to Main Room 1 (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a>)</b>			<b>ICT/Secretariat</b>
4:50 PM 5:15 PM	Ewangan Olosho			NGO - 8
5:15 PM 5:55 PM	<b>Keynote Presentation 3 – With Evening Cocktail</b>			<b>Ms. Susan N. Kasero, County Director, Council of NGOs</b>
5:55 PM 5:05 PM	<b>Q&amp;A for Keynote Speaker 3</b>			<b>Dr Isaac Motochi</b>



6:05 PM 6:10 PM	End of Day 1; Summary Lessons & Remarks	Prof Justus Simiyu Director – Research & Innovation
6:10 PM 6:15 PM	Closing Prayers	Volunteer 2
<b>6:15 PM</b> -	<b>Participants Leave</b>	



THURSDAY, 29<sup>TH</sup> JUNE, 2023

TIME	ACTIVITY			FACILITATOR
<b>Day 3 Preliminaries – Room 1/Link 1 (<a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a>)</b>				
8:00 AM 8:20 AM	Participants Registration/online attendees sign in			Conference Secretariat/ICT
8:20 AM 8:25 AM	Opening Prayers			Volunteer - 3
8:25 AM 8:30 AM	Opening Remarks			Prof Justus Simiyu Director – Research & Innovation
8:30 AM 9:00 AM	<b>Sub-theme 4 Keynote Speech</b>			<b>Dr. Oludaisi S. Adekomaya</b> University of Witwatersrand, S. Africa
9:00 AM 9:10 AM	<b>Q/A for Keynote speaker 4</b>			<b>Dr. George Rukaria</b>
Breakout to Plenary Session Rooms (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> (Link 2: <a href="https://meet.google.com/xdp-hifi-kxy?hs=224">https://meet.google.com/xdp-hifi-kxy?hs=224</a> )				ICT/Secretariat
	<b>Session 7 (Hybrid)</b> (Room 1/Link 1)	<b>Session Chair</b> (Dr George Rukaria)	<b>Session 8 (Hybrid)</b> (Room 2/Link 2)	<b>Session Chair</b> (Dr. Sr. Alice Sambu)
9:10 AM 9:25 AM	Religion and climate change	<b>Renato</b> Kiprotich (Maasai Mara University, Kenya)	Influence of Political Leadership on the Advancement of Modern Road Infrastructure for Sustainable Development in Narok North Sub-County, Kenya	<b>Ang'aba Aden</b> Esokomi & Naini Pauline Kararei (Maasai Mara University, Kenya)
9:25 AM 9:40 AM	The Impact of the Travel Restrictions on The Economic Status of SMEs in Kenya: A Case Study of Businesses in Narok Town, Kenya	<b>Wilson Waweru</b> Mungai (Life and Peace Institute, Kenya)	Effect of Supply Chain Collaboration Strategies on the Performance of Floricultural Firms in Kenya	<b>Leonah</b> Kemunto, Patrick Gudda & Pauline Keitany (Maasai Mara University, Kenya)
9:40 AM 9:55 AM	Strategic Procurement Planning and Service Delivery of County Governments in Western Kenya	<b>Kennedy</b> Wandera Walubengo, Joseph Olang'o Abuya, Fredrick Njehu Kiongera (Masinde Muliro	Effect of Supplier Evaluation on The Procurement Performance of Steel Manufacturing Firms in Nairobi City	<b>Gudda</b> Kevin, Keitany Pauline, Mauricer Ombok (Maasai Mara University, Kenya)





	Region	University)	County, Kenya	
9:55 AM 10:10 AM	Environmental Dilemma among selected Future Industry Leaders in the Philippines	<b>Mark</b> Gabriel (Aguinaldo College, Philippines)	The Relationship Between Signature Pedagogy, Subject Knowledge, and Pedagogic Knowledge in Promoting Good Teaching in Social Work Education: A Case Study of Role-Playing and the Flipped Classroom	<b>Justine Orucho</b> (Maasai Mara University, Kenya)
10:10 AM 10:35 AM	<b>Osiligi girls</b>			NGO - 09
10:30 AM 11:00 AM	<b>Tea Break</b>			<b>Catering/Secretariat</b>
11:00 AM 11:15 AM	Effect of Supply Chain Flexibility Strategies on the Performance of Floricultural Firms in Kenya	<b>Leonah</b> Kemunto, Patrick Gudda & Pauline Keitany (Maasai Mara University, Kenya)	Analysis of Literary Texts on Environment and their Treatment of Nature	<b>Nancy</b> K. Ayodi (Maasai Mara University, Kenya)
11:15 AM 11:30 AM	Influence of Audit Committee Composition on The Quality of Audit Reports of Sacco's in Homabay County	<b>Limonya</b> Joel ( Masinde Muliro University, Kenya )	Growth Effects of Urban-Rural and Intra-Regional Linkages on Non-Metropolitan Counties and Communities	<b>Lamech</b> Osiago ( Jomo Kenyatta University of Agriculture And Technology, Kenya)
11:30 AM 11:45 AM	Effects of Resource Risk Management Strategies on Road Construction Project Delivery in Kenya	<b>George</b> Onyango Agumba, Patrick Gudda & Samuel Mwaura (Maasai Mara University, Kenya)	“Bettering Oneself to Better the Community” Positive Youth Development Across Three Kenyan Contexts	<b>Onyiko, Kennedy;</b> Geldhof, John; Blodgett, Jey; Chandler, Kelly; Bowers, Edmond; Allen, Lawrence; Bolding, Candice; McQuillin, Sam; Mercurief, Alexis; and Thompson, Daria. (Maasai Mara University, Kenya)
11:45 AM 12:00 PM	The Role of Reward and Compensation Management in Promoting Remote Learning: A Case of Public Universities in Nairobi Metropolis	<b>Ruth</b> Parteyie, Daniel Naikuni & Patrick Gudda (Maasai Mara University, Kenya)	Physical Library Spaces and Facilities Status in Academic Libraries in Kenya	<b>Milcah</b> Gikunju, Damaris Odero & Tom Kwanya (Moi University, Kenya)
12:00 PM 12:15 PM	Impacts of Hustler Fund on Rural Development in Kenya: The Case of Kesses Sub-County of Uasin Gishu County	<b>J. K. Ngetich*</b> , D. M. G. Mugambi, A. K. Kiplagat, K Nelima, G P Opata1, & P. Omondi (University of Eldoret, Kenya)	Political Propaganda and The Politics of Pokot Community, Kenya	<b>John</b> Musto Lomuk, (Moi University, Kenya)



12:15 PM 12:30 PM	On $n,m-(\alpha,\beta)$ - class (Q) Operators in Semi-Hilbertian space	<b>Wanjala</b> Victor, Beatrice Obiero Adhiambo, Edward Njuguna and John Wanyonyi Matuya (Maasai Mara University, Kenya)	Influence of Entrepreneurship on Socio-Economic Empowerment in Registered Youth Groups in Kenya: A Case of Makadara Sub-County, Kenya	<b>Naini Kararei</b> , Simon Kitiyo & Danson Lemein (Maasai Mara University, Kenya)
12:30 PM 12:45 PM	Isolation and Analysis of Chemotherapeutic profiles from the roots of <i>Hydnora abyssinca</i>	<b>Paul</b> Mungai, Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)	Geographical Variation of Polyphenols of Dried Black Tea in Kisii Highlands, Kericho and Mt. Kenya Region, Kenya	<b>Armstrong</b> Gachengo, Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)
12:45 PM 1:00 PM	Electrochemical Analysis of an Aluminium-Citrate Ion Cell from Recycled Aluminium Wastes and <i>Dovyalis caffra</i> extracts electrolyte	<b>Wamumwe</b> John Mwangi, Aloys Osano & Bakari Chaka (Maasai Mara University, Kenya)	Design, Sizing and Simulation of Grid Connected Solar PV for Water Pumping System of Maasai Mara University	<b>Lwambe</b> Dorothy (Maasai Mara University)
1:00 PM 1:15 PM	Baseline Survey on the Status of alcohol and drugs abuse at Maasai Mara University	<b>Nancy Kimile</b> (Maasai Mara University, Kenya)	Assessment of essential mineral nutrients in selected indigenous and exotic vegetables from Murang'a and Kisii counties, Kenya	<b>Kennedy</b> Njarange (Maasai Mara University, Kenya)
<b>1:15 PM 2:05 PM</b>	<b>LUNCH BREAK (Entertainment for virtual participants) /Poster exhibitions</b>			<b>Catering &amp; Hospitality</b>
2:05 PM 2:10 PM	Re-convergence to Room 1 (Link 1: <a href="https://meet.google.com/izv-uqzn-cmi?hs=224">https://meet.google.com/izv-uqzn-cmi?hs=224</a> )			ICT/Secretariat
2:10 PM 2:35 PM	Miss Green Anglicans Movement			NGO - 10
2:35 PM 2:50 PM	Lessons learnt from the Conference			Prof Justus Simiyu Director – Research & Innovation
2:50 PM 3:10 PM	The Way Forward			Prof. Bulitia Godrick DVC (AS&A) & Conference Chair
3:10 PM 3:40 PM	Closing Speech & Issuance of Certificates			Prof Peninnah A. Obudho Ag. Vice Chancellor



3:40 PM 3:45 PM	Vote of Thanks	Dr. Sr. Alice Sambu
3:45 PM 3:50 PM	Closing Prayers	Volunteer 4
3:50 PM -	Participants Leave at their own pleasure	Secretariat/Transport Committee

\*Room 1 – Conference Hall

\*Room 2 – MH-01

\*Physical presenters in green - 42

\*Virtual Presenters in blue - 31

\*All NGOs presentations physical – 16

\*Total - 89

**Support Lines**

Issue	Contacts
For presentations submission	<a href="mailto:conference2023@mmarau.ac.ke">conference2023@mmarau.ac.ke</a> Call/Whatsapp; +254 705350166 (Chaka) +254 708368956 (Abdallah)
Difficulties in accessing the room links	Call/Whatsapp; +254 725513032 (Kibaso) +254 723068081 (George) +254 786835417 (Sadia) +254 798138176 (Wamumwe) +254 702170700 (Maxwell) +254 702718019 (Kiragu) +254 791016052 (Njoki)



## **PARTICIPANTS ABSTRACTS**

### **Sub-theme I: Impacts of climate change on bio-diversity and sustainability**

#### **Implications of Human Activities Carried Out in Urban Green Spaces of Slum-Dwelling Areas: A Case of Dandora Estates, Nairobi County, Kenya**

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#### **Abstract**

Rapid urbanization, coupled with population influx in many developing countries worldwide, is a prominent cause of the depletion of urban green spaces (UGS). These beautiful, green, and tranquil areas within urban forms are being depleted due to increased human interference in cities and urban areas globally. This paper examines the implications of various human activities that dominate the urban green spaces of Dandora by engaging with household heads and those found undertaking activities within the UGS. The results indicate that residents' participation in social and economic activities had a positive correlation (0.18 and 0.304, respectively) with the negative effects on UGS, while residents' participation in environmental activities had a negative correlation (-0.502) with the latter. The findings establish that the primary positive effect resulting from human activities practiced in the UGS in Dandora was increased UGS users who increased utility and made use of these spaces. Some of the recommendations include: the county government should reclaim and rehabilitate any open space that may have been encroached upon to facilitate other unplanned and haphazard developments. This move will tend to increase the green space size as they originally were, making them more functional, usable, and accessible to the public. The Ministry of Land needs to invest in a centralized land information system and Geographic Information System as a tool in innovative land use planning to reduce encroachments. There is a dire need for architects, engineers, and environmentalists within the country to advise and educate real estate developers on the importance of biophilic design to the contemporary urban form.

**Keywords:** Urban Green Spaces (UGS), Human activities, Impacts of human activities on UGS



## **Impacts of Climate Change on Biodiversity and Sustainability**

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### **Abstract**

Climate change poses a significant threat to biodiversity and sustainability worldwide. The objective of the literature review is to assess the key impacts of climate change on biodiversity and explore the implications for sustainability. By understanding these impacts, we can develop effective strategies for conservation and adaptation to ensure the long-term health and resilience of ecosystems. This abstract draws on a comprehensive review of scientific literature and case studies to examine the impacts of climate change on biodiversity and sustainability. The information was synthesized from various disciplines, including ecology, climatology, and conservation science, to provide a comprehensive overview of the subject matter. Climate change has diverse and far-reaching effects on biodiversity. Rising temperatures and altered precipitation patterns disrupt ecosystems, causing shifts in species distributions, changes in phenology, and alterations in ecosystem dynamics. This can lead to the loss of habitat and reduction in species abundance, posing significant threats to global biodiversity. Additionally, climate change exacerbates existing stressors on ecosystems, such as habitat loss, pollution, and invasive species. These synergistic impacts further compromise biodiversity and ecosystem functioning. The loss of key species and disruption of ecological processes can undermine the provision of ecosystem services, including clean water, pollination, and climate regulation, with significant implications for human well-being and sustainability. Understanding the impacts of climate change on biodiversity is crucial for developing effective conservation and adaptation strategies. Conservation efforts must focus on protecting and restoring critical habitats, facilitating species movement, and managing ecosystems in a way that enhances their resilience to climate change. Furthermore, integrating climate change considerations into sustainable development policies and practices is essential for ensuring the long-term sustainability of human societies and ecosystems.

**Keywords:** climate change, biodiversity, sustainability, ecosystems, conservation, adaptation.



## **Climate Change and Landscape Dynamics on Elephants' Distribution in Meru National Park Kenya**

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### **Abstract**

Climate change is a long-term shift in temperatures and weather patterns. These shifts have been found to be natural and human induced. Human activities are the main drivers of climate change primarily due to the use of fossil fuels. Climate change is a big threat to biodiversity and natural ecosystems. Climate change is a major contributor to the loss of biodiversity especially large mammals like elephants. Increased water shortage and habitat degradation as well as habitat fragmentation as a result of climate change and the attendant persistent drought has been identified as a serious threat to the survival of large mammals. In Kenya, high mortality of African elephants (*Loxodonta africana*) has been an issue of great concern to the government and conservationists. Although studies have attributed the death of elephants to human wildlife conflict and poaching, there is scarcity of robust evidence on the relationship between climate change and landscape dynamics on elephants' distribution in Meru National Park Kenya. Using time series data on elephants' population in Meru National Park and data on environmental changes in the park overtime, an attempt was made to analyze the relationship between climate change and landscape dynamics on elephants' distribution. The study established that drying of vegetation due to the high temperatures, habitat fragmentation, as well as drying of water points in areas mostly habited by elephants contributed significantly to elephants' population and landscape integrity. The study recommends that conservation efforts of African elephants should focus on mitigating the adverse effects of climate change in the park such as drilling ground water that is powered by solar energy to ensure sustainability.

**Keywords:** Biodiversity, Climate change, Impact, Mitigation



## **Socio-Economic Impacts of Stone Quarrying Activities in Narok Town Ward**

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### **Abstract**

Quarrying is an excavation process involving abstracting materials, which are neither fuel nor minerals in nature from rocks. The ever-increasing development and construction in major urban centres worldwide have necessitated the need for quarries to provide materials for construction. This has led to detrimental environmental and social economic impacts which are usually ignored at the expense of economic pursuit by developers. The study focused on assessing the socio-economic impacts of stone quarrying in Narok Town Ward, Narok North Sub-County, Kenya. The target population were quarry workers, the residence and government agency officials dealing with environmental management. The study employed descriptive research design where both quantitative and qualitative techniques were used. Stratified sampling and random sampling techniques were used during the study. Questionnaires, interviews and observations were used to collect data. Findings have been presented descriptively in quantitatively and qualitatively. Quarrying activities in Narok Town ward has played important role in the economic development and infrastructural development, however it has brought about negative social issues such as change in social fabrics, conflicts, displacement and health related issues. Correlation coefficient ( $r=0.705$ ,  $P<0.001$ ) show positive correlation between severity of dust and respiratory illnesses among the respondents. The respondents strongly agreed that quarrying activities has led to creation of employment in the area. The study recommends that Stakeholders should put efforts in mitigation of negative outcomes of quarrying activities that leads to disruption of livelihoods. Community education and sensitization on environmental, socio- economic impacts and safety measures should be done to minimize negative impacts of quarrying activities in Narok Town ward.

**Keywords:** Quarry, excavation, socio-economic, environmental, impacts



## **Tree Conservation Challenges among the Indigenous Pastoral Rendille Community in Marsabit, Kenya**

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### **Abstract**

Every environment is surrounded by traditional people who have lived in the geographic location for a long time and use their particular knowledge to cohabit with the natural ecosystem. This study assessed challenges encountered towards tree conservation by the Rendille pastoral community in Kenya. Selected tree species; *Olea europaea*, *Terminalia sp.* and *Hyphaene compressa*, that are commonly used by the community were identified and the probable threats towards their conservation. Some of these tree conservation challenges by the indigenous Rendille were: charcoal burning and fuel wood consumption, demand of traditional tree medicinal value, climate variability extremes and demand for land for settlement by the community. The results indicate that, charcoal burning (84.4%) and demand for traditional tree medicine (77.3%) were leading causes frustrating tree conservation among the Rendille. To mitigate these challenges, the respondents indicated that, creation of awareness (89.1%) and promotion of other sources of fuel (78.9%) could be vital factors. The study recommends Integration of Indigenous Knowledge (IK) with formal education to enhance conservation of the mentioned tree species.

**Keywords:** Tree conservation, challenges, ecosystem, environment, *olea europaea*, *terminalia sp.*, *hyphaene compressa*





**Sub-track 2: Bio-medical, agricultural and environmental sciences and climate change research for sustainable development**

**"The Crucial Role of Social Workers in Preventing Obstetric Fistula in Kisii County: Promoting Maternal Health, Advocacy, Counseling, Referral, and Follow-up"**

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**Abstract**

Obstetric fistula is a preventable and treatable condition that can have a significant impact on the physical, social, and economic well-being of women who experience prolonged obstructed labor during childbirth. This study delves into the profound essence of social workers' transformative role in the prevention of obstetric fistula within the intricate tapestry of Kisii County. It endeavors to unravel the intricate threads of their invaluable contributions, illuminating the path towards holistic well-being for women. By elucidating the interconnectedness of maternal health, advocacy, counseling, referral, and follow-up, this study endeavors to uncover the profound impact social workers can have on transcending the barriers that obstruct the realization of a society free from obstetric fistula. Data was collected through focus group discussions with practicing social workers in Kisii County who were purposively selected. The finding of this study indicate that Social workers play a crucial role in preventing obstetric fistula in Kisii County. They provide essential support and services to women at risk of or experiencing obstetric fistula, by offering counseling and emotional support, they address fears and misconceptions, encouraging women to seek timely and skilled care. They also serve as a link in the healthcare system, facilitating referrals to appropriate healthcare providers and rehabilitation services. Social workers advocate for women's rights and work towards improving access to quality healthcare services. The study recommends increased investment in maternal healthcare services and increased training and support for social workers to effectively prevent obstetric fistula in Kisii County.

**Key words:** Obstetric fistula, Psycho-social support, Maternal Health, Referral services

## **Exploration of the Efficacy of Psychosocial Support for Terminally ill Patients and their Caregivers in Palliative Care Settings**

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### **Abstract**

Terminal illness can have a profound impact on patients and their caregivers, often leading to emotional distress and a reduced quality of life. Palliative care settings often provide psychosocial support to address these issues, but the efficacy of such support is not well understood. This study aims to explore the efficacy of psychosocial support for terminally ill patients and their caregivers in palliative care settings. Psychosocial support in palliative care aims to address the emotional, social, and spiritual needs of patients and their caregivers. However, research on the efficacy of such support is limited. The study employed a qualitative research design, using in-depth interviews with terminally ill patients, their caregivers, and social workers in palliative care settings. The data collected was transcribed, translated, and analyzed thematically to identify patterns and themes. The findings of this study highlight the importance of psychosocial support in palliative care, both for patients and their caregivers. Patients reported improvements in emotional well-being and coping skills, while caregivers expressed gratitude for the support provided. Social workers identified challenges in providing support, such as cultural and language barriers, and the need for ongoing training and education. Based on the findings of this study, it is recommended that palliative care settings prioritize psychosocial support for terminal ill patients and their caregivers. Healthcare providers should receive ongoing training and education in providing such support, and efforts should be made to address cultural and language barriers.

**Key words:** Psychosocial support, Terminal illness, Caregivers, Palliative care, Coping mechanisms, Holistic care, Cultural competence

## **Efficiency of Citizen Participation on Healthcare Service Delivery in Sirisia sub-County, Bungoma County, Kenya**

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### **Abstract**

With the onset of Kenya's devolution in March 2013 as provided for in the new Constitution of Kenya of 2010, healthcare resources have been at the dispensation of the counties. However, health service delivery in Sirisia Sub County has generally lagged behind in comparison to other Sub Counties in Bungoma County. The general objective of this study was to examine the efficiency of citizen participation on healthcare service delivery in Sirisia sub-County. The study tested the hypotheses that there is no significant relationship between efficiency of citizen participation on healthcare service delivery in Sirisia Sub-County, Kenya. The study used empowerment theory. Both correlational and descriptive research designs were used. The target population was 17659 household heads and 107 healthcare workers in Sirisia Sub-County. 32 (30%) healthcare workers and 376 household heads in the Sub-County were selected. The healthcare workers were purposively selected while the households were randomly selected. The study relied on both primary and secondary data. Data was analyzed using both qualitative and quantitative analysis. For descriptive analysis, both mean and standard deviation were computed. Inferential statistics of Correlation, Regression and ANOVA were used in the study. Results are presented using figures such as tables, charts and graphs. Results also established that improvement in efficiency of citizen participation is likely to have a commendable effect on service delivery at the health facilities ( $r=.617^{**}$ ;  $P=.000$ ). The study also noted that the null hypothesis was rejected, implying that there is a statistical relationship between the efficiency of citizen participation and healthcare service delivery. The study recommends that in order to achieve the main goal of public participation, there is need to create structures, mechanisms and guidelines for citizen participation. Secondly, there is need for the study area to come up with a comprehensive public participation process which should involve all the stakeholders in the health sector. The results are expected to benefit the hospital staff, the health departments at the counties, Citizens of Sirisia Sub-County, both public and private health care providers in Bungoma County, scholars, researchers and other stakeholders in Kenya.

**Key Words:** Efficiency, Citizen Participation, Health care Service Delivery, Sirisia sub-county

## **Effect of Mixed Cropping on Socio-Economic Welfare of Farmers in Uasin Gishu County, Kenya**

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### **Abstract**

One of the biggest challenge currently facing humanity and farmers across the globe is the actual consequence of reduced agricultural diversity. This study considers the consequence of reduced agricultural diversity on global health, income and food security and thus the greatest way out of these problems is by diversifying crops and this has been considered as the best solution globally regionally and locally. The purpose of this study is to establish the effect of mixed cropping on the socioeconomic welfare of farmers in Uasin Gishu County. This study was guided by human capability approach. This study focused on 34,692 households in Ainabkoi, Uasin Gishu County. The target population consisted of small holder rural farmers in Kapsoya, Kaptagat and Ainabkoi/Olare wards. The study adopted a descriptive survey design. Sample size was determined using sample size determination formulae by Yamane (1967). 395 farmers and 10 key informants were interviewed and were distributed proportionally across 3 wards in Uasin Gishu County. The data was collected using questionnaires and an interview guide. The study established a positive and significant correlation between mixed-cropping and socio-economic welfare of farmers in Uasin Gishu County. Results further indicate that a unit change in mixed-cropping leads to 44.3% change in socio-economic welfare of farmers in the study area ( $R^2 = 0.443$ ). First, agricultural transformative policies should strengthen extension services with a special focus on cropping systems, viable crop enterprises, return from the different type of crops, needs and access to credit and irrigation facilities. There is also need to promote capacity building for certification of production systems according to internationally accredited systems that can provide possibilities for diversification within the traditional crop. Farmers need to form producer groups so that they can galvanize their resources and promote collaborations for sustainable development in the agricultural sector. The study will be beneficial to the farmers in Uasin Gishu County who consistently suffer from issues related to food security . It will further be beneficial to Counties, NGOs in food security amongst other stakeholders.

**Key Words:** Farmers, Mixed Cropping, Socio-Economic Welfare, Uasin Gishu County

## **Factors Influencing Immunization Uptake of Children Under Five Years in Limanet Location, Narok North Sub County, Kenya**

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### **Abstract**

Immunization is a simple and efficient method of protecting children from potentially fatal infections. Immunized youngsters are better protected against several diseases, their mortality rate is lower. This study was done in Limanet Sub- location located in Narok North sub County in Narok Kenya. The main objective of the study was to investigate the factors that influence the immunization uptake of children under five years. Specific objectives venturing into knowledge of immunization, cultural influence and socioeconomic factors influencing immunization. A descriptive cross-sectional study was used with qualitative and quantitative studies. Collection of data was done by use of questionnaires, random Sampling was used. Data analysis and interpretation was done using the Statistical package. The analyzed data was be presented using tables, pie charts and frequency diagrams. The Knowledge of the respondent concerning immunization, which is greatly affected by the level of education, depicted 36% believe in immunization while 64 % do not believe in it. For socioeconomic factors, 32%, earn less than Ksh 2000 per month, 28% earning between ksh 2000-4,999 monthly,16% earn between Ksh 5000- 9,999,8% earn from Ksh 10,000 to Ksh 20,000 and those who earn above Ksh, 20,000 represent the least, being 4%. The results show that a majority of the respondents have low income while a few have a higher income monthly which impacts on the health care management of their children. Distance to the nearest health facility; In considering the travel time,32% take around a half an hour to arrive to the facility while 68% being the majority, take 30 minutes to an hour for them to reach the health care facility.

**Key words:** Immunization, mortality rate, immunization uptake, fatal infections

## **Spatio-Temporal Analysis of Land Use Contribution to Greenhouse Gas Emissions in Kiambu County**

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### **Abstract**

This research project describes the possible relationship of greenhouse gas emission pattern with land use activities using a GIS approach. Ambient air quality measurements for nitrogen dioxide, carbon dioxide, and methane levels were obtained for Kiambu County using Google Earth Engine and NASA Giovanni for the years 2004, 2012 and 2022. Landsat 8 images and aerial photo derived maps used to map out the County's land use and land cover changes for the last two decades. Landsat data were classified using a classification tool in ArcMap to distinguish the different classes of interest which were; Urban and settlement, forest cover, agriculture, bare lands and road network. Greenhouse gas data from GoogleEarth engine and NASA Giovanni were interpolated using Inverse Distance Weighting (IDW) technique and the relationship between greenhouse gas emissions and land use was determined through map overlays and correlation analyses. The results show that an increase in anthropogenic activities e.g., urban development has led to a decrease in forest covers and vegetation which has led to increase in concentrations of greenhouse gases in the atmosphere. Furthermore, processing and classification enabled the computation of field total fluxes as the percentage of fluxes in different zones, considering the spatial variability of greenhouse gas fluxes within the region.

**Key words:** GIS, greenhouse fluxes, Kiambu

**Breaking barriers and promoting education and awareness efforts in local communities as an intervention strategy to address myths, misconceptions, and religious beliefs**

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**Abstract**

The study of malaria intervention options presented in this abstract aims to dispel local myths, misconceptions, and religious beliefs that may function as roadblocks to successful prevention and treatment initiatives. The goal of the study is to pinpoint optimal practices for enhancing the effectiveness of malaria interventions and ultimately lessening the disease's burden, especially in regions where these perceptions are firmly rooted and have the greatest influence on local people. In the efforts to address the issue of Myths and beliefs ie; I have had malaria, so I am immune, Malaria isn't fatal and Traditional medicine alone can cure malaria, a targeted education and awareness campaign was implemented in local communities. The campaign's main activities conducted in the western region of Kenya in the year 2022 included community meetings, the involvement of community stakeholders like local NGOs, CHOs, and area chiefs to provide accurate information about the disease and clarify common myths and misconceptions, radio broadcasts to reach a wider audience, pamphlets distribution to households to provide information about the disease. The target audience was local community members who held beliefs that could impede malaria intervention efforts. The campaign was a success in improving knowledge and awareness about malaria prevention and treatment. It also broke down barriers to effective intervention efforts and improved the impact of malaria prevention and treatment strategies in local communities. The intervention successfully improved access to proper treatment, enhanced trust in medical interventions, and reduced malaria-related morbidity and mortality among the people in the western Kenya region. Involving community stakeholders built trust and ownership, and radio broadcasts disseminated accurate information. However, addressing deeply entrenched beliefs required cultural sensitivity and was challenging. Overall, the intervention was effective in improving the impact of malaria prevention and treatment strategies in local communities. The response recommends conducting community assessments before interventions to address the entrenched beliefs, involve stakeholders, use multiple channels to disseminate information, maintain cultural sensitivity, continuously monitor and evaluate interventions to identify areas for improvement and scale up successful interventions to other communities with similar challenges.

**Keywords:** Myths, Misconceptions, Religious beliefs, Prevention, Local perceptions, Education and awareness campaign, CHOs (Community Health Organizations)

## **Factors Contributing to Maternal Mortality in Narok County Referral Hospital, Kenya**

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### **Abstract**

Maternal mortality refers to the death of a pregnant woman due to complications related to or worsened by pregnancy or management of those conditions, provided the causes are not accidental or incidental. In Narok county, the maternal mortality rate is 444 per 100,000 live births; for this reason, it is ranked as one of Kenya's counties with poor maternal outcomes. This study aimed at identifying the factor contributing to maternal mortality in Narok county referral hospital. The study was retrospective in nature and employed a descriptive cross-sectional survey design. The study was carried out at Narok county referral hospital. The study population were all the dead mother's files since January 2020 to December 2022. Descriptive analysis was done and reported in pie charts, bar graphs and tables. Based on the data collected majority of the causes of death were not facility related. Of all the files reviewed, n (15), 60% were sociocultural factors. Facility based factors contributed to 40% of total deaths. Also, sociocultural factors that significantly contributed to maternal deaths. The data revealed that 60%(n 15) were multiparous women. Out of the reviewed files (n10) represented teenage pregnancies. Out of sizeable reviewed files (n10) had no history of family planning. Those mothers that had delayed reaching the facility on time represented 20% (n 5). Delayed review of the patient by a skilled medical officer or obstetrician and inadequate medical supplies accounted for 10% (n5). The study was essential because was going to act as performance indicator for the facility and to help the community and the facility identify the gaps that exists in matters concerning maternal health, that way they are able to curb maternal death.

**Key words:** Maternal mortality, multiparous women, teenage pregnancies, sociocultural.



## Occurrence, Distribution and Ecological Assessment of Polycyclic Aromatic Hydrocarbons in Surface Waters of Narok and Bomet Counties, Kenya

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### Abstract

The growth in the number of sources of polycyclic aromatic hydrocarbons (PAHs) in developing nations poses a great concern on the presence of these pollutants leading to exposure of ecologies. The Narok and Bomet Counties of Kenya have witnessed an increase in charcoal burning activities and vehicular emissions. Some of these PAH sources are located near water bodies, which is a concern as PAHs are toxic to aquatic organisms and people. This study evaluated the occurrence and concentrations of PAHs in surface waters of the two Counties which allowed for a preliminary ecotoxicity assessment thereof. Grab sampling was done in eight regions of the two Counties based on their proximity to PAH sources. In-situ analysis of physicochemical properties was conducted followed by extraction of the water samples via solid phase extraction, followed by GC-MS analysis. Seven US Environmental Protection Agency (US EPA) priority PAHs were detected. The concentrations of these PAHs varied between 1.84 µg/L (naphthalene) to 31.42 µg/L (benzo[a,h]anthracene). The majority of the PAHs from Narok County were from pyrogenic sources while those from Bomet were from petrogenic sources based on PAH diagnostic ratios. The surface waters were significantly polluted with anthracene, benzo[a]pyrene and dibenzo[a,h]anthracene with risk quotients above 1.0 in the surface waters and were found to be hazardous, with hazard quotients above 10.0, thus indicating potential environmental risks. The findings indicate the need for stringent measures to be put in place to mitigate the risks posed by these PAHs to people, livestock, wildlife and aquatic organisms who rely on these waters in Narok and Bomet Counties.

**Keywords:** PAHs, eco-toxicity, pollution, hazardous, surface waters

## **Exploration of the Efficacy of Psychosocial Support for Terminally Ill Patients and their Caregivers in Palliative Care Settings**

**Kimberly Miser Otieno<sup>1\*</sup>, Emmanuel Aswani<sup>2</sup>, Obed Jackson<sup>3</sup>, Tabitha Onyari<sup>4</sup>, Jacinta Bosibori<sup>5</sup>, Patricia Kantai<sup>6</sup>, Orucho Justine Amadi<sup>7</sup>**

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### **Abstract**

Terminal illness can have a profound impact on patients and their caregivers, often leading to emotional distress and a reduced quality of life. Palliative care settings often provide psychosocial support to address these issues, but the efficacy of such support is not well understood. This study aims to explore the efficacy of psychosocial support for terminally ill patients and their caregivers in palliative care settings. Psychosocial support in palliative care aims to address the emotional, social, and spiritual needs of patients and their caregivers. However, research on the efficacy of such support is limited. The study employed a qualitative research design, using in-depth interviews with terminally ill patients, their caregivers, and social workers in palliative care settings. The data collected was transcribed, translated, and analyzed thematically to identify patterns and themes. The findings of this study highlight the importance of psychosocial support in palliative care, both for patients and their caregivers. Patients reported improvements in emotional well-being and coping skills, while caregivers expressed gratitude for the support provided. Social workers identified challenges in providing support, such as cultural and language barriers, and the need for ongoing training and education. Based on the findings of this study, it is recommended that palliative care settings prioritize psychosocial support for terminal ill patients and their caregivers. Healthcare providers should receive ongoing training and education in providing such support, and efforts should be made to address cultural and language barriers.

**Key words:** Psychosocial support, Terminal illness, Caregivers, Palliative care, Coping mechanisms, Holistic care, Cultural competence

## **Environmental Dilemma among selected Future Industry Leaders in the Philippines**

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### **Abstract**

Humans are both affected by and responsible for environmental degradation, making their attitudes and behaviors crucial for achieving environmental sustainability. To investigate this, a descriptive-correlational research design and a quantitative research approach was employed to assess the environmental attitude and behavior of 392 tourism management students from selected colleges and universities in the Philippines. The findings revealed that students displayed a highly positive attitude and significant engagement in terms of energy and water consumption. However, their involvement in solid waste management, product purchasing and usage, and actual environmental practices scored considerably lower. Notably, there was no significant correlation observed between students' environmental attitudes and behaviors, suggesting a disconnect between their intentions and actions. This discrepancy highlights an issue that requires attention. While previous studies have explored environmental attitudes and behaviors, limited research has specifically focused on tourism management students. This study holds particular significance due to the students' academic exposure to environmental conservation and ecotourism, as well as the fact that many popular tourist destinations in the Philippines revolve around nature-based attractions.

**Keywords:** Environmental Education, Sustainable Tourism, Environmental Conservation and Sustainability

## **Influence of Participative Leadership Style on Public Health Service Delivery in County Governments in Western Kenya Region**

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### **Abstract**

Poor health service delivery has been linked to the devolution of health services, with some health workers walking off the job due to inadequate pay and unsafe working conditions. This research aimed at establishing the influence of participative leadership style on public health service delivery by County Governments in Western Kenya Region, Taking a positivist approach, the study was anchored on participative leadership theory. Descriptive survey and causal-comparative research designs were adopted with a target population of 966 personnel consisting of the CECMs, Chief Officers, Directors and County Nursing Officer for Health, Medical Superintendents, Hospital Administrator, Human Resource Officer, Head of Pharmacy, Head of Nursing, Health Records Information Officer, Head of Laboratory, Head of Clinical Services and number of patients admitted, treated and discharged drawn from all the four Counties of Bungoma, Busia, Kakamega and Vihiga. Primary data was collected using both structured questionnaires and interview schedules. Qualitative data was analysed by content analysis while quantitative data was analysed using both descriptive and inferential statistics. The SPSS Software version 26 was used for statistical analysis which was both descriptive whereby frequencies, percentages, means and standard deviation were clearly shown in the form of both tables, models and charts. The hypothesis tested for significance of the study at 5% significance level. From the results, the beta value for participative leadership from the regression model was 0.777 at  $p < 0.05$ . Participative leadership explains 60.4% ( $R^2 = 0.604$ ) of variance in public health service delivery. Therefore, the hypothesis was rejected. The study recommends establishing transparent and straightforward policies and procedures for managing human resources is essential for promoting productivity, equity, and workplace peace. In order to improve service delivery, the report suggests that county governments implement methods to promote collaborative decision-making. Consultation is a necessary part of the decision-making process. In this regard, as many of the perspectives of workers who are directly affected by the decision as feasible should be considered.

**Key Words:** Participative leadership, service delivery, health care, Western Kenya

## **Analysis and characterization of bio-slurry: fertilizer, fuel and pesticide potential of biogas slurry from Anaerobic Digestion systems**

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### **Abstract**

Escalated prices of food production and fuel prices raise an alarm. This is caused by the fact that fertilizers are turning out to be very expensive as well as fossil fuels. The same case for pesticides calls for alternative ways since by using conventional pesticides and fertilizers increases the cost of production. Soil contamination is not a new thing and thus may also reduce crop production too. The contamination is due to conventional pesticide and fertilizer residues. The study aims to investigate the pesticide, and liquid fuel molecules that can be present in the bio-slurry in the selected biogas systems in Narok county. The main findings from the study established the use of bio slurry since there was potential pesticide molecules analogues as well as biofuel molecules. The bio slurry containing cow dung substrate as the leading slurry with 8 pesticide analogue molecules as well as 5 fuel molecules. Such molecules included 1,4-Cyclohexanediamine, N-[3-[N-Aziridyl] propylidene]-3-dimethylaminopropylamine, 4-Piperidinone, 1-Ethyl-2-pyrrolidinone, Aziridine, 2H-Azepin-2-one, and Pyrrolidine-2-carboxylic acid for pesticide. The same sample contained 2,2-Dimethoxybutane, 3-Penten-2-one, 2-Hexanol, 2-Pentanone, Boronic acid and, Phenol molecules being responsible for the biofuel capacity. The bio slurry samples from biogas plants containing pig droppings substrate and a mixed substrate made of chicken waste, kitchen waste and cow dung also had pesticidal organic molecules as well as bio fuel molecules but in lower compositions.

**Key words:** bio-slurry, AD systems, pesticides, fuel potential

## **Exploration of the Efficacy of Psychosocial Support for Terminal Ill Patients and their Caregivers in Palliative Care Settings**

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### **Abstract**

Terminal illness can have a profound impact on patients and their caregivers, often leading to emotional distress and a reduced quality of life. Palliative care settings often provide psychosocial support to address these issues, but the efficacy of such support is not well understood. This study aims to explore the efficacy of psychosocial support for terminal ill patients and their caregivers in palliative care settings. Psychosocial support in palliative care aims to address the emotional, social, and spiritual needs of patients and their caregivers. However, research on the efficacy of such support is limited. This study seeks to add to the existing body of knowledge on this topic. The purpose of this study is to explore the efficacy of psychosocial support for terminal ill patients and their caregivers in palliative care settings. The study aims to understand the types of support provided, their effectiveness, and any challenges or limitations in providing such support. The study employed a qualitative research design, using in-depth interviews with terminal ill patients, their caregivers, and social workers in palliative care settings. The data collected was transcribed, translated, and analyzed thematically to identify patterns and themes. The findings of this study highlight the importance of psychosocial support in palliative care, both for patients and their caregivers. Patients reported improvements in emotional well-being and coping skills, while caregivers expressed gratitude for the support provided. Social workers identified challenges in providing support, such as cultural and language barriers, and the need for ongoing training and education. Based on the findings of this study, it is recommended that palliative care settings prioritize psychosocial support for terminal ill patients and their caregivers. Healthcare providers should receive ongoing training and education in providing such support, and efforts should be made to address cultural and language barriers. Future research should focus on identifying the most effective forms of psychosocial support and how to ensure that such support is accessible to all patients and caregivers.

**Key words:** Psychosocial support, Terminal illness, Caregivers, Palliative care, Coping mechanisms, Holistic care, Cultural competence

## **Preparation of an Acaricide from a Tuberos Plant Extract ‘Ayuga’**

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### **Abstract**

Parasitic diseases is a global problem and considered as a major obstacle in the health and product performance of animals. This may be due to endoparasites that live inside the body or ectoparasites such as ticks, mites, fleas and midges which attack the body surface. Among ectoparasites, ticks are very important and harmful blood sucking external parasites of mammals, birds and reptiles throughout the world. Ticks are the most important ectoparasites of livestock in tropical and subtropical areas and are responsible for severe economical losses in livestock. The major losses caused by ticks are due to their ability to transmit protozoan, ricketisia and viral diseases of livestock which are of great economic importance worldwide. Tick borne diseases e.g. theileriosis, babesiosis and ricketisia diseases (e.g. anaplasmosis and cowdriosis and tick associated dermatophilosis are a major health and management problems of livestock in developing countries. There are various ways to control ticks but every method of tick control has certain shortcomings. Chemical control with acaricides was considered one of the best methods but it was shown recently that ticks have developed resistances against a range of acaricides. However, these chemicals are toxic and costly. Problems of acaricide resistance chemical, chemical residues in food and the environment and unsuitability of tick resistant cattle for production systems made the current situation unsatisfactory which is why there is need on the development of alternate and absolute control through botanical acaricides. This study aims at extracting and determining the acaricidal activity of the plant extract in question. This plant has herbal benefits in Kenya as it is used by the local communities as an acaricides to control cattle ticks and spider mites. The extracts will also be tested on a wide range of insects such as cockroaches, aphids and white flies. The application methods to be used are fumigation, dipping and spraying using various concentrations of the extracts. A plant ‘Ayuga’ is collected and identified and its tuber is ground and its powder mixed with either ethanol, methanol or acetone to obtain a crude extract. Acaricidal and pesicidal activity of the extract is studied through various concentration of the extract and the time it takes to kill is noted. Further analysis of the extract through thin layer chromatography is carried out to ascertain its chemical compound. It is my expectation that the result of this work will help a great deal in establishing the main chemical constituents in the plant responsible for acaricidal activity.

**Key words:** acaricides, ‘Ayuga’, pesticidal, plant tuber

**Evaluation of Antimicrobial Properties of Extracts from *Tamarindus Indica*,  
*Punica Granatum* and Essential Oil from *Rosemarinus Officinalis***

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**Abstract**

The antifungal and antibacterial and minimal inhibitory concentration (MIC) of the extract of *tamarindus indica*, *punica granatum* and essential oil from rosemary were evaluated against one fungi, *penicillium* and a bacteria *pseudomonas syringae pv. Garcae*. These plants were used in traditional medicine to treat infections of microbial origin. Plant will be collected and extract obtained by standard methods. The antimicrobial activity will be evaluated using the agar disc diffusion method/ kirby-bauer method. All microorganisms will be obtained via simple isolation from infected plant material. Minimum inhibitory dose (MID) will be determined from the plant extracts that will show some efficacy against the test microorganisms. In vitro study of some extracts will show a higher efficacy against particular microorganisms in this cases either *pseudomonas syringae* or *penicillium* similarly extract from some evaluated plant species were active against one microorganism and inactive against the other. The research project targeted on locating the efficiency of extract from tamarind, pomegranate and essential oil from rosemary and their importance in disease control and management of coffee blight and stem of green house cucumber caused by *pseudomonas syringae pv. Garcae* and *penicillium* respectively

**Key words:** Antimicrobes, *Tamarindus Indica*, *Punica Granatum*, Essential Oil, *Rosemarinus Officinalis*



## **Adoption of climate smart agricultural technologies towards achievement of food security in Kenya**

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### **Abstract**

The agriculture sector has experienced a decline in growth. Global disruptions like the Covid-19 pandemic and conflicts have further strained the economy, leading to food and energy supply crises. The study was guided by the following objectives: how adoption of CSA practices helps in attainment of food security and to examine the impact of climate change towards achievement of food security. Adoption of climate smart agricultural technologies provides the potential to meet the food demand for the rapidly growing population, despite the adverse effects posed by climate change. The adoption of the CSA technologies is key towards eradication of hunger among the people and taking key measures to combat climate change. The use of the CSA practices is crucial towards addressing the challenge of declining agricultural production on majority of the agricultural commodities. The study emphasized on the essence of adopting climate smart agricultural technologies such as irrigation, mulching, water harvesting and crop rotation to increase productivity and food sustainability. In addition, given the climate variability, the study examined how the climatic changes influence productivity of the agricultural commodities. The findings of the study were beneficial to researchers and policy makers in developing good strategies which would help enhance food security in the face of climate change.

**Key words:** climate smart, agricultural technologies, food security

## **Fabrication and Electrochemical Analysis of a Bio-Slurry Based Microbial Fuel Cell at Cryo-Mesophilic Temperatures**

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### **Abstract**

Currently there is increasing dependence on energy with advancement of science and technology. The objective of the study was to investigate the performance of the MFC with different resistors at ambient conditions using bioslurry as the bio-anode. Microbial fuel cells (MFC) are electrochemical devices that convert the chemical energy contained in organic matter into electricity by means of the catalytic (metabolic) activity of living micro-organisms. One of the most important significance of MFCs is to produce electricity from wastewater, providing a new way to simultaneously treat wastewater while obtaining a source of clean and renewable energy. A H-type mediator-less MFC of capacity 4,000 cm<sup>3</sup> using porous graphite electrodes and bio-slurry as the bio-anode was studied over 12-day retention period. The results showed an exponential increase in OCV up to the sixth day followed by its gradual reduction. Ohmic behavior was observed in the current and power densities with varying resistors. A multimeter was used to monitor voltage output in presence of several resistors, in series with the multimeter. Open-circuit voltage, current, power densities and energy balance were then monitored over duration of 12 days with varying Ohmic behavior. In the experiments with a frit membrane separator, an OCV maxima value of 1.143 V for 8 h was attained while that with a nafion separator a maxima OCV value of 1.128 V for 32 h was attained. In the determination of power density, the highest value was obtained in the 1,000  $\Omega$ . An optimal OCV value of approximately 1.0 V was achieved on the sixth retention day. The optimal power densities (on the sixth day) obtained by each of the resistors were 0.054, 0.018, 0.004 and 0.0005 mW/cm<sup>3</sup> for the 1,000, 2,500, 5,000 and 16,000  $\Omega$  MFC resistors respectively further illustrating ohmic behavior of the MFCs. The study shows great potential and conformity to electricity principles by MFCs utilizing naturally occurring and untreated bio-electrodes and thus exhibiting more applicability of MFCs.

**Key words:** microbial fuel cells, bio-slurry, cryo-mesophilic temperatures

## Occurrence, Distribution and Ecological Assessment of Polycyclic Aromatic Hydrocarbons in Surface Waters of Narok and Bomet Counties, Kenya

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### Abstract

The growth in the number of sources of polycyclic aromatic hydrocarbons (PAHs) in developing nations poses a great concern on the presence of these pollutants leading to exposure of ecologies. The Narok and Bomet Counties of Kenya have witnessed an increase in charcoal burning activities and vehicular emissions. Some of these PAH sources are located near water bodies, which is a concern as PAHs are toxic to aquatic organisms and people. This study evaluated the occurrence and concentrations of PAHs in surface waters of the two Counties which allowed for a preliminary ecotoxicity assessment thereof. Grab sampling was done in eight regions of the two Counties based on their proximity to PAH sources. In-situ analysis of physicochemical properties was conducted followed by extraction of the water samples via solid phase extraction, followed by GC-MS analysis. Seven US Environmental Protection Agency (US EPA) priority PAHs were detected. The concentrations of these PAHs varied between 1.84 µg/L (naphthalene) to 31.42 µg/L (benzo[a,h]anthracene). The majority of the PAHs from Narok County were from pyrogenic sources while those from Bomet were from petrogenic sources based on PAH diagnostic ratios. The surface waters were significantly polluted with anthracene, benzo[a]pyrene and dibenzo[a,h]anthracene with risk quotients above 1.0 in the surface waters and were found to be hazardous, with hazard quotients above 10.0, thus indicating potential environmental risks. The findings indicate the need for stringent measures to be put in place to mitigate the risks posed by these PAHs to people, livestock, wildlife and aquatic organisms who rely on these waters in Narok and Bomet Counties.

**Keywords:** PAHs, eco-toxicity, pollution, hazardous

## ***Catharanthusroseus* and *carthamustinctorius* as Anti-Cancerous Drug Sources**

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### **Abstract**

*Catharanthusroseus* also known as Madagascar periwinkle or *vincarosea* is a popular ornamental plant found in warmer parts of the world. It can be found in garden, homes or in forests. *Catharanthusroseus* belongs to the family Apocynaceae. It has alkaloid properties like vinblastine and vincristine which are mainly found in this plant. The two alkaloids are used for treatment of various human cancer (Schmeller and wink,1998, Mukherjee et al.). The alkaloids have anticancer, anti-oxidant and anti-diarrheal properties. Stems and leaves of *catharanthusroseus* are poisonous though they have large amount of phytochemicals and therefore the species is endangered. *Carthamustinctorius*also known as safflower is a traditional Chinese medicine mostly used to improve blood circulation. It is found in most parts of the world such as Kenya. It is a herbaceous plant and is commercially cultivated for vegetable oils. The plant has ant-cancer properties and is therefore used to treat breast cancer. Its used as a traditional medicine like antipyret, analgesic and anti-diabetic. The two plant species are endangered because of their medicinal functions and therefore there is a need for conservation in order to create a cancer free world.

**Key words:** *Catharanthusroseus*, *carthamustinctorius*, anti-cancerous drugs, alkaloids

## **Determinants of 30-Day Pneumonia Readmissions in The Pediatric Wards in Narok County Referral Hospital**

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### **Abstract**

Hospital readmission is a healthcare key performance indicator reflecting both treatment effectiveness and quality of care. Whereas pneumonia is the leading cause of hospitalization and mortality among pediatrics, pneumonia readmissions account for the highest hospital readmission rate, approximately 20 %, in the pediatric wards. This study focuses on factors linked to 30-day readmissions of pediatric clients with pneumonia for preventive strategies. A cross-sectional study was conducted in Narok County Referral Hospital in the Rift Valley in Kenya on patients and caregivers admitted to the pediatric ward in August 2022 with pneumonia. An interviewer-administered questionnaire and clinical records were used for data collection. Nearly 15% of all hospitalizations due to pneumonia in children aged < 11 years were readmitted within 30 days of discharge, with readmissions being more common among patients with comorbidities ( $p < .05$ ). Two-thirds of readmissions occurred within 14 days of discharge. Female gender and specific chronic comorbid conditions were found to be significant risk factors for hospital readmission among the patients. In addition, various patient-related, caregiver-related, environmental, and health-system factors were highlighted as major predictors of pneumonia readmission among pediatric patients. The study findings suggest that patient demographics, admission care, comorbidities, and home environment can predict clients at a high risk of 30-day pneumonia readmission. Thus, early identification of high-risk patients allows for thorough pathogen characterization and treatment, vigilant monitoring, patient/caregiver education, and timely post-discharge follow-up to reduce readmissions.

**Keywords:** Pneumonia; Hospital readmissions; 30-day; Risk factors

## **Patient Satisfaction with Nursing Care At Narok County Referral Hospital, Kenya**

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### **Abstract**

Patient satisfaction is a vital healthcare quality assurance metric for evaluating performance of the healthcare delivery. This key performance indicator aims at improving the quality of care and promoting patient-centered care. The study assessed whether the nursing care provided met the expectations of the individual patients. A cross-sectional, descriptive survey study was conducted using the Newcastle Satisfaction with Nursing scale, with a total of 19 items in August 202. It measured the discharged patients' level of satisfaction with the healthcare experience, focusing on the quality of care, facilities, and interactions with staff. Most of the patients (59.2 %) in the medical and surgical wards were quite satisfied with the nursing care received. Specifically, more (69.45%) respondents were satisfied with the 'Concern and caring by nurses', 68 % were satisfied with the 'Time spent with nurses', and a lesser number (42.6 %) were satisfied with the 'Information given to you.' There was a statistically significant relationship between the respondents' level of education and satisfaction scores ( $p < .05$ ). About a third of patients in the medical and surgical wards were not satisfied with the nursing care provided. Nurses need to improve the delivery of nursing care to raise overall patient satisfaction scores. Special focus should be directed on the information-giving process and supporting autonomy in decision-making.

**Keywords:** Patient satisfaction; Newcastle satisfaction with nursing scale; nursing care; medical surgical wards

**Sub-Theme 3: Physical sciences, engineering and technology for sustainable development**

**Prioritizing energy saving and pollution reduction in food transportation system: adaptation of containment measures**

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**Abstract**

Food transport refrigeration is a critical link in maintaining unbroken cold chain from the food producer to retail vendors in the best environmentally manner. The entire value chain has been burdened in recent times considering the high thermal load and energy consumption required to sustain the shelf life of fresh fruits. A lot of approaches have been adopted in food industries to preserve fresh food amid environmental concerns. As global temperature rises due to climate change, sustainable measure has to be devised on how to stem the rising energy demand to save the food industry from impending collapse. In this paper, existing measures of mitigating energy demand in these industries would be x-rayed, most importantly, the insulated panel of refrigerated vehicles. This panel is reportedly depreciated over time due to variation in ambient temperature. Part of the approach would be, to determine thermal conductivity values of some of these panels, adapting extremely temperature variation in the foreseeable future, in order to achieve a precision in the overall material selection suitable for heat transfer as it relates to this industry.

**Keywords:** Cold chain, Insulated panel, Material, Thermal conductivity

## **Variation of Polyphenols of Dried Black Tea in Kisii Highlands, Kericho and Mt. Kenya Region, Kenya**

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### **Abstract**

Tea production has been impacted negatively by climatic changes due to global warming, locally and internationally. These unfavorable climatic changes have affected both production and quality of tea. This project was aimed at quality assessment of tea produced from three counties in Kenya. Polyphenols, a group of compounds present in tea leaves are the major constituent, known for its antioxidant property. Polyphenols were extracted from dried and ground tea leaves. Enzyme in the fresh tea leaves were deactivated prior to drying followed by grinding and sieving. Caffeine, the other pharmacologically important compound, was extracted as a byproduct. Crude extraction was done with water and subsequently the extract was concentrated for decaffeination with 1,2-Dichloromethane. Polyphenols were extracted from the decaffeinated crude extract with ethyl acetate. Ethyl acetate was removed from the extract to get polyphenols. Total polyphenols in the product were analyzed using gas chromatography- mass spectrometer. Sample analysis were carried out using Stat and Excel. Tea from Mt. Kenya region had three fatty acids namely; n-Hexadecanoic acid, Oleic acid, 6-Octadecenoic acid. Also had Benzaldehyde an essential oil and nine phthalate esters. Kericho tea had six phthalate esters, pentacosane, cyclohexanol, 1,3-dimethyl-,cis. Kisii tea had two essential oils, five phthalate esters, Acetic acid, alkanes and alcohols. Indicating tea from Mt. Kenya region was the best. Regulatory bodies should monitor the quality of fertilizers, processing and packaging of tea. More research should be done to come up with climate resilient tea cultivars, encourage organic farming in order to improve the quality. Climatic changes have resulted producers to increase fertilizer input to boost production. The safe level of phthalates is 0.05 mg/kg body weight per day.

**Keywords;** Polyphenols, caffeine, ethyl acetate



## **Detection of malaria *plasmodium falciparum* parasites in dried human blood spots using light microscopy and OpenCV python library analysis**

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### **Abstract**

Malaria, a life-threatening disease caused by the Plasmodium parasite, poses a significant global health challenge. The objective of this study was to develop a diagnostic method that complements the conventional approach of light microscopy by utilizing image processing and analysis with Python OpenCV, an open-source image processing library. It proved to be accurate and efficient in malaria parasite identification, particularly in resource-limited settings. In this study, images of dried human blood samples, obtained under a light microscope, were processed using Python OpenCV. By incorporation of advanced algorithms in the Python package, this approach sought to minimize human error and reduce subjectivity in malaria diagnosis. The Plasmodium parasites were successfully detected and observed. Furthermore, the program accurately estimated the number of parasites within the current field of view of the analysed sample. Despite these findings, the parameters of the Python program required refinement in order to accurately identify and delineate parasite boundaries, ultimately leading to improved estimation of parasite numbers. This study showcased the potential of utilizing computational tools for image processing and analysis as a complementary approach alongside light microscopy in malaria diagnosis. The method also showed promise in improving efficiency and scalability, addressing the challenges of skilled microscopists and limited resources in malaria-endemic regions. Moreover, it presented a cost-effective and accessible solution for accurate malaria detection. In conclusion, this study highlighted the value of leveraging image processing and analysis techniques with Python OpenCV for combating malaria. The findings showed promise in supporting the improvement of current diagnostic methods and the global efforts to alleviate malaria.

**Keywords:** Malaria, Plasmodium parasite, Python OpenCV, edge detection, parasite boundaries

## **Anthelmintic Potential of *Cucurbita pepo* Seeds and in-Vitro Tests Against *Lumbricoides***

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### **Abstract**

*Cucurbita pepo* is widely used both as food and as traditional medicine. *Cucurbita pepo* and other Herbicides are promising in minimizing certain human diseases, they have been proven to be effective, have minimal side effects, and are less expensive compared to synthetic drugs. In Kenya, the Kikuyu community uses *Cucurbita pepo* seeds to eliminate human intestinal worms. The present research aimed to screen phytochemicals, determine the concentrations of zinc, calcium, and magnesium in *Cucurbita pepo* seeds, and test in vitro the anthelmintic potential of these seeds against lumbricoides. The seeds components were extracted using methanol and preconcentrated in a vacuum rotatory evaporator. The extracts were characterized by gas chromatography for mass spectrophotometry (GCMS), atomic absorption spectrometry (AAS), and Fourier transform infrared (FTIR) techniques. *Lumbricus rubellus* were used to study the bioefficacy potential of the extracts in vitro, the worms mimic the characteristics of the human parasite lumbricoides. The most abundant of the three essential elements analysed was zinc (2.5858 ppm). A significant number of essential oils from the GCMS studies were reported, with methyl 10-trans and 12-cis-octadecadienoate being the most abundant in the oil (53.93%). Alkaloids and saponins were the most concentrated phytochemicals in the sample. A significant amount of the macrocyclic lactone 7,9-ditert-butyl-1-oxaspiro [4.5] deca-6,9-diene-2,8-dione (0.58%) in the seeds was observed. Macrocyclic lactones are generally a class of anthelmintic drugs. We concluded that macrocyclic lactones and fatty acids, as well as their derivatives such as linoleic acid esters and palmitic acid, are responsible for the anthelmintic actions of the seeds, providing a basis for further research.

**Keywords:** *C. pepo*, helminths, antihelminth, macrocyclic lactones, GC-MS

## **Catalytic Bio-Slurry Degradation to Bio-hydrogen and Hydrocarbon Fuels Using an Electrolytic Biomass Solar Cell**

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### **Abstract**

The disposal of bio-slurry disposal in areas that do not have farmyards, where they can be applied for use as organic manure is a conundrum. Also, there is a developing need to opt for more environmentally friendly processes to generate more efficient and cleaner bio-fuels. This study purposed to Catalyze Bio-Slurry Degradation to Bio-Hydrogen and Hydrocarbon Fuels Using an Electrolytic Biomass Solar Cell and a 40W solar power panel. Design and development of a modified E.B.S.C of a capacity 9,000mL and a solar panel energy source of 40 W (current of Pmax; vmp of 1.13) was used for the electrolysis of bio-slurry. Pre-experimental research design was done in three batch experiments with one design having geo catalyst, another having iron catalyst and the other a control experiment with water as the electrolyte. The rate of degradation of the biomass samples/ gas evolution volumes at the cathode and the anode were measured. The objectives of the study were; design and fabricate a modernized electrolytic biomass solar PV cell, characterization the bio-slurry before and after electrolysis and the catalyst used using LC-MS, FTIR, and pH meter revealed: alcohols , acids and fats present before electrolysis, pH was 8.04, and 7.0 after electrolysis, and the efficacy of the catalysts and the fabricated biomass solar cell in the degradation of bio slurry waste depicted that the geo-catalyst evolved was 250mL averagely per day than that of the iron catalyst. Also, Solid matters in the bio-slurry were effectively reduced by 32.15% while turbidity decreased from 18.92 to 5.82 NTU for the set-up with geo-catalyst while the one with the iron catalyst remained the same 18.92 NTU. Thus, the study successfully generated results that can turn the tide on policy development on management and monitoring of waste conversions.

**Key words:** Electrolytic biomass solar cell, bio-hydrogen, electrolytic biomass degradation, bio-slurry, electro-catalysts

## **Incorporation of Green Synthesized Silver Nanoparticles and Eucalyptol Oil into Polymeric Nanoparticles for the Enhanced Mosquito Repellence**

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### **Abstract**

Malaria is a vector-borne disease spread mostly by mosquitoes through bites during their search for food (human blood). Malaria is a deadly disease if not detected early. Malaria control can be done in many ways though considering safety and economic problem an environmentally friendly method is advised which is the green chemistry approach. The main objective of the study is to prepare silver nanoparticles with eucalyptol oil incorporated into chitosan for enhanced repellence against mosquitoes. Silver nanoparticles were synthesized by chemical reduction of silver nitrate using sodium borohydride and sodium citrate each as reducing agents with PVA and PEG as their surfactants. The eucalyptol oil was extracted through steam distillation of eucalyptus alba leaves using Clevenger type apparatus and then encapsulation was done through embedding AgNPs with eucalyptol oil into polymeric nanoparticles of chitosan. The reduction process was monitored using a UV-Vis spectrometer where at the point of color change to pale red and pale yellow respectively the readings of absorbance peaks were between 420nm and 540nm. FT-IR analysis was done using the Shimadzu spectrometer where the interactions of the functional groups between AgNPs, eucalyptol oil, and chitosan were observed through the shifting of the band stretch, peaks, and symmetries of attributed carbonyl, amide, hydroxyl, amino and alkyl groups. A double-based mosquito repellent was developed using silver nanoparticles and eucalyptol oil embedded in chitosan. The capsule produced was effective in that during testing several mosquitoes were repelled, it can be applied through embedding it into the textile and also as an ointment, further studies can be done on how it should be embedded into the textile.

**Keywords:** *malaria, AgNPs, eucalyptol oil, chitosan*

## **Comparison of Organic Polymer P3HT Blended with Fullerene Acceptor PC<sub>61</sub>BM versus Non-Fullerene Acceptor Coi8DFIC**

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### **Abstract**

The Organic Solar Cells (OSCs) based on the bulk hetero-junction (BHJ) structure have been projected to become successful renewable energy alternatives. Studies concerning BHJ OSCs are ongoing because they have a higher potential in championing low-cost, environmental harmless, non-complex and flexible large area devices. In this work we compared the organic polymer P3HT blended with fullerene acceptor PC<sub>61</sub>BM versus non-fullerene acceptor COi8DFIC in the formation of BHJ. This study compared the performance of polymer donor P3HT blended with fullerene acceptor PC<sub>61</sub>BM and non-fullerene acceptor COi8DFIC through the use of steady-state absorption and emission spectroscopy where charge generation and separation for different donor: acceptor blend films were studied. The films were then characterized using UV-VIS and photoluminescence spectroscopy for their charge generation and separation. From the UV-VIS spectroscopy results, the polymer blend of the P3HT: COi8DFIC showed an extended absorption window in the UV, VIS and NIR regions compared to P3HT: PC<sub>61</sub>BM blend. In the PL spectroscopy, there was better quenching of the polymer donor by the COi8DFIC compared to the PC<sub>61</sub>BM as depicted by their respective polymer blend spectra. The study was able to give a detailed comparison of the effect of the fullerene PC<sub>61</sub>BM and non-fullerene COi8DFIC acceptors on the polymer donor P3HT.

**Key words:** Polymer solar cells and bulk hetero-junction.

## On $(n, m)$ - Posimetrically Equivalent Operators

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### Abstract

In this paper, we generalize posimetrically equivalent operators to the class of  $(n,m)$ -posimetrically equivalent operators. Some basic properties of this class are covered. We also relate this equivalence relation to the class of  $(n,m)$ -quasi- $p$ -normal operators. We also relate this class to other equivalence relations such as  $(n, m)$ -metric equivalence. The methodology used involved the use of properties of unitary and adjoint operators. Results show that this class is closed under unitary equivalence. Results also show that this class is closed under scalar multiplication. The study of posimetrically equivalent operators is important in the telecommunication industry where signal processing uses the properties of this class through compacting of signals into small antenna. We conclude that these class is  $(n,m)$ -metrically equivalent provided they are idempotent . On the same note we recommend more research to be done to establish if this class is equivalent to almost similarity of operators.

**Keywords:** Quasi- $p$ -normal,  $(n,m)$ -metrically equivalent, metrically equivalent, posimetrically equivalent  $(n,m)$ -posimetrically equivalent

## **Analysis of Antibiotics from Selected Steak and Stomach Bowels from Goat, Sheep and Cattle in Narok County, Kenya**

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### **Abstract**

In modern day life some of the diseases affecting people are related to food. Mostly, humans are exposed to Antibiotic residues through taking meat. Resistant bacteria from animals can spread to people making them develop certain antibiotic resistance. Antibiotics are known to kill / inhibit growth of bacteria to prevent infections. Taking antibiotics too often directly or in animals or humans develop antibiotic resistance. Antibiotics residues in animal meat occurs as result of animal feeds containing antibiotics for growth promotion and also antibiotics that are used for treatment of or prevention of bacterial infection. This research intended to analyze Antibiotics present in meat in Narok town and thereafter certain measures were recommended too general a statement, the reader wishes to know the recommendations based on your findings, hence this statement should follow after you share the major results in this abstract. Antibiotics were analyzed by Ultra Performance Liquid Chromatography- Mass spectrometer/Mass spectrometer (UPLC-MS/MS). Data obtained were analyzed by SPSS Statistical package and Ms. Excel. Some of the antibiotics found in limits well above those recommended by WHO included Sulfapyridine, Sulfadiazine, Norfloxacin and nalidixic acid. The animal which had highest traces of antibiotics was Sheep- steak as shown Sulfapyridine 391 ppb, Sulfadiazine 131 ppb, and Norfloxacin 4062 ppb. Goat- *matumbo* was Sulfapyridine 428 ppb, Sulfadiazine 208 ppb, and Norfloxacin 4098 ppb. According to WHO the recommended levels of antibiotic residues are 200 mg/kg for muscles, 600mg/kg for liver. This the amount of antibiotics residue can be ingested or taken over lifetime without detectable health effects. Due to high traces of antibiotics in meat the following measures are recommended proper cooking of meat to the required temperature and in required time. Another measure is avoiding use of antibiotics for growth promotion or to prevent diseases in animals that are healthy instead animals should be vaccinated to reduce the need for antibiotic so as to prevent antibiotic resistance.

**Key words:** Antibiotics resistance, Antibiotics, Meat, Livestock

## **Analysis of wind characteristics of Olderkesi region in Narok county**

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### **Abstract**

Most wind regimes in relation to wind power in Narok and Kenya as a whole are generally hardly understood due to limited information on characteristics of the wind regime. The scanty or no information is majorly due to few studies on wind characteristics and wind power density for most parts of the country (such as Narok) currently witnessed in literature. This paper reports a study of wind data of Olderkesi region in Narok county to establish the wind characteristics relevant to wind power development by employing two parameter Weibull distribution function analysis technique. The study found out that wind regime in Olderkesi is turbulent in general with the maximum turbulence intensity (TI) occurring in the month of May with TI of 0.97. While, the turbulence is lowest in the month of September with TI of 0.42. This implies that wind turbines in the area must be able to handle mechanical stress due to turbulent wind regime. Mean wind speed was found to be maximum in the month of September (4.06 m/s) and lowest in the month of January (1.26 m/s) with average daily wind speed of 3.2 m/s at 10 m height which is just below the cut-in wind speed (3.5 m/s) for most utility scale wind turbines. However, the mean wind speed is higher than the cut-in wind speed (1.5 -2 m/s) for domestic scale wind turbines. From the mean wind speed, the regime belongs to light breeze type of wind. The study also established that the most suitable time for wind power generation in Olderkesi is between 0600 Hrs to 1400 Hrs based on the mean wind speed evolution over the day. The annual mean power density of the area was found to be 20.20 W/m<sup>2</sup> which is a class I wind power. Therefore, the area is suitable only for a domestic scale wind power extraction but not utility scale wind power extraction at 10 m anemometer height. The characteristics suggested that wind power production at 10 m in Olderkesi is only viable for domestic scale wind power extraction and its characterized generally low wind speeds.

**Key words:** Wind power density, turbulence intensity and mean wind speed



## Quantitative analysis of phytochemical extracts of *Hydnora africana* and *Hydnora abyssinica* species in Narok County, Kenya

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### Abstract

*Hydnora spp.* are a group of parasitic herbs that thrive well in arid tropical regions such as in the Maasai terrains of Narok County, Kenya. These herbs have been alleged to cure numerous killer diseases such as cancer and HIV/AIDS. However, not much is known of ethno-medicinal properties of most of the species. The present study aimed at analyzing the quantity of phytochemicals as well as other confounding ethno-medicinal variables of different *Hydnora spp.* found in Narok County, Kenya in an effort to determine their viability in the synthesis of new drugs. *Hydnora africana* samples were collected from loita forest and Ewaso-nyiro while *H. abyssinica* were collected from Maasai Mara national reserve. The flowers and rhizomes extract of these samples were extracted by maceration and hot water infusion method (as is natively done). The extracts were then used to assess their qualitative and quantitative phytochemical analysis (gravimetry), composition (X-Ray fluorescence), functional groups (Fourier transform infrared), antimicrobial activity and metabolites analysis. Antimicrobial analysis against *Escherichia coli* as the bacteria pathogen and *Candida albicans* as the fungi and gave strong inhibition zone diameters ranged from 12.40.8 to 182.3mm for bacteria and 11.31.1 to 13.31.6mm for fungi indicating high ability of the extracts in suppressing these pathogens. From the analysis both *Hydnora spp.* showed the presence of Mg, Al, Si, P, S, P, Ca, Fe, Cl and Br ions. The main functional groups demonstrated in the two species were N-H, O-H, C-O, C-O-, C=C, C-H, benzene ring. The metabolite tests for both species averaged; carbohydrates (0.387±1.16), iodine value (4.06± 0.11), fatty acids value (2.222± 0.37), acid value (4.437± 1.11) and total ash value (4.21± 1.05). Both species also tested positive for tyrosine and histidine while *Hydnora africana* showed positive results for arginine. On the other hand, *Hydnora abyssinica* showed positive results for cystine and cysteine. *H. abyssinica* rhizomes were found to have the highest concentrations of alkaloid (4.4±1.12) % and phenolics (2.37±0.58) % while *H. abyssinica* flowers exhibited the highest flavonoid content (1.32±0.14). *H. africana* rhizomes had the highest saponin content (2.4±0.54) %. *Hydnora africana* and *abyssinica* species thus exhibited very high potential for drug development and more insights on their pharmacological pathways are invited.

**Keywords:** *Hydnora africana*, *Hydnora abyssinica*, phytochemicals, ethno-medicinal, maceration,

## Electrochemical Analysis of an Aluminium-Citrate Ion Cell from Recycled Aluminium Wastes and *Dovyalis caffra* extracts electrolyte

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### Abstract

Aluminium-citrate ion cell will be fabricated using waste aluminium foils and citric acid which will be extracted from *dovyalis caffra* plant (kei apple). The aluminium ions were derived from waste aluminium foils while citrate ions were obtained by co-precipitation of *Dovyalis caffra* macerated extracts and acid infusion. All analysis except morphology, crystallinity and oxide composition (done in The University of Witwatersrand, South Africa) analysis were carried out in Maasai Mara University, Chemistry and Physics research laboratories. To obtain aluminium oxide nanoparticles, waste aluminium foils were digested using 1M HCl acid (35% v/v) at room temperature. After effervescence, the  $Al_2Cl_6$  digestate was thoroughly washed with running distilled water (equal volume) then co-precipitated with an equivalent aliquot of 0.5M sodium carbonate solution as the prepared nano aluminium oxide were analysed and compared with commercial aluminium oxide using FTIR, SEM, EDS, UV-VIS and XRF where the result differed just slightly because of presence of impurities. Synthesized citric acid was analysed and compared with commercial citric acid using FTIR analysis where it showed a slight difference due to presence of impurities such as tartaric acid and other acids in small quantities. The prepared particles ranged between 66.3.3 to 106.1 nm and exhibited alpha  $-Al_2O_3$  moieties and crystalline boehmite polymorphs. The EDS tables indicated significant  $SiO_2$  contamination of up to 33% arising from the method of preparation used. The amperometric properties of fabricated ion cell in closed circuit varied between 0.6 to 3.7 V. Increase in length of electrode increased the amount of current produced increased and decreased with the increase in time spent in the electrolyte as the concentration decreased. Due to impurity the pH decreased as the time increases, density increased with increase in time of reaction as there was increase in mass of the electrode. Due to decrease in concentration the conductivity also decreased. The discharge rates were in the region of 120 – 126 minutes with nominal charges of 0.1 to 0.26V. The energy balance and density of the cell was 3361 J/s and 17.23 Wh/kg respectively. The cells were found to be quite viable in production of energy storage devices from waste materials.

**Key words:** Aluminium, Citric acid electrolyte, Current, Ion cell

## **Physicochemical characterization of Taita rock for flocculation properties in water treatment**

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### **Abstract**

Suspended particles in drinking water can be detrimental to human health leading such complications as appendicitis. Treatment solution that flocculates these particles will help in minimizing these risks. Attempts used in chemical technologies have reported cases of side effects. This project sought to investigate by characterizing Taita rock for flocculative properties for use in homesteads. Taita rock is a brown natural sedimentary rock found in the coastal regions of Kenya. Characterization aimed at determining its chemical composition confirmed the rock as a reliable flocculant of suspended particles in water. Xray florescence technique showed abundant presence of  $\text{Al}_2\text{O}_3$  (23%),  $\text{SO}_3$  (70.2%) and  $\text{Fe}_2\text{O}_3$  (5.67%) which by inference confirmed presence of aluminium sulphate and iron sulphate. These are known for their use in water treatment. Fourier Transform Infrared Spectroscopy (FTIR) spectra affirmed these findings as it compared well with renowned Aluminium sulphate in pugu Kaolin. Transmittance at  $870.71\text{cm}^{-1}$ ,  $1031.36\text{cm}^{-1}$ ,  $1156.61\text{cm}^{-1}$  was observed for  $\text{SO}_4$ ,  $569.7\text{cm}^{-1}$  corresponded to  $\text{Al}_2\text{O}_3$ . These two characterization findings, and in comparison, with existing data from known flocculants, indicate reliability of the rock as a natural flocculant without negative chemical effects.

**Key words:** particles, flocculation, natural, water

## **Isolation and Analysis of Chemotherapeutic profiles from the roots of *Hydnora abyssinica***

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### **Abstract**

Recent research has shown that cancer is a great threat to many people around the world rated the second causing more than 2.6 million deaths per year. The massive loss of lives is due to the high cost of treating cancer which many people cannot afford to pay. Another reason that has caused all these deaths is that modern methods of treating cancer are less effective and they do not give a permanent solution to the affected organs, nor do they increase the patient's life span. Because of these problems, there is a need to extract the chemotherapeutic compounds from these available natural plant *Hydnora abyssinica* because they are not costly to synthesize, and they do not affect the normal cells which are near the affected organs. Isolation and analysis was performed using GC-MS. The results indicated presence of several phytochemicals in varying intensities. Alkaloids, flavonoids and steroids were all exhibited in the root extracts. Several chemotherapeutic compounds were isolated using GC-MS.

**Key words:** chemotherapy, root isolates, *Hydnora abyssinica*

## **Understanding $K^*$ Quasi-n, m-Class (Q) Operators : A powerful Tool for studying Complex systems in Math and Physics.**

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### **Abstract**

In this paper, we extend the study of  $K^*$  Quasi -n - Class (Q) to the class of  $K^*$  Quasi -n, m- Class (Q) which exhibits a wider range of algebraic properties. By investigating this broader class of operators, we aim to provide a more comprehensive understanding of the structure of class (Q) operators. We study some algebraic properties of this class. Methodology mainly involved the use of properties of adjoint operators. Results show that this class is closed under unitary equivalence and scalar multiplication. Being a generalization of class (Q), the study of this class is pertinent in compression of signals into more compact and portable antennae. We recommend further study to be done on the spectral picture that this class enjoys.

**Keywords:**  $K$  Quasi-n, m-normal,  $K$  Quasi-n-Class (Q),  $K^*$  Quasi- n, m-Class (Q) operators.

## **Isolation, Control and Development of Antiserum from *Rastonia Solanacearum***

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### **Abstract**

Irish potatoes is an important crop for rural and urban population in the world specifically in Kenya. potatoe wilt (*Rastonia solanacearum*) is the most damaging disease in Kenya leading to severe yield losses and even plant death. Bacteria wilt is one of the most destructive diseases of potato which has a very wide host range. Potato wilt bacteria are also known as brown rot, southern wilt, sore eye or jammyeye. There is an urgent need to screen or come up with a way of controlling this disease to stop explosive spread of the bacteria. The use of plants essential is a more biological way since most plant or crop protection methods involves application and use of toxic chemicals noxious to the environmental as a way of control mechanism. This is an ecologically friendly approach to control potato wilt bacteria without affecting the environment. Its introduction into Agricultural Practices minimizes the scope of chemical control thus contributing to the development of sustainable Agriculture. Famers, especially in Njoro region have been of late experiencing a lot of reduced Irish potatoes yield due prevalence of potato wilt. The purpose of this research is to study the control of potato wilt bacteria using plants essential oils of rosemary, mint, lavender and eucalyptus. The method used included collection of a diseased plants sample, isolation of the bacteria (*Ralstonia solanacearum*), culturing in nutrient agar Media and re-isolating to obtain a pure culture that is streaked using different types of plants essential oil and zones of inhibition are determined by measuring the diameter of clear zones. Data presentation of this research is in form of graphs. The data is then analyzed using Microsoft excel spread sheet and statistical package for social sciences (SPSS) Version 17.0 software.

**Key words:** *Rastonia solanacearum*, antiserum, Irish potatoes

## On n-power-class D(D) Operators

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### Abstract

Study of Drazin inverse in operators provides a way of characterizing properties of operators in various function spaces, this can be used to study null space, range and spectral properties of operators. One such class of operator is the class of D(D) operators that was recently introduced. If  $S \in B(H)$ , then  $S^D$  is said to be the Drazin Inverse of S. In this paper, we generalize the class D(D) to the class of n-power-D(D). An operator  $S \in B(H)$  is said to be n-power-D(D) if there exists a unitary operator  $U \in B(H)$  such that  $S^{*n}S^DU = US^{*n}S^D$ . We study interesting algebraic properties of this class. The methodology used involved use of properties of adjoint and unitary operators. Results showed that the class of n-power-D(D) is a closed subspace of B(H). The study of n-power-D(D) enhances the development of singular valued decomposition that is used in image processing by digital computers. We recommend more study to be done on the spectral picture of this class of operators.

**Key words:** n-power-class, D(D) Operators, Drazin inverse

## On $n, m$ - $(\alpha, \beta)$ - class (Q) Operators in Semi-Hilbertian space

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### Abstract

In this paper, we generalize the class of  $(\alpha, \beta)$ -class (Q) operators to the class of  $n, m, (\alpha, \beta)$ - class (Q) Operators in Semi-Hilbertian space, we study properties of this class and relation with other classes of operators. An operator  $\Delta \in B_A(H)$  is said to be  $n, m, (\alpha, \beta)$ - class (Q) Operator if  $\alpha^2(\Delta^{\#A})^{2n} \Delta^{2m} \leq_A ((\Delta^{\#A})^n (\Delta)^m)^2 \leq_A \beta^2(\Delta^{\#A})^{2n} \Delta^{2m}$  where  $0 \leq \alpha \leq \beta \leq 1$  and  $n, m$  comes from the set of reals. The methodology used involved the use of properties of unitary and adjoint operators. Results showed that this class enjoys commutativity of operators. The class of  $n, m, (\alpha, \beta)$ -A-class (Q) Operator provides an important tool in the development of quantum technologies. Quantum technology provides the potential of revolutionizing sensing, computing, communication and imaging. We recommend more study to be done on this class to establish its relation with various deformed operators on the semi Hilbertian space

**Keywords:** class (Q) operator,  $(\alpha, \beta)$ -class (Q) operator, Semi-Hilbert space.



## On $n, m+k-(\alpha, \beta)$ -A-class (Q) Operators in Semi-Hilbertian space

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### Abstract

In this paper, we generalize the class of  $(\alpha, \beta)$ -class (Q) operators to the class of  $n, m+k-(\alpha, \beta)$ -class (Q) Operators in Semi-Hilbertian space, we study properties of this class and relation with other classes of operators. An operator  $\Delta \in B_A(H)$  is said to be  $n, m+k-(\alpha, \beta)$ -A- class (Q) Operator if  $\alpha^2(\Delta^{\#A})^{2n} \Delta^{2(m+k)} \leq_A ((\Delta^{\#A})^n (\Delta)^{m+k})^2 \leq_A \beta^2 (\Delta^{\#A})^{2n} \Delta^{2(m+k)}$  where  $0 \leq \alpha \leq \beta \leq 1$  and  $n, m$  and  $k$  comes from the set of reals . The methodology used involved the use of properties of unitary and adjoint operators. Results showed that this class enjoys commutativity of operators; that is if two bounded operators  $S$  and  $T$  are  $n, m+k-(\alpha, \beta)$ -A- class (Q) , then  $ST$  is  $n, m+k-(\alpha, \beta)$ -A- class (Q) provided  $S$  and  $T$  are commuting .The class of  $n, m+k-(\alpha, \beta)$ -A- class (Q) Operator provides an important tool in the development of quantum technologies. Quantum technology provides the potential of revolutionizing sensing, computing, communication and imaging. We recommend more study to be done on this class to establish its relation with various deformed operators on the semi Hilbertian space.

**Keywords:** Class (Q) operator,  $(\alpha, \beta)$ -class (Q) operator , Semi-Hilbert space

## **Ceramic Water Filters Impregnated with Silver Nanoparticles for the Removal of Lead and Chromium Ions from Water**

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### **Abstract**

Ceramic Water Filters (CWFs) have been fronted as a socially acceptable, low-cost, and effective household water treatment alternatives. CWFs have been widely studied to prove their effectiveness in removal of physical and biological contaminants. However, there is limited research on their application in removal of heavy metals. This work examined the ability of CWFs impregnated with silver nanoparticles (AgNPs) to remove Lead and Chromium ions from water. It assessed the effects of the addition of silver nanoparticles, application method of silver nanoparticles, initial water temperature, and initial metal ion concentration on the performance of the different sets of filters. It was observed that relative amounts of Lead and Chromium ions removed in filters with AgNPs were higher (12.58% and 15.43%) than in filters without AgNPs (control filters) (5.64% and 7.40%), implying that addition of AgNPs improved the adsorption capacities of the CWFs. The study also found that the adsorption of Lead was higher in the Paint-method filter (14.45%) than in the Dip-Soaked filter (12.58%), whereas the adsorption of Chromium was higher in the Dip-Soaked filter (15.43%) than in the PaintMethod filter (14.22%). The effect of initial water temperature, over the examined range (24 °C-84 °C) was insignificant. Further, initial metal ion concentration was found to have significant impact on the adsorption capacities of the CWFs. Surface morphology studies further revealed excellent surface binding between clay particles and AgNPs. The study thus proves that CWFs impregnated with AgNPs are a low-cost, practical, and effective alternative for removal of heavy metal ions at household levels.

**Keywords:** Adsorption; ceramic water filters; chromium; heavy metal ions; lead; silver nanoparticles

## **Analysis of wind characteristics of Olderkesi region in Narok county**

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### **Abstract**

Kenya has one of the fast-growing population and economies in Africa. This growth is accompanied by logarithmic growth of energy demand in relation to population and economic growth. Current energy demand is largely serviced by biomass and fossil fuels both of which are in steady decline according to studies. These sources are also associated to environmental pollution and its related hazards such as climate change. These challenges provoke need to shift to renewable energy sources as alternative sources. The shift can only be fully achieved if the concept of energy mix is fully embraced. This is not the case as it is currently since wind energy uptake and growth is still lagging behind according to energy reports by EPRA. Even though wind energy exploitation is low, Kenyan wind map show that there is huge wind power potential for most part of the country. This may be attributed to the scanty or no information on wind characteristics for most parts of the country currently witnessed in literature. This study partially bridges this gap by studying wind data of Olderkesi region in Narok county to establish the wind characteristics relevant to wind power development. The study found out that wind regime in Olderkesi is turbulent in general with the maximum turbulence occurrence in the month of May with turbulence intensity of 0.97. While the turbulence is lowest in the month of September with turbulence intensity of 0.42. Mean wind speed was found to be maximum in the month of September (4.06 m/s) and lowest in the month of January (1.26 m/s) The study also established that the most suitable time for wind power generation in Olderkesi is between 0600 Hrs to 1400 Hrs The mean power density for Olderkesi was found to be. The characteristics suggested that wind power production in Narok is viable.

**Key words:** Wind characteristics, Narok County, energy

## On $(n+k,m)$ - $(\alpha,\beta)$ - class (Q) Operators in Semi-Hilbertian space

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### Abstract

We generalize the class of  $(n,m)$ - $(\alpha,\beta)$ -class (Q) operators to the class of  $(n+k,m)$ - $(\alpha,\beta)$  class (Q) Operators in Semi-Hilbertian space. In this paper, we study properties of this class and relation with other classes of operators. An operator  $\Delta \in B_A(H)$  is said to be  $(n+k,m)$ - $(\alpha,\beta)$ -A- class (Q) Operator if  $\alpha^2(\Delta^{\#A})^{2m}\Delta^{2(n+k)} \leq_A ((\Delta^{\#A})^m \Delta^{(n+k)})^2 \leq_A \beta^2(\Delta^{\#A})^{2m}\Delta^{2(n+k)}$  where  $0 \leq \alpha \leq \beta \leq 1$  and  $n,k$  and  $m$  comes from the set of reals. The methodology used involved the use of properties of unitary and adjoint operators. Results showed that this class enjoys commutativity of operators. The class of  $(n+k,m)$ - $(\alpha,\beta)$ -A- class (Q) Operator provides an important tool in the development of quantum technologies. Quantum technology provides the potential of revolutionizing sensing, computing, communication and imaging. We recommend more study to be done on this class to establish its relation with various deformed operators on the semi Hilbertian space

**Keywords:** class (Q) operator,  $(\alpha,\beta)$ -class (Q) operator , Semi-Hilbert space.

**Sub-theme 4: ICT and AI research in mitigating climate change**

**The Integration of Information Communication Technology in Teaching English in Secondary Schools in Thika Sub County in Kiambu County, Kenya**

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**Abstract**

The researcher will focus to determine the influence of ICT integration in Teaching English in Secondary Schools in Thika Sub County. The study will be guided by the following objectives; to determine the extent of ICT usage in Teaching English in Secondary Schools in Thika Sub County, to determine the ICT resources available in ICT Integration in Teaching English in Secondary Schools in Thika Sub County and to determine the challenges experienced in ICT integration in Teaching English in Secondary Schools in Thika Sub County. The study will be based on constructivism theory, innovation diffusion theory and transaction cost theory. The study adopted the descriptive survey approach. The target population will be 670 respondents while the sample population will be 250 respondents. The data was collected using the primary data. The primary data was sourced through the administration of questionnaires to the sampled population. The data was analyzed through the use of SPSS and Stata and presented in tables, graphs and pie charts.

**Key words:** ICT, English, Secondary schools

## **Impact of Electronic Braille Note-Taking Devices on Academic Performance of Learners with Visual Impairment in Selected Special Primary Schools in Kenya**

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### **Abstract**

Academic performance of learners with visual impairment in Kenya has been dismal over the years. Researches on performance for the visually impaired learners have pointed at various factors among them teachers' attitudes, teaching environment, facilities, parents' attitudes, setting of exams and time among other factors. Little has been attributed to lack of technology and limited use of technology which is the question for this study. Technological advancements such as the Electronic Braille note-taking (EBN) devices have been developed and are available for use. This study therefore intended to examine the impact of EBN devices on academic performance of visually impaired learners in special primary schools in Kenya. The study was guided by the following objectives: to determine the adequacy of electronic Braille note-takers in Special Schools for the visually Impaired in Kenya, to determine the teachers' preparedness on the use of electronic Braille note-takers in Braille instruction, to find out the learners' attitudes towards the use of electronic Braille note-taking devices in learning and to deduce the impact of EBN devices on the performance of learners with visual impairment in primary schools in Kenya. This study was guided by the theory of technology acceptance model (TAM). TAM focuses on the interactions that occur between a person's perception of technology and therefore the person's technology usage behaviour. The study used a descriptive design while applying both quantitative and qualitative approaches. The study targeted a population of 15 Special schools with a population of 1982 learners, 238 teachers and 15 headteachers. Six special schools were purposively sampled: St. Francis Special School in West Pokot County, Marigat Special School in Baringo County, Kiomiti Special School in Kisii County, Korara Special School in Bomet County, Kibos Salvation Army School for Visually Impaired in Kisumu County and Thika Special Primary School in Kiambu County. The data collection tools were piloted at Likoni Special School for Visually Impaired. The findings of the pilot study were subjected to Cronbach Alpha reliability test and Validity Coefficient Index to ensure the validity and reliability of the tools. Data was analysed descriptively and thematically. The results were presented in form of tables and figures. The findings of the study showed that the EBN devices in the schools for visually Impaired learners were inadequate. The teachers in special schools for the Visually Impaired learners were not well prepared to incorporate EBNs in instruction. The LVIs in Kenyan special primary schools have a very positive attitude towards the use of EBNs in their learning activities. EBN devices had a positive impact on the academic performance of the learners. The findings are expected to inform the government and stakeholders of schools for the Visually Impaired to increase the supply and distribution of EBN devices to the schools for the visually impaired so as to improve the adequacy. The study also recommends the creation of time for regular trainings for both the learners and the teachers on the utilization of EBNs in teaching and learning.

**Key words:** special schools, visual impairment, braille

## **Multi Branch School Management System**

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### **Abstract**

This project focuses on the development of a multi-branch school management system for schools in Kenya. The existing school management systems in the country mainly cater to individual school branches, causing difficulties for school managers in accessing information about multiple branches. This project aims to address this problem by providing a centralized system that allows school administrators, teachers, students, and parents to send and access vital information about students and school activities. The system will be mobile-responsive, enabling users to access it through their mobile phones or tablets. Additionally, the system will facilitate parent-teacher communication by providing parents with real-time updates on their child's attendance and performance in specific subjects. The research objectives include managing information about various school branches, maintaining inventories, and enabling parents to track their child's progress. The study's significance lies in offering a convenient solution for school owners to manage information across multiple branches without the need for physical meetings. The proposed system will also enhance parent engagement through a dedicated portal. The scope of the study covers various branched schools in Kenya, including prominent institutions such as the Agha Khan Schools, St. Kevin Hill Schools, the Riara group of schools, and St. Hanna's Schools. The literature review highlights the importance of digital technology, functions of existing school management systems, and features required for effective school management. Overall, this project aims to contribute to the development of education in Kenya by providing a comprehensive multi-branch school management system.

**Key words:** school management system, students, school branches, ICT

## **Design and Implementation of a Product Expiry Alert Management System**

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### **Abstract**

The Design and Implementation of a Product Expiry Alert Management System project aims to develop a robust software solution that effectively manages product expiry alerts in various industries. With the increasing demand for efficiency and quality in product management, it is crucial to address the challenges associated with tracking and managing product expiry dates. This project focuses on designing and implementing a system that provides timely notifications and alerts to businesses and consumers regarding the expiry dates of their products. By leveraging modern technologies and data management techniques, the proposed system ensures that expired products are detected and dealt with promptly, reducing the risks of health hazards and financial losses. The system employs a user-friendly interface that allows businesses to input relevant product information, including batch numbers, manufacturing dates, and expiry dates. The information is stored in a secure database, ensuring data integrity and confidentiality. Through automated processes, the system constantly monitors the stored data and generates alerts when a product's expiry date is approaching or has passed. To enhance the functionality and versatility of the system, additional features such as barcode scanning and integration with existing inventory management systems are incorporated. This integration enables seamless synchronization of product expiry data across different platforms, facilitating real-time updates and accurate reporting. The Design and Implementation of a Product Expiry Alert Management System project not only benefits businesses by preventing the sale and consumption of expired products but also enhances consumer safety and confidence. By minimizing the chances of consuming expired goods, the system helps protect consumers from potential health risks. Overall, this project aims to develop an efficient and reliable product expiry alert management system that can be widely implemented across industries. The successful implementation of this system will contribute to streamlining product management processes, reducing waste, and ensuring the safety and satisfaction of both businesses and consumers.

**Key words:** product expiry alert system, businesses, expired products



## **Mitigating climate change Impact on learning: Lessons from marginalized regions of Kenya**

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### **Abstract**

Climate change has occasioned unpredictable future. Education is a life changer, a recipe for mitigating climate change effects and can't be delayed without hurting learners. The COVID -19 pandemic widened learning gaps, revealed digital divide and brought about innovations in learning possibilities which could be harnessed for education resilience in difficult times. A study by UWEZO (2020) reported that some children were learning during the pandemic; an inspiration for this study - to find out how any learning took place in Narok county, Kenya which records poor academic performance. This case study established an innovative working learning strategy employed by some private primary schools in Narok county. The target was the schools' 16 teachers and 80 class eight pupils. Qualitative data was gathered using interview schedule influenced by interpretivist paradigm and the cognitive development theory by Piaget. This study was guided by the research question: How did learners access learning amidst challenges of technology supported learning during COVID -19 school closures? What values guided learning resilient amidst Ministry of Health protocols? What lessons can be derived during future calamities occasioned by climate change and leveraged by ICT and AI research? It was established that innovative thinking, concerted effort by teachers, parents, pupils, school workers and the community around the school, positive attitude and diligence contributed to the success of the model which could be enhanced by ICT and AI research.

**Key words:** pandemic, resilience, model, interpretivist paradigm, implementation

## **Adopting Big Data in Creating Smart LREB's Economic Prosperity**

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### **Abstract**

The sustainable development goals (SDGs) were designed to serve as a useful guide for focused and coherent action on sustainable development at the global, regional, national and local levels, and also help to mainstream sustainable development into the United Nations system by 2030. Information, a leading factor of production cutting across all sectors lacks the due consideration as a significant enabler of progressive development of infrastructure and e-readiness for accelerated economic take-off. This paper presents a review of academic literature, policy documents from government organizations and international agencies, and reports from industries and popular media on the trends in Big Data utilization in key development issues and its worthwhileness, usefulness, and relevance. By analytically evaluating the Big Data deployment in a number of key economic sectors, it seeks to provide a better comprehension of the opportunities and challenges of using Data Science for addressing key issues facing the Lake Region Economic Block as identified in the LREB blueprint. It reviews the uses of Big Data in agriculture and farming activities in developing countries to assess the capabilities required at various levels to benefit from Big Data. It also provides insights into how the current digital divide is associated with and facilitated by the pattern of Big Data diffusion and its effective use in key development areas. It also discusses the lessons that developing countries can learn from the utilization of Big Data in big corporations as well as in other activities in industrialized countries.

**Key Words:** Big Data, development, agriculture, Data Science, social media

## **Designing a Smart Voltage and Current Monitoring System For a Single-Phase Inverter Using an Android Smartphone Application**

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### **Abstract:**

This Project presents a new smart voltage and current monitoring system technique. It monitors a single-phase electrical system using an Arduino platform as a microcontroller to read the voltage and current from sensors and then wirelessly send the measured data to monitor the results using a new Android application. The mobile software application developed for the implementation of a smart voltage and current monitoring system for single-phase electrical systems. The system uses an Arduino platform as a microcontroller to gather voltage and current data from sensors, which is wirelessly transmitted to an Android smartphone application. The mobile application is created using the open-source MIT App Inventor 2 software and serves as a comprehensive monitoring tool for fundamental voltage power quality properties while providing control over power usage through the ability to switch home appliances on and off. The software was found to facilitates real-time monitoring of voltage and current levels within a single-phase electrical system. The Arduino microcontroller was found to collect data from the sensors and wirelessly transmits it to the Android smartphone application. This enables users to conveniently access and analyze crucial power quality information on their mobile devices. The Android application offers a user-friendly interface that displays essential voltage power quality parameters, such as voltage magnitude, current intensity, and power factor. Users can monitor these elementary fundamental properties in real-time, enabling them to identify irregularities or fluctuations in power supply. Additionally, the application provides the ability to switch home appliances on and off remotely, effectively controlling power usage and optimizing energy efficiency. The combination of the Arduino microcontroller and the Android application was found to allow for seamless integration of hardware and software, providing users with an efficient and accessible solution for monitoring and controlling single-phase electrical systems. The open-source nature of the software allows for customization and further development to meet specific user requirements. This mobile software application was found to offer a practical solution for individuals seeking to monitor voltage power quality properties and effectively manage power consumption in their homes. By leveraging the capabilities of the Arduino platform and the convenience of mobile devices, users can ensure the optimal performance of their electrical systems while promoting energy efficiency and reducing electricity costs.

**Key words:** Smart Voltage, Current Monitoring System, Single-Phase Inverter, Android Smartphone

## How Technology Can Transform the Lives of Street Women?

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### Abstract

My research focuses on Nairobi city to examine how street women can leverage technology, especially those with kids. In most urban centers, it is common to come across a female, often in untidy clothes begging by the roadside. The site of a baby leaning on her provokes emotions. These minors mostly range from a few months old to around 5 years in age. As fragile as babies and recent mothers are, the circumstances through which this group survive remains a mystery. What are the real experiences of motherhood in the streets? The reality that they spend their days begging from well-wishers may be justified by their infirmities, but did they really want to raise families with begging as their primary source of income? Naturally, a female being requires proper sanitation, especially during certain days of the month. Can we have digital apps and gadgets customized to meet the needs of street families? Some circumstances such as feeding on available food rather than nutritious food may have negative ripple effects. Breastfeeding mothers may transmit nutrient deficiency to their babies. While medical professionals recommend regular medical check up as a necessity for all small children, street children continue to miss this facility. Can digitalization improve the living conditions of people who live at the bottom of the social pyramid? The current research examines how technology can transform the lives of street women and active mothers. Findings will be used to inform gender empowerment initiatives.

**Key words:** technology transformation, street women, roadside

**Sub-theme 5: Human & Management sciences research in mitigating climate change**

**Unraveling the Transformative Power of Trauma-Informed Therapy: A Philosophical Exploration Among Sexually Abused Children in Kisii County**

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**Abstract:**

Within the depths of Kisii County's collective consciousness lies a community haunted by unspeakable trauma. This study delves into the transformative power of trauma-informed therapy in fostering resilience among sexually abused children in Kisii County. Through a philosophical exploration, it unravels the interplay between healing and empowerment, shedding light on the nature of trauma and the embodiment of resilience. Employing a qualitative research design, in-depth interviews and participant observations were conducted to capture the experiences and perspectives of sexually abused children who have undergone trauma-informed therapy. Thematic analysis revealed significant breakthroughs, improved coping mechanisms, and shifts in self-perception and resilience as reported by the participants. Cultural sensitivity and caregiver involvement emerged as crucial factors in the therapeutic process. The findings highlight the transformative nature of trauma-informed therapy and underscore the need for increased access, cultural sensitivity, interdisciplinary collaboration, caregiver support, and continuous evaluation. The study recommends strengthening trauma-informed training, advocating for policy changes, and prioritizing the well-being of sexually abused children. By illuminating the philosophical foundations of trauma-informed therapy, this research contributes to a deeper understanding of resilience and healing in the aftermath of trauma

**Key words:** Transformative power, trauma-informed therapy, resilience, embodiment, healing, empowerment, trauma-informed training, policy changes, well-being.

## **“Bettering Oneself to Better the Community” Positive Youth Development Across Three Kenyan Contexts**

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### **Abstract**

Positive youth development emerged as a formal idea in the context of Western, Educated, Industrialized, Rich, and Democratic (WEIRD) nations and has only recently “gone global” (e.g., Dimitrova & Wiium, in press; Lehman et al., 2017; Petersen et al., 2016). One of the greatest risks faced by the globalization of PYD is an inappropriate dominance of, and reliance upon, WEIRD perspectives (van de Vijver, 2017), and the present study represents a concrete example of how such dominance can be avoided. The goal of the present study was to investigate the meaning of PYD in Kenya inductively in order to best understand key constructs that indicate thriving among Kenyan youth. More specifically, we examined how character manifests among Kenyan youth as well as which attributes, skills, and attitudes youth need to possess in order to be viewed in a positive manner. We present findings from interviews of adolescents, youth, and adults in three contexts (rural schools, urban schools, and rehabilitation centers/homes for street youth) and discuss implications of these findings for future program development and evaluation work across those contexts. Using thematic analysis, we inductively explored how character manifests among Kenyan youth as well as which attributes, skills, and attitudes youth need to possess in order to be viewed in a positive manner with 22 youth from rural schools and 34 youth from urban schools. We also interviewed 16 youth-serving professionals, including teachers and social workers. The key findings from the study were (a) no analogue to “character” in Swahili language commonly spoken in Kenya, rather, participants described good character as exhibiting positive attributes in line with social norms, such as being obedient, honest, respectful, loving, disciplined, philanthropic, and being a good listener; (b) Bad character often reflected drug/substance use, theft, etc.; and (c) better oneself in order to better the community which involves fostering positive attributes and personal development, building skills to become successful and giving back to the community. We provide a background of PYD in Kenya followed by the context of character and thriving in the country. Implications for positive youth development and research are discussed.

**Key words:** Positive Youth Development; Character; Youth; Kenya

## **Solution Based Journalism in Communicating Climate Change: A Content Analysis of Print Media in Kenya**

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### **Abstract**

The purpose of this paper is to assess media approaches in communicating climate change. Solution-Oriented Journalism/ Reporting is a type of media coverage of events that focuses on solutions attempted in response to a crisis. Climate change is an ongoing crisis globally. In the recent past, Kenya has witnessed many diverse and unprecedented climatic conditions which are more erratic in terms of duration and time of occurrence. Rainy seasons have also led to increased flooding and landslides. Kenyan media sparsely provides evidenced and solution based alternatives in their reporting on this topical issue. Mostly coverage is influenced by events such as climate conferences and disasters instead of incorporating climate crisis impact on economies, health, food security, agriculture, etc. Solution-Based reporting of environmental issues, including climate change, has been markedly low. Through a qualitative approach, the study sought to answer the following question; What are the journalistic approaches adopted by the Kenyan media in reporting climate change? Data of this study consisted of all newspaper articles in the two local dailies *Daily Nation* and *Standard* newspapers for the period of one year (June 2022- May 2023). Data was collected through code sheets for content analysis. A purposive sampling was used to select articles for analysis. A total of 23 articles were analysed thematically. The findings of the study show that very few articles sampled used the solution –based approaches to reporting climate change. Key findings indicate that climate change impacts mitigation and adaptation, climate change conferences and policy, politics and projects were themes mostly covered in the two newspapers under review. Findings also indicate an increased coverage of both international and local climate change news. The study further, established that there is low awareness on solutions journalism, with only 6 stories on climate change taking a solutions approach. The study recommended that there is need to train journalists and editors on solutions journalism and crisis reporting. The government is implored to engage the media and other stakeholders on climate change communication in order to sensitize the public on the subject. The researcher suggested further investigation on whether other mediums such as radio, TV and online platforms incorporate solutions journalism in their reportage

**Key words:** Solution- Based journalism, Climate change, media coverage, crisis communication

## **Influence of Organizational Culture on Public Health Service Delivery in County Governments in Western Kenya Region**

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### **Abstract**

Poor health service delivery has been linked to the devolution of health services, with some health workers walking off the job due to inadequate pay and unsafe working conditions. This research aimed at establishing the influence of organizational culture on public health service delivery in County Governments in Western Kenya Region. Taking a positivist approach, the study was anchored on Organizational Culture Theory. Descriptive survey and causal-comparative research designs were adopted with a target population of 966 personnel consisting of the CECMs, Chief Officers, Directors and County Nursing Officer for Health, Medical Superintendents, Hospital Administrator, Human Resource Officer, Head of Pharmacy, Head of Nursing, Health Records Information Officer, Head of Laboratory, Head of Clinical Services and number of patients admitted, treated and discharged drawn from all the four Counties of Bungoma, Busia, Kakamega and Vihiga. Primary data was collected using both structured questionnaires and interview schedules. Qualitative data was analysed by content analysis while quantitative data was analysed using both descriptive and inferential statistics. The SPSS Software version 26 was used for statistical analysis which was both descriptive whereby frequencies, percentages, means and standard deviation were clearly shown in the form of both tables, models and charts. The hypothesis tested for significance of the study at 5% significance level. From the regression model, the  $R^2$  value was 0.761. This shows that organizational culture could explain 76.1 % of variance in public health service delivery. Under regression coefficients, organizational culture could statistically significantly predict public health service delivery in County Governments in Western Kenya Region ( $t=30.529$ ,  $p<0.05$ ). Therefore, the hypothesis was rejected. This shows that for one-unit increase in organizational culture, public health service delivery increased by 0.873 units. With regard to organizational culture, it is suggested that policymakers develop policies that encourage a culture wherein all employees and stakeholders are actively engaged in the strategic implementation process. Management of the strategy's implementation should not be the sole purview of change specialists and upper management. The people leading the shift were also responsible for making conditions more amenable to the desired transformation.

**Key Words:** Organizational Culture, public health service delivery, Western Kenya



## Historical Evolution and Contextual Dynamics of Social Work in Kenya

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### **Abstract**

Social work has a significant role in addressing social and economic challenges in Kenya. Despite this importance, there is limited research on the historical and philosophical foundations of social work in Kenya, particularly in response to the country's social, economic, and political context. This study aimed to conduct a historical analysis of the development of social work in Kenya, examining the evolution of social work theory and practice in response to the country's social, economic, and political context. The study utilized document analysis and interviews with social work practitioners, educators, and policymakers in Kenya. The data collected was analyzed using thematic analysis. The study found that social work in Kenya had evolved in response to the country's social, economic, and political context, with key milestones including the establishment of social work education programs and the development of social work policies and guidelines. Major challenges facing social work practitioners in Kenya were identified, including limited resources and a lack of public understanding of the role of social work. The study recommends the need for continued investment in social work education and training, as well as the development of policies and programs that support the growth and development of social work in Kenya. It also recommends increased public awareness of the role of social work in addressing social and economic challenges. This study provides a comprehensive historical analysis of the development of social work in Kenya, contributing to a better understanding of the foundations and evolution of social work theory and practice in the country. It also highlights the challenges and opportunities facing social work practitioners, educators, and policymakers in Kenya, providing insights for future research and policy development.

**Key words:** Social work, evolution, development, theory, practice, policies, challenges, opportunities, education, practitioners, stakeholders, ethics, community, vulnerable populations.

## **Influence of Human Resource Capacity on Public Health Service Delivery in the Western Kenya Region**

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**Sub-theme: 5 (Human & Management Sciences research in mitigating climate change)**

### **Abstract**

Good governance strategies lead to improved service delivery. However, there have been inefficiencies in the delivery of health services at the County levels. Health staff unrest has been witnessed since the advent of County Governance; affecting service delivery thus posing health risks to thousands of residents and other medical service seekers in the Hospitals. The County Government together with the various stakeholders has paid little attention to such a situation despite the fact that if it remains unchecked could jeopardize service delivery. This study thus investigated the influence of human resource capacity on public health service delivery in the Western Kenyan Region. Taking a positivist approach, the study was anchored on Human Capital Theory. Descriptive survey and causal-comparative research designs were adopted. The target population for this study consisted of 966 respondents from the four County Referral Hospitals and 29 Sub-County Hospitals. These included 264 health practitioners, 10% of 686 (69) patients were selected through simple random sampling who were admitted, treated and discharged between July and September, 2022 and a total of 16 staff comprising CECMs, Chief Officers, County Directors and County Nursing Officers were interviewed, thus giving a total sample size of 333 respondents drawn from all the four Counties of Bungoma, Busia, Kakamega and Vihiga. Primary data was collected using both structured questionnaires and interview schedules. The study adopted mixed-methods research designs to triangulate research results that were both qualitative and quantitative using both descriptive and inferential statistics. The SPSS Software version 26 was used for statistical analysis which was both descriptive whereby frequencies, percentages, means and standard deviation were clearly shown in the form of both tables, models and charts. The hypothesis that Human Resource Capacity has no statistical significant influence on Public Health Service Delivery was tested for significance of the study at 5% significance level. From the study, the beta value for human resource capacity from the regression model was 0.690 at  $p < 0.05$ . Human resource capacity explains 47.6% ( $R^2 = 0.476$ ) of variance in public health service delivery. The study concludes that human resource capacity had a positive effect on public health service delivery and thus it is a measure of public health service delivery. Therefore, it was concluded that enhancing the human resource capacity in County Governments in Western Kenya Region would lead to improved public health service delivery and the overall performance public health service delivery in County Governments in Western Kenya Region. The study recommends that, the Ministry of Health in the County Governments should ensure that, the opinions of workers who are directly affected by the decision is built to expand their knowledge and abilities, training and development to all workers, and a sufficient budget allocation must be made for this purpose to enhance public service delivery.

**Key words:** *Human resource capacity, health service delivery, Western Region*

## **Understanding the Causes and Consequences of Missing Marks in Kenyan Universities**

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### **Abstract**

Missing marks is a prevalent issue in Kenyan universities that has significant implications for both students and the institutions. Missing marks occur when grades or scores for a student's coursework or exam are not recorded or are lost, leading to confusion and frustration for both the student and the university. The consequences of missing marks are significant, including delays in graduation, academic penalties, financial implications, and damage to the university's reputation. Given the importance of accurate grading in ensuring academic integrity and fairness, it is essential to explore the causes and consequences of missing marks and to identify measures to prevent and address them effectively. This study aimed to investigate the causes and consequences of missing marks in Kenyan universities and to provide recommendations for policy and practice. The study used a qualitative research design and conducted focus group discussions with university students and examination officers. Purposive sampling was used to select participants, and data was collected through audio recording and transcription of the Interviews and FGDs conducted. Thematic analysis was used to analyze the data, and ethical considerations were observed throughout the study. The findings revealed that common causes of missing marks include administrative errors, technical issues, and academic misconduct. The study recommends that universities should implement measures to prevent missing marks and adopt best practices for addressing missing marks when they occur. The findings of this study contribute to the existing knowledge on missing marks in Kenyan universities and provide insights for policy and practice.

**Key Words:** Missing marks, academic integrity, academic misconduct, administrative errors, technical issues, consequences.

## The 'Evil Eye' (Ebibiriri) in the Gusii Community: Origins, Manifestations and Effects

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### Abstract

Social Workers, Sociologists and Social anthropologists have given little attention to the evil-eye in communities where depravity is predominant. The evil eye has continued to affect the health and social well-being of children and people with light brown skin because of the susceptibility and delicacy of their skin to 'ebibiriri'. The Gusii community strongly believes in the existence and power of the evil eye, locally known as "ebibiriri." The evil eye is believed to be a form of negative energy that can cause harm, illness, or misfortune to individuals or their belongings. The community believes that anyone can possess the power to cast the evil eye, intentionally or unintentionally, and that certain individuals are more susceptible to its effects. The purpose of this study was to investigate the antiquity and etiology of the evil eye in the Gusii community in Kenya. The study used snowballing and purposive sampling to select participants of this study. The participants consisted of 50 parents whose children had suffered from the evil-eye, 30 evil-eyed people and 20 religious leaders. The findings of the study reveal that children are particularly susceptible to the "evil eye" (okobiriria), not because they are young but because their skin is still light brown and consequently subtle. To protect themselves from the evil eye, the Gusii community employs various traditional practices such as wearing protective charms and amulets, performing rituals, and avoiding envy and jealousy. The community also has a system of beliefs around the causes and effects of the evil eye, which vary depending on the context and the individuals involved. Overall, the belief in the evil eye is deeply ingrained in the Gusii culture and plays a significant role in shaping their daily lives and interactions with others. Women are the main conveyor of the evil eye though men can also be conveyors. The evil-eye is unconscious and not controllable by the person who has it thus, when a woman with this delinquent gives birth, she is forced to focus her eyes on millet grains held in front of her to absorb the evil effect and prevent it from reaching her infant. The study recommends a dialogue among the evil-eyed people, religious leaders and the victims on the treatment of both the victims and the evil-eyed people to bring this degeneracy to a culmination.

**Key Words:** Evil eye, Evil eyed people, Depravity, Gusii Community, Social workers, Social Anthropologist and Sociologists

**Sub-theme 6: Religion and philosophy nexus and climate change**

**Religion and climate change**

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**Abstract**

Science involves systematic study of the natural world through scientific techniques and testing of theories against evidence gathered. Application of scientific proofs for practical purposes defines technology. While science is a branch of empirical knowledge, technology is a multidimensional. Science and technology are mutualistic, if well manipulated, brings sustainable development through inventions and innovations. While seeking for present satisfaction, concern for the future generation is paramount. Achievement of sustainable development needs multifaceted approach. Observing the current mushrooming of religious sects, this paper seek to show how religion can be the best tool to evangelise climate change mitigation measures for sustainable development. Religion is based on beliefs, values, and worship. Across all the sects, creationism is a common belief. Christian belief God as their creator. Genesis 1 vs 1-30 explains Biblical theory of creation and God's assignment for man to take control. That plants and animals were to be the source of man's food, proper care for sustainable supply was the implied responsibility. Human being is gifted with the ability to reason. This gives human being advantage over the entire universe. Rational inquiry into the key issues of human life begets the field of philosophy. Religion deals with faith and philosophy; reason. Philosophy enables man to develop; Religion, literature and other faculties. While philosophy is celebrated for its contributions to make life easy, it has led to massive environmental degradation. Industrialization accelerates pollution. Global warming resulting to the rise in the level of sea waters has been reported (IPCC 6<sup>th</sup> assessment report, 2021). This paper finds religious gatherings as avenues to sensitise people on their religious duty for environmental protection. Man should assert his philosophical ability to reason, as a religious gift to device ways of mitigating the climatic change. Serious religious collaborations in advocating for environmental protection is also necessary.

**Key words:** religion, climate change, beliefs

**Sub-track 7: Business, Economy and Society, Leadership and Integrity:  
challenges and solutions**

**The Effects of Computerized Accounting System on The Performance of Manufacturing Firms  
In Uasin Gishu County, Kenya**

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**Abstract**

The accounting system is key to the success of any firm as it influences the quality of the financial reports which influences the firm performance. The researcher sought to find out the effects of computerized accounting systems on the performance of the manufacturing companies in the Uasin Gishu County. The study was guided by the following objectives; to determine the effects of the CAS adoption on the performance, to find out the effect of CAS level of usage on the performance and to find out the challenges encountered in CAS usage in the Manufacturing firms in the Uasin Gishu County. The study was guided by the following theories; the technological acceptance model, agency theory and the system theory. The study adopted the descriptive survey in research design. The study adopted the stratified random sampling the target population of 340 employees to get a sample population of 100 employees. The study findings were presented in tables, bar graphs and pie charts. The study made the following conclusions; the majority of the companies used the computerized accounting system, the adoption of CAS had helped in time saving as it is relatively faster compared to the manual, the adoption of the CAS had improved the quality of the financial reports hence improved the performance and the adoption of the CAS in the company of the CAS in the company had cost saving benefits. The usage of the CAS influenced the performance of the firms, the companies with greater usage of CAS had recorded high performance, the companies used the quality of the financial reports as a measure of the level of usage of CAS and the CAS used the Ms. Excel in the usage in the companies. The CAS had a high initial capital which makes it expensive for the small companies to install, the usage of the CAS had a high cost of maintenance which is expensive for the companies and the usage of CAS in the companies required expertise's which are very few. The study recommends the following: the companies which had not adopted the Computerized Accounting System should ensure they install as it faster as compared to the manual input, it also ensure quality work is done, it also ensures that the quality and the credibility of the financial statements is high which attracts more investors' hence improving on the performance and it is cost saving thus improving on the firm performance. The companies should also improve on the level of usage and make sure it is greater as it influences the firm performance. The companies should also the use of EPICOR and Pastel in the CAS usage instead of just Ms. Excel. The companies should seek outside funding for the small companies in order to counter the problem of the high initial cost. The firms should also train and educate their employees to increase their expatriate in order to solve the challenge of few expertise in the market.

**Key words:** accounting system, manufacturing firms, Uasin Gishu County

## **The Impact of Quality Control Methods on Employee Performance Within The Hospitality Industry**

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### **Abstract**

The hospitality industry is a highly competitive sector that relies heavily on delivering exceptional service and maintaining high-quality standards to meet customer expectations. Therefore, ensuring effective quality control methods is essential to optimize employee performance and enhance overall service delivery. This research project aims to explore the impact of quality control methods on employee performance within the hospitality industry. The study employs a mixed-methods approach, incorporating both quantitative and qualitative research methods. A comprehensive literature review is conducted to establish a theoretical framework and identify key variables related to quality control and employee performance. The review highlights the significance of quality control methods, such as standard operating procedures, training programs, performance evaluations, and feedback mechanisms, in driving employee performance. To collect primary data, surveys and interviews are conducted with employees at various levels within different hospitality establishments, including hotels, restaurants, and resorts. The surveys assess employees' perceptions of the effectiveness of quality control methods and their impact on performance. Additionally, interviews provide deeper insights into employees' experiences, challenges, and suggestions for improvement regarding quality control measures. The quantitative data collected through surveys are analyzed using statistical techniques, including correlation analysis and regression models, to identify relationships between quality control methods and employee performance. The qualitative data from interviews are thematically analyzed to uncover emerging themes and patterns related to employee experiences and perceptions of quality control. The findings of this research project contribute to the existing body of knowledge by providing insights into the relationship between quality control methods and employee performance within the hospitality industry. The study aims to demonstrate that effective quality control measures positively influence employee performance, leading to improved service quality, customer satisfaction, and overall organizational success. The implications of this research project extend to hospitality industry practitioners, managers, and policymakers. The study's findings can guide organizations in developing and implementing robust quality control systems tailored to their specific needs, ultimately enhancing employee performance and overall service quality. Furthermore, policymakers can utilize the research outcomes to develop guidelines and regulations that promote the adoption of effective quality control methods within the hospitality industry. In conclusion, this research project investigates the impact of quality control methods on employee performance within the hospitality industry. By integrating quantitative and qualitative research methods, the study provides a comprehensive understanding of the relationship between quality control and employee performance. The findings and recommendations of this study have the potential to improve organizational practices and enhance the quality of service delivery within the hospitality industry.

**Key words:** employees, organization structure, quality control

## **Influence of Audit Committee Composition on the Quality of Audit Reports of Sacco's in Homabay County, Kenya**

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### **Abstract**

Every functioning organization tracks its progress by preparing timely financial statements at the end of every financial year which then are presented to various individual users who are interested on the progress of the organization. Further to this, an audit process is then carried out to ascertain the accuracy of the financial statements which then is sealed by a transparent audit report produced by the audit committee to the individual entity. The main objective of this study was to examine the influence of audit committee composition on the quality of audit reports of Sacco's in Homabay County, Kenya. This was justified by the existence of Many Sacco's in Homabay County which are reportedly having audit issues in the past years. The study was guided by Agency theory. This study adopted causal research design, the target population was 104 audit committee members of deposit taking Sacco's in Homabay County as at December 2021. The study obtained responses from 82 audit committee members out of the target population obtained using krejcie and Morgan formula participated in the study. Primary data was collected using research questionnaire which involved drop and pick method. Data analysis was done using descriptive statistics such as frequency table, mean and standard deviation while inferential statistics included Pearson's correlation analysis, hierarchical and stepwise regression. The findings of this research will be of much importance to the county government of Homabay, managers of Sacco's, cooperative societies and scholarly community at large. It will aid in the handling of various committees in the Sacco's and state cooperatives. It will be of significance to researchers and future scholars who might need to refer to such and equally build on it for further research. The study discovered that audit committee composition had positive significant influence on quality of audit reports on Sacco's in Homabay County, Kenya. The study recommends that Sacco's audit committee should be made up of skilled members who are not biased and in accordance to auditing standards to ensure audit reports provided for publishing are of quality.

**Key words;** Audit Committee Composition, Quality of Audit Reports, Deposit taking Sacco's



## Validity of The Short Run and The Long Run Phillips Curve in Macroeconomic Policy Implementation in Kenya

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### Abstract

Levels of unemployment is of great concern to policy makers in most world economies. Many models have been developed to address the problem but no clear solution has been found. Closely related to unemployment is the problem of inflation. Stagflation, a condition where both unemployment and inflation are high at the same time has resulted to ineffectiveness of policies issued by monetary authorities in Kenya. Solutions to unemployment and inflation are challenges experienced by policy makers in many economies. The purpose of this study was to empirically analyze validity of short and long run Philips curve in macroeconomic policy implementation in the Kenyan. More specifically, the study objective was to examine the short and long run relationship between unemployment and inflation, the relationship between government spending and unemployment and the relationship between money supply and unemployment. The study was informed by the ever increasing unemployment rates, cost of living and the inadequate attention inform of macroeconomic policies made by the policy makers to alleviate the economy from this problem. The study was anchored on the Phillips curve theory, the Expectation theory and the Lucas critique theory. The study adopted an explanatory research design and employed an Auto-Regressive Distributed Lag and Error Correction Model to analyze both the short run and the long run results. The study sample entailed of annual secondary time series data set for a period of 30 years from 1991 to 2020, sourced from KNBS, Central Bank of Kenya, and World Bank. The findings of the diagnostic test demonstrated that there was no multicollinearity among the independent variables ( $vif=1.31$ ), the residuals were homoscedastic ( $p=0.8312>0.05$ ), and there was no autocorrelation among the residuals ( $p=0.3470>0.05$ ). The results of the Shapiro-Wilk normality test showed that the study's variables were normally distributed. The co-integration test and ADF unit root test both showed that there existed a unit root and that the variables had a long-run relationship. Additionally, the model's stability over time was confirmed by the CUSUM test. The findings of the study were: the relationship between unemployment and inflation was positive and insignificant both in the short run ( $\beta_{3i}=0.0006, p=0.974$ ) and in the long run ( $\beta_{2j}=0.0007, p=0.974$ ); government spending had a negative significant relationship ( $\beta_{3j}=0.0281, p=0.045$ ) with unemployment; Money supply had a negative insignificant relationship ( $\beta_{4j}=0.002, p=0.900$ ) with unemployment. Gregory Hansen test also indicated that the model suffered from structural period during 2009, 2013 and 2016. Dummy variables that modeled the structural breaks were significant ( $\beta_{5j}=0.8766, p=0.031$ ) in the long run. The study concluded that the short run and the long run Phillips curves are invalid in the Kenyan economy. The study therefore recommends that expansionary fiscal policy of government spending can be used to reduce unemployment levels in the short run and the government should come up with a supplementary policy of cushioning the economy against the harsh effects of structural breaks on unemployment.

**Key words:** Long Run, Phillips Curve, Macroeconomic Policy, Implementation

## **Effects of Resource Risk Management Strategies on Road Construction Project Delivery in Kenya**

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### **Abstract**

The most predominant Department of Infrastructure, has embarked on major road investments. In the financial year 2021-2022, Kenya National Treasury allocated KSh.200 billion for the construction of over 6,000 kilometers of new roads to expand the country's accessibility. The reason for construction of roads is to reduce traffic jam, which in Nairobi is estimated to cause \$1 billion a year in lost productivity. Road construction projects in Kenya are complex and challenging sometimes resulting to delay in completion time, litigation, and cost overruns. This is partly contributed to the resource risk management performance in the road construction sector which has traditionally been instinctive or based on unwritten rules where most of the time risks have either been ignored or handled arbitrarily. However, some road projects (167.9 kilometers valued at Ksh. 690.4 billion) have had major challenges due to execution by ill-equipped contractors resulting in compromised quality of work executed, projects running behind schedule as well as having high-cost overruns. The reason for this being attributed to the lack of enforcement of effective resource risk management strategies. This study sought to determine the influence of resource risk management strategies on delivery of road construction projects in Kenya, with the main focus on Nairobi Expressway, Kenol-marua and Isebani-Ahero road projects. The aspect of the resource risk management strategies that were examined included; risk transfer, risk avoidance and risk mitigation. This study used an explanatory research design, that tries to understand a problem that has not been conclusively researched. This study collected both primary and secondary data. The primary data was collected from 45 respondents in the management level using questionnaires. Quantitative data was analyzed by calculating the response rate with descriptive statistics such as means, median, standard deviation, and percentages using the statistical package for social sciences (SPSS). The analyzed data was presented by the use of bar charts, graphs, and frequency tables. The qualitative data was analyzed using content analysis where common themes were placed together and then subjected to descriptive statistics. The study revealed that road construction companies investigated have taken initiative to implement resource risk management strategies that contributed to road construction project deliveries. The road companies ensured resources such as construction materials and equipment are available. They also managed human resource effectively to reduce absenteeism and ensuring they employ competent employees that are motivated. The result revealed that resource planning, resource scheduling, resource monitoring significantly contributed to project deliveries through risk avoidance by ensuring that the stated activities are carried out effectively. The study concluded that resource risk management strategy significantly influences project deliveries of road construction project. A Company that sorts out issues related to delay of material, malfunction of vehicles, and absenteeism of competent workers thrives in delivery of road construction projects. Road construction company's management should devise and implement resource risk management strategies. They should ensure safety of employees is guaranteed and motivate to maintain competent workers. Furthermore, equipment and vehicles should be regularly maintained to good working standard. Policy makers should draft laws and policies governing resource risk management strategies and enforce them to ensure each road construction companies follow them as stipulated.

**Keywords:** Road project construction, resource risk management, project delivery

## **Effect of Supplier Selection on The Procurement Performance of Steel Manufacturing Firms in Nairobi City County, Kenya**

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### **Abstract**

The aim of this study was to determine the effect of supplier selection on the procurement performance of steel manufacturing firms. Using a census survey with 288 respondents and 278 valid questionnaires, PLS-SEM model was fitted with procurement performance as the dependent variable and supplier selection as the independent variable. The results indicate that at 95% confidence level supplier selection ( $\beta=0.50$ ,  $t=8.309$ ,  $p<0.05$ ) had a significant positive effect on procurement performance. The study established that the more a firm improves on its supplier selection strategies, the better the performance of their procurement operations are expected to be. This implies that supplier selection is a strong indicator of procurement performance of steel manufacturing firms in Nairobi City County, Kenya. The study recommends that steel manufacturing firms need to highlight the importance of indicators such as accountability, product quality, supplier performance and supplier technological capability to enhance procurement performance.

**Key words:** Supplier selection, procurement performance, product pricing, supplier reputation, product quality

## **The Role of Reward and Compensation Management in Promoting Remote Learning: A Case of Public Universities in Nairobi Metropolis**

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### **Abstract**

With ever increasing demand for remote learning in higher learning institutions, the role of HRM practices in promoting work culture that appreciate e-learning mode can never be under estimated. Under the umbrella of human resource management, reward and compensation management is responsible for the creation and execution of policies and strategies aimed at rewarding employees consistently, fairly, and in line with their performances and value to the firm, thus reward and compensation management is critical in motivating workforce towards achievement of expected behaviors and outcomes. The main objective of the study was to determine the role of reward and compensation management in promoting the implementation of remote learning by public universities in Nairobi Metropolis. The study was anchored on resource based view theory, descriptive study was used to tackle the research subject. The study targeted public universities in Kenya that are located within Nairobi metropolitan zone. From the 29 public universities in Kenya, the study sampled 8 Universities from which the respondents were sampled from. The unit of analysis included university registrars and their deputies in every universities the study also included lectures tutoring online-classes. The study sampled 44 (28 lectures and 16 university registrars) respondents who took part in this study. Both qualitative and quantitative data was generated from the study. Qualitative data was analyzed through the use of thematic analysis while Quantitative data was analyzed using Inferential Statistics (Regression analysis). Descriptive statistics (frequencies, percentages, mean and standard deviation) was used to analyze data. For easy comprehension Tables, charts and graphs were utilized for presenting quantitative facts. SPSS version 24 was used as software to carry out the analysis. Both descriptive and inferential statistics confirm that wages and bonuses recognition promotes implementation of remote learning by public universities in Nairobi Metropolis. This study concludes that reward and compensation promoted the implementation of remote learning by public universities in Nairobi Metropolis. Thus the study recommends that Higher learning institutions must draw on both extrinsic and intrinsic reward strategies to improve retention levels through endorsing higher levels of workplace trust and work engagement levels.

**Key Words:** Reward and Compensation Management, Implementation of Remote Learning by Public Universities

## **Effects of Personnel Risk Management Strategies on Road Construction Project Delivery in Kenya**

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### **Abstract**

The most predominant mode of transport in Kenya is road transport with over 90% of all freight and passenger traffic transported by road. It is, for this reason, the Government, through the State Department of Infrastructure, has embarked on major road investments. In the financial year 2021-2022, Kenya National Treasury allocated KSh.200 billion for the construction of over 6,000 kilometers of new roads to expand the country's accessibility. The reason for construction of roads is to reduce traffic jam, which in Nairobi is estimated to cause \$1 billion a year in lost productivity. Road construction projects in Kenya are complex and challenging sometimes resulting to delay in completion time, litigation, and cost overruns. This is partly contributed to the personnel risk management performance in the road construction sector which has traditionally been instinctive or based on unwritten rules where most of the time risks have either been ignored or handled arbitrarily. However, some road projects (167.9 kilometers valued at Ksh. 690.4 billion) have had major challenges due to execution by ill-equipped contractors resulting in compromised quality of work executed, projects running behind schedule as well as having high-cost overruns. The reason for this being attributed to the lack of enforcement of effective personnel risk management strategies. This study sought to assess the influence of personnel risk management strategies on delivery of road construction projects in Kenya, with the main focus on Nairobi Expressway, Kenol-marua and Isebani-Ahero road projects. The aspect of the personnel risk management strategies that were examined were risk avoidance and risk mitigation. This study used an explanatory research design, that tries to understand a problem that has not been conclusively researched. This study collected both primary and secondary data. The primary data was collected from 45 respondents in the management level using questionnaires. Quantitative data was analyzed by calculating the response rate with descriptive statistics such as means, median, standard deviation, and percentages using the statistical package for social sciences (SPSS). The analyzed data was presented by the use of bar charts, graphs, and frequency tables. The qualitative data was analyzed using content analysis where common themes were placed together and then subjected to descriptive statistics. The study indicated that road construction companies investigated possibly implemented some of the strategies to protect their employees from injuries and avoid risk or uncertainties associated with personnel risks. In the road construction project investigated, they employed competent workers, supervised efficiently, trained workers, rewarded employees, ensured communication is effective from administration to all the workforce, and promoted highly productive employees. These measures towards personnel risk management are likely to contribute to timely project deliveries. The study concluded that personnel risk management strategy significantly influences project deliveries of road construction project. Protecting employees from harm while executing their duties and responsibility is vital because absence of one person may cause delay in project deliveries, faults in quality, and other threats to a company operation, calling for avoidance of the associated risks at all cost. The study recommended that Road construction company's management should devise and implement personnel risk management strategies. They should ensure safety of employees is guaranteed and motivates them to maintain competent workers. Furthermore, implementation of the strategies to protect their employees from injuries and avoidance of risk or uncertainties associated with personnel risks should be highly considered.

**Keywords:** Road project construction, personnel risk management, project delivery

## **Diversification of Enterprise Among Small Scale Tea Farmers: A Case Study of Kirinyaga Central Sub-County in Kenya**

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### **Abstract**

Farm diversification is considered an optimal farm plan decision for mitigating varying degrees of risks and uncertainties which surround agricultural production, and also has a benefit of stabilizing or increasing income. Diversified agriculture is widely practiced in Konoin district but small holder farmers earn low incomes as evidenced by poor living standards amongst the smallholders. The purpose of the study was to evaluate the role of on-farm diversification in poverty alleviation among the smallholder farmers. To achieve this purpose, the study measured the contribution of on-farm diversification to incomes of smallholder farmers and then characterized smallholder farmers based on diversification. In this study an empirical examination of on-farm diversification was carried out by use of cluster sampling and simple random sampling procedures which were employed to sample 6 small-scale farmers in Kirinyaga Central. The herfindahl index and t-tests were used to measure the contribution of on-farm diversification to farm incomes and to characterize smallholder farmers based on diversification while the Tobit model was used to identify the factors influencing on-farm diversification. The study obtained a herfindahl index of 0.39 in a continuum of zero (0) to one (1). Out of all the sampled farms, 30.5 percent of them were found to be highly diversified while 69.5 percent were less diversified. This shows that the smallholder farmers in Kirinyaga Central are considered less diversified for purposes of income generation given that the index is less than 0.5. On-farm diversification was found to have positive relationship with income given that the highly diversified farms had bigger gross margins than the less diversified farms. Access to the extension services positively influenced farm diversification. Market prices for the farm produce and the distance to the product markets negatively influenced on-farm diversification.

**Key words:** enterprises, tea farmers, Kirinyaga County

## **The Effects of Inflation on The Economic Growth in Kenya**

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### **Abstract**

Economic growth is one of the main objectives of every government, this is because with good economic growth all other income generating activities becomes easier for the citizens including doing businesses. However there are many factors that affect the economic growth, this study will focus on the inflation. The study was guided by the following theories; the quantity theory of money, the interest rates parity theory and the purchasing power parity theory. The study adopted the descriptive survey research design. The study adopted the stratified random sampling to get the 48 respondents as the sample size from the target population of 125 officials. The study did a test retest in order to check on reliability of the information given. The study findings were presented in pie charts, bar graphs and tables. The study made the following conclusions; the high interest rates made borrowing/taking loans from banks expensive for individuals, it also discouraged borrowing by companies to invest in large sums of money projects in the country, it also led to the fall of the prices of the financial assets e.g. bonds and it caused higher saving returns earned in saving accounts. The increase in taxation reduced the motive of the citizens to work, save and invest, it also led to the collapse of many businesses and companies in the country, it also enabled the government to collect more revenue for development and infrastructural growth in the country and it also retarded/inhibited the economic growth and advancement in the Country. The exchange rate fluctuation led to the depreciation of the country currency value, it also made imports expensive and exports cheap hence leading to trade deficit and surplus in the economy, it also encouraged overseas investments by deterring the local investments and discouraging foreign investors into the country and lastly it led to high interest rates in the economy. The study recommends the following; the government should be cautious with the interest rates and they should cap them in order to reduce the chances of the banks increasing them to increase profits and makes the individual and company borrowing expensive. The government should also put measures and policy that discourages the increase in interest rates in order to avoid the fall in prices of the financial assets. In case of the high interest rates the citizens should save more money in order to earn more from the saving accounts. The government should also avoid increasing the taxes as it leads to collapsing of businesses and companies in the country, it reduces the motive of the citizens to work, save and invest. It also reduces the profit margins of the companies and businesses in the country which discourages their growth and expansion. Although increasing the taxation increases the government revenue for development purposes the government should focus on other sources of finances e.g. internal /external borrowing instead of increasing the taxes. The government should ensure proper policies that discourages the depreciation of the exchange rate as it leads to devaluation of the country currency, discourages foreign investors, makes imports expensive and exports cheap and lastly it increases the interest rates.

**Key words:** inflation, economic growth, interest rates, exchange rate

## **Effect of Supply Chain Flexibility Strategies on the Performance of Floricultural Firms in Kenya**

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### **Abstract**

The aim of this study was to investigate the effect of supply chain flexibility strategies on the performance of floricultural firms in Nakuru County, Kenya. The study used descriptive and correlation research design with a sample size of 197, multiple regression was performed between performance as the dependent variable and supply chain flexibility as the independent variable measured by supply chain re-engineering, production flexibility and delivery flexibility. The results indicate the predictors explained 74.7% of the variance ( $R^2=.747$ ,  $Adj R^2=.734$ ),  $p<0.05$ ;  $t=16.222$ ; supply chain re-engineering significantly predicted performance of floricultural firms ( $B=0.055$ ,  $P<0.05$ )  $t=2.798$  as did production flexibility ( $B=0.159$ ,  $P<0.05$ )  $t=2.596$  and also delivery flexibility ( $B=0.015$ ,  $P<0.05$ )  $t=3.224$ . The study established that supply chain flexibility significantly enhance performance of floricultural firms. The study recommends the setting up of policies that promote prior re-engineering supply chain flexibility by firms to integrate readiness and allow efficient and effective response to disruptions. Production and transportation flexibility will quicken response to changes in flower production due to order variations or uncertain transportation respectively as a result of unforeseen events.

**Key words:** Floricultural Firms, Supply Chain flexibility Strategies, supply chain re-engineering, production flexibility, delivery flexibility, Performance Kenya



## **Impacts of Hustler Fund on Rural Development in Kenya: The Case of Kesses Sub-County of Uasin Gishu County**

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**Sub-theme: 7 (Business, Economy and Society, Leadership and Integrity; Challenges and Solutions)**

### **Abstract**

Since the attainment of independence in Kenya in 1963, successive political regimes have pursued different development pathways in promotion of rural development. Rural development is about empowering people living in rural areas and making their wellbeing to be self-sustaining. The Jomo Kenyatta administration adopted the Harambee spirit of pooling resources together for rural development, while Moi administration introduced the school milk feeding program which led to increased enrollment in primary schools in Kenya. The Kibaki era regime came into power on the strength of economic reforms under the vision 2030 policy. The Uhuru Kenyatta administration invested heavily on infrastructural development involving construction of Super Highways, Standard Gauge Railways (SGR), LAPSSSET project and also embraced the Big Four Agenda strategy of development. The current administration of President William Ruto campaigned on the platform of bottom-up economic development model and upon coming to power introduced the Hustler Fund, money directed for empowerment of the low-income people. Yet studies hardly interrogate the impacts of these development agendas. Given that the present administration's focus is empowered those at the bottom, this study seeks to assess the impacts of Hustler Fund on rural development with Kesses sub-county of Uasin Gishu county as a case. The study methodology entailed administration of semi-structured questionnaires to 53 households selected out of 1458 households living within the sampled sub-locations of Tulwet, Sambul, Bindura and Chuiyat within Kesses Sub- County to gather data on status of Hustler Fund and its associated challenges. Focus Group Discussions were conducted to validate study findings. Data analysis was done using SPSS and presented qualitatively and quantitatively. The study revealed that 47% of households had benefited from Hustler Fund, while 53% of the respondents had not accessed the fund. The respondents who received the fund used it for payment of school fees (21%), purchase of household items (15%) and for buying poultry feeds (2%). However, Hustler Fund was pointed out as too little to make significant impacts on rural development. The study recommends increase of the Hustler Fund personal loan limit and diversification of agriculture to enable farmers in the rural areas have a wide pool of products for local and export markets thereby promoting rapid rural development. Such diversified crops could include avocados and macadamia that fetch higher incomes.

**Key Words:** Rural development, Hustler Fund, Empowerment, Political Regimes, Development pathways

## **The Role of Reward and Compensation Management in Promoting Remote Learning: A Case of Public Universities in Nairobi Metropolis**

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### **Abstract**

The most predominant with ever increasing demand for remote learning in higher learning institutions, the role of HRM practices in promoting work culture that appreciate e-learning mode can never be under estimated. Under the umbrella of human resource management, reward and compensation management is responsible for the creation and execution of policies and strategies aimed at rewarding employees consistently, fairly, and in line with their performances and value to the firm, thus reward and compensation management is critical in motivating workforce towards achievement of expected behaviors and outcomes. The main objective of the study was to determine the role of reward and compensation management in promoting the implementation of remote learning by public universities in Nairobi metropolis. The study was anchored on resource based view theory, descriptive study was used to tackle the research subject. The study targeted public universities in Kenya that are located within Nairobi metropolitan zone. From the 29 public universities in Kenya, the study sampled 8 Universities from which the respondents were sampled from. The unit of analysis included university registrars and their deputies in every universities the study also included lectures tutoring online-classes. The study sampled 44 (28 lectures and 16 university registrars) respondents who took part in this study. Both qualitative and quantitative data was generated from the study. Qualitative data was analyzed through the use of thematic analysis while Quantitative data was analyzed using Inferential Statistics (Regression analysis). Descriptive statistics (frequencies, percentages, mean and standard deviation) was used to analyze data. For easy comprehension Tables, charts and graphs were utilized for presenting quantitative facts. SPSS version 24 was used as software to carry out the analysis. Both descriptive and inferential statistics confirm that wages and bonuses recognition promotes implementation of remote learning by public universities in Nairobi metropolis. This study concludes that reward and compensation promoted the implementation of remote learning by public universities in Nairobi metropolis. Thus the study recommends that Higher learning institutions must draw on both extrinsic and intrinsic reward strategies to improve retention levels through endorsing higher levels of workplace trust and work engagement levels.

**Key Words:** Reward and Compensation Management, Implementation of Remote Learning by Public Universities

## **Effects of Resource Risk Management Strategies on Road Construction Project Delivery in Kenya**

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### **Abstract**

The most predominant Department of Infrastructure, has embarked on major road investments. In the financial year 2021-2022, Kenya National Treasury allocated KSh.200 billion for the construction of over 6,000 kilometers of new roads to expand the country's accessibility. The reason for construction of roads is to reduce traffic jam, which in Nairobi is estimated to cause \$1 billion a year in lost productivity. Road construction projects in Kenya are complex and challenging sometimes resulting to delay in completion time, litigation, and cost overruns. This is partly contributed to the resource risk management performance in the road construction sector which has traditionally been instinctive or based on unwritten rules where most of the time risks have either been ignored or handled arbitrarily. However, some road projects (167.9 kilometers valued at Ksh. 690.4 billion) have had major challenges due to execution by ill-equipped contractors resulting in compromised quality of work executed, projects running behind schedule as well as having high-cost overruns. The reason for this being attributed to the lack of enforcement of effective resource risk management strategies. This study sought to determine the influence of resource risk management strategies on delivery of road construction projects in Kenya, with the main focus on Nairobi Expressway, Kenol-marua and Isebani-Ahero road projects. The aspect of the resource risk management strategies that were examined included; risk transfer, risk avoidance and risk mitigation. This study used an explanatory research design, that tries to understand a problem that has not been conclusively researched. This study collected both primary and secondary data. The primary data was collected from 45 respondents in the management level using questionnaires. Quantitative data was analyzed by calculating the response rate with descriptive statistics such as means, median, standard deviation, and percentages using the statistical package for social sciences (SPSS). The analyzed data was presented by the use of bar charts, graphs, and frequency tables. The qualitative data was analyzed using content analysis where common themes were placed together and then subjected to descriptive statistics. The study revealed that road construction companies investigated have taken initiative to implement resource risk management strategies that contributed to road construction project deliveries. The road companies ensured resources such as construction materials and equipment are available. They also managed human resource effectively to reduce absenteeism and ensuring they employ competent employees that are motivated. The result revealed that resource planning, resource scheduling, resource monitoring significantly contributed to project deliveries through risk avoidance by ensuring that the stated activities are carried out effectively. The study concluded that resource risk management strategy significantly influences project deliveries of road construction project. A Company that sorts out issues related to delay of material, malfunction of vehicles, and absenteeism of competent workers thrives in delivery of road construction projects. Road construction company's management should devise and implement resource risk management strategies. They should ensure safety of employees is guaranteed and motivate to maintain competent workers. Furthermore, equipment and vehicles should be regularly maintained to good working standard. Policy makers should draft laws and policies governing resource risk management strategies and enforce them to ensure each road construction companies follow them as stipulated.

**Keywords:** Road project construction, resource risk management, project delivery

## **Effects of Personnel Risk Management Strategies on Road Construction Project Delivery in Kenya**

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### **Abstract**

The most predominant mode of transport in Kenya is road transport with over 90% of all freight and passenger traffic transported by road. It is, for this reason, the Government, through the State Department of Infrastructure, has embarked on major road investments. In the financial year 2021-2022, Kenya National Treasury allocated KSh.200 billion for the construction of over 6,000 kilometers of new roads to expand the country's accessibility. The reason for construction of roads is to reduce traffic jam, which in Nairobi is estimated to cause \$1 billion a year in lost productivity. Road construction projects in Kenya are complex and challenging sometimes resulting to delay in completion time, litigation, and cost overruns. This is partly contributed to the personnel risk management performance in the road construction sector which has traditionally been instinctive or based on unwritten rules where most of the time risks have either been ignored or handled arbitrarily. However, some road projects (167.9 kilometers valued at Ksh. 690.4 billion) have had major challenges due to execution by ill-equipped contractors resulting in compromised quality of work executed, projects running behind schedule as well as having high-cost overruns. The reason for this being attributed to the lack of enforcement of effective personnel risk management strategies. This study sought to assess the influence of personnel risk management strategies on delivery of road construction projects in Kenya, with the main focus on Nairobi Expressway, Kenol-marua and Isebani-Ahero road projects. The aspect of the personnel risk management strategies that were examined were risk avoidance and risk mitigation. This study used an explanatory research design, that tries to understand a problem that has not been conclusively researched. This study collected both primary and secondary data. The primary data was collected from 45 respondents in the management level using questionnaires. Quantitative data was analyzed by calculating the response rate with descriptive statistics such as means, median, standard deviation, and percentages using the statistical package for social sciences (SPSS). The analyzed data was presented by the use of bar charts, graphs, and frequency tables. The qualitative data was analyzed using content analysis where common themes were placed together and then subjected to descriptive statistics. The study indicated that road construction companies investigated possibly implemented some of the strategies to protect their employees from injuries and avoid risk or uncertainties associated with personnel risks. In the road construction project investigated, they employed competent workers, supervised efficiently, trained workers, rewarded employees, ensured communication is effective from administration to all the workforce, and promoted highly productive employees. These measures towards personnel risk management are likely to contribute to timely project deliveries. The study concluded that personnel risk management strategy significantly influences project deliveries of road construction project. Protecting employees from harm while executing their duties and responsibility is vital because absence of one person may cause delay in project deliveries, faults in quality, and other threats to a company operation, calling for avoidance of the associated risks at all cost. The study recommended that Road construction company's management should devise and implement personnel risk management strategies. They should ensure safety of employees is guaranteed and motivates them to maintain competent workers. Furthermore, implementation of the strategies to protect their employees from injuries and avoidance of risk or uncertainties associated with personnel risks should be highly considered.

**Keywords:** Road project construction, personnel risk management, project delivery

## **The Impact of the Travel Restrictions on The Economic Status of SMEs in Kenya: A Case Study of Businesses in Narok Town, Kenya**

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### **Abstract**

As the basic unit of the national economy, the operation of businesses is key to the development of the national macro-economy. UNDP (2020) estimate that containment measures in sub-Saharan Africa, in their current form, have pushed an additional 9.1% of the population into extreme poverty. Narok County in particular has experienced challenges due to travel restrictions ranging from low business activities and lack of production material in industries. Studies have been conducted on the impact of Covid-19 in relation to various parameters. Little study has been done in relation to SMEs. It is for this reason; this study tends to find out the impact of travel restrictions on the economic status of SMEs in Narok County and the possible policy recommendations. The main objective of this research was to find out the impact of travel restrictions on the economic status of SMEs in Narok County. The specific objectives was to find out the impact of travel restrictions on the economic status of SMEs in Narok town, Narok County, to determine how SMEs respond to travel restriction to improve their economic status in Narok town, Narok County and to recommend Policies and coping strategies for future travel restriction in order to improve economic status for SMEs in Narok County. This study used descriptive research design. The target population that was considered in this study was all SMEs officially registered in Narok town. There are 895 SMEs registered in Narok town as per the ministry of trade Narok County (2021). The sample size will be 90 respondents. The respondents will be allocated proportionately and the sampling unit will be obtained using simple random sampling as per their category. The study used a self-administered questionnaire to collect data. Questionnaires were distributed using drop and pick method and the responses analyzed to find out if the intended information is given by the respondents. Quantitative data was analyzed using descriptive statistical methods. The analysis was done by SPSS (Statistical Package for Social Sciences) to generate those measures where the percentages and frequencies together with the means and standard deviations were computed and analyzed for each item that measures the impact of travel restrictions on economic status of SMEs in Narok town. The findings of the study revealed that travel restriction had made the SMEs to reduce the number of employees. This was due to reduced number of customers who could be served by that large number of employees had reduced. The study recommended that the government to adjust tax rates, provide subsidies to enable stability of SMEs.

**Key words:** SMEs, travel restrictions, economy, macro-economy

## **Effect of Supplier Selection on The Procurement Performance of Steel Manufacturing Firms in Nairobi City County, Kenya**

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### **Abstract**

The aim of this study was to determine the effect of supplier selection on the procurement performance of steel manufacturing firms. Using a census survey with 288 respondents and 278 valid questionnaires, PLS-SEM model was fitted with procurement performance as the dependent variable and supplier selection as the independent variable. The results indicate that at 95% confidence level supplier selection ( $\beta=0.50$ ,  $t=8.309$ ,  $p<0.05$ ) had a significant positive effect on procurement performance. The study established that the more a firm improves on its supplier selection strategies, the better the performance of their procurement operations are expected to be. This implies that supplier selection is a strong indicator of procurement performance of steel manufacturing firms in Nairobi City County, Kenya. The study recommends that steel manufacturing firms need to highlight the importance of indicators such as accountability, product quality, supplier performance and supplier technological capability to enhance procurement performance.

**Key words:** Supplier selection, procurement performance, product pricing, supplier reputation, product quality

## **Strategic Procurement Planning and Service Delivery of County Governments in Western Kenya Region**

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### **Abstract**

Ensuring the provision of public services in Kenya entails public expenditure through sourcing of goods, works and services thus, the integrity of the entire process from tendering to delivery of goods, works and services and their use portrays the robustness of proper management of public resources and fidelity to the constitution of Kenya. However, corruption has been cited as a major hindrance to socio-economic development in Kenya as there exists misappropriation of public funds in most of the Counties and allegedly 50% of it is related to the public procurement practices adopted. The main objective of the study was to determine the effects of strategic procurement planning on service delivery of County Governments in Western Kenya Region. The study was guided by the Mc Kinsey 7s framework model while adopting a positivist research philosophy. The study was conducted in Counties in western Kenya region which included; Kakamega, Busia, Vihiga and Bungoma. The study target population comprised of 228 officers which was categorized into chief officers, Directors, Finance officers and procurement officers. The study adopted stratified random sampling in selecting a sample of 174 respondents. Primary data was gathered through a questionnaire and interview schedules. A pilot study was done in order to test for validity and the reliability of research instruments. The study utilized both descriptive and inferential statistics. The findings of the study established that Strategic Procurement Planning significantly accounted for 40.5% of the variance in Service Delivery of County Governments in Western Kenya ( $R^2=0.405$ ,  $P<0.05$ ). Specifically, when Strategic Procurement Planning increases by one unit, service delivery changes by 0.636 units ( $\beta_1=0.636$ ,  $P<0.05$ ). Thus, there existed a positive and significant relationship between strategic procurement planning and service delivery of County Governments in Western Kenya Region.

**Keywords:** Strategic procurement planning, Public procurement practices, Service Delivery and Public Resources

**Management in Services as a Marketing Instrument for Increasing Customers' Satisfaction with Tourism Products**

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**Abstract**

This project aims to investigate the role of management in services as a marketing instrument for enhancing customers' satisfaction with tourism products. In the highly competitive tourism industry, customer satisfaction is crucial for the success and sustainability of tourism businesses. It is widely recognized that effective management practices can significantly influence customer satisfaction by improving the quality and delivery of services. However, there is a need for a comprehensive understanding of how management in services can be utilized as a strategic marketing tool to enhance customers' satisfaction in the context of tourism products. To achieve the research objectives, a mixed-methods approach will be employed, combining qualitative and quantitative data collection and analysis techniques. The study will begin with an extensive literature review to establish a theoretical foundation and identify relevant concepts, theories, and models related to management in services and customer satisfaction in the tourism industry. Subsequently, primary data will be collected through surveys and interviews from both tourists and tourism service providers. The surveys will capture customers' perceptions of service quality, service delivery, and overall satisfaction with their tourism experiences. Interviews with tourism service providers will explore their management practices, strategies, and challenges in meeting customer expectations. The data collected will be analyzed using appropriate statistical techniques, such as regression analysis and thematic analysis, to uncover patterns, relationships, and insights. The findings will contribute to a deeper understanding of how various aspects of management in services, such as leadership, employee training, service design, and customer relationship management, impact customers' satisfaction with tourism products. The research outcomes will have practical implications for tourism businesses and destination management organizations. By identifying key management practices that positively influence customer satisfaction, this study will provide actionable recommendations for improving service quality, enhancing customer experiences, and gaining a competitive edge in the tourism market. Moreover, the research findings will contribute to the existing body of knowledge on services marketing and customer satisfaction, filling a gap in the literature regarding the specific context of tourism products. Overall, this project endeavors to shed light on the significance of management in services as a marketing instrument for increasing customers' satisfaction with tourism products. By uncovering the underlying mechanisms and strategies that drive customer satisfaction, this research will offer valuable insights to the tourism industry, enabling businesses to better meet the evolving needs and expectations of their customers and foster long-term relationships for sustainable growth and success.

**Key words:** Marketing Instrument, Customers' Satisfaction, Tourism Products



### Sub Track 8: Cross-cutting issues

## Analysis of Literary Texts on Environment and their Treatment of Nature

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### Abstract

Environmental criticism is a critical study in literature that investigates humanity's relationship to the environment. These days, more and more artists are turning their feelings about climate change, environmental justice and the extinction crisis into powerful creative works. Against this backdrop, this paper aims at giving a critical discourse of selected creative environmentally themed literary works. These works include among others, a novel *Bustani ya Eden* (Mbogo, 2002) and an anthology of poems *Msimu wa Tisa* (Mberia, 2007). The aim is to analyze how the selected works illustrate environmental concerns and examine the various ways the literature treats the subject of nature. Ecocriticism theory is the study's theoretical framework. The theory focuses on exploring humanity's relationship with the natural world, with many aspects of it found in modern literature. The main breakthrough of this paper is the emerging portrayal through creative works of the realities on environmental degradation by humans. However, the drawbacks among others are that these creative works on environment are normally read and analyzed by scholars and findings published and archived mainly in university libraries; policy makers on matters environment hardly get access to these findings. This study concludes that as climate change becomes more a part of our lives, it is increasingly reflected in the arts and literature. Based on the study findings and conclusions, the study recommends that policy decision makers concerning environmental conservation be incorporated and updated on all debates on climate change more so the danger of mankind pushing beyond the planetary boundaries and entering a Code Red for Humanity.

**Keywords:** Climate change, Environment, Ecocriticism, Environmental criticism, Code Red for Humanity, Nature

## **The Relationship Between Signature Pedagogy, Subject Knowledge, and Pedagogic Knowledge in Promoting Good Teaching in Social Work Education: A Case Study of Role-Playing and the Flipped Classroom**

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### **Abstract**

Social work education is crucial in preparing students for the complexities of the profession. Good teaching practices are therefore essential for social work educators. This study explored the relationship between signature pedagogy, subject knowledge, and pedagogic knowledge in promoting good teaching in social work education, with a focus on role-playing and the flipped classroom approach. The study also aimed to identify the challenges, advantages, and disadvantages of these pedagogical approaches and their implications on social work students' learning outcomes. The study used a case study approach, and the data were collected from social work lecturers, students, and practicing social workers through in-depth interviews and focus group discussions. The sample size was 30 participants, and the data were analyzed thematically. The study found that social work educators who incorporated signature pedagogy, subject knowledge, and pedagogic knowledge in their teaching using role-playing and the flipped classroom approach had a positive impact on students' learning outcomes. However, social work educators encountered challenges in implementing these pedagogical approaches, such as inadequate resources, resistance from students, and time constraints. The findings suggest that the flipped classroom and role-playing approach are effective pedagogical approaches for teaching social work students. The study recommends that social work educators should receive training on how to effectively integrate signature pedagogy, subject knowledge, and pedagogic knowledge in their teaching using role-playing and the flipped classroom approach. Additionally, social work education institutions should provide adequate resources to support the implementation of these pedagogical approaches.

**Key words:** Social work education, signature pedagogy, subject knowledge, pedagogic knowledge, role-playing, flipped classroom

## **Influence of Political Leadership on the Advancement of Modern Road Infrastructure for Sustainable Development in Narok North Sub-County, Kenya**

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### **Abstract**

Investment in infrastructure is at an all-time high globally, thus an ever-increasing number of decisions are being made by legislators to foster patterns of development for future generations. Road Infrastructure development has become one of the pertinent concerns of the modern governments. Kenya has in the recent past been highlighted as one of the countries with decent and technologically-sophisticated road infrastructure in the continent. Despite this milestone, little is known about the place of political leadership in determining the development of road infrastructure in the country. Thus, in an effort to understand the development and sustainability of road infrastructure, this research paper sought to investigate the influence of political leadership on the development of road infrastructure in fostering sustainable development. Purposive sampling method was used to select the participants to the study. A sample of 48 public administrators poised at the forefront of implementing road infrastructure development projects and 96 mature citizens within the 48 administrative units in Narok North Sub-County participated in the study. Interviews were conducted with the public administrators and questionnaires administered to the citizens respectively. Thematic analysis as well as quantitative analysis were carried out to analyze the data. The findings of the study (71.74% of the respondents) revealed that political leadership is a key ingredient in road infrastructure development and any other development discourse and therefore citizens should choose leaders that will initiate and sustain development.

**Key Words:** Advancement, Political leadership, Public administrators, Road infrastructure, Sustainable development

## **Library Spaces and Facilities Status in Academic Libraries in Kenya**

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### **Abstract**

In the global sphere, debate on physical library spaces is increasingly gaining popularity. A key aspect in the debate is the shifting nature of the physical library spaces influenced by issues such as libraries moving from print to electronic resources and becoming more of learning centres as well as collaborative spaces. The change in pedagogy where learning activities are now inclined to collaboration and group projects that necessitate new physical library spaces that are in line with the new purposes in teaching and learning styles that better meet users' needs. Unfortunately, research on physical library spaces and facilities in Kenyan academic libraries is limited. It is on this strength that this paper reports on a study that sought to explore the status of physical library spaces in Kenyan academic libraries as well as library users' physical space preferences. The study achieved this by assessing the current status of library spaces in Kenya university libraries and exploring the library space preferences of the university library users in Kenya. The study was anchored on Henri Lefebvre's spatial theory 'The Production of Space'. The sample size was 1288 academic staff, 1467 students, 6 university librarians and 6 librarians focus groups drawn from 6 universities in Kenya (3 public and 3 private) in 2021/2022. Research was conducted using pragmatic research paradigm and a convergent mixed methods design and employed multiple case studies strategy. The qualitative data was thematically analysed while descriptive statistics was used in analyzing the quantitative data. The key findings show that academic libraries in Kenya have far and large similar library spaces as well as facilities that are blended between traditional and modern. Quiet study spaces, spaces to browse current print books and journals, and spaces to explore and use new technologies ranked as the most desired features in the library. Chi-Square tests revealed that adequate space availability in the university libraries is a significant predictor of general user satisfaction with library spaces. The study concludes that in spite the value attached to the existing library spaces, the library spaces are insufficient to support academic and research works. Based on the findings, the study recommends the need to provide different types of library spaces in order to cater for the different categories of library users. For instance, there are library users who prefer quiet study spaces while others prefer space for discussions.

**Keywords:** Academic libraries, physical library spaces, library users' preference, changing users' needs, Kenya

## **Inter-Ethnic Conflict Resolution Through Cultural Norms and Practices in Laisamis Sub-County, Marsabit County, Kenya**

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### **Abstract**

Ethnic communities violently compete for property, rights, jobs, education, language, social amenities and good health care facilities. These conflicts have caused loss of life and property, human displacement, cattle rustling and slow socio-economic growth. Indigenous conflict resolution strategies emphasize empathy, sharing, and cooperation in coping with common challenges, emphasizing the essence of humanity. This study sought to investigate how cultural factors enhance inter-ethnic conflict resolution in Laisamis Sub-county, Marsabit County in Kenya. Specifically, the study used mixed research design. The target population constituted 292 leaders of Laisamis Sub-county. A sample of 123 respondents was selected using both purposive and simple random sampling methods. The study used a questionnaire, key informant interview schedule and focus group discussions guide to collect data. Response from key informant interviews and focus group discussions were organized into themes and analyzed qualitatively. The findings were presented using frequencies and percentages. The results indicated that cultural factors do indeed enhance inter-ethnic conflict resolution in the study area.

**Key words:** Conflict Resolution, Inter-Ethnic, Cultural Norms and Practices

## **Influence of Entrepreneurship on Socio-Economic Empowerment in Registered Youth Groups in Kenya: A Case of Makadara Sub-County, Kenya**

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### **Abstract**

The Youth bulge has presented challenges both to nations and the youth themselves. As a result, countries have developed or updated national policies and programs to promote the socio-economic empowerment of youth. This study considers youth groups as social organizations that are created to help young people participate in development and cope with social and economic challenges. The main objective of this study was to determine the influence of Entrepreneurship on socio-economic empowerment in registered youth groups in Nairobi, Kenya with a key focus on Makadara Sub-County. The study was grounded on the Human Capability approach. The study adopted a descriptive survey design. The stratified sampling techniques were used and Slovin's formula was applied to obtain the required sample size. A structured questionnaire was used to collect data. The findings show a strong and positive relationship between entrepreneurship and socio-economic empowerment of youth in registered youth groups in Makadara sub-county, Nairobi County. The study showed that youth in registered youth groups in Makadara sub-county Nairobi County have embraced technology and used their social networks and social media to positively influence socio-economic empowerment. Youth groups are not only seen as a platform for meeting with friends but as a place for the opportunity to market products, explore new ideas, and combine resources to undertake development activities. The findings of this study are intended to inform decision-makers to streamline their interventions and act with confidence on the factors that will improve the activities and outcomes within youth groups as youth people continue to be at the center of community development.

**Keywords:** Youth, Socio-economic empowerment, Entrepreneurship, Youth Groups, Makadara sub-County, Nairobi County

## **Courses of Food Poison Among Catering Establishments**

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### **Abstract**

Food poisoning is a significant public health concern worldwide, with catering establishments often being implicated as sources of outbreaks. This project aims to investigate the courses of food poisoning in catering establishments, focusing on identifying the factors that contribute to the occurrence and transmission of foodborne illnesses. The study employs a comprehensive approach, integrating both qualitative and quantitative research methods. Primary data will be collected through interviews, surveys, and observations conducted in a diverse range of catering establishments. Additionally, secondary data from relevant literature and existing databases will be utilized to support the findings. The project seeks to identify the various sources of contamination, such as improper handling, storage, and preparation of food, as well as inadequate sanitation practices. It will also investigate the impact of factors such as training and education of food handlers, implementation of food safety regulations, and the role of monitoring and surveillance systems. The findings of this research will contribute to the development of targeted interventions and strategies to prevent food poisoning incidents in catering establishments. By gaining insights into the causes and courses of food poisoning, policymakers, regulatory bodies, and catering establishments themselves can implement effective measures to ensure food safety and protect public health. Ultimately, this project aims to raise awareness about the importance of food safety in catering establishments and provide evidence-based recommendations for improving food handling practices, enhancing training programs, and enforcing stricter regulations. By addressing the courses of food poisoning, this research has the potential to significantly reduce the occurrence of foodborne illnesses, safeguard consumer health, and enhance the overall quality of food services in the catering industry.

**Key words:** food poison, catering, public health

## **Realignment of Rural Spaces, Cultures and Regulations to Foster Sustainability**

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### **Abstract**

Rural spaces are relied upon as the producers of food, raw materials and many essential resources that are depended upon for sustenance. These spaces being characterized by tranquility and ecological richness act as the foundations of the conservation and ecological reforms that ground sustainability. However, the current state of these spaces exhibit worrying developments and alterations that are threatening sustainability. Socio-cultural practices catalyzed by population increase are reshaping the rural in ways that have led to the shrinking of agricultural lands, encroachment into forested hills and escarpments, disappearance of wetlands and depletion of riverine vegetation that has influenced river discharge, blockage and drying up of natural water springs. As population increases, the pressure is exerted on available land resource, land fragmentation aided by the current state of land tenure and inheritance laws, the farm sizes continue to shrink calling for the need for measures to foster land reforms and rural planning. Given that the land resource on earth is not expanding as these happens, the entire human existence is under threat, that food production is going down and as the natural environment gets depleted. This study examines the need for rural spaces to be planned and its consumption, development and exploitation be regulated by reforms that will govern sustainable land subdivision as per household sizes. The study also aims to illuminate the gaps existing in the implementation of laws regarding environmental conservation of riverine vegetation and other ecological features in the rural spaces.

**Keywords:** Rural spaces, sustainability, socio-cultural practices, reforms



## **Factors affecting customer retention in the Hospitality Sector in Narok County, Kenya**

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### **Abstract:**

This comprehensive project aimed to investigate the factors influencing customer retention in the hotel industry, specifically focusing on Narok hotels. CRM is recognized as a strategic process for managing customer relations, increasing customer value, and ensuring customer satisfaction. The importance of CRM in the hotel industry is emphasized due to its potential to enhance profitability, guest loyalty, and competitiveness. Customer satisfaction and retention are crucial for hotels to succeed in a highly competitive market. The study emphasizes that hotels must prioritize fulfilling customer needs and implementing effective CRM strategies to improve personalized customer experiences, attract new customers, increase profits, and reduce customer maintenance costs. The role of CRM as a source of competitive advantage and a means to sustain long-term relationships with customers is emphasized. The challenges faced in achieving customer retention, including variety seeking behavior, increasing competition, high customer turnover, and the failure rate of CRM initiatives affect this sector greatly. Despite the growing amount of literature on customer retention factors, there is still a need for further research, particularly in the hotel industry. The research objectives focus on identifying strategies for customer retention, understanding how hotels measure success in customer retention, and determining reasons for customer loyalty. The corresponding research questions delve into these areas. The study suggests the importance of creating a strong onboarding experience, personalizing customer experiences, building trust, implementing customer feedback loops, and offering unique services to ensure customer retention. However, the study also acknowledges limitations, including the focus on Narok hotels as the research setting, the constraints of time, and the potential for unpredictable cooperation from the target population.

**Key words:** hospitality, customer retention strategies, hotels

## **I am Here To Remind You**

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### **Abstract**

In the thought-provoking poem titled "I Am Here to Remind You," the poet delivers a passionate plea to humanity, emphasizing the critical importance of caring for Mother Earth. Through a series of vivid and evocative verses, the poem presents fifteen alarming scenarios that highlight the dire consequences of neglecting our environment. From the addiction of charcoal burning that leads to the depletion of trees and the wrath of the ozone layer resulting in extreme temperatures, to the deforestation of crucial forest ecosystems causing drought and the urgent need for individuals like Wangari Maathai to champion tree planting, each verse serves as a stark warning. The poem further emphasizes the need for selflessness and dedication, calling for individuals to embody the spirit of Mother Teresa and give their all for the preservation of the planet. It urges a return to sustainable farming methods and warns of the detrimental effects of urbanization on the environment and the potential degradation of tap water quality. The somber prediction of respiratory diseases finding a home within our lungs due to environmental degradation and the tragic loss of iconic wildlife species due to rampant poaching serve as haunting reminders. Ultimately, the poem concludes with a chilling revelation: if we continue on this destructive path, both Mother Earth and humanity itself will face a lifeless existence. Through its poignant verses, "I Am Here to Remind You" urges us to recognize our responsibility and take immediate action to safeguard our planet for future generations.

**Key words:** poem, earth, nature, forest ecosystems

## **Political Propaganda and The Politics of Pokot Community, Kenya**

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### **Abstract**

The Indigenous Pokot Community has had its way of choosing leaders since time immemorial and in the modern democracy; the community still employs some of her indigenous approaches in the contemporary politics. In both the indigenous and modern politics, propaganda has had its share in determining who becomes leader in various levels. The objective of the paper was to analyze the influence of political propaganda on the politics of the Pokot Community. The paper employed qualitative research design using interviews to collect data from various respondents from West Pokot and Baringo Counties. Simple random sampling was used targeting population of 300 and sample size of 100 respondents. From the content analysis on qualitative data, the following categories of propaganda were found to have huge influence on determining community political leadership; name calling, composition of songs, attachment to communal cultures and practices, ancestral origin and clanism, family history, history of individual success and failures, gender, literacy, wealth and riches, individual behaviours, body physique, language among others. It was noted that well use of propaganda techniques has positive and negative effects on electing political leaders among the Pokots.

**Key words:** propaganda, community, political culture, gender, political behaviours

## **Influence of Political Leadership on the Advancement of Modern Road Infrastructure for Sustainable Development in Narok North Sub-County, Kenya**

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### **Abstract**

Investment in infrastructure is at an all-time high globally, thus an ever-increasing number of decisions are being made by legislators to foster patterns of development for future generations. Road Infrastructure development has become one of the pertinent concerns of the modern governments. Kenya has in the recent past been highlighted as one of the countries with decent and technologically-sophisticated road infrastructure in the continent. Despite this milestone, little is known about the place of political leadership in determining the development of road infrastructure in the country. Thus, in an effort to understand the development and sustainability of road infrastructure, this research paper sought to investigate the influence of political leadership on the development of road infrastructure in fostering sustainable development. Purposive sampling method was used to select the participants to the study. A sample of 48 public administrators poised at the forefront of implementing road infrastructure development projects and 96 mature citizens within the 48 administrative units in Narok north Sub- County participated in the study. Interviews were conducted with the public administrators and questionnaires administered to the citizens respectively. Thematic analysis as well as quantitative analysis were carried out to analyze the data. The findings of the study revealed that political leadership is a key ingredient in road infrastructure development and any other development discourse and therefore citizens should choose leaders that will initiate and sustain development.

**Key Words:** Advancement, Political leadership, Public administrators, Road infrastructure, Sustainable development

## **Growth Effects of Urban-Rural and Intra-Regional Linkages on Non-Metropolitan Counties and Communities**

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### **Abstract**

This research project investigates the growth effects of urban-rural and intra-regional linkages on non-metropolitan counties and communities. With the increasing urbanization and regional integration observed globally, understanding the impact of these linkages on non-metropolitan areas becomes crucial for effective policy formulation and sustainable development. The study employs a multidisciplinary approach, drawing on concepts from economics, geography, and sociology to analyze the various dimensions of urban-rural and intra-regional linkages. It examines how these connections influence economic growth, social well-being, and overall development in non-metropolitan counties and communities. To conduct this research, a mixed-methods approach is adopted, combining quantitative analysis and qualitative case studies. The quantitative analysis involves collecting and analyzing relevant data on economic indicators, such as GDP, employment, and income distribution, as well as social indicators, including education, healthcare, and quality of life measures. This analysis will enable the identification of patterns, trends, and correlations between urban-rural and intra-regional linkages and development outcomes. In addition to the quantitative analysis, the study incorporates qualitative case studies to gain a deeper understanding of the mechanisms through which these linkages operate. These case studies will explore specific non-metropolitan counties and communities, examining the dynamics of their urban-rural and intra-regional relationships, the challenges faced, and the strategies employed to leverage these linkages for growth and development. The research project aims to generate valuable insights into the growth effects of urban-rural and intra-regional linkages on non-metropolitan areas. The findings will contribute to the academic literature in the fields of economics, geography, and sociology, shedding light on the complexities and nuances of regional development processes. Moreover, policymakers and local stakeholders will benefit from the research findings, as they will inform evidence-based decision-making and the design of targeted policies to promote inclusive and sustainable growth in non-metropolitan counties and communities. Overall, this research project addresses a significant gap in the current literature by providing a comprehensive analysis of the growth effects of urban-rural and intra-regional linkages on non-metropolitan areas. By combining quantitative analysis with qualitative case studies, the study offers a holistic understanding of the mechanisms underlying these linkages and their impact on economic and social development. The insights generated from this research will support policymakers in formulating effective strategies to harness the potential of urban-rural and intra-regional connections, fostering balanced and inclusive growth in non-metropolitan counties and communities.

**Key words:** urban-rural linkages, intra-rural linkages, urban growth

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#### **Undergraduate Degree Programmes**

- Bachelor of Arts in Community Development
- Bachelor of Arts in Political Science and Public Administration
- Bachelor of Arts in Criminology and Penology
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#### **Diploma Programmes**

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#### **Diploma Programmes**

- Diploma in Business Management
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- Bachelor of Tourism Management
- Bachelor of Science in Parks, Recreation and Leisure Management
- Bachelor of Hotel and Hospitality Management
- Bachelor of Environmental Management

#### **Diploma Programmes**

- Diploma in Wildlife & Tourism Management.
- Diploma in Hotels & Hospitality Management
- Diploma in Animal Health and Production

#### **Certificate Programmes**

- Certificate in Wildlife & Tourism Management

## MINIMUM ENTRY REQUIREMENTS

- **PhD programmes:**  
*A Masters degree in the relevant field from a recognized University.*
- **Masters programmes:**  
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- **Undergraduate programmes:**  
*Mean Grade of C+ in KCSE*  
*or*  
*a C/C- with a relevant Diploma*
- **Diploma programmes:**  
*KCSE Mean Grade of C/C- and above*  
*or*  
*a Mean Grade of D+ with a Certificate from a recognized institution.*
- **Diploma in Education (Secondary Option):**  
*KCSE Mean Grade of C+ and a C+ in two teaching subjects.*
- **Diploma in Education (Primary Option):**  
*Mean Grade of C+*  
*or a Mean Grade of C (plain) with a P1 certificate.*
- **Certificate programmes:**  
*KCSE Mean Grade of D+ and above.*

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## CONTACTS

For more information, please contact us through the addresses indicated below. You can also log on to our website [www.mmarau.ac.ke](http://www.mmarau.ac.ke)







**Maasai Mara**  
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eng'eno e puun

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