



MACHAKOS UNIVERSITY

2ND ANNUAL INTERNATIONAL CONFERENCE

DATES:

24TH - 26TH APRIL 2019

BOOK OF ABSTRACTS

THEME:

*Supporting Green Growth and Knowledge Economy
through Research Innovation and Technology
for Sustainable Development*

Supported by:



National
Bank



Soaring Heights in Transforming Industry and Economy

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MACHAKOS UNIVERSITY PRESS

FUNDAMENTAL STATEMENTS

Our Vision

A preferred University of Excellence in Scholarship and Service Delivery

Our Mission

Provide scholarly education through Training, Research and Innovation for Industrial and socio-economic transformation of our communities.

Our Identity

Machakos University is an academic institution committed in transmitting knowledge, skills and attitude through science, Technology and Innovation for the benefit of humanity.

Our Philosophy

The Philosophy of Machakos University is to provide transformative leadership in Teaching, Training, Research, Innovation, Industrial and Technology transfer for wealth creation.

Core Values

Integrity
Accountability
Professionalism
Inclusivity
Creativity
Teamwork
Equity



MACHAKOS UNIVERSITY

2ND ANNUAL INTERNATIONAL CONFERENCE

DATE:

24TH ~26TH APRIL 2019

VENUE:

MACHAKOS UNIVERSITY HOTEL AND CONFERENCE CENTRE

THEME:

Supporting Green Growth and Knowledge Economy through Research,
Innovation and Technology for Sustainable Development

Edited By:

Dr. Wycliffe Amukowa

Dr. Elijah Muange

Dr. David Wekesa

CONFERENCE COMMITTEE MEMBERS

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Dr. Mark Kimathi

Dr. Elijah Muange

Dr. George Waswa

Mr. Paul Mutua Kombo

MESSAGE FROM THE VICE-CHANCELLOR



It is with great pleasure that I welcome you to Machakos University and to her 2nd Annual International Conference on the theme of “Supporting Green Growth and Knowledge Economy through Research, Innovation and Technology for Sustainable development”.

This conference purposes to take an in-depth reflection on global, regional and national interests, as espoused by Sustainable Development Goals adopted by the United Nations, Africa Union 2063 Agenda, Vision 2030 and the Kenya Government’s Big Four Agenda.

As we may be aware, conferences provide moments to network, build collaborative synergies, linkages, and partnerships that shall continue on, beyond the three days that we shall be gathered here. I would like to take this opportune moment to encourage you to share your experiences and opportunities with your fellow participants. In welcoming you to Machakos University, I wish to share with you that since its inception as a Technical School in 1957, the university has made a niche in Engineering and

Technology especially in Mechanical Engineering, Electrical & Eletronics Engineering Civil Engineering and Hospitality. The researchers and scholars participating from various universities, industry and other organizations’ in sharing their knowledge, shall propel not just this university but Kenya, Africa and the entire globe in general.

Finally, I wish to thank our Chief Guests, Keynote Speakers, Guests Speakers and all the participants, for finding time to be with us during this important occasion. I welcome you all to interact freely not just amongst yourselves but also with the University community.

Thank you and God bless you.

Prof. Lucy W. Irungu, PhD
VICE-CHANCELLOR & PROFESSOR OF ENTOMOLOGY
MACHAKOS UNIVERSITY



MESSAGE FROM THE CHAIRMAN, CONFERENCE COMMITTEE

After successfully hosting the 1st International Conference in April 2018, we have organized this 2nd International Conference with great enthusiasm pivoted on the lessons learnt earlier. I am therefore filled with joy to welcome you to this conference, under the theme: Supporting Green Growth and Knowledge Economy through Research, Innovation and Technology for Sustainable Development. This theme underscores Machakos University's inherent efforts to the realization of Sustainable Development while being conscious of the environmental implications. The University further underscores the fact that development occurs in an environment, both physical and socio-economic, facets that are captured in the following sub-themes of this Conference

1. Agriculture, Food and Nutrition Security
2. Health care, Leisure and Tourism Innovation
3. Language, Culture, Social Equity and Governance
4. Built Environment and Infrastructure Development, Industrialization:
Emerging Technologies, Manufacturing & Agro- processing
5. Energy, water, climate Change and Environmental Sustainability
6. Mathematics, Statistics & Data Science, Basic and Applied Sciences
7. Issues in Education and Training
8. Business, Entrepreneurial Innovation, SMEs & Marketing

Preparation of the conference started in August 2018 and the first call went out in October 2018, while final call closed on 15th March, 2019. I wish to thank participants for submitting quality abstracts from which a total of 206 from 10 countries were reviewed and accepted. I take pleasure to welcome all of you to Machakos University and appreciate you for choosing to share your scientific and academic work and experiences in this Conference. As it has become our tradition, one of our post-conference activities will be to peer-review all submitted papers and have them published. The papers that were presented during the 1st conference appeared in the proceedings and the ones that we further peer-reviewed and accepted appeared in the Machakos University Journal of Science and Technology.

On behalf of the conference committee, I wish to acknowledge and appreciate support received from Machakos University, National Research Fund, Athena at Two Rivers, Konza Technopolis Development Authority, National Bank of Kenya, Kenya Commercial Bank, Equity Bank, Coca-Cola and Sidiya Bank. Your support made this 2nd Conference possible. May I further appreciate fellow Conference Committee members that I chair, upon whose collective effort, the Conference has come forth.

Finally, I wish you all fecund deliberations and networking throughout Conference period.

Thank you.

Prof. Peter N. Mwita, PhD
DEPUTY VICE-CHANCELLOR (RESEARCH, INNOVATION AND LINKAGES) &
CHAIRMAN, CONFERENCE COMMITTEE

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Ms. Aileen Nyatuga
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Finance Officer

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CHIEF GUEST~OFFICIAL OPENING



HON. MR. KERIAKO TOBIKO

(Cabinet Secretary for the Ministry of Environment and Forestry.)

Before his appointment, Tobiko was the Director of Public Prosecutions, the first holder of the office under the Constitution of Kenya 2010 having been first appointed in 2005. He was re-designated as the Chief Public Prosecutor in August 2010 and appointed to head the independent constitutional office in June 2011. He is an advocate of the High Court of Kenya and formerly a lecturer at the University of Nairobi. Hon. Tobiko is an alumnus of the University of Nairobi and Cambridge University. He is the winner of GadhiSmarak Award for Best “A” Level student 1984 (Kenya), Barclays Cambridge Commonwealth Scholarship, 1990 for Kenya and Pegasus Cambridge Scholarship, 1990 as well as Fellow of Cambridge Commonwealth Society (FCCS).

He has served in other national institutions namely: The Commission of Inquiry into the Land Law Systems in Kenya (The Njonjo Land Commission, between 1999 – 2002) where he was a Commissioner; The Constitution of Kenya Review Commission (CKRC, between 2000-2005) where he was a commissioner; Appointed as Director of Public Prosecutions in 2005; Member of the Commonwealth Group of contact persons on International Cooperation in criminal matters from 2007 to date; From 2007 to-date, member of the Governing Council of the National Crime Research Centre (NCRC); Member of the Advisory Board of the Witness Protection Agency (WPA) from 2008 to date; Ad hoc Secretary to the Constitutional Advisory Committee on Prerogatory of Mercy in 2009; Served as Alternate to Hon. Attorney-General as member of the Ransely Task Force on Police Reforms in 2008-09; Re-designated as Chief Public Prosecutor in August 2010; Alternate to Hon. Attorney General as a Member of The Police Reforms Implementation Committee (PRIC) from 2010 to date; Appointed by the Hon. Attorney-General as the National contact person in relation to cooperation with ICC from March 2010 to-date; Appointed to team up with Hon. Attorney-General and Solicitor-General to represent GOK in the proceedings before the ICC in relation to the 2007/08 Post Election Violence in Kenya from March 2011.

CHIEF GUEST~OFFICIAL CLOSING



PROF. CHACHA NYAIGOTTI-CHACHA

(Chairman, Commission for University Education)

Professor Chacha Nyaigotti-Chacha is a Kenyan playwright and consummate Swahili language educationalist. He has served as an executive secretary of the Inter-University Council for East Africa (2000–2010), and was the first CEO of the Kenyan Higher Education Loans Board (1995–2000). He is currently serving as the Chairman of the Kenyan Commission for University Education (CUE) and he has been the chairman of Kenya Institute of Mass Communication (KIMC).

He was educated at Kenyatta College, receiving a BEd (Swahili Language), and later studied at Yale University, gaining an MA in Anthropological Linguistics and a Ph.D. in Swahili Language Linguistics. He has been a Tutorial Fellow and Lecturer in Swahili Language and Linguistics at Kenyatta University and later Egerton University in Kenya. He was a Research Professor at the Institute of Regional Integration and Development of the Catholic University of East Africa.

In 1994 Awarded Head of State Commendation (HSC) Medal (Kenya) for Distinguished Service and 2004 he was Awarded the Order of the Grand Warrior (OGW) Medal (Kenya).

KEYNOTE SPEAKERS



HON. JEROME OCHIENG

Principal Secretary, ICT & Innovation

Mr. Jerome Ochieng is Principal Secretary for ICT and Innovation. Until his appointment, Mr. Ochieng was the Director of the Integrated Financial Management Information System (IFMIS) at the National Treasury and a member, Board of Directors at the Information, Communication Authority. He has 17 years' work experience in the field of information and communication technology in the Public Service. Mr. Ochieng has also served as ICT Manager with Public Procurement Oversight Authority for 6 years. He holds a Masters' Degree in Information Engineering from the University of the Ryukyus, Okinawa, Japan. He is a registered fellow of the Computer Society of Kenya and a Licentiate Member of the Institute of Management Information Systems (IMIS), UK.



PROF. GILIAN WESTHORP

Charles Darwin University-Australia

Prof. Gill is a realist research and evaluation methodologist and a Professorial Research Fellow at Charles Darwin University, where she leads the Realist Research Evaluation and Learning Initiative (RREALI). She also runs a private consultancy business specialising in realist research and evaluation. She is co-author of the international publication standards and quality standards for realist evaluation and realist literature review. Prof. Gill has provided in excess of 70 training workshops in 14 countries, developed several new methods for realist research and evaluation, and published in realist methodologies. In 2018 she was made a Fellow of the Australian Evaluation Society. She is currently working on two aspects of realist philosophy – epistemology (knowledge) and axiology (value) – and their implications for evaluation methods.



PROF. FABIO SANTONI

Sapienza University of Rome

Prof. Fabio Santoni received the Dr. Eng. degree in Aeronautical Engineering (cumlaude) and the PhD in Aerospace Engineering both at Università di Roma "La Sapienza", in 1992 and 1996. In 1996 he was visiting scholar at Stanford University, where he participated in the small satellite programs Sapphire and Opal. He had technical management responsibility in the education program UNISAT at University of Rome "La Sapienza", till 2009. He is presently Associate Professor in Aerospace Systems at the Dipartimento di Ingegneria Astronautica, Elettrotecnica ed Energetica (DIAEE) of University of Rome "La Sapienza", where he established the Aerospace Systems Laboratory. His research activity is mainly devoted to nanospacecraft design, attitude determination and control, space debris observation, mitigation and remediation techniques, including end-of-life disposal and active debris removal.

GUEST SPEAKERS



PROF. WILLIAM FAUSTINE EPEJU

William Epeju is a Professor of Agricultural Education and Extension at Kyambogo University, Uganda with diverse interest and experience in Agricultural Education. He holds a PhD in Agricultural Education (Extension) and has been the Dean of the Faculty of Vocational Studies which houses and administers the Department of Agriculture at Kyambogo University. He has been a member of several professional committees and bodies including Uganda Society and Association of Third World Studies, Kenya Chapter. His major area of interest is improving agricultural productivity through improved education and training of the farmers.

He has special interest in poverty reduction and eradication on smallholdings through improved productivity to assure food security and better incomes. He is active in matters of tree planting and participated in national environmental action plan process (NEAP) in Uganda during the 1990s. He is the Guest Speaker for Sub-Theme 1: Agriculture, Food and Nutrition Security.



PROF. ELIJAH GITONGA RINTAUGU

Professor Elijah G. Rintaugu is a Professor at Kenyatta University in the Department of Recreation and Sport Management. He holds Doctor of Philosophy (Socio-Psychology of Sport) from Kenyatta University. Elijah is a member of several professional bodies such as International Council for Health, Physical Education, Recreation Sport and Dance (ICHPER-SD) Africa Association for Health, Physical Education, Recreation, Sport and Dance (AAHPERD) and Kenya Association of Health, Physical Education Recreation Sport and Dance. He serves as a reviewer for many international journals and has sat in a number of Committees in the University. He is

the Guest Speaker for Sub-Theme 2: Health care, Leisure and Tourism Innovation.



PROF. MARTIN NJOROGE

Prof. Martin C. Njoroge is a Professor of Languages & Linguistics, holds PhD in Linguistics (KU). Prof. Njoroge is an accomplished scholar and researcher and has conducted extensive research on Multilingual Education, English language teaching and sociolinguistics. He is co-editor of Multilingualism and Education in Africa: The State of the State of the Art, and Springer's Multilingual Education in Africa journal. He is also a peer reviewer for the Commission for University Education. He is the Guest speaker for Sub-theme 3: Language, Culture, Social Equity and Governance.



PROF. MUGENDI K M'RITHAA

Professor Mugendi K. M'Rithaa is a transdisciplinary industrial designer, educator and researcher. He studied in Kenya, the USA, India and South Africa and holds postgraduate qualifications in Industrial Design, Higher Education, and Universal Design. He has taught in Kenya, Botswana, South Africa and Sweden and is passionate about various expressions of socially conscious design, including Designerly Strategies for Mitigating Climate Change; Design for Social Innovation and Sustainability; Distributed Renewable Energy; Indigenous Knowledge Systems; Participatory Design; and Inclusive/Universal Design. He is a founding member of the Network

of Afrika Designers (NAD), a member of the Association of Designers of India (ADI). He is the Guest Speaker for Sub-theme 4: Built Environment, Infrastructure Development Industrialization: Emerging Technologies, Manufacturing & Agro-processing.



PROF. BERNARD KIPSANG ROP

Kipsang is a Professor of Petroleum Geology and formerly, Chairman Mining, Materials & Petroleum Engineering Department, Jomo Kenyatta University of Agriculture Technology, Kenya. He holds a Ph.D. in Petroleum Geology, from University of Pune, India. He has attended and facilitated various local and international symposia/workshops among them; The East Africa Petroleum Conference and Exhibition (EAPC'15), Kigali, Rwanda, Governing Council Meeting at the Southern Eastern African Mining Center, Dar ES Salaam,

Tanzania, Governing Council meeting at the Southern Eastern African Mining Center, in Luanda, and United Nations Commission on Sustainable Mining Extractive Developments, Geneva, Switzerland, UN HQs. Mineral Extractive Industry Development. He is the Guest Speaker for Sub-theme 5: **Energy, water, climate Change and Environmental Sustainability.**



PROF. ANNE W.T. MUIGAI

Prof Anne Muigai is a molecular population geneticist with over 15 years' experience in the field of Genetics and Biotechnology. She is a Professor of Genetics at JKUAT and a member of the Animal Genetic Taxonomy Advisory Group (AnGR-TAG) of the African Union. She is also a Commissioner with the Commission for University Education and a Director with the Kenya Plant Health Inspectorate Service (KEPHIS), a state corporation within the Ministry of Agriculture that regulates the agricultural sector. She was recently appointed

to become a member of the World Health Organization international advisory committee on the future of human gene editing. She is the Guest Speaker for Sub-theme 6: **Mathematics, Statistics & Data Science, Basic and Applied Sciences.**



PROF. KISILU KOMBO

Professor Kombo holds a PhD in Sociology of Education, and currently the Acting Dean, School of Education, Kenyatta University. Some of the significant researches he has done include the Impact of Nairobi-Thika Super Highway on Ruiru Town in Kenya and Cactus Pilot Project on Health Promotion in Selected Primary Schools in Nairobi, Kenya. His areas of interest include Education, Research and Community Development. He is the Guest Speaker for Sub-theme 7: **Issues in Education and Training.**



PROF. SIMMY MARWA

Simmy is a Professor and practitioner of Strategic Quality Management and has well over 20 years' academic practice in Higher Education Institutions (HEIs) and international experience in consultancy (both public and private sector) in UK, Middle East and Africa. He is also a Certified Manager in Six Sigma Green and Black Belt, Process Excellence and Project Management as well as a Fellow of the Higher Education Academy (UK). Simmy has acquired considerable experience working with the public and private

entities in diverse sectors and specialisms and is passionate about quality deliverables in every project. He is the Guest Speaker for Sub-theme 8: **Business, Entrepreneurial Innovation, SMES & Marketing.**

OFFICIAL OPENING AND KEYNOTE ADDRESSES

TIME	DAY 1: WEDNESDAY 24 TH APRIL 2019	RESPONSIBLE
8:00-9.00	Arrival and Registration and Brief Entertainment	Secretariat
9.00-10.30	OFFICIAL OPENING OF THE CONFERENCE VENUE: KILIMAMBOGO HALL	
	Welcoming Remarks, Prof. Peter Mwita (DVC-Research, Innovation and Linkages, Machakos University)	Registrar (RIL)
	Opening Address, Prof. Lucy Irungu (Vice-Chancellor, Machakos University)	Prof. Peter Mwita Deputy Vice-Chancellor (RIL)
	Opening Address; Prof. Gideon Hanjari (Chairman, Machakos University Council)	Prof. Lucy Irungu Vice-Chancellor, Machakos University
	SPEECH AND OFFICIAL OPENING OF THE CONFERENCE BY THE CHIEF GUEST: HON. MR. KERIAKO TOBIKO, CABINET SECRETARY, MINISTRY OF ENVIRONMENT AND FORESTRY	Prof. Gideon Hanjari (Chairman, Machakos University Council)
10.30-11.00	PHOTO SESSION AND HEALTH BREAK	Registrar (RIL)
11.00-11.30	Hon. Mr. Jerome Ochieng (Principal Secretary for ICT & Innovation) ICT and Innovation Synergies for Supporting Green Growth and Sustainable Development	Prof. Peter Mwita, DVC-RIL, MKsU
11.30-12.00	Prof. Gillian Westhorp (Professorial Research Fellow, Charles Darwin University) A Realist Approach to understanding Green Growth and Sustainable Development in Low- and Medium-Income Countries.	Prof. Joyce Agalo, DVC-ASA, MKsU
12.00-12.30	Prof. Fabio Santoni (Sapienza University of Rome) Kenya's First Satellite	Prof. Douglas Shitanda DVC-APF, MKsU
12.30-1.00	Plenary (Key Note Speakers)	Prof. Fredrick Ogola
1.00-2.00	LUNCH BREAK	

SUB-THEME 1: AGRICULTURE, FOOD AND NUTRITION SECURITY

DAY 1: WEDNESDAY 24 TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: VOI HALL		
TIME	PRESENTER	RESPONSIBLE
2.00-2.20	Shirandula Duncan: Food wastage in Hotels in Kenya: Interventions for Realization of Food Security	Dr Jacob, J.J.Konyango
2.20-2.40	Kyule, N. Miriam, Konyango J.J O. Jacob: The place for Dry Land Agriculture in Kenya’s Secondary School Agriculture Curriculum	
2.40-3.00	Serah W. K Muchai, Ngetich, K. Felix, Mary Baaru and Monicah W.M. Muna: Evaluation of sorghum production under zai [pit system in semi-arid areas of Kenya	
3.00-3.20	Javan O. Owiti, Jacob J.J. OchiengKonyango, James J. Obara, Mark N. Mutinda: Extension Environment Characteristics Influencing the Use of Video Mediated Technology in Teaching Agricultural Knowledge and Skills to Farmers in Homa-Bay County, Kenya	
3.20-3.40	Mary Wambura Kamau: Evaluation of Effects of Sewage Farming Vegetables to Consumers and Their Awareness in Peri-Urban Areas: A Case Study of Ruai, Nairobi County	
DAY 2: THURSDAY, 25 TH APRIL 2019 CONFERENCE PRESENTATION SESSIONS. VENUE: VOI HALL		
GUEST SPEAKER: PROF. FUASTINE WILLIAM EPEJU		
TIME	PRESENTER	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-9.20	Guest Speaker Address and Plenary	Prof. Benjamin Onyango (Missouri State University)

9.20-9.40	Samuel Namu, Hannah Karuri, Editah Njeri: Evaluating the efficiency of high-resolution melting curve analysis in diversity analysis of Meloidogyne species in rice fields	
9.40-10.00	Paul Mwari Maina: Integrating Information and Communication Technology (ICT) in the Farming System for livelihood improvement, “a case of Kieni East constituency, Nyeri County, Kenya”	
10.00-10.20	Nderitu Wangari Peris, Otieno Mark, Arunga Esther, Geoffrey O. Wafula, John Jamleck Muturi, Mattias Jonsson: Tomato leaf miner (TUTAABSOLUTA) incidence and severity in Kirinyaga County, Kenya	
10.20-10.40	Pauline N. Mutura and Lilac Osanjo: Improving Food Security through Adoption of Bio-based Practices in Rural Kenya	
10.40-11.00	David Agole, William Faustine Epeju: Determinants of Participation of Young Farmers without Disability in Capacity-building Programs Designed for the Public in Uganda	
11.00~11.30	HEALTH BREAK	
11.30-11.50	Angelica M. Kimwele, Sophie A. Ochola, Mary N. Mugambi: Implication of School feeding programs, national food policies, action of plan and strategies on school meals and food security among school children in Kenya (Review)	Dr. Marther Ngigi
11.50-12.10	Seraphine Sherry Aholi, Jacob J.J. Ochieng Konyango: Influence of Secondary School Students Attitude Towards Agriculture on Employment Creation in Vihiga County, Kenya	
12.10-12.30	Daniel Kitonga, Robert Arasa, Damaris K. Muthusi: Hands on Strategy’ on Food Security: A Freirean pedagogical approach with the pastoralist communities in Kenya	
12.30-12.50	John Kiratu, George Gachumi: In Agricultural Products Processing Application of Supercritical Carbon Dioxide	
12.50~2.00	LUNCH BREAK	
2.00-2.20	Zachary Getenga, Anastasiah Ngige, Selly Kimosop, Gershom Mutua, Francis Orata, Isaac Kowino, Hassan Were, Daniel Onunga, Bonface Mbithi: Enhancement of Degradation of Persistent Agricultural Chemicals in Soils: Strategy for Decontamination of Polluted Environments	Dr. Elijah Mwuange

2.20-2.40	Tindih H.S, Geysen D, Goddeeris B.M, Awino E, Naessens. J: Differential induction of host innate responses after infection of cattle with two <i>Theileria parva</i> isolates of different virulence	
2.40-3.00	Alice Kosgei Leah Mutanu, Margaret Wachu Gichuhi and David Steven Scott: Effective methods for data collection in rural setup: A pilot study focusing on Agricultural practices in Kinangop, Nyandarua County, Kenya	
3.00-3.20	Alhaji ModuBakar, Mohammed Zanna Malilima: Pathogenicity and Control of Root Knot Nematode (<i>Meloidogyne incognita</i>) on Cowpea.	
3.20-3.40	Onyango S, Muchina S.W, Ng'ang'a S.I: Small Holder Tea Industry Sustainability: Environmental Accounting and Reporting as A Strategy to Cushion on Environmental Concerns	
3.40-4.00	Daniel Oduor Onyango: Human and Physical Variables in the Adoption of Cash Crop Farming in Gem Sub County, Siaya County, Kenya	
DAY 3: FRIDAY, 26TH APRIL 2019 CONFERENCE PRESENTATION SESSIONS. VENUE: VOI HALL		
8.30-8.50	Muhia. S, Ilatsia. D & Achieng .C: Effects of Anthropogenic Activities on the Water Quality of Malewa River for Animal Consumption: ~ A Case Study of Kenya Agricultural and Livestock Research Organization (KALRO)-Naivasha	Dr. Alice Kosgei
8.50-9.10	Wambu Charles: Women Technological Empowerment in Agriculture: Issues, Challenges and Policy Option: A Case of Rural Women Farmers Groups in Njoro Sub-County Kenya	
9.10-9.30	Benjamin Onyango: Predictors of the Purchase of Organic Foods in the United States: A Study of Attitudes and Practice in Emerging Food Markets	
9.30-9.50	Philip Mwangi Gichuki: Effects of Exotic Trees on Mycorrhizal Association and Bio-Geochemical Processes of the Adjacent Native Pastures	
9.50-10.05	Wambua B., Muli E., Kanui T., and Muli B: Large Hive Beetle: A potential new pest of honeybee in Kenya.	
10.05-10.20	Eunice Kabura: Constraints and Opportunities for Youths Engaged in Agricultural Value Chain in Limuru Sub-County in Kiambu County	

SUB-THEME 2: HEALTH CARE, LEISURE AND TOURISM INNOVATION

TIME	DAY 1: WEDNESDAY 24 TH APRIL 2019	RESPONSIBLE
2.00-3.00	GUEST SPEAKER: PROF. ELIJAH GITONGA RINTAUGU	Dr. Esther Nduku
3.00-3.20	Plenary	
3.20-3.40	Lucy Rotich: Effect of Consistency Culture on Performance of Selected 5-Star Chain Affiliated Hotels in Kenya	
3.40-4.00	Mwawaza M. S, Shirandula, D: A review of literature on local community participation towards sustainable tourism development in East Africa	
DAY 2: THURSDAY, 25TH APRIL 2019 CONFERENCE PRESENTATION SESSIONS VENUE: ROOM 11		
TIME	PRESENTER	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-9.20	Guest Speaker and Plenary	
9.00-9.20	Alice M. Nzioka: Tourism product Innovation: Positioning Meetings, Incentives, Conferences and Exhibitions, as a strategy for product diversification in Beach Hotels of Mombasa County, Kenya	Mr. Duncan Shirandula
9:20-9:40	Linnet Hamasi, Faith Wambua: Tourism Potential in Elgeyo-Marakwet County and Prospects for Development	
9:40-10:00	Linnet Hamasi: Community Reproductive Sexual Health Scouts and Monitors Among the Pastoralist Communities of Northern Kenya and Implications for Development	
10:00-10:20	Akunja L. Aluoch: Institutional Frameworks for Sustainable Events Management: A Kenyan Perspective	
10:20-10:40	Nelima Barasa: Design Aspects for Smart Maternity Wear: A Strategy for growing the Maternity Wear Market in Kenya	
10:40-11:00	Khisa Kevin Nandasaba: Improving Health Care Delivery by Community Health Workers Through Mobile Phones	
11:00-11:30	HEALTH BREAK	

11:30-11.50	Charles Ndambuki: Mathematical Modelling of Cholera Transmission Dynamics for Aquatic Reservoir with Control Strategy	Dr. Alice Nzioka
11.50-12.10	Michael Bennett Sepula and Jacqueline Korir: Harmonisation of Hotel Rating Systems in Southern Africa: Benefits and Challenges for the Hospitality Industry in Malawi	
12.10-12.30	Mutai, C & Bii, C: Antimicrobial activity of Maytenusheterophylla extracts.	
12.30-12.50	Rose Achieng' Agalo: Significance of Social Media in the Kenya Tourism Industry	
12.50-2.00	LUNCHBREAK	
2.00-2.20	Bett, C.J., Waweru, B.R.: Adoption of Green Practices within the Hospitality and Tourism Sector for Sustainable Development: A Case Study of Selected Hospitality and Tourism Industries in Machakos County, Kenya	Dr. Charles Ndambuki
2.20-2.40	Isa Yetunde Opeyemi, Onuoha Stanley Chukwudozie, Oladele Olasoji Vincent: Drug Resistances Detection in Mycobacterium Tuberculosis Patient in Jos, Plateau state Nigeria	
2.40-3.00	Susan Chepchirchir Boit: Community Perception of Tourism Development; A case study of Rimoi National Reserve, Elgeyo-MarakwetCounty, Kenya	
3.00-4.00	Group Plenary	
4.00-4.20	HEALTH BREAK	

SUB-THEME 3: LANGUAGE, CULTURE, SOCIAL EQUITY AND GOVERNANCE

DAY 1: WEDNESDAY, 24TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: ROOM 10		
TIME	PRESENTATION	RESPONSIBLE
2.00-2.20	Jackson Ndung'u Mwangi: Analysis of the Motives Elicited by Use of Symbolic Names in Swahili Novel KidagaaKimemwozea	Dr. Vifu Makoti
2.20-2.40	Raphael Francis Otieno: The Role of the 'Path' and the 'Container' Image Schemas in Political disclosure in Kenya	

2.40-3.00	Martin C. Njoroge, Peter Mutahi: Practices in Undergraduate Phonology Andragogical Class Integrating Visually Impaired Students: Lessons from Kenya, Africa	
3.00-3.20	Eunice Wanjiku Ndung'u: Critical Reflections on the Impact of Non-Governmental Organizations in the Development of the Kenyan Rural Community: A Case Study of the Ogiek Peoples' Development Program (OPDP)	
3.20-3.40	Ian Slade Ashivende & Steve Gachie: Matatu Design Culture in Nairobi Kenya: An Iconological Analysis	
3.40- 4.00	Jeremiah Mutuku Muneeni: Linguistics Elements and Meaning: Imagery as a Subtle Communication of Ideologies in Poetry	
4.00-4.20	Ruth M. Mwanzia, Njoki Wane and George Muthaa: Philosophical Foundations and Ethics: A Deconstruction and Reconstruction of Kenyan Education System	
4.20-5.00	HEALTH BREAK	
DAY 2: THURSDAY, 25TH APRIL 2019: VENUE ROOM 10		
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
GUEST SPEAKER:		
TIME	PRESENTATION	RESPONSIBLE
8.30-9.20	Guest Speaker and Plenary	
9.00-9.20	Mugambi C. Ngumo, Mwai K. Francis: Subversion of Grand Narratives in Trevor Noah's Story 'Run'	
9.20-9.40	Grace Gakii Muthuri, David Malonza, Farai Nyabadza: Modeling the Effects of Targeted Mass Media Campaigns on Alcohol Abuse in Kenya	Prof. Geoffrey Maroko
9.40-10.00	Benson Boniface Kinjofu & Joseph Hokororo Ismail: The Contribution of the Mother Language to Tanzanian Socio-economic Development through Media: With special reference to Mashami	
10.00-10.20	Chipanda Simon: Evaluation of Speech Act Theory in the 5 th Tanzanian Presidents Speeches	
10.20-10.40	J. W. Mbithi: Critical Thinking, Democracy and Sustainable Development	
10.40-11.00	Larry Ndivo: Kinyanjui Kombani: Didactic Escapee or Just a Story Teller?	

11.00-11.30	HEALTH BREAK	Dr Larry Ndivo
11.30-11.50	Paul Kombo: The Legacy of Cecil John Rhodes: The British Diamond Magnate	
11.50-12.10	Chipanda Simon: Analysis on the maximum number of freely Affix ordering in Kisukuma Verb Extensions	
12.10-12.30	Geoffrey Maroko & Gladys Mokua: Geoffrey Maroko&Gladys Mokua: Unpacking the linguistic metaphors entrenching HIV/Aids-related stigma in Kisii County	
12.30-12.50	Romano Okwi Elingit & Beatrice Kemunto Obaga: Gender Mainstreaming Interventions in the Public Sector of Kenya	
1.00-2.00	Geoffrey Maroko, Larry Ndivo, Sophia Njeru: Postgraduate Attrition: Supervisor Feedback Too Is to Blame	
12.50-2.00	LUNCH BREAK	Dr. Anashia Ong'onda
2.00-2.20	Mercy Mueni Wambua: Effects of Parental Divorce or Separation on Adolescent's Psychosocial Wellbeing in Kajiado North Sub-county	
2.20-2.40	Chipanda Simon: Evaluation of Speech Act Theory in the 5 th Tanzanian Presidents Speeches	
2.40-3.00	Emmanuel Mutungi: Conserving the African Narrative: Blacksmith Practice among the Ethur Community in the Western Karamoja in Northern Uganda	Dr John Mutua
3.00-3.20	Mugambi C. Ngumo & Mwai K. Francis: Subversion of Grand Narratives in Trevor Noah's Story 'Run'	
3:20-3:40	Susan Mwangi: The Role of Vernacular Radio in Peace Building and Post-Conflict Reconstruction Initiatives in Kenya	
3:40-4:00	Ong'ayo, A H. and Hassan, F. A: Relationship Between Human and Social Capitals and Community Participation in Development Initiatives in Coastal Region of Kenya	
4.00-4.20	Ngira Amos Anthony: Terrorism and Disaster Preparedness among Higher Educational Institutions in Kenya	
4.20-5.00	HEALTH BREAK	

DAY 3: FRIDAY, 26TH APRIL, 2019 VENUE: ROOM 10		Dr Francis Mutua
8.30-8.50	Murithi Joseph Jesse: Itikadikatika Riwayaza Dunia Yao (2006) na Mhanga Nafsi Yangu (2013) za S. A. Mohamed	
8.50-9.10	John Musyoka Mutua: Usawiri wa Mitazamo ya Viji-nana Wazee katika Ukombozi wa wanamke: Tamthilia ya Kitumbua Kimeingia Mchanga (Said A. Mohamed) na Migogoro (Mwenda Mbatiah)	
9.10-9.30	Joseph Hokororo Ismail: Ujitoshelezaji wa Kiswahili kama Chombo cha kutafsiria Nyaraka Teuleza Kima-hakama Tanzania	
9.30-9.50	Joseph Hokororo Ismail: Mchango WA Kiswahili ka-tika Upunguzaji WA Ajaliza Vyombo vya Moto Baraba-rani: Mifanokutoka Madereva WA Magari Tanzania	
9.50-10.05	Jackson Ndung'u Mwangi: Dhamira Zinazo ibuliwa Na Umajazi Wa Wahusika Katika Riwaya Ya Kidagaa Ki-memwozea	
10.05-10.20	Magdalene Wangu Gituru & John M. Kobia: Mifa-nyiko Ya Unyambulishaji Wa Vitenzi Katika Kigichugu	
10.20-10.35	Justus Kyalo Muusya: Tathmini Ya Ujumi Mweu-si Katika Tamthilia Ya Mashetani Wamerudi (S.A.M 2016)	
10.35-10.50	Jackson Ndung'u Mwangi: Dhamira Zinazo ibuliwa na Umajazi wa Wahusika Katika Riwaya ya Kidagaa Kimemwozea	
10.50-11.05	Joseph Hokororo Ismail & Baraka Kasinge Mwik-wabe: Mustakabali wa Ufundishaji na Ujifunzaji wa Fonolojia ya Kiswahili kwa kutumia Uwili Lugha ka-tika Elimu ya Juu Tanzania: Mifano kutoka Programu za Uzamili	
11.00~ 11.30	HEALTH BREAK	

SUB-THEME 4: BUILT ENVIRONMENT, INFRASTRUCTURE DEVELOPMENT INDUSTRIALIZATION: EMERGING TECHNOLOGIES, MANUFACTURING AND AGRO-PROCESSING

DAY 1: WEDNESDAY, 24 TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: THATHA HALL		
TIME	PRESENTATION	RESPONSIBLE
2.00-2.20	Ibrahim Oyediran, Jacob Mutua, Eliud Mathu, Benard Kipsang Rop, Faith Mlewa: Validation of GIS based approach to optimally locating Drilling Targets during Exploration of Gold in Kakamega, Western Kenya	Dr. Mark Kimathi
2.20-2.40	Stanley M. Makindi: Participatory Forest Management (PFM) Performance within the Mau Forest Complex, Kenya	
2.40-3.00	Mohammed H, Mohammed B, Adam M, Adamu H: An Assessment on The Impact of Information Technology: Case Study of University of Maiduguri Teaching Hospital, Nigeria.	
3.20-3.40	Susan Mwangi: Digitizing the voice of the community: The Use of ICTs in Community Radio Broadcasting in Kenya	
3.40 -4.00	Michael K. Muiya: Application of Design in Enhancing Quality Handmade Products in Kenya	
4.00-4.20	Mark Kimathi: Description of Traffic Flow on an Inclined Road; The Fundamental Diagram Approach	
4.20-5.00	HEALTH BREAK	
DAY 2: THURSDAY, 25 TH APRIL 2019: VENUE: THATHA		
TIME	PRESENTATION	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
GUEST SPEAKER: PROF. MUGENDI K. M'RITHAA		
8.30-9.00	Guest Speaker Address and Plenary	Dr. Charles Mwaniki
9.00-9.20	Mercy Wanja Njagi: E-Learning: The Emerging Technologies in Instruction	
9.20-9.40	Simon Mburu Njoroge: Supporting Green Growth and Knowledge Economy through Research, Innovation and Technology for sustainable Development	

9.40-10.00	John Samuel Njoroge: Global High-Tech Digital based Company (e-Global)	
10.20-10.40	Osmund Kapinga, Victoria A. Gores: The History of Tanzania industrial Research and Development Organization (TIRDO) 1976 to 2018.	
10.40-11.00	Angela Kemunto Nyambane; Factors influencing Integration of ICT and Sustainable Development in Secondary Schools	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Mugiira E. K., Emmanuel Kinoti: Review of Ancillary services provided by Solar PV plants	Dr. George Waswa
11.50-12.10	Nicholas Anyuor, Olghah Awuor-Kiboye: Community Radio and Women Empowerment in Kenya: Case of Mama Milambo Programme of Radio Milambo in Migori County	
12.10-12.30	Purity Mugambi, MA, James Murunga, MA: Creating Favorable Macroeconomic Environment for Manufacturing Industry in Kenya	
12.30-2.00	LUNCH BREAK	
2.00-2.20	Mwaniki Charles: Medium Network Optimal Load Shedding using Cuckoo Search with Levy Flight Algorithm for System Stability	Dr. Sophia Njeru
2.20-2.40	Obondo Gaudence, Violet K. Nabwire, and Jackson K. Too: The smart phone Revolution Has Arrived in Classroom! What Are my Options?	
2.40-3.00	Coletta Ruth Matayo, Justin Kyalo: Towards Self-Sustaining Communities Through the Art of Basketry; The Case of Mumo WaManyala Group, Masii Sub County, Machakos County, Kenya	
3.00-3.20	GW Waswa, J van Tol, SA Lorentz & D Vermeulen: Dynamics of pressure waves and groundwater flow at a wetland zone in a headwater catchment	
3.20-3.40	Hesbon Kipchirchir Kiptoo, Benard Mutisya Nzyoka, David Muchangi Mugo: A Service Oriented Architecture Approach to Implementing an Omni channel Personal Health Record system	

3.40-4.00	Mohammed. B, Mohammed H, Tu'unji. S.A, Ahmed I: Building conditions Survey and systematic Defects Diagnosis on Library building in Nigeria	
4.00-5.00	HEALTH BREAK	
DAY 3: FRIDAY, 26TH APRIL 2019: VENUE: THATHA HALL		
TIME	PRESENTATION	RESPONSIBLE
8.30-8.50	Nosayaba F. O. Evbuomwan: Creating the Infrastructural Framework for Innovation in Africa	Dr Charles Mwaniki
8.50-9.10	Emmanuel Kiamba, Richard Muthui Kasomo, Bernard K. Rop & Jackson Mwangangi Mwendwa: Limestone Production Optimization by Fragmentation Control – Case Study of Bissel Quarry	
9.10-9.30	Waswa, G. W. Vermeulen & D. Lorentz, S. A: A new pressure wave theory for a transient drawdown in an unconfined aquifer during pumping	
9.30-9.50	Watson Kanuku, George Okeyo & Michael Kimwele: A Stage Model for Cloud Computing Adoption in E-Government Implementation	
9.50-10.10	Ali H. Wako: Nanotechnology: A New Dawn for Kenya	
10.10-10.30	Oluwaseye Oniekeku, Stanley Musee Shitote, John Mwero, Adeola. A. Adedeji: Comparative Analysis of Compressive Strength of Bamboo Leaf Ash and Baggash Ash Concretes	
11.10-11.30	HEALTH BREAK	

SUB-THEME 5: ENERGY, WATER, CLIMATE CHANGE AND ENVIRONMENTAL SUSTAINABILITY

DAY 1: WEDNESDAY, 24TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: ILUVYA HALL		
TIME	PRESENTATION	RESPONSIBLE
2.00-2.20	Ma'arf Murtala: Spatio-Temporal Analysis of Rainfall Trends and Fluctuations in Northwestern Nigeria	Dr Julius Nzeve

2.20-2.40	Babangida Garba: Assessing the Constrains of Water Supply for Irrigation in Hadejia Valley Irrigation Project Area, Jigawa State Nigeria	
2.40-3.00	Ruth N. Kundu, Marther N. Ngigi: Fostering resilience to climate change through institutional innovations and gender inclusion in Africa	
3.00-3.20	Levi Situma Chepkania: Mapping Geographical Features; Case Study of Bungoma County	
3.20-3.40	Kioko Mutunga: Environmental Degradation and poverty nexus: The Twin threat and barrier to Sustainable Development	
4.00-4.20	HEALTH BREAK	
DAY 2: THURSDAY, 25 TH APRIL 2019. VENUE: ILUVYA HALL		
GUEST SPEAKER: PROF. BERNARD ROP		
TIME	PRESENTATION	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-9.20	Guest Speaker Address and Plenary	
9.20-9.40	David Wafula Wekesa: Feasibility Study for Development of 2 MW Solar PV power plant at Machakos University, Machakos County	Dr. David Wekesa
9.40-10.00	Jones F. Agwata: Reflections on Disaster Management Regulatory Frameworks in Kenya	
10.00-10.20	Philip Komo Kahuho, Phirista Nakato Nassali, James Maina & Paul Byatta: Describing an Effective Volunteer in Program Implementation: A Case of Promoter in the Dispensers for Safe Water Program in Rural Kenya, Uganda and Malawi	
10.20-10.40	Temitope Ezekiel Idowu, Nelly Cherono Nelly Kiplangat, Rose Waswa: Land cover changes and its Implications on Urban Heat island in Nairobi County: A GIS and Remote Sensing Approach	
10.40-11.00	Onyango, S; Muchina, S.W, Nga’ang’a: Small Holder Tea Industry Sustainability: Environmental Accounting and Reporting as a Strategy to Cushion on Environmental Concerns	
11.00-11.30	HEALTH BREAK	

11.30-11.50	Caroline Maina, Bernard K Rop, Wycliffe H Namwiba, Jackson M mwenda: Importance of Applied Geology in Mining Perspective	Dr. Cornelius Okello
11.50-12.10	K. Muchiri, J. N. Kamau, D.W. Wekesa: Solar PV Potential and Energy Demand Assessment in Machakos County	
12.10-12.30	Shelin Kasozi, Emmanuel Mutungi: Community Participation in Sustaining Safe and Clean Water: The Case of Kyampisi Child Care Ministries Water Project in Mukono District, Central Uganda	
12.30-2.00	LUNCH BREAK	
2.00-2.20	Christabel Muhonja · Huxley Mae Makonde, Mabel Imbuga, Gabriel Magoma: Biodegradability of Polyethylene by Bacteria and Fungi from Dandora Dumpsite-Nairobi Kenya	Dr Elizabeth Ndunda
2.20-2.40	Muhia S., Ilatsia D., Achieng C.: Effects of Anthropogenic Activities on the water Quality of Malewa River for Animal Consumption: - A Case Study of Kenya Agricultural and Livestock Research Organization (KALRO)-Naivasha	
2.40-3.00	Philip Komo Kahuho, Phirista Nakato Nassali, James Maina & Paul Byatta: Optimizing Access to Safe Water through Chlorinated Dispensers in Rural Kenya, Uganda and Malawi	
3.00-3.20	George Kiarie: The Role of Religion in Environmental Conservation in Kenya	

SUB-THEME 6: MATHEMATICS, STATISTICS & DATA SCIENCE; BASIC AND APPLIED SCIENCES

DAY 1: WEDNESDAY 24 th APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: KILIMAMBOGO HALL		
TIME	PRESENTER	RESPONSIBLE
2.00-2.20	J. O. Awino, T. J. O. Aminer, T.M. Onyango and N. B. Okelo: Numerical Analysis of mathematical Model for Carbon Pollution in roads with ventilated Embankments in Absence and Presence of Forced Convection	Prof. Richard Simwa
2.20-2.40	Virginia Mwelu Kitetu, Prof. Thomas Tonny Mboya Onyango, Prof. Jackson Kioko Kwanza: Control Volume Analysis of Unsteady mhd Mixed Convection nanofluid Flows as a Result of Stretching Surface and Suction	

2.40-3.00	Ngesa Joel Ochola: Mathematical modelling for behavioral dynamics of controlled evacuations based on visual perception	
3.00-3.20	Mwelu Susan, Gichuhi Waititu, Peter N. Mwita: Change Point Analysis in the Generalized Pareto Distribution	
3.20-3.40	Conlet Biketi Kikechi, Richard Onyino Simwa, Ganesh Prasad Pokhariyal: Results on Model based Robust estimators in Finite Populations	
3.40-4.00	Queensley C. Chukwudum: Assessing the Extreme Temperature Dependence in the East African region	
4.00-5.00	HEALTH BREAK	
DAY 2: THURSDAY, 25TH APRIL 2019 CONFERENCE PRESENTATION SESSIONS VENUE: KILIMAMBOGO HALL		
TIME	PRESENTER	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
GUEST SPEAKER: PROF. ANN W.T. MUGAI		
8.30-9.20	Guest Speaker Address and Plenary	Prof. Zachary Getenga
9.20-9.40	Owiti Edgar Oduor: Near infrared hybrid graphene embedded plasmonic metasurface with dual-band tunable performance based on localized surface plasmons	
9.40-10.10	Josephie Njeri Ngure, Anthony Waititu: Change Point Estimation in Volatility of a Time Series	
10.00-10.20	S.K. Rotich: Ranks and Sub Degrees of $G=PGL(2, q)$ On The Cosets of Its Subgroups	
10.20-10.40	Emmanuel Torsen, Peter N. Mwita, Joseph K. Mung'atu: Non-Parametric Prediction Interval for Conditional Expected Shortfall Admitting a Location -Scale Model using Bootstrap Method	
10.40-11.00	Wambua B, Muli E, Kanui T, Muli B: Large Hive Beetle: A potential new pest of honeybee in Kenya	Dr. Euna Nyarige
11.00-11.30	HEALTH BREAK	
11.30-11.50	Ibrahim Oyediran, Jacob Mutua, Eliud Mathu, Benard Kipsang Rop, Faith Mlewa: Validation of GIS based approach to optimally locating Drilling Targets during Exploration of Gold in Kakamega, Western Kenya	

11.50-12.10	Moges TY, Ahemen I, Mwita P and Dejene BF: Light Energy (Solar and Luminescent materials) in Service of Man Kind- from Nanoscale to Microscale	
12.10-12.30	Duncan Kiboi, Boiyo, E.K. Rotich Kipnoo, T.B. Gibbon: Bragg Trans-reflectance OADM based VCSEL Optical Fibre Access Networks within the 1550nm Transmission Window	Dr.Veronicah Okello
12.30-12.50	Stephen N. Mailu: Graphenated Polypyrrole Nanocomposite for Real Time Determination of Pollutants in Water	
12.50-1.10	Peter G. Murage, Joseph K Mung'atu, Evelyne Odero: Threshold Determination for Maximum Product of Spacing Methodology with Ties for Extreme Events	
1.10-2.00	LUNCH BREAK	
2.00-2.40	Special Representation on Research and Applied Sciences by Prof. Joseph Chacha (Deputy Vice Chancellor - Students' and Academic Affairs Maseno University)	Dr. Stephen Mailu
2.40-3.00	Plenary	
3.00-3.20	Benard Okelo: On Characterization of Classes of Hilbert Space Operators and Applications	
3.20-3.40	Veronica Okello, Nian Du: Poly (Amic) Acid Nanostructured Membranes for Capture and Detection of VENGES Generated Nano-Aerosols: Air and Water Purification	
3.40-4.00	Virginia Mwelu Kitetu, Thomas Tonny Mboya Onyango, Jackson Kioko Kwanza: Control Volume Analysis of Unsteady MHD Mixed Convection Nano fluid Flow as a Result of Stretching Surface and Suction	
4.00-4.20	Kalovwe Sebaastian Kaweto: Modeling stock Returns Volatility Using Regime Switching Models	
DAY 3: FRIDAY 26TH APRIL 2019; KILIMAMBOGO HALL		
8.00-8.30	Arrival, Registration & Entertainment	Secretariate
8.30-9.30	Open Forum on Research issues in pure and applied Sciences	Dr. Stephen Mailu
9.30-10.00	PLENARY	

SUB-THEME 7: ISSUES IN EDUCATION AND TRAINING

DAY 1: WEDNESDAY, 24 TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: KOMA HALL		
TIME	PRESENTATION	RESPONSIBLE
2.00-2.20	Seraphione Sherry Aholi, Jacob J. J. Ochieng konyango: Influence of Secondary School Students' Attitude Towards Agriculture on Employment Creation in Vihiga County, Kenya	Dr Peter Koech
2.20-2.40	Sammy KipkorirBii: Indigenous Methods of Education as Practised by the Kipsigis	
2.40-3.00	Ezra Ondari Okemwa: The Role of Knowledge Workers in Innovation and Technology for Sustainable Development	
3.00-3.20	Daniel Njane Thuo: Teachers' Professional Development Issues and their Impact on Teachers' Service Delivery	
3.20-3.40	Martin C. Njoroge, Peter Mutahi: Practices in an Undergraduate Phonology Andragogical Class Integrating Visually Impaired Students: Lessons from Kenya, Africa	
3.40-4.00	David M. Mulwa & Dominic Maingi: The Influence of School Climate on Students' Discipline in Public Secondary Schools in Makueni County	
4.20-4.40	Mercy Kariuki: Influence of Self Esteem on Student's Psychomotor and Cognitive Academic Performance	
4.40-5.00	Mary M. Muema, Peter Kibet Koech & Pamela Muriungi: Influence of Material Selection Criteria on Acquisition of Numeracy Skills among Children in Pre-School Institutions in Kathiani Sub-County	
5.00~	HEALTH BREAK	
DAY 2: THURSDAY, 25 TH APRIL 2019 VENUE: KOMA		
GUEST SPEAKER: PROF. KISILU KOMBO		
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-9.20	Guest Speaker and Plenary	Prof. James Muola

9.00-9.20	Sammy Kipkorir Bii: Indigenous Methods of Education as Practiced by the Kipsigis	
9.20-9.40	Eric Mwenda Elias, Catherine Nkirote Maingi: Training, In-service Training, Pre-service, refresher courses, Management skills, Enhance	
9.40-10.00	Kirima Lucy Karimi: Influence of Educational Support on Academic Performance of Orphans and Vulnerable Children in Public Primary Schools in Kalama Sub County, Machakos County, Kenya	
10.00-10.20	Nathan Mutua, Dr Jennifer Kilonzo: Influence of Non-Governmental Organizations Education Support Activities on Academic Performance of Students in Public Primary Schools in Kenya: A Case of Machakos County	Dr.Pamela Muriungi
10.20-10.40	Milcah Nyaga: An Investigating on Student-Teachers' Acquisition of New Skills During Teaching Practice Exercise. A case Study of University of Embu	
10.40-11.00	Mercy Wanja Njagi: E-Learning: The Emerging Technologies in Instruction	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Wanjiru Jane J. Mugai: Promotion of Child Friendly Schools Model	
11.50-12.10	Hassan Kinyua Omari and Edith Kayeli: Comprehensive sex education in Kenya: Islamic perspective	
12.10-12.30	Fellis N. Mutune: Research and publication, publish or perish, so what?	Dr. Richard Kimiti
12.30-12.50	Nicholas Anyuor: The Educational Role of Nation and Standard Newspapers in Creating Awareness on Functions of County Governments among Residents of Embakasi East Sub County, Nairobi	
1.00-2.00	LUNCH BREAK	
2.00-2.20	Henry.E. Embeywa: Rediscovering the Core Cognitive Processes that Define Scientific Competence	

2.20-2.40	Joseph Hokororo Ismail: The contribution of ICT in teaching and learning Tone of Tanzanian Bantu languages	
2.40-3.00	Murungi, J. Mwenda and Muthaa, G.M: Kenyan Curriculum and Self-reliance: A Decolonizing Perspective	
3.00-3.20	James M. Muola, Wycliffe Amukowa, David Mulwa Peter Kimiti: Academic Advising Needs of University Students: The Case of Machakos University	
3:20-3:40	Kimiti, Richard Peter: The 8-4-4 School Curriculum: Is it still relevant for the Kenyan Child?	
3:40-4:00	Yahya Umar Magaji: Using path analysis for determining parental involvement on child academic performance in selected primary schools in Adamawa state, Nigeria	
4.00-4.20	Margret Nakesa Shibo: Effects of level of Enforcement of KNEC and Regulations on the Prevalence of Examination Malpractice in Public and Private Secondary Schools in Kisii County between 2008-2014	
4.20-4.40	Joseph Muriungi Kirugua, Njoki Wane and George M. Muthaa: Inculcation of Societal Norms in School System in Meru County, Kenya: An Afrocentric Perspective	
4.40-5.00	Areba George Ngwacho: Management of Co-Curricular Activities and Its Implications on Quality Education in Public Secondary Schools in Kisii County, Kenya	
4:00-5:00	HEALTH BREAK	
DAY 3: FRDAY, 26TH APRIL 2019: KOMA HALL		
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-8.45	Elizabeth Welu Kiamba, Francis Mutua& David Mulwa: Influence of Teacher's Preparation of Professional Documents on Students' Academic Achievement of Kiswahili Language in Public Secondary Schools in Kathonzwani Sub-County, Kenya	Dr Peter Koech

8.45-9.00	Andima George: An integrated early literacy intervention model for children living in disadvantaged contexts: Snapshots from the Reading Kenya Intervention	
9.00-9.15	Denis Kintu: Technical Vocational Education and Training (TVET) Institutions' Contribution to Promoting Sustainable Development	
9.15-9.30	Mukolwe Akhasakhulu Newton & Akinyi Nila Oduori: The Phenomenon of Missing Marks in Kenyan Public Universities – Reality or Myth: The Case of Maasai Mara University in Narok County, Kenya	
9.30-9.45	Collins Omondi Ogogo: An Empirical Analysis of the Effects of Mastery Learning Strategies (MLS) on Self-Esteem and Learning Outcomes of High School Students	
9.45-10.00	Motanya, Jared Ochwangi: An Interplay between Higher Education, knowledge economy and Green Growth towards Achieving Sustainable Development in Africa	
10.00-10.15	Elizabeth Mutiso Mutio & Peter KibetKoech: Influence of Teacher Teaching Strategies on Children Literacy Development in Pre-Primary Education	
10.15-10.30	Eustace Murage Muthui, George M. Muthaa, Barchok K. Hillary & David K. Wamukuru: Influence of Participation of Student Councils in Conflict Resolution on Management of Public Boys' and Girls' Boarding Secondary Schools, Nyeri County, Kenya	Prof. Fredrick Ogola
10.30-10.45	Stephen O. Odebero & Simala I.K: Assessing Skills Supply and Youth Employability in Kenya: secondary school education graduates training (miss-) match with Mumias Sugar Company labour market needs	
10.45-11.00	Aminu Ahmadu Michika: A Comparative Study of Academic Performance of Students Admitted Through Pre-NCE & Direct Entry in Final NCE Examination (A Case Study of English Department Federal College of Education, Yola)	
11.00-11.15	Stephen O. Odebero & Simala IK: The Craze for Students' Numbers in Kenya's Public and Private Universities and the Optimal Operation of MasindeMuliro University of Science and Technology: Towards A Cost Recovery Strategy	
	HEALTH BREAK	

SUB-THEME: 8 BUSINESS, ENTREPRENEURIAL INNOVATION, SMEs & MARKETING

DAY 1: WEDNESDAY, 24 TH APRIL 2019: CONFERENCE PRESENTATION SESSIONS VENUE: PGL 3		
TIME	PRESENTATION	RESPONSIBLE
2.00-2.20	Nosayaba F. O. Evbuomwan: Creating the Infrastructural Framework for Innovation in Africa	Prof. Charles Ombuki
2.20-2.40	Hamma njoda Kabiru: Service Quality Delivery and Customers' Satisfaction in Nigeria Banking Industry	
2.40-3.00	Robert Arasa, John Achuora: Strategic Inventory Management Practices And Performance Of Supermarkets In Nairobi County, Kenya	
3.20-3.40	Leah Jeruto Chemitei & Romano Okwi Elingit: An Assessment of Team Work Relevance in the Twenty First Century on Organizational Performance	
3.40 -4.00	Eunice Wanjiku Ndung'u: Critical reflections on the Impact of Non—Governmental Organizations in the Development of the Kenyan Rural Community: A Case Study of the Ogiek Peoples' Development Program (OPDP)	
4.00-4.20	Beatrice Kemunto Obaga & Romano Okwi Elingit: Emotional Intelligence and Organizational Performance	
4.20-4.40	Betrum Namanya, Mugabe Robert and Firimooni Rweere Banugire: Towards Decentralized Economic Policy Making and Management of Developing Economies with Special Reference to Uganda	
4.40-5.00	Beatrice Kemunto Obaga & Romano Okwi Elingit: Assessment of Human Resource Analytics and Employee Performance and Motivation Reviews	
5.00	HEALTH BREAK	
DAY 2: THURSDAY, 25 TH APRIL 2019 VENUE: PGL3		
TIME	PRESENTATION	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat

GUEST SPEAKER: PROF SIMMY MARWA		
8.30-9.20	Guest Speaker Address and Plenary	Prof. Mboya Kiweu
9.20-9.40	Josphat Mboya Kiweu, Johnstone Kiteme Gregory Munyao: Corporate Boards, CEO Compensation, and Firm Performance	
9.40-10.00	Purity Mugambi, James Murunga: Creating Favorable Macroeconomic Environment for manufacturing Industry in Kenya	
10.00-10.20	Jacinta Muniyiva Kinyili: Influence of Organizational Culture and Information Communication Technology on Knowledge Management in Organizations- A Review from Literature.	
10.20-10.40	Charles Andoh, Kudjawu Alexandra Fafali, Saint Kuttu: The Effects of Holidays on the Ghanaian Equity Market	
10.40-11.00	Jane Matingi Nyikuri, Winnifred Nduta Ribebe, Jemmy Mutua: Influence of Business Entrepreneurial Skills, Innovation and marketing on Performance of small and Medium Enterprises (SMEs) in Machakos County, Kenya	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Romano Okwi Elingit & Beatrice Kemunto Obaga: Knowledge Economy Interventions for the Achievement of Kenya Vision 2030	Dr. Jacinta Kinyili
11.50-12.10	Grace Maina: Analysis of Cost Leadership Strategies Adopted by Contractors in Kenya on Organizational Performance: A Case of National Construction Authority of Kenya	
12.10-12.30	Catherine Kathure Kaimenyi: The Moderating Effect of Stereo type on the Relationship Between Organizational Strategy and Implementation of Workforce Diversity Policies in Public Universities in Kenya	
12.30-12.50	Jacinta Kaigai: Demystifying the relationship between insurance intermediaries and their clients in Nakuru County in Kenya.	
12.50-1.10	Angeline Wambui Wambugu: How much does labor turnover cost? A case study of Kenyan Small and Medium	
1.10-2.00	LUNCH BREAK	

2.00-2.20	Josephat Mboya Kiweu, Andrew Mutunga Kimondiu: Corporate Governance in Kenya: Ownership Structure and The Performance of Listed Firms	Prof. Arasa Robert
2.20-2.40	Kariuki, S. N. and Mutugi, J: Effect of risk retention techniques on theft in SACCOs in Embu County, Kenya	
2.40-3.00	Kariuki, S. N. and Zachary, J. M. N: Determinants of tax compliance by small and medium businesses in Embu County, Kenya	
3.00-3.20	Jacinta Muniyiva Kinyili: Promoting the Big 4 Agenda: HIV and AIDS Stigmatizations and Discrimination, Their Effect and the Way Forward- A Review from Literature	
3.20-3.40	Editah Njeri: Human Resource Management Practices and Employee Turnover in Commercial Banks in Kenya	
3.40-4.00	Michael K. Muiya: Application of Design in Enhancing Quality Handmade Products in Kenya	
4.00-4.20	HEALTH BREAK	
4.20-4.40	Wamitu Susan Njeri: Well these Policies Have Been Applied and Fortified to Enhance Public Sector Performance	
4.40-5.00	Firimooni Rweere Banugire, Betrum Namanya: Towards Good Economic Governance of African Economies with Special Reference to Uganda	
DAY 3: FRIDAY, 26TH APRIL 2019. VENUE: PGL 3		
TIME	PRESENTATION	RESPONSIBLE
8:00-8.30	Arrival, Registration and Entertainment	Secretariat
8.30-8.50	Joséphat Mboya Kiweu: Alpha Nunda: Dividend Policy and Behavior in Kenya: An Empirical Analysis	Prof. Charles Ombuki & Dr Jacinta Kinyili
8.50-9.10	Mohammed Zannah Malilima: Role of Bio-Entrepreneurial Skills Opportunities in Biology Education in Eliminating the Current Economic Crisis in Some Selected Tertiary Institutions in Borno State	
9.10-9.30	Cyrus M Munyua: Influence of Budget Efficacy on Household Effects in Kenya	

9.30-9.50	Evans Geoffrey Mogeni, Gideon Nyabando Masese & Pollyene Mutunga Mbithe: An Assessment of Health System in Kenya: Towards the Achievement of Universal Health Coverage	
9.50-10.10	Stephen Kamau Warui, Phelista Njeru, George Gongera & Julius Bichanga: Merger Strategy and its Effects on Profitability for Commercial Banks Listed in the NSE in Kenya	
10.10-10.30	Plenary	
11.00~11.30	HEALTH BREAK	

CLOSING CEREMONY: VENUE: KILIMAMBOGO HALL

TIME	DAY 3: FRIDAY, 26 TH APRIL 2019	RESPONSIBLE
11:30-1200	Assembling and Arrival of Chief Guest	Dr Wycliffe Amukowa (Registrar – RIL)
12.00-1.00	OFFICIAL CLOSING PROGRAMME	
	Σ Conference Recap and Ways Forward: Prof. Geoffrey Maroko	Secretariat
	Σ Closing Remarks by Prof. Peter Mwita (DVC- Research, Innovation and Linkages, Machakos University)	
	Closing Address, Prof. Lucy Irungu (Vice-Chancellor, Machakos University)	Prof. Peter Mwita (DVC- Research, Innovation and Linkages, Machakos University)
	SPEECH AND OFFICIAL CLOSING OF THE CONFERENCE: PROF. CHACHA NYAIGOTTI-CHACHA	Prof. Lucy Irungu (Vice-Chancellor, Machakos University)
1.00	PHOTO SESSION AND LUNCH BREAK	Secretariat

MACHAKOS UNIVERSITY 1ST ANNUAL CONFERENCE IN PICTURES



Prof. Ntimba who represented the chief guest Amb. Amina Mohamed, by then CS Education is welcome to the conference



Prof. Ntimba signs visitors book on arrival



Delegates follows conference proceedings



Delegates follows conference proceedings



Prof. Lucy Irungu the Vice-Chancellor making her official opening address



Prof. Peter Mwita (Deputy Vice-Chancellor-RIL making opening remarks

SUB~THEME 1:

AGRICULTURE, FOOD AND NUTRITION SECURITY



Tomato Leaf Miner (*Tuta absoluta*) Incidence and Severity in Kirinyaga County, Kenya

Nderitu Wangari Peris¹, Geoffrey O. Wafula², Otieno Mark³, John Jamleck Muturi⁴, Arunga Esther⁴, Mattias Jonsson⁴

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Abstract

The tomato leaf miner (*Tuta absoluta*) is a new insect pest of tomato in Kirinyaga County. Under severe infestations it can cause 100% yield loss. Farmers have been using synthetic insecticides to combat the insect pest. This study was aimed to determine the incidence of *Tuta absoluta* through monitoring using pheromone traps and determine its severity in tomato fields' despite chemical insecticides applications. Field sampling was carried out in three sites to monitor *T. absoluta* trap catches and carefully inspect presence/absence of mines. *Tuta absoluta* trap catches were found in all sampled sites, infestation damage increased as the crop advanced in growth and extensive infestation was on the lower part of the leaves. Results show *Tuta absoluta* populations are already established in Kirinyaga County, despite chemical insecticide applications infestation damage increased and it was heaviest at the end of the cropping cycle. Synthetic insecticides have been found to reduce populations of naturally occurring predators and parasitoids of *Tuta absoluta* and increased development of resistant populations of the insect pest. It is therefore imperative to develop alternative nonchemical integrated control programs for a sustainable management of *T. absoluta*.

Key words: *Tuta absoluta*, synthetic chemicals, sustainable management, pheromone traps

Improving Food Security through Adoption of Bio-Based Practices in Rural Kenya

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Abstract

Food security is a key component of the Big Four Agenda a flagship undertaking of the Jubilee Government in Kenya. This agenda is also in line with the United Nation's Sustainable Development Goals (SDGs), the African Union's Agenda 2063 and Kenya's Vision 2030. Food security includes but not limited to income generation to farmers, reduction in malnutrition cases, availability of food and cost reduction of food for all Kenyans. Bio- farming is one of the options that could keep designs of agriculture production systems eco-friendly as well as generate enough production to sustain communities. Bio-Based practices, if adopted would lead to food security and a general improvement of livelihoods within rural communities. Lack of adequate information on these practices is one of the key hindrances towards adoption of the same. The research sought to provide adequate information on these practices and also understand the hindrances towards adoption of the same within these rural communities. The research design was mainly be qualitative and the study are being based in Murang'a

county one of the key food baskets in the country. As the county is geographically too big for the researcher to access all areas a sample will be selected from Kangema Sub-County through purposive and convenient sampling methods. An applied research was carried out in this study as through the research the researcher hopes to highlight bio-based practices being practiced successfully around the world and recommend the best framework for adoption of the same in Rural Kenya. The data collected was analyzed using thematic analysis and narrative analysis.

Key Words: Food Security, Rural Kenya, Bio-Based, Livelihoods, Adequate, Framework

Evaluation of Sorghum Production under Zai Pit System in Semi-Arid Areas of Kenya

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Abstract

Low crop yields due to low erratic rainfall, high evapotranspiration, and deteriorating soil fertility in smallholder farmers' fields of sub-Saharan Africa have led to a quest for sustainable production practices with greater resource use efficiency. To alleviate water stress, soil fertility decline and reduce runoff, water harvesting technologies and integrated soil fertility management (ISFM) are alternative promising options whose impact on agricultural productivity is not yet clear. Field experiment was set up in TharakaNithi County, Kenya to assess the effect of using zai pits in combination with selected organic/inorganic amendments on sorghum production. Zai pit in combination with tithonia amendment had the highest yields of 4.3 Mg ha⁻¹ during short rains season of 2013 (SR13) while zai pit in combination with cattle manure had the highest yield of 4.18 Mg ha⁻¹ during short rains season of 2014 (SR14). During the SR14, grain yields of zai pit with cattle manure (ZC) were significantly ($p=0.016$) higher by 53.7% compared to conventional planting with cattle manure (CCM). The experiment showed that zai pit technology contributed to increments of yields in comparison to conventional planting. However, both zai pit and conventional practices should be used in combination with organic and inorganic amendments to enhance yields in sorghum production.

Key words: Yields, Water Stress, Organic/Inorganic Amendments, Conventional Planting

Integrating Information and Communication Technology (ICT) in the Farming System for livelihood improvement, “a case of Kieni East constituency, Nyeri County, Kenya”

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Abstract

In many developing countries, the agriculture sector is dominant in raising incomes among the poor by as much as four times than other sectors. According to the World Bank, 2013, annual report, agriculture reduce poverty, raise incomes and has improved food security for 80% of the world's poor who depend on farming.

The sector realized about 17% of the GDP and 40% of exports. This achievement is attributed to improve agricultural productivity through integration of ICT in the farming system to address SDG number two on zero to hunger. Questionnaires, focus group discussions and interviews were the methods used to collect data. The data was collected from 90 respondents sampled across Kieni East Constituency.

The research targeted producer organizations, change teams, extension agents and key stakeholders. The overall objective of the research was to investigate the role of ICT to small holder farmers to harness the benefit of information and communication technologies to maximize returns on agriculture production system. The research examined the role of ICT mainly using market price information through short message service or web portal, open data kit, internet and use of geographical information system in enhancing growth and efficiency in agri-business transactions. The research findings indicated that there is a correlation between increase in information and communication technology and increase in returns on agricultural production system. It also indicated that use of ICT enhanced growth and efficiency in agri-business transactions by empowering the farmer and producer organizations with real time marketing information.

The research demonstrated the role of ICT in the systematic dissemination of agricultural information to provide comprehensive, up-to-date and detailed knowledge and information. The research witnessed tremendous advancement in information dissemination among smallholder farmers. Use of ICT in Agricultural extension and education provided an efficient and effective way to reach out to small holder farmers.

Key Words: ICT, Agricultural extension, Agricultural information, market, mobile technology

Determinants of Participation of Young Farmers with and without Disability in Capacity-building Programs Designed for the Public in Uganda

*David Agole, William FaustineEpeju
Kyambogo University*

Abstract

Participation of young farmers with disabilities in agricultural capacity-building programs in their communities is important as poverty reduction strategy in people with disabilities in Uganda. This research study comparatively examined participation of young farmers with

and without disabilities in capacity-building programs designed for the public in Northern and Eastern Uganda. The study employed a comparative, mixed methodology, cross-sectional research designs involving 774 young farmers composed of 388 with disabilities and 386 who had no disabilities. The sample selection strategies involved the use of a stratified, and random sampling techniques. This research utilized an interviewer-administered paper survey in collecting data. Descriptive statistics and regression analyses were used in analysing quantitative data. The findings indicate that young farmers with a disability and being contacted face-to-face were less likely to participate in community capacity-building programs. In contrast, Northern Uganda, those contacted in a group setting, application of sign language interpretation, being female, and having supportive training staff increased the chances of their participation in community capacity-building programs.

Key Words: Disability, youth with and without disability, participation, capacity-building programs.

Human and Physical Variables in the Adoption of Cash Crop Farming in Gem Sub County, Siaya County, Kenya

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Abstract

Poverty levels in Gem sub-county are high yet the area has a high agricultural potential. However, there is low engagement in cash crop farming especially, growing of sugarcane. Involvement in sugarcane farming would assure the farmers of extra income from the sale of the crop. This would empower them economically, reduce poverty rates, spur industrialization and provide employment. Hence there is need to establish why a large number of farmers are not engaging in sugarcane farming in Gem-sub County. The objectives of the study were to: establish whether operations costs, marketing costs, land fragmentation and rainfall variability have influenced adoption of sugarcane as a cash crop. The study was conducted using descriptive survey design. It employed both quantitative and qualitative methods. A Conceptual Framework guided the study. The questionnaire was administered to 300 heads of households. Six Agricultural Extension workers were interviewed. Stratified Random Sampling was used to select the sample from the population. The unit of analysis was the farmers. Descriptive and inferential statistics was used to analyze the data. The study was significant as it established factors that have contributed to decline in sugarcane farming in Gem Sub County, Siaya County.

Key terms: Smallholder Agriculture, Sugarcane Farming, Land Fragmentation and Agriculture, Climate Change.

Food Wastage in Hotels in Kenya: Interventions for Realization of Food Security

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Abstract

The government of Kenya has prioritized a development agenda to ensure food security through innovative initiatives and programmes meant to curb food wastage. However, a critical observation indicates that the initiatives and programmes emphasize on post-harvest and distribution processes of the food chain, with little focus given on prevention of wastages during secondary processing, especially in hotels. Besides, little seem to be known on the role the hospitality sector is supposed to play to ensure the achievement of the agenda on food security. Therefore, this study aimed at assessing the influence of food wastage during secondary production and service processes on food security in hotels. The study employed a co-relational research design. It was conducted in selected zero-rated hotels in Nairobi. From a target population of 35 food and beverage managers, a sample size of 32 was adopted using Krejcie and Morgan sample size determination table. Using self-administered questionnaires, data was gathered and analyzed using regression. The findings indicate a significant influence of food wastage on food security during the production stage in hotels in Kenya ($t=-5.035$, $p<.000$). Besides, there is a significant influence of food wastages on food security during the service stage in hotels in Kenya ($t=-3.503$, $p=0.001$). The study recommended that hotels should develop and enforce standard operating procedures in volume forecasting, cost control and menu planning. Besides, regulators such as Tourism Regulatory Authority, National Environment Management Authority and county governments should develop and implement systems and procedures of monitoring and controlling the amount of food wastages from hotels.

Key words: Food wastage; Food security; Food chain

Enhancement of Degradation of Persistent Agricultural Chemicals in Soils: Strategy for Decontamination of Polluted Environments

Zachary Getenga¹, Anastasia Ngige², Elly Kimosop & Gershom Mutua³, Francis Orata & Isaac Kowino³, Hassan Were³, Daniel Onunga³ and Bonface Mbithi⁴
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Abstract

After repeated applications and long use of persistent pesticides in soils, a phenomenon known as enhanced (accelerated) degradation of some pesticides has been observed in soils. This has led to isolation of key microbes known to degrade these persistent pesticides in soils. The isolated microbes which are characterized and identified can potentially be used to enhance degradation of pesticides in contaminated soils. In this paper we discuss various pesticide compounds which for so long were known to be recalcitrant, but later could be subject to accelerated degradation. Key degraders were isolated and characterized and are potential candidates for Green method of cleaning the environment. The isolated key degraders have

been isolated from various parts of the country (Kenya) where rice, sugarcane and pineapple cultivation are undertaken. We report the successes registered in our various studies with the following compounds atrazine, terbuthylazine, hexazinone, diuron, carbofuran and chlorpyrifos and metribuzin. Atrazine and terbuthylazine were broken into CO₂, H₂O, NH₃ and HCl up to 88 and 64%, respectively within 14 days by *Arthrobacter* Sp. Strain GZK-1, a new species reported at the time of the study (Getenga et al. 2009). *Bacillus Thuringiensis* isolated from rice-cultivated soil in western Kenya impacted by carbofuran mineralized 98% of carbofuran (100µg/ml) within 10 days (Onunga et al. 2015). Other compounds were extensively degraded almost up to 100% and are hereby reported.

Key words: Bioaugmentation; remediation; pollution; adaptation; pesticides

Effects of Exotic Trees on Mycorrhizal Association and Bio-Geo-chemical Processes of the Adjacent Native Pastures

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Abstract

In nature, plants do associate with intra or inter-specific ecological relationship with other microorganisms forming mycorrhizae. This association enhances alternative handling methods in nutrients uptake systems and plants productivity and growth. Introduction of exotic trees to the adjacent native grass pastures' ecosystem is thought to alter patterns of mycorrhizal responses and changes in soils' bi geochemical processes. The main objective of the study is to evaluate the influence of these associations through the introduction of exotic trees and establish the overall effects on native pastures. Three adjacent native pastures next to cypress, eucalyptus and Acacia experimental sites will be established. Three plots were marked for each of the selected adjacent tree stands. A total of 9 plots of the three species of tree stands adjacent to native pastures was selected randomly and marked for sample collections. Each soil sample will be taken at a depth of 0-15cm with a soil borer (4 cm in diameter). From each tree stand, soil samples were taken at a distance of 0m, 10.0m, 20.0m, and 40.0m. A radius of 1m was used to get collective soil samples from each marked point centre in the direction of 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. A number of parameters was evaluated such as number of mycorrhizal /roots, spore density (spore number of soil volume) and percentage of AMF & ECM association per soil volume. Moreover, inorganic N available in the soil, soil moisture, soil pH, organic matter and available phosphorus will also be evaluated. Samples were sealed in plastic bags to prevent loss of moisture and the record of wet soil weight was taken. For each parameter, the data collected in native acacia tree acted as control value. Samples was homogenized and stored with polythene bags at a temperature of 50C before taken for analysis. The data was analyzed on the five main variables covered by the research. Average scores for each treatment were plotted. All collected soils samples were analyzed in the lab. Interactions between species and treatment on biomass parameters, soil phosphorus, and Nitrogen and Carbon interaction with mycorrhizal association was analyzed using two-way ANOVAs. Where F- ratios shows significant ($P < 0.05$), treatment means was compared by least significant differences. Other quantitative data was then summarized

using excel package and then analyzed using Statistical Package for Social Sciences (SPSS) for window version 22. All the hypotheses were tested at $\alpha=0.05$. The study results show differences in; mycorrhizal association, availability of vital elements to plants, carbon allocation to fungi and effects of distances from exotic trees stand in mineral acquisition to adjacent native pastures. The findings are thought to provide variable information to National Environmental Management Authority (NEMA), community leaders, Kenya Forestry Services (KFS), opinion leaders, extension officers, farmers and NGOs.

Implication of School feeding programmes, National food policies, action of plan and strategies on school meals and food security among school children in Kenya. (Review)

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Abstract

School feeding programs have been implemented in Kenya since the 1980's with varying degrees of success. From its inception, it has targeted food insecure areas of Kenya, including school districts in the Arid and Semi Arid Lands and the informal urban slums of large cities such as Nairobi and Mombasa. Through school feeding programmes in Kenya notable changes have been seen especially in school attendance, school enrollment but insignificantly on overall student health. Food insecurity is occasioned by droughts, floods, ever rising food prices and crop/ livestock diseases.

Children dwelling in the arid and semi-arid lands and the urban poor or slum dwellers, are the most the most vulnerable. Food insecurity in school aged children can lead to nutrient deficiencies resulting to increased vulnerability to infections, stunted growth and diminished cognitive performance in school. The Government of Kenya has shown commitment to improving food security of such school children in several occasions through school feeding and formulation of national policies, action plans and strategies to govern school meals. However, school feeding programmes are facing funding challenges in curbing food insecurity especially in availability of quality and quantity meals due to limited and flat rate school feeding stipend with ever rising food costs. The many national food and nutrition policies, action of plan and strategies governing school meals are at draft stage and are yet to be implemented. Hence the need for this review to determine; the extent to which school feeding programmes have been implemented in Kenya, operational national food policies, plan of action and strategies on school meals. This will be critical in improving food security of school children and therefore their health.

Key words: School, School Children, Food Policy, Food Security, Action of Plan, Strategy.

Influence of Secondary School Students' Attitude towards Agriculture on Employment Creation in Vihiga County, Kenya

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Abstract

Agriculture is believed to be the backbone of the Kenyan economy contributing to over 30% of the Gross Domestic Product and employs about 80% of the rural population. Kenya Vision 2030 positions it as a key driver for delivering the 10% annual economic growth. It is estimated that 64% of unemployed persons in Kenya are youth, indicating a serious employment problem. Emuhaya Constituency being an agricultural potential area, little attention has been taken to identify why there is a high rate of unemployment yet some of the youth who have learnt agriculture in secondary school are idle thus indulging in crime and other social vices. The purpose of this study was to analyze the influence of secondary school students' attitude towards agriculture on employment creation in Vihiga County, Kenya. The study was done in Emuhaya Constituency and adopted qualitative research design using descriptive survey method. The target population was the youth who learnt agriculture in secondary schools. The study purposively sampled 150 youth out of a total population of 2,736 youth who sat for KCSE in Emuhaya Constituency between 2010-2012. Data was collected using structured questionnaire. Academic experts from the Department of Agricultural Education and Extension validated the instrument. The instrument had a Cronbach's Alpha reliability coefficient of 0.814, at 0.05 level of significance. The data was analyzed using the Statistical Package for the Social Sciences, based on the objectives and research questions. The relationship between the secondary school students' attitude towards agriculture and employment creation was tested using Pearson Correlation. Frequency tables and percentages summarized the results. The study established that teaching of agriculture in secondary school based on students' attitude was negatively related to employment creation for out of school youth in Emuhaya Constituency of Vihiga County. The study recommended formulation of policies that promote harmonization between agriculture teaching and employment creation, it recommended youth to take up agricultural activities for employment and also recommended replication of similar studies in other levels of education such as primary and university.

Key Words: Agricultural Policy, Employment Creation, Learning Resources, Students Attitude, Agricultural Education

Predictors of the Purchase of Organic Foods in the United States: A Study of Attitudes and Practice in Emerging Food Markets

Benjamin Onyango

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Abstract

The study identifies and estimates the influence of consumers' views of specific food aspects (attributes) and personal attributes on demand for organic foods. A logistic regression is applied to US national survey data to analyze consumers' willingness to buy organic foods. Results from the study show that food naturalness aspect (no artificial flavors or colorings),

vegetarian vegan identity (persons who do not eat meat or animal products) and production location considerations are critical in determining the regularity of organic food purchases. Food familiarity aspect (whether the respondent has consumed a food previously or prefers a familiar brand) is negatively associated with organic food purchases. Females and young people buy organic foods on a regular basis, as well as the more politically liberal and moderately religious. This study contributes to the emerging markets literature by broadening the range of drivers of organic foods purchases beyond sociofactors. Information generated provides useful information to policy makers and organic food marketers as the organic food industry evolves.

Key Words: Organic Foods, Emerging food markets, Food Attributes, Logistic model

The place for Dry Land Agriculture in Kenya's Secondary School Agriculture Curriculum

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Abstract

The paper sets out to document the extent to which secondary school agriculture curriculum addresses competencies on Dry Land Agriculture (DLA) and the possible ways of bridging the gaps. Approach: This is a historical paper based on desktop review of various education commission reports and policy documents as well as secondary school agriculture syllabus over time and other related research literature. Findings: The review revealed that soil and water conservation sub theme had the highest number of learning objectives addressing DLA while minimum soil disturbance had the least. Only 29.4 percent of the learning objectives focus on skill acquisition. Practical implication: To tap the agricultural potential in ASALs, learning objectives in the curriculum must focus more on competency acquisition since learning objectives inform the learning experiences that learners are subjected to. Learning objectives focusing on knowledge encourages theoretical implementation of the curriculum denying agriculture graduates the opportunity to learn through practice. Thus with few skills on DLA practices, secondary school graduates are less competent and lack the skill to transform the ASALs into food baskets. Theoretical implication: This study is informed by Competency based theory, Edgar dale and Kolb's experiential learning theory. These theories emphasize on skill acquisition for various competencies through active participation of learners in related learning experiences; in this case, exposing agriculture students to DLA practices. Originality: The paper constitutes unique contribution towards the need to refocus agriculture curriculum content in Kenya secondary schools to address the societal needs in this case ASALs.

Key words: Dry Land Agriculture, Agricultural education, Competency, Agriculture curriculum, Arid and Semi Arid Lands, implementation.

Differential induction of host innate responses after infection of cattle with two *Theileria parva* isolates of different virulence

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Abstract

In *Theileria annulata* parasite, which infects and transforms bovine macrophages instead of lymphocytes, the appearance of macroschizonts in the animals correlates with the appearance of fever and a distinct increase in pro-inflammatory cytokine-dependent acute phase proteins (APPs). The increase in acute phase protein, the host matrix metalloproteinase 9 (MMP 9) and some cytokines such as cytokine IL-10 have been used as markers for virulence. In this article we determined levels of these molecules following infection with two different *Theileria parva* isolates both in vivo and in vitro. The levels of three acute phase proteins - serum amyloid acid A (SAA), haptoglobin (Hp) and acid glycoprotein (1AGP) — were compared between the two *T. parva* isolates using equal doses of sporozoites giving significant differences in levels of SAA and AGP, whereas the level of IL-10 were similar between the two. There was also a difference in MMP 9 expression between established cell lines from the two isolates with *T. parva* Chitongo-infected cells expressing a lower level, although the difference was not statistically significant. These results seem to indicate that *T. parva* Chitongo is less virulent and that the difference in virulence could be partly explained by induction of lower levels of APP. Though the exact role of APP and their mechanism of action has not yet been analysed in cattle infected with *T. parva*, some studies have shown that APPs are important molecules in controlling inflammation and apoptosis thereby contributing to the host innate defense. The significance of these studies cannot therefore be underestimated especially at the critical stages of this disease and in the progression of the cancerous cells.

Key words: *Theileria parva*, Acute phase proteins, HMMP, Inflammation, Apoptosis

Women Technological Empowerment in Agriculture: Issues, Challenges and Policy Option: A Case of Rural Women Farmers Groups in Njoro Sub-County Kenya

Wambu Charles

Machakos University

Abstract

In Kenya women in rural areas are key agents for achieving the transformational economic, social, political and environmental changes required for achieving sustainable development. Women lack empowerment on economic, political, social, educational and psychological affecting most for development such as Sustainable Development Goals, Kenya Vision 2030 among others. Empowering is women key not only to the well-being of individuals, families and rural communities but also to the overall economic productivity, given that women form the largest workforce in agriculture worldwide. The study adopted cross-sectional study survey with concurrent mixed methods approach entailing equal preference to quantitative

and qualitative methodologies to generate rich information that helped fully to explore each of the survey objectives.

The respondents were sampled using different approaches for quantitative and qualitative aspects of the survey. For quantitative segment, simple random sampling was done to identify beneficiaries' households (HHs) for the household survey. The survey target 240 farmers who were organized into 2 clusters of 12 farmer groups (Each cluster 6 groups) comprising of 20 farmers each working as a production group in Mauche and Mau-Narok divisions in Njoro sub-county, Nakuru County, Kenya. The sample size representative of the farmers in this study was 148. Primary data collected using a combination of quantitative and qualitative methods including group discussion, structured interview, semi-structured interview, Key informant Interviews (KII) and some PRA tools such as Venn diagram, Gender Analysis Matrix, and Time Trends.

Secondary sources comprised of relevant project documents and State and Non-state partner reports. The data collected was analyzed using qualitative and quantitative methods with the help of Statistical Package for Social Science (SPSS). From the data results the respondents reported that they lacked power over, power within and power to control major decisions such as marketing, major crops to produce, type of technology to use, and type of information. They reported that they were economically, technologically, socially and politically empowered. The women reported that after introduction of the mobile phone services they were able to open an account, save, access credit, make payments, access extension information, network with other women, men and other organization on modern farming methods.

Key Words: Women, Technological Empowerment, Agriculture, Issues, Challenges and Policy Option

‘Hands on Strategy’ on Food Security: A Freirean pedagogical approach with the pastoralist communities in Kenya

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Abstract

The fact that almost 80 percent of the population of the Horn of Africa region lives in rural areas (FAO, 2017), means that increasing agricultural productivity and production in various ways should be the principal approach to solving the problem of long-term food insecurity. While recognizing the efforts by world organizations like UN, World Bank, and both regional and local governments, NGOs and private sectors; in the recent news; pastoralist communities are continuously hit by sphere hunger which of late has led to loss of lives in Turkana County in Kenya.

Such experiences generate a discourse on what has been lacking as organizations and governments seek to respond to the challenge of food insecurity. A hands-on strategy on food security could be of value. However, its implementation will seek for a turnaround from similar practices as the involved enter a serious reflection of the problem in order to liberate themselves. The key tool identified by Freire for achieving this liberation is education.

Freire argues for a new type of education; a pedagogy of the oppressed. That is an education constructed by the people out of their lived experiences. Pastoralist communities in Kenya have had an experience build around oppressive structures. These oppressive structures constructed by them and by 'others'. Therefore, unless such communities seek to overcome this reality through problematization and conscientization; the culture of silence may lead to diminishing of such a potential people or they will remain perpetual food emergency cases. This article enunciates a discussion on the 'hands on strategy' as informed by Freirean pedagogy, an approach to solving deeply rooted socio-economic challenges like food insecurity. The article demonstrates an innovative model which can be employed by key stakeholders for sustainable development in developing countries.

Key words: Strategy, Pedagogy, Problematization, Conscientization, Food security, Innovation

Application of Supercritical Carbon Dioxide in Agricultural Products Processing

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Abstract

Supercritical fluid extraction (SFE) technology has been well received as an environmentally friendly processing technique and, over last two decades, its use in many industries has advanced tremendously. This is as a result of pressure from regulating bodies aimed at reducing the wide-scale use of organic solvents due to negative environmental impacts. SC-CO₂ is considered to be environmentally benign and generally regarded as safe (GRAS) since its critical point values (73 atm, 31°C) are easily achievable. It is relatively inert, making it ideal for thermal labile compounds.

It is also ubiquitous, cheap, recyclable, and it leaves no residue on the extract. Therefore, it has been used in development of a wide range of alternative processes in various industries to totally or partially eliminate the use of organic solvents. In this work, SC-CO₂ was used in processing of selective agricultural products which included: Beeswax, Distillers dried grains (DDGS) with solubles, and waste sheep wool to produce value-added products. Supercritical carbon dioxide was employed in the isolation of high purity lanolin from waste sheep wool, processing of DDGS to food-grade flour which can be used for making baked products, and in extraction of beeswax from honeycomb, cappings, slumgum, and filter cakes. Response surface methodology was applied in optimization of the processing parameters.

Key words: Supercritical carbon dioxide, green chemistry, Supercritical fluid extraction

Evaluating the efficiency of high resolution melting curve analysis in diversity analysis of Meloidogynespecies in rice fields

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Abstract

High resolution melting (HRM) analysis is a fast and inexpensive technique for detecting and identifying organisms. Meloidogyne spp. were extracted from soil samples collected from rice fields. Four primer pairs targeting the Internal Transcribed Spacer region were used to produce HRM profiles of the Meloidogyne spp. The species were identified as Meloidogynegraminicola, M. incognita, M. javanica and M. arenaria. There were significant variations ($P < 0.05$) in the average melting temperatures of M. arenaria, M. incognita and M. javanica among the different primers. There were also differences in HRM profiles, normalized curves and melting curve shape between the four primers. This study has demonstrated that HRM is a high-throughput technique that can be used in identification of Meloidogyne spp. Accurate identification will allow sustainable species-specific nematode management leading to low cost of rice production.

Keywords: HRM, Meloidogyne, Oryza sativa

Evaluation of Effects of Sewage Farming Vegetables to Consumers and Their Awareness in Peri-Urban Areas: A Case Study of Ruai, Nairobi County

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Abstract

Food safety has become everybody's concern and it's difficult to find anyone who has not encountered an unpleasant moment of foodborne illnesses at least once.

Food borne illnesses are a result of consumption of contaminated food with micro-organisms, pathogens, heavy metals and other toxic elements. Due to lack of land and water for farming in Nairobi most farmers utilize the land along the sewage which is usually owned by the government and do their farming with the sewage water. Most of the vegetables consumed in Nairobi is produced with sewage water and research sought to establish how the produce affects the consumers since the water contains heavy metals, pathogens and micro-organisms. Sewage vegetables are sold everywhere in the market and they take biggest share in the market. Those who produce using clean tap water are mostly not able to take their produce to the market since consumers come to buy the vegetables at the farm. It was realized that vegetables produced using clean water was very few to satisfy the population and so most farmers sold to friends. The study used a stratified random sampling technique, used questionnaire and interview method to collect data from the consumers from consumers both from their homes and in the market place since most people consume what they sell vegetables as well as from a few farmers. Very few consumers were able to differentiate between vegetables produced

with sewage water and those produced with clean water; they said those produced with sewage water were greener. Most consumers in the household were affected by the sewage vegetables but due to factors such as income they are not able to purchase clean vegetables. Consumers from middle income and high income are willing to pay for a safer vegetable. Sewage vegetables causes' health risk to consumers and then it was realized that most affected people in the household are the children. The health risks they suffer are mostly stomach problems and very few cases of polio.

Key words: Farming, Foodborne, Sewage, Population

Effective methods for data collection in rural setup: A pilot study focusing on Agricultural practices in Kinangop, Nyandarua County, Kenya

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Abstract

Agriculture sector in Kenya plays a vital role in achieving sustainable development goals of ending poverty, hunger and economic growth in the country. Conducting research on how this sector can be improved is imperative in order to improve the lives of the citizens, especially those in the rural areas. The quality of any research is highly dependent on the way data is collected. However, very little research exists that shows the most effective ways of collecting data especially in rural areas. This pilot study aimed at identifying effective data collection methods and techniques among farmers in rural areas in Kenya. To achieve this, four data collection methods were tested: Interviews, Digital Story Telling, Focus Groups and Rich Pictures that was conducted on different respondents in Kinangop. Data was analysed using descriptive statistics. Results obtained showed that no single data collection method is adequate to address all the research objectives. Data collection methods have strengths and weaknesses that can be balanced out by using different techniques. Digital Story Telling and Rich pictures are ideal for exploring options and therefore tend to be useful during problem identification. Interviews and Focus groups are ideal for addressing specific objectives and therefore should be used after the problem identification phase when objectives have been set. The findings highlight the importance of selecting effective data collection methods when conducting research among farmers in rural Kenya. Further research needs to be conducted with large number of respondents to validate these methods.

Key words: Agricultural research, data collection methods and techniques, pilot study, rural livelihood, Rural Education

Large Hive Beetle: A potential new pest of honeybee in Kenya

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Abstract

Sustainable declines in the abundance and diversity of pollinators have been reported worldwide. Loss of pollinators has serious consequences for both biodiversity and crop productivity. Pollinators are essential or beneficial for the production of many crop species and also important for the reproduction of more than 65% of the world's wild plants. The drivers implicated in honeybee colony losses in Europe and North America has been reported in Kenya, including pathogens, parasites and pesticides. The recent declines in honeybee populations and demand for sustainable pollination to ensure food security have resulted in increased awareness of the need to protect honeybee populations especially in Africa. In many areas of the world where it is managed, the honeybee, *Apis mellifera* has been plagued by diseases, pests and parasites. The presence of Large Hive Beetle (LHB) in Kenya honeybee colonies has raised concern as affecting honeybee colony performance and productivity. The study was conducted in Kenya's two agro- ecological zones at the coast in TaitaTaveta and mid- altitude in Kitui. Seasonal distribution and the effect of Large Hive Beetle on honeybee colonies will be determined by assessing the brood area, colony growth / weights, honey yields and absconding in the two sites. The two study sites were chosen because of high infestations as reported beekeepers and confirmed during initial surveys. The study developed Large Hive Beetle management techniques, which resulted into improved honeybee health and increase productivity.

Key Words: Honeybee, Colony, Large Hive Beetle, Performance, Productivity, Seasonal Distribution

Pathogenicity and Control of Root Knot Nematode (*Meloidogyne incognita*) on Cowpea

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Abstract

Pot experiment was conducted in a greenhouse to evaluate the efficacy of the leaf powder of Cassod tree (*Cassia siamea*), eucalyptus (*Eucalyptus gigantea*) and locust bean tree (*Parkia biglobosa*) in the control of *Meloidogyne incognita* on cowpea and their potency in growth and grain yield improvement. Seventy-five grams of each of the leaf powder was separately mixed with 4kg of soil in a 25cm diameter plastic pot. Non-amended pots served as control. Three cowpea seeds cv. "Kanannado" were sown in each pot but the seedlings were thinned to one plant per pot six days after emergence. Each seedling was inoculated with about 3000 freshly hatched juveniles of *Meloidogyne incognita* two weeks after sowing. The experiment was laid out in a completely randomized design with five replications. The results of the study showed that all the treatments significantly ($p < 0.001$) reduced root galling, nematode multiplication and improved plant growth and grain yield. Although all treatments

were effective in reducing root galling and nematode population, application of *Cassia siamea* leaf powder gave the highest reduction in nematode population (65.45%) reduction over the control, followed by, *Eucalyptus gigantea* 63.64% and *Parkia biglobosa* 60.00% reduction. These botanicals have strong nematocidal properties and amending soil with them can help reduce *M. incognita* and improve yield in cowpea.

Key words: Cowpea, *Meloidogyne incognita*, *Cassia siamea*, *Eucalyptus gigantea*, *Parkia biglobosa*

Effects of Anthropogenic Activities on the Water Quality of Malewa River for Animal Consumption: ~ A Case Study of Kenya Agricultural and Livestock Research Organization (KALRO)-Naivasha

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Abstract

Anthropogenic activities such as agriculture and livestock have transformed River Malewa basin in Kenya. The objective of this study was to assess the effects of the anthropogenic activities on the water quality of Malewa River for animal consumption; a case study of Kenya Agricultural Research Organization (KALRO)-Naivasha. River Malewa is located in Nakuru County. The River has its source at the western slopes of the Aberdare range and drains at Lake Naivasha. KALRO-Naivasha has a considerable portion of the 1,730 square Kilometres River serving KALRO's animals with water needs. This study analyzed nutrient inputs from agricultural production, spatial crops distribution, human activities and their influence on the ecological state of River Malewa. The evaluation entailed physicochemical and biological parameters in the indexes of water quality, pollution and the aquatic macro invertebrates' community. Results showed that aggregated crop fields occupy 25.2 % in the River and the biological water quality through the Biological Monitoring Working Party (BMWP) index denotes the presence of tolerant-pollution organisms, at the same time, the biodiversity was low (Shannon H' 1.1). Higher concentrations of nutrients in the lower area with 2.20 mg/L nitrates and 1.49 mg/L of phosphates, besides the loss of nutrients by runoff, which was 2.57 mg/L nitrates in the middle area and 0.18 mg/L phosphates in the upper area. In this case, the nutrient concentration input increases toward the lower area of Malewa River. The water quality in the River satisfies the Kenyan regulation criteria for both human and animal consumption.

Key words: Anthropogenic, Water Pollution, Agriculture, Biodiversity, Water Consumption.

Isolation and Identification of Pathogens Responsible for Post-Harvest Spoilage of Onions (*Aliumcepa* L.) In Some Selected Markets inBorno State, Nigeria

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Abstract

This study aimed to isolate and identify the pathogens responsible for post-harvest spoilage of onions and evaluates the efficacy of some selected plant crude extracts against the major post-harvest onion spoilage pathogens. The target onion cultivars were those commonly grown by the farmers in the target areas. A survey was carried out to access the current status and causes of post-harvest losses. Factors such as susceptibility of the cultivar and post-harvest handling processes were investigated. Disease causing micro-organisms that were suspected to cause the post-harvest damage were isolated, identified and re-inoculated to wounded surface sterilized freshly harvested onion to establish pathogenicity. Crude plant extracts from neem (*Azadirachta indica*) leaves, ginger rhizomes (*Zingiber officinale*) and Kassod leaves (*Sennasiamea*) were tested for the control of the most potent fungal and bacterial pathogens. An in vivo experiment was carried out where healthy onions were dipped into the selected crude plant extracts and disease development on them monitored and compared with the untreated onion samples. Data was analysed using SPSS and SAS One-way ANOVA and means separated using Students – Newman – Kuels Test. The survey revealed that factors such as cultivars used and post-harvest handling processes differed significantly ($p < 0.001$) and contributed to post-harvest losses that averaged 30.63%. Four pathogens were isolated from infected onion samples and they varied significantly ($p < 0.001$) with *Aspergillus* spp. being the most prevalent (30%). Damage caused by the pathogens on onion also varied significantly ($p < 0.001$) with *Erwinia* spp. causing (100%) rot. Plant extracts were tested for their efficacy in controlling four most damaging pathogens where their efficacy differed significantly ($p < 0.001$) with neem extracts being the most effective. The in vivo study demonstrated that the extracts could be applied to control the rots on onion bulbs. Results of this study showed that plant extracts had antimicrobial compounds such as nimbin, azadirachtin, gingerol, gingerdiol, anthraquinone that acted against the test pathogens and can be an important step in developing plant based bio-pesticides for the management of bulb rots because the plants are readily available, affordable and environmental friendly.

Key Words: Isolation, Identification, Pathogens, Spoilage, Onion Marketing

Extension Environment Characteristics Influencing the Use of Video Mediated Technology in Teaching Agricultural Knowledge and Skills to Farmers in Homa-Bay County, Kenya.

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Abstract

The study assessed extension environmental factors influencing the use of video mediated technology (VMT) by public extension agents in Homa-Bay County, Kenya. All the 85 extension agents in Homa Bay County were assessed using a structured questionnaire. The collected data was then cleaned, coded and analyzed using descriptive and bivariate linear regression. The internal reliability of the created indices was determined using Cronbach's alpha (α) and an alpha of above .70 was considered adequate for this study. The study found out that there was low rate of use of VMT, and that the extension environmental characteristics had a positive and significant influence ($\alpha = .215$, $p = .048$) on the use of VMT by the extension agents in Homa-Bay County. The influence of extension environment on the use of video mediated technology was rated as average (mean of 5.2) on a scale of 1 to 10. The extension environmental characteristics affecting the level of use of VMT among the extension agents in Homa-Bay were found to be low level of response by the farmers to VMT trainings, lack of electricity away from training centers in the local agricultural areas and inaccessibility of training centers by farmers due to long distances and poor road networks. The study recommended that the public education of the farmers on video mediated learning, establishment of Video Viewing Shops (VVS) strategically, adequate electricity connectivity and improved road network systems within the local areas would improve farmers' attitude towards the usefulness of VMT and increase their ability to access agricultural information in the attempt to improve farm productivity through better agricultural practices.

Keywords: Video Mediated Technology, Extension Environment, Teaching, Agricultural, Knowledge, Skills.

Constraints and Opportunities for Youths Engaged in Agricultural Value Chain in Limuru Sub-County in Kiambu County

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Abstract

The population in Kenya is largely comprised of the youths and research shows that youth involvement in agriculture is declining amidst the rising youth unemployment yet other sectors in the economy like industrial sectors despite growing at considerable faster rates have not created enough jobs for the youths. This may have an effect on food security and un-employment and this may limit the government efforts to drive growth in the economy through agriculture. The objective of this research is to determine the constraints and opportunities that youths face while engaging in the agricultural value chain in Limuru sub-county in Kiambu County. To achieve this, the study examines the perceptions of youths in engaging in the agricultural value chain, examines the constraints faced by youths who practice agribusiness, find out the opportunities that promote youth participation in the agriculture value chain and to come up with strategies that will encourage more youths to participate in the agricultural value chain. The results of the study established that majority of the youths want to start businesses in agribusiness. Youths had a positive perception about agriculture and they were actively involved in the agriculture value chain and they considered agriculture as an important sector in the Kenya's economy. The challenges hindering youth involvement in agribusiness and agricultural value chain identified by this study include, poor access to financial services, access to agricultural information and access to markets in this order. Other challenges included access to mentors in the agriculture profession, access to agricultural inputs and access to agricultural machinery. The study recommends that strategic positioning of youth in value chain through enhancing access to adequate financing, imparting practical knowledge on agriculture through mentorship, establishment of easy access market channels for agriculture products and training on value addition.

Key Words: Agriculture, Value Chain, Constraints

SUB~THEME 2:

HEALTH CARE, LEISURE AND TOURISM INNOVATION

Machakos University First Annual Conference in Pictures



Deputy Vice-Chancellors: Prof. Douglas Shitanda, Prof. Peter Mwita



Prof. Joyce Agalo lead members in medical Check up during the medical camp.



Tourism Product Innovation: Positioning Meetings, Incentives, Conferences and Exhibitions, As a Strategy for Product Diversification in Beach Hotels of Mombasa County, Kenya

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Abstract

The study purposed to investigate Meetings, incentives, conventions and exhibitions, abbreviated “MICE” as an important element of tourism product innovation and diversification in Kenya. This paper had specific reference to the Beach Hotels in Mombasa County in the Kenyan Coast, which has traditionally offered vacation and leisure tourism product. As one of the major sectors within the global tourism industry, MICE have long been recognized as a sector that gives direct and indirect revenue for host destinations, creates employment opportunities and generates foreign exchange. As a consequence of all these major characteristics, the number of destinations vying for this industry is increasing. This study adopted a census approach while data collection took a two pronged approach. A validated questionnaire was administered to the respondents while a focus group discussion was held with selected hotel owners from the county. Results from this study indicate that during the period of focus 50% of the study hotels offered incentive tours while 33% offered exhibitions and trade fairs. The proportion of MICE earning compared to the total earning in the study hotels grew from 21% in 2013 to 51% in 2017. The study found that 38% of the hotels are increasing their marketing targeting MICE, 31% are investing in developing their facilities. Seventy percent of the respondents said that the MICE product need diversification as an opportunity for growth as well as income to cushion the hotels during the seasonal fluctuations of the leisure tourism. Results showed that 60% of the hotels have not exploited their advantage of being on the beach to offer more incentive tours. The study recommends that beach hotels address new and existing innovations and technological solutions to diversify their businesses by offering products that incorporate business with leisure packages to be able to maximize on their revenue all year round.

Keywords: Tourism Product, Destination, MICE, Diversification, Beach Hotels, Revenue

Community Perception of Tourism Development: A Case of Rimoi National Reserve, Elgeyo Marakwet County, Kenya

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Abstract

The tourism industry greatly contributes to the economy of developing countries by creating wealth through foreign earnings, creation of employment, infrastructural and business development in the destination areas. In Kenya, tourism is the fastest growing economic sector and is the second largest source of foreign exchange after agriculture. Consequently, community participation in the planning and development of tourism is critical for sustainable tourism development. This study therefore sought to assess local communities’ attitudes and perceptions towards tourism development and their

perceived impacts to be able to identify different factors affecting local community's attitudes that might have major implications for future tourism development of Rimoi National Reserve. A survey questionnaire was administered to 160 randomly selected respondents from the neighborhood of Rimoi National Reserve. Out of 320 residents (88) 55 % of the respondents were drawn from Biretwo village while (72) 45% were from Chepsigot village. To triangulate the study findings, 10 participants were selected using snowball sampling technique and interviewed. Data based on the study's research questions was summarized using descriptive statistics and hypotheses tested using t-test at 0.05 level of significance. Interview data was analyzed thematically. The study found that residents around Rimoi National Reserve perceive the role of community as critical in tourism development. Besides, the community is generally aware of the infrastructural and economic impacts of developing Rimoi National Reserve as a tourist destination. The study recommends strategies meant to encourage community participation in tourism development for the achievement of SDGs and Kenya Vision 2030.

Key words: Community Perception, Tourism Development, Rimoi National Reserve

Mathematical Modelling of Cholera Transmission Dynamics for Aquatic Reservoir with Control Strategy

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Abstract

Cholera is generally a disease of the poor. Affecting regions that lack a heightened sense of hygiene and access to safe drinking water. In this research a mathematical model for the control of cholera transmission dynamics using water treatment as a control strategy is proposed. The model is designed by dividing the system into compartments leading to corresponding differential equations. The model is built on the assumption that cholera is contracted only through the ingestion of contaminated water. Conditions are derived for the existence of the diseases free and endemic equilibrium. We proved that the diseases free equilibrium is locally asymptotically stable under prescribed conditions on the given parameters. This means that cholera can be eradicated under such conditions in finite time. Numerical simulations are carried out using parameters values from published data to investigate the effect of transmission parameters on the dynamics of infection. We assimilated cases with no control, weak and average control. The results showed that water treatment is an effective method of controlling cholera however cholera cases will continue to be present in the population if the contribution of each infected person to the aquatic environment and the contact rate with the contained water is high.

Key words: Cholera, free and endemic equilibrium, and Numerical simulations

A review of literature on local community participation towards sustainable tourism development in East Africa

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Abstract

Tourism is a major contributor to global economic growth, hence it has been earmarked for the achievement of the aspirations of the 2030 Agenda for Sustainable Development. As a result, UNWTO has partnered with governments, private partners, international and regional finance institutions and other organizations to realize sustainable Development Goals (SDGs). One of the SDG goals is to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all by 2030 by devising and implementing policies to promote sustainable tourism. Impliedly, inclusivity of local communities is critical to the achievement of the aspirations. Ironically, literature contends that local communities lack participation opportunities in decision-making relating to tourism and experience inadequate financial, social and vocational benefits from projects that commercially exploit their resources. Therefore, this study reviewed the extent to which local communities participate in sustainable tourism development. This study adopted a qualitative approach by reviewing and analyzing existent literature on the topic under study. Based on the literature, the findings of these studies reveal that local community's participation in tourism is coercive, a low form of participation which denies the local community more opportunities to participate in key policy and decision making process. This study concludes that local community participation towards sustainable tourism development is more coercive and induced than spontaneous. Besides much participation is associated with socio-economic pillar of sustainability at the expense of the ecologic pillar. In addition, several personal and environmental factors influence local community participation. Consequently, this study proposed an integrated framework of factors which influence local community participation that can be used in East African countries. However, a quantitative study is recommended to investigate the reliability and the extent to which the framework can be applied in the Kenyan tourism destinations.

Key Words: Community Participation; Local Community; Sustainable Tourism Development; Tourism

Effect of Consistency Culture on Performance of Selected 5-Star Chain Affiliated hotels in Kenya

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Abstract

The paper sought to establish the effect of consistency culture on performance of selected 5-star Chain affiliated hotels in Kenya. The study employed both descriptive survey and correlation research designs. The study was undertaken in Nairobi Central Business District (CBD). The target population of this study comprised of employees 5-star rated chain hotels. The study employed purposive sampling, stratified sampling and simple random sampling techniques. Questionnaires were used in data collection. Data was analyzed using descriptive

statistics; frequencies and percentages while correlation and regression analysis was used to assess the effect of consistency culture on performance. The study established a strong positive relationship ($r = 0.797$, $p = 0.000$) between consistency culture and performance. The regression results established that consistency culture significantly predict performance ($\beta = 0.041$, $p = 0.184$). Consistency culture can be achieved by employees adopting sense of ownership, responsibility, loyalty and commitment to the organization. This indicates that as customers visit a particular hotel, they develop some level of expectation through the available information channel. When the organization is inconsistent in service delivery, they run a risk of not satisfying the customers. The study recommends adoption of innovative service designs that sustain consistency in service delivery order to meet customers' expectations. It is highly recommended that such service designs should incorporate information systems such as management and operations support systems.

Key Words: Consistency Culture, Performance, Service Design

Community Reproductive Sexual Health Scouts and Monitors among the Pastoralist Communities of northern Kenya and implications for Development

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Abstract

This ongoing study seeks to appraise the role of community scouts and monitors who work to collect reproductive sexual health information on girls and women in conflict communities of northern Kenya. The idea of scouts and monitors on health and security of women and girls in northern Kenya has been borrowed from the scouts and pre-vets in the monitoring of movement of livestock diseases. Northern Kenya has been in the backwoods of development since the colonial days and through the successive regimes. This has made it to suffer many forms of scarcities leading to high levels of poverty. As a result access to basic services such as health and education is at its minimal. The area is characterized by high mortality rates of children, women and girls due to lack of proper sexual reproductive health services. Women and girls also suffer different forms of sexual reproductive health complications since this is a highly patriarchal society that has almost zero room for any discussion on such issues. What are the reproductive sexual health problems facing girls and women in this county? In what ways do conflicts increase these sexual reproductive issues, what are the indigenous ways of dealing with these issues and the implications? What are the structures, policies and institutions that have been created by the government (national and county), CBOs, and NGOs to deal with these issues? These are some of the questions that this study is grappling with. The study is employing mixed methods approach which has given room to the use of both qualitative and quantitative approaches. The data collection instruments include; in-depth interviews, FGDs, Observation schedules and questionnaires. The preliminary results show that there are several sexual reproductive diseases which affect women and girls in this county. Most of the health issues are handled by traditional ethno medicine experts who in some cases make them more complicated for lack of proper understanding of the same. The findings also show that the hospitals in the area of study are not sensitive to these issues since some of them lack basic drugs and the in charge are young nurses and clinicians who have no experience in dealing with these issues.

Key Words: Reproductive, Health, Scouts, Monitors, Pastoralist

Antimicrobial activity of Maytenusheterophylla extracts.

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ABSTRACT

Maytenusheterophylla are used in traditional medicine to treat several diseases in Kenya. The aim of the study was to investigate antimicrobial activity of different parts of Maytenusheterophylla used in traditional medicine. The stem barks and root barks were extracted with various solvents, and tested against different bacteria; Staphylococcus aureus (ATCC 25923), Enterococcus faecalis, Pseudomonas aeruginosa and Eschericia coli (ATCC 25922). The fungal strains used in this study were Candida albicans (ATCC 90028), clinical isolates of Candida krusei, Cryptococcus neoformans, Microsporiumgypseum and Trichophyton mentagrophytes were also tested. Minimal Inhibitory Concentration (MIC) values of each active extracts and fractions were determined. The results obtained show strong activity of the methanol extract and its fractions against bacteria and fungi used as test organisms. The study demonstrated a correlation between their use in traditional medicine use and in-vitro antimicrobial activity of extracts indicating that the traditional knowledge is important.

Tourism Potential in ElgeyoMarakwet County and prospects for Development

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Abstract

The aim of this paper is appraise tourism potential in EgeyoMarakwet County and discuss some of the ways in which the potential can be exploited. For a long time, northern Kenya was closed from the rest of Kenya for reasons that were segregationist and discriminative and ElgeyoMarakwet was in this marginalized categorization. After independence there has been a realization that tourism in ElgeyoMarakwet can support the economy in this endeavor and benefit the local population as well as the country at large. ElgeyoMarakwet has attractive landscapes like the only hanging valley in the world, the longest stretch of National Park stretching from Baringo to Turkana with an estimated largest number of elephants (single herds up to 200 parks in Rimoi Game Reserve). The Keiyo escarpment that links to the Cherangani hills is the longest escarpment in Kenya beside the Abadares and Mau ranges to provide one of the picturesque landscapes in Africa. ElgeyoMarakwet serves as one of the origins of the water towers in Kenya from Chebara dam served by five rivers. The county has one of the biggest indigenous forests called Bombut which is a home to unique plant and animal species not found anywhere in the world. My argument in this paper is that if this is opened to local and international tourists this will contribute to large revenue for the county and country at large. Why has it taken long for this tourism potential to be unraveled? What are some of the ways in which this can be done? What are some of the obstacles and how can they be eliminated? Is there possibility of generating local investment as well as government support for tourism in this county? These are some of the questions that this paper will attempt to address?

Key Words: Tourism, Potential, Marginalized, Indigenous, Appraise

Drug Resistances Detection in Mycobacterium Tuberculosis Patients in Jos, Plateau State Nigeria

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Abstract

Tuberculosis (TB) is a leading cause of mortality worldwide and one of the notable infectious disease of poverty with high prevalence in Africa and most developing countries. The prevalence of MDR-TB in most region in Nigeria is not well documented, so far, there is no report of the prevalence of MDR-TB among new and previously treated cases in the study area. This study compared the performance of three different methods; the nitrate reductase assay (NRA) with MTB/RIF Xpert (GX) and Genotype MDRTBplus (LPA) for direct detection of TB drug resistance using sputum specimen. A cross-sectional study was carried out using a total of 126 expectorated sputum samples from patients with signs and symptoms suggestive of tuberculosis and referred to at APIN TB laboratory, Jos University Teaching Hospital from August 2016 to December 2016. The sample distribution was 60 samples from newly diagnosed patient and 66 samples from retreatment cases. Sputum sample was tested directly by Ziehl-Neelsen method. All samples showing Positive AFB were used as study samples. Overall results showed that the prevalence of *M. tuberculosis* RIF resistance confirmed cases was 71.1% (86/126). RIF's resistance was higher in male 75.5% (65/86) than female 33.9% (29/86). A total of 13.5% (17/126) were sensitive to all the first line TB drugs while a higher percentage 86.5% (109/126) of study samples was resistant to one or more drugs was sensitive to all TB first line drugs. RIF resistance was concordantly detected in 46.7% (28/60) in treatment naïve patients and 95.1% (58/61) in retreatment patients. Correlation of the test assays (GX, LPA and NRA) on RIF detection were all positive and significant (p -value<0.05). A higher proportion of RIF's resistance 76.2% (96/126) was detected by NRA, 75.4% (95/126) detected by GeneXpert and 74.6% (94/100) was detected by LPA. NRA assay demonstrated high sensitivity in detecting RIF resistance in sputum specimen compared to Xpert MTB/RIF and LPA assays. Based on these findings, it is evident that NRA is suitable for the early detection of MDR-TB, especially with its advantage of detecting more than one drug resistance pattern in TB suspects.

Keywords: Assay, Drug resistance, Mycobacterium tuberculosis, Mortality, Nigeria, Prevalence.

Significance of Social Media in the Kenya Tourism Industry

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Abstract

The emerging significance of Social media in the tourism industry is increasing. Social media have changed the way tourists explore, search, book and experience travel. Most operations and transactions are currently carried online. With the increasing number of users, social media platforms are seen to have a significant influence in the tourism industry. This paper examines the significant role social media plays and how service providers in the Kenyan tourism industry can utilize them to their advantage. Kenya is ranked among the top tourism

destinations in Africa. It is an income generating sector and contributed to 9.7% of the Country's GDP in 2017. It is also one of the key sectors in the economic pillar of vision 2030. In the financial year 2017/2018, tourism arrivals grew by 6.8 % while tourism receipts posted a 9.9% growth of Ksh 117.6 Billion. Hence social media in the Kenyan tourism industry is envisioned as a means of reaching prospective tourists, showcasing emerging destinations within the Country, and improved and new tourism products. This will further improve Kenya's tourism global visibility as well as increase tourism arrivals.

Keywords: Social Media, Tourism, Tourismdestination

Institutional Frameworks for Sustainable Events Management: A Kenyan Perspective

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Abstract

Events of all types have the potential to create adverse consequences both positive and negative. Several areas of events have been comprehensively researched. However, there is need for studies to create a better understanding on the relationship between events and public policy agenda. Institutional frameworks include formal laws, regulations, procedures and informal conventions, customs and norms that shape socio-economic activity and behavior. They affirm need for effective governance at local, sub-national, national, regional and global levels representing the voices and interests of all people which is crucial for sustainable development. This study therefore sought to underscore the importance of strengthening institutional frameworks for sustainable development with specific reference to event management in Kenya. The study purpose was to provide an in-depth understanding on the various institutional frameworks in place and their relationship to sustainable event management. The objective was to establish the existing institutional frameworks in place in Kenya with respect to events management and to provide and insight into the requirements and guidelines relating to sustainable management of events and finally make recommendations for event service providers to the execution of events that are environmentally, socially and economically sustainable. Data was collected from documents relating to regulation of events in Kenya. The study findings revealed that the existing documents were not adequate in shaping the event industry towards sustainable development and hence recommends that policy makers and service providers incorporate responsible practices in their businesses if Kenya is to be positioned as a preferred destination and contribute towards the global sustainability agenda with a framework that is comprehensive, flexible, transparent and effective.

Key Words: Institutional Frameworks, Public Policy, Sustainable Development, Events, Sustainable Events, Event Service Providers

Improving Health Care Delivery by Community Health Workers through Mobile Phones

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Abstract

Community health workers (CHWs) play a critical role in delivery of basic health care especially in rural communities where access to health care is a challenge. Most of these “first line” health care workers are ill equipped and do not have much support in their role. Majority of Community health workers are low skilled and operate far from formal health care system. Mobile phones have provided a unique opportunity for Community health workers. This technology has allowed access of health information through the internet to facilitate their work. They are able to acquire updated information on how to deal with certain ailments, protocols to be followed and even consult with medical practitioners. It has improved the attendance to clinics immensely through reminders sent to patients in the form of text messages. Adherence to medication has also been enhanced through the same approach. It has made the collection and transmission of information to relevant authorities easier, faster and efficient. This paper presents the application of mobile phone technology specifically among community health workers. A review of literature available on chwcentral.org, a platform devoted to research linked to community health work, forms the core of this paper. It delves into the opportunity that this technology provides for improvement of health care delivery to communities. It provides evidence that indeed mobile phones can contribute immensely to improving health care delivery through community health workers to communities in dire need of these services.

Key Words: Community, Health, Technology

Design aspects for smart Maternity Wear: A Strategy for growing the Maternity Wear Market in Kenya

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Abstract

During pregnancy, expectant women experience dramatic changes in their physical body in terms of body silhouette, measurement, weight and posture. This lead to the need of clothes that can accommodate the changes and make the expectant women attractive and comfortable. Most expectant women have experience in dressing their non-pregnant body due to the availability of many styles and cuts of their normal clothing. Expectant women do realize that the maternity market in Kenya is limited in terms of the styles and cuts it offers. In addition, the maternity wear available in the market is expensive and only used during the last two trimesters. This makes expectant women opt to use the non-pregnant clothes which are ill fitting and uncomfortable to the fetus and the mother thus not buying the available maternity wear in the market. This study aims at determining the design aspects for smart

maternity wear which is a solution to the unlimited styles and cuts available in the market. It explores the possibility of using design aspects like garment silhouette, control of fullness and fabric that stretches to accommodate the physical changes. The methodology used was first undertaking a survey that established the desired design aspects of the target respondents, developing the smart maternity wear and collecting feedback from the target respondents concerning the developed garments. The garments were well received as they provided a variety of style, cuts and can be used for a longer period. Smart maternity wear is every day clothes that fits women during and after pregnancy and provides proper fit and comfort for a healthy fetus and mother. This will lead to growth in the maternity market since the expectant women will have variety of styles and cuts to select from.

Keywords: Design Aspects; Smart Maternity Wear; Maternity Wear Market; Pregnancy; Physical body changes; Trimester.

Harmonisation of Hotel Rating Systems in Southern Africa: Benefits and Challenges for the Hospitality Industry in Malawi

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Abstract

The International Standards Organization (ISO) and the World Trade Organization (WTO) jointly discussed the international harmonisation attempts of hospitality standards in 1998, but with very little success. As a result, many of the harmonisation attempts of the hotel rating or classification systems, for instance, have been more country specific than universal because the criteria are often adjusted and localised. Hotels in seventeen European countries implemented a harmonised rating system dubbed as Hotel stars Union for common criteria and procedures in the participating countries. The East African Community (EAC) comprising Burundi, Kenya, Rwanda, Tanzania and Uganda, successfully developed criteria for standardisation of their hotels, restaurants and other tourist accommodation facilities. The harmonisation dialogue on hotel rating systems in the 14-member state Southern African Development Community (SADC) to which Malawi belongs, was initiated about ten years ago but little progress has been achieved to date. Malawi also belongs to the 15-member state Regional Tourism Organisation of Southern Africa (RETOSA). Using secondary research, this paper explores the introduction of a harmonized hotel rating scheme for the hospitality industry in the SADC region. It examines potential benefits and challenges of a harmonised scheme drawing lessons from the EAC and Europe. Through the assessment lens of schemes in these regions, this paper argues that a SADC harmonized hotel rating scheme is achievable and suggests that its successful implementation hinges on how member states view its efficacy. It also posits that such a system would ultimately flourish on cooperation among industry players and the various tourist boards in the member states. The paper further argues that Malawi stands to benefit in the long run, having introduced a National Hotel Grading System (NHGS) modeled on South Africa in 2010. The article concludes that further research on the effective harmonisation model that 'sticks', is required.

Keywords: Harmonisation, hotel rating system, hotel rating criteria, service quality, SADC

SUB~THEME 3:

**LANGUAGE, CULTURE, SOCIAL
EQUITY AND COVERNANCE**

Critical Thinking, Democracy and Sustainable Development

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Abstract

Despite both the central importance of critical thinking in the works of many of the major figures of the western philosophical tradition and the deep philosophical issues raised, it has not been seen as an important or even a legitimate, area of democracy and sustainable development. In this paper, I challenge this conventional view by paying considerable attention to critical thinking, democracy and sustainable development. Especially noteworthy is the place of criticality in characterisation of democracy as a crucial component of the competence of denizens needs to participate in political society. Hence I inquire into method and theory debates within the academic study of CT, arguing for the potential of this broad field to enrich democracy and as an essential ingredient for sustainable development. I will be arguing that education should and ought to foster critical thinking in students for preparation or initiation into democratic life indispensable for sustainable development. This paper will give pride of place to CT as both the highest epistemic value and the fundamental aim or ideal of democracy and its indispensability for sustainable development.

Key Words: Democracy, Development, Critical thinking

The Legacy of Cecil John Rhodes: The British Diamond Magnate

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Abstract

This paper sets out to describe the character, philosophies and guiding beliefs of Cecil John Rhodes, the diamond magnate, as seen by different researchers and writers on the bigger-than-life personality. It also explains how these were shaped by his attempts at grammar school in England and much later his long stint due to absences in class-attendance in Oxford University while studying there. Having initially been sent by his father to South Africa at a young age due to poor health, initially living with his elder brother Herbert in Natal where they did some cotton farming and their relocation to Kimberley Diamond Fields after one year, we describe the key things that he subsequently went on to achieve including becoming Prime Minister of the Cape Colony, his creation of the British South Africa Company (BSAC), acquisition of diamond mining rights not only in Southern Africa, but the whole world. We also look at his handling of quarrels with the already established Boers especially in the Transvaal and his subsequent expansion northwards from Cape Colony into the hinterland of Southern Africa with view to pushing British Empire interests further into hinterlands of southern Africa. His relations with the Boers and Afrikaners in the face of his expansionist plans in Southern Africa is discussed as well as the so-called concessions agreement between Rhodes (representing British interests) and the kings Lubengula of Matabele and the king of the Mashona who controlled these lands. We explain his relationship with Matabele and Mashona chiefs especially his manipulation of their good intentions towards him in order to acquire the land concessions in Zimbabwe. Some discussion on his fervent belief in the superiority of the British race and his plans for the origins and role of the Rhodes secret society

as he describes them in his book 'Confession of Faith' which laid the basis for the elaborate plans for the expansion of the British empire and creation of a one-world government, are briefly covered. A discussion about the character and achievements of Rhodes cannot be complete without mention of how the Rhodes scholarships and the round table movement, both of which he was the originator and funder, have shaped the world since the beginning of the 20th Century.

Key Words: Character, Philosophies, Diamonds, Mining, Boers, Expansionist, Hinterlands, British Empire, Secret Society, Scholarships, Round Table.

Evaluation of Speech Act Theory in the 5th Tanzanian Presidents Speeches

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Abstract

The major purpose of this paper is to evaluate Speech Act Theory's insinuation within the 5th Tanzanian Presidents Speech. Speech Act Theory is the theory on how to do things with words. This is following the felicity force which triggers the truth of the action addressed. Three tenets: Locutionary, illocutionary and perlocutionary constitute the theory, the first is about the phonic/phatic utterance, the second is on the function while the third is on the effect of its preceding. Three speeches of the 5th Tanzanian President motivated the current analysis in the sense that the theoretical apparatus of Speech Act Theory insinuate these speeches. The paper is qualitative whose data collection is through documentary reading, thus three speeches were read following the criteria of being functional, also content analysis was applied during data presentation and analysis. The findings show that the three speeches have insinuated vigorously in the Speech Act Theory, thus the function of the speeches (illocutionary) has forces that have triggered real action (perlocutionary) to individuals concern as in leaving offices and others die due to stress. It can be generally said that Speech Act (ion) Theory is real to human being in the world following the social structure and organization that reflects the philosophy of language.

Key words: Speech, Locutionary, Illocutionary, Felicity condition, Perlocutionary

Analysis on the maximum number of freely Affix ordering in Kisukuma Verb Extensions

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Abstract

The aim of this paper is to analyze the maximum number of freely Affix ordering in Kisukuma verb extensions from which applicative, causative, simultaneous, repetitive, reciprocal and passive may be expanded from the verbal root. I have reached this analysis following the fact

that the previous literatures fall out that the maximum number of affix lying together to a single verb across Bantu languages is not other than three. Constructivism paradigm was adapted in this study; three Sukuma informants were purposively sampled. Two instruments were used for data collection: focus group discussion and documentary review. The Cognitive Grammar theory was used in data analysis and interpretation. The findings expose that the maximum number of freely affix ordering in Kisukuma is 5morphs from the verbal root. Therefore, such findings inform professionals to avoid general claim that a certain phenomenon is not permissible in languages. Let it be known that a truly educated does not graduate.

Key words: Affix Ordering, Kisukuma, Maximum Number, Cognitive Grammar

Unpacking the linguistic metaphors entrenching HIV/Aids-related stigma in Kisii County

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Abstract

Community-level stigma and discrimination towards people living with HIV is a setback to efforts at tackling the burden of HIV and Aids in Kisii County. It is evident that people living with HIV and Aids continue to be subjected to prejudice, negative attitudes and abuse. In 35% of countries with available data, over 50% of people report having discriminatory attitudes towards people living with HIV. Stigma may be based on actual or perceived health status, race, socioeconomic status, age, sex, sexual orientation or gender identity or other grounds. Despite the biomedical, structural and behavioural interventions by the County Government and implementing partners, HIV and Aids remain mysterious and less understood in Kisii County. People perceive the condition as a death sentence. Those living with HIV are viewed as people waiting to die. These perceptions are packaged in linguistic metaphors that make people living with the condition and those free from it to equally dread HIV and Aids. It is no wonder that people in the County, men in particular, shy away from participating in voluntary HIV testing services. The only avenue for identifying HIV positive persons is the new guidelines that require all people seeking healthcare in hospitals to undergo screening and, where applicable, testing for HIV. To uncover the role of language in the poor health-seeking behavior, this paper aims to identify and describe the linguistic metaphors. The paper argues that HIV and Aids are a complex health concern that call for the concerted efforts of a multisectoral framework where language management is a key component.

Andragogical Practices in an Undergraduate Phonology Class Integrating Visually Impaired Students: Lessons from Kenya, Africa

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Abstract

Phonology, one of the disciplines in the study of languages, is a core course in many Kenyan universities that teach linguistics. It is a technical course that utilizes both theory and practical in its delivery. Many students that I have taught initially find the course a challenge but with time they find it easier to understand, interesting and relevant for their future careers, particularly because most of them become teachers of English in high schools. One of Kenya's national goals of education is to promote social equity and responsibility by providing inclusive and equitable access to quality and differentiated education, including for learners with special needs and disabilities. Although this goal guides teaching in all education tiers in Kenya, its implementation, specially to integrate the visually impaired students in all undergraduate courses, has been a challenge. When an undergraduate student was registered to join the rest of the 120 students in my Phonology class, I knew I needed to change my methodology and approach to make the lectures more inclusive and relevant to him. In this paper, and using qualitative approach, we share our experiences (mine as a lecturer, and Peter's as the student) in the phonology class at Kenyatta University, Kenya. We explore and discuss the challenges we both encountered during the learning/teaching of phonology and how we navigated the same to be successful in achieving the objectives of the course. Peter is now a high school teacher and is an example of success among visually impaired students in Kenyan Universities. We recommend training of lecturers in pedagogical and andragogical practices long before students with visual impairment are integrated in the classroom

The Contribution of the Mother Language to Tanzanian Socio-economic Development through Media: With special reference to Mashami

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Abstract

The study of mother language has been given much attention how can be used as language of instruction in schools Qooro (2003), Zubeida (2003) and Rubagumya (1996). The concern relating to various aspect of mother language such as mother language in Socio-economic development through media has not well explained. This paper intends to discuss the contribution of mother language to Tanzanian socio-economic development through media. The objective this paper is to show the extent of which media can use mother language to catalyze the social and economical issues in Tanzania. This study will be guided by The Exploratory approach by Thornborrow (1998) as the theoretical framework. The study will

be qualitative using only one ethnic community language, Kimashami as the case study. Both focus group and interview will be used as tools for data collection. The findings of this study will be helpful in building a case to the language planner and policy maker on the necessity of officially allowing the use of mother language in broadcasting to the localities. Unless mother language is used in Radio Stations and other media, the socio-economic development in Tanzanian rural will be far from reality.

Key words: Mother language, Media, Socio-economic, Mashami language

The Role of the ‘Path’ And The ‘Container’ Image Schemas in Political Discourse in Kenya

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Abstract

The study of conceptual interaction has attracted the attention of many scholars in Cognitive Linguistics. Primarily, the analysis has focused on the role of image-schemas in the construction of metaphors. This study explores the PATH and the CONTAINER image-schemas and the role they play in conceptual formation of metaphors in political discourse in Kenya. The study presents the PATH and its subsidiary image schemas of Verticality, Process and Force-Motion and the CONTAINER image-schema and the subsidiary image-schemas of Excess and In-Out. The analysis reveals that both the PATH and the CONTAINER image-schemas structure the relationship between the source domains (journey and container) and the target domain (politics) by activating subsidiary image-schemas in metaphors of politics in Kenya. The study further reveals that image-schemas provide the axiological value (positive or negative) of metaphorical expressions in political discourse. A positive political environment is a key ingredient for green growth and knowledge economy. The study contributes to the field of metaphor in political discourse by examining the politicians’ conceptualization of politics as a journey, which consists of four structural elements (a source, a destination, contiguous locations which connect the source and the destination and a direction) and as a container, which consists of an interior, an exterior and a boundary. The study used the Conceptual Metaphor Theory (CMT) as a tool to establish conceptual metaphors used during the 2005 Draft Constitution referendum campaigns in Kenya and the Image-Schema Theory to account for the presence of image-schemas in political discourse in Kenya. Lakoff and Johnson’s (1980) Conceptual Metaphor Theory is the locus classicus of the image schema theory.

Key Words: Cognitive Linguistics, Image-Schema, Political Discourse, Conceptual Metaphor

Gender Mainstreaming Interventions in the Public Sector of Kenya

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Abstract

Gender mainstreaming is essential to a country's sustainable development. The interventions used to enhance gender mainstreaming determine the extent to which gender mainstreaming will be realized. Gender mainstreaming is concerned with equality between men and women in the work place. Effective mainstreaming can be achieved through a number of strategic and prioritized interventions within the supported sector, programme or project. The main objective of the study was to establish gender mainstreaming interventions used in the public sector of Kenya. The study was a critical review of literature on gender mainstreaming interventions. The study results showed that gender mainstreaming interventions lead to more effective and efficient service delivery. The study concluded that appropriate gender mainstreaming interventions should be employed, to enhance the agenda of gender mainstreaming.

Key Words: Gender Mainstreaming, Interventions, Public Sector, Kenya

Effects of Parental Divorce or Separation on Adolescent's Psychosocial Wellbeing in Kajiado North Subcounty

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Abstract

This study examines adolescents from divorced or separated families, whose transitional stage into adulthood, characterised by identity crisis, direly needed an intact family for a sense of direction and stability. With divorce rates high in Kenya there is a lacuna on the state of emotional and mental wellbeing of these adolescents. This study was carried out through concurrent descriptive research design. Data collection was through secondary data review and interviews with adolescents from divorced/separated families. The research was carried out in consideration of informed consent, privacy and anonymity. It was guided by Family Systems Theory which depicts family ties and how they affect the parties involved during and after divorce. From this study it was established that: adolescents initially experienced both positive and negative effects. Adolescents who were in emotionally violent homes cited initial reprieve after divorce. Those that cited initial negative emotional effects were too young to comprehend the divorce or separation, later realisation after getting older caused distress. Most adolescents cited economic strain in their divorced families with the mother largely mentioned as the provider. The adolescents had good relationship with their mother. Those that had a relationship with their father suggested that he did not economically provide for them. The economic strain made the adolescent yearn for an intact family where both parents would cooperate and economically provide, regardless of the emotional strain. In conclusion there is need to address the psychosocial wellbeing of married couples, in order to reduce parental divorce as it is most likely to create a vicious cycle of violence in the society.

Key words: Wellbeing, Psychosocial, Divorce, Separation, Adolescent, Effect

Effects of Gender Stereotyping on Women's Social Development: a Case of Urbanized Turkana Women in Eldoret Town~Kenya

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Abstract

This study investigated the effects of gender stereotyping on urbanized Turkana women's social development in Eldoret, Kenya. It identified the cultural factors that influence their involvement in social development. It also examined the role of local leaders in addressing gender stereotyping, while suggesting strategies that would address it and improve urbanized Turkana women's participation in social development. The study utilized the Convergent Parallel Research Design. Consciousness Raising and Radical Feminist theories guided the study. The sample size was 549 respondents. Questionnaires, interviews and focus group discussions were used to collect data. Findings revealed that gender stereotyping has a negative moderate relationship with women's social development with "r" value of -0.337. Results also demonstrate that there is a negative weak relationship between cultural factors and women's social development with "r" = -0.131, and statistically influence it since "p" = 0.015, less than 0.05. Similarly, findings indicate that there is a negative weak relationship between local leaders and women's social development with "r" = -0.201, and that they have a on women's social development since "p" = 0.000 which was less than the ideal value. Based on these results, the researcher proposes an action plan as a way forward. One of the proposed activities is the sensitization of Eldoret local leaders and the community on effects of gender stereotyping, creation of support groups for women to helps them to work together and have their voices heard. The researcher believes that the findings in this study will contribute to the fight against gender stereotyping and have more inclusiveness.

Key Words: Gender Stereotyping, Women's Social Development, Urbanized Turkana Women

Terrorism and Disaster Preparedness among Higher Educational Institutions in Kenya

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Abstract

The recent terror act at 14 Riverside Drive left twenty-one people dead and countless injured. On second April, 2015 gunmen stormed Garissa University killing 148 students and injuring 79. The militant group Al-Shabaab took responsibility for the attack. This came against the backdrop of 1998 United States embassy bombing in Nairobi and the 2013 Westgate shooting among other incidences. The vulnerability of universities to terrorism is related to the terrorist philosophy, to unleash terror. The high exposure in terms of population exacerbates it. After the Garissa University attack most institutions have gone into slumber vis-a-vis preparedness since the longer the time between an attack and subsequent attacks the greater the human memory lapse and denial. Universities must therefore make deliberate efforts to deter terrorist or counter and mitigate the effects. This paper proposes various

measures which include: The need for academic community to study terrorist recruitment techniques, organizational modes, methods of operations such as choice of targets and weapons: The need of modeling terrorist decision making as an input for understanding vulnerabilities of critical infrastructure: Institutional preparedness should be exhaustive and conditional, to anticipate every conceivable attack, understanding probable ripple effects, thinking in terms of multiple attacks and preparing proper responses for agents who would give out information in crisis: Detailing the roles of first line response agencies based on the principle of Subsidiarity and developing back up responses to contain loss of life: Conducting applied research on preparedness: Making information available about measures taken to prevent or defend against an attack including training and drills and designing warning systems.

Keywords: Terrorism, Disaster Preparedness, Higher Educational Institutions

Critical Reflections on the Impact of Non-Governmental Organizations in the Development of the Kenyan Rural Community: A Case Study of the Ogiek Peoples' Development Program (OPDP)

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Abstract

A non-governmental organization (NGO) is a non-profit, citizen-based group that functions independently of government. As non-profit organizations, NGOs rely on a variety of sources for funding projects, operations, salaries and other overhead costs. Non-governmental Organizations (NGOs) are recognized as important institutional actors in mobilizing community assets, motivating people and implementing social welfare programs effectively at both the grassroots level and the national level in any part of the world. Non-governmental organizations (NGOs) have also played a major role in pushing for sustainable development at the international level. They provide services to society through welfare works for community development, assistance in both local and national disasters, sustainable system development, and other popular movements. This paper investigated the impact of NGOs on community development strategy of the Ogiek community, one of the indigenous and underprivileged rural community in Nakuru County, Kenya. The findings of the study revealed that Ogiek Peoples' Development Program (OPDP), a registered NGO in Kenya, has opened doors for developmental activities in the Ogiek community. Prior to involvement of OPDP, villagers were deprived from basic rights such as education, social, health, economic and political opportunities. Disparity between genders was also high and tenacious in Nessuit division. Nevertheless, after the involvement of OPDP in the region, the livelihood strategies of the locals changed significantly. Villagers have access to electricity, modern communication mediums and their indigenous rights have been recognized. OPDP has created livelihood opportunities for the Ogiek community by empowering women groups, dis-advantaged youth groups and the entire Ogiek community.

Keywords:- Ogiek, Indigenous, NGO, Livestock, underprivileged.

Conserving the African Narrative: Blacksmith Practice among the Ethur Community in the Western Karamoja in Northern Uganda

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Abstract

This study analyzes the blacksmith practice as a tangible process that supported traditional communities in their day to day activities such as agriculture, hunting and defense. Although the modern living patterns and the invention of tools and new technologies from the west have reduced use of traditional technologies among the communities, the practices form the history of several communities in the world and in some cases are still used to support the communities. The study focuses on the Ethur community in the Western Karamoja in Northern Uganda which still uses blacksmith products to support their agricultural production. The purpose of the study is to document the blacksmith practice of the Ethur people as a means of conserving the African narrative. Although many household members in Ethur community prefer using imported items to traditional ones which they do not even have the capacity to acquire and poor quality notwithstanding, their household activities are supported by traditional items such as hoes, spears, knives, sickles, axes and bow and arrows as well as jingles. However, the production of local materials such as those of blacksmith continues to dwindle towards extinction as production remains for only the elderly persons among the community. The objectives of the study are therefore to; analyze the perceptions of the Ethur community towards blacksmith practice, document the blacksmith process of the Ethur community and guide a masters student to produce paintings that interpret the production process for conservation of the blacksmith practice for the Ethur community. The study will ethnographically interview three blacksmiths, two elders and two leaders in the area who will be purposely selected. The findings will help policy makers to plan pro-people interventions, record African narrative that sustained communities and make paintings that conserve the processes involved in the blacksmith practice.

Key Words: Blacksmith, Traditional Communities, Ethur People, African Narrative, Conservation

The Place of an Applied Linguist in Actualizing the Big Four Agenda

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Abstract

The Big Four Agenda, thereafter BFA, is a four-point agenda initiated by His Excellency President Uhuru Kenyatta, the President of Kenya, which outlines his focus in his final Presidential term. The BFA is geared towards improving the living standards of all Kenyans regardless of their social status; grow the economy and leave a long-lasting legacy. The items in the BFA are; manufacturing, food security, affordable housing and universal healthcare. The skills and expertise of all professionals and the government are key in the actualization of the Big Four Agenda. In fact, all Kenyans should be proactively involved towards realizing

the vision of the president and his government. The applied linguists may think that they are just spectators in the four-point agenda but that is not the case. Language is a roadmap in the realization of national development. An applied linguist, therefore, has a role to play since there may be linguistics problems that if not solved may hinder the actualization of the BFA. This means that applied linguists are part of the solution to both local and the global challenges which may stand in the way of actualizing the Big Four Agenda. This paper strives to shed some light on the role of the applied linguist in the actualization of the BFA. Secondly, the paper highlights on some areas that an applied linguist may research on, which are directly tied to the realization of the Big Four Agenda. Further, the paper compounds the important skills that a current (21st Century) applied linguist should have in order to actively participate in the realization of the Big Four Agenda. It is hoped that this paper will impact on linguists who may be of the notion that they are just spectators in the ongoing conversation on how best and timely the Big Four Agenda can be made a reality.

Key Words: The Big Four Agenda, Applied Linguist, Actualize, Final Presidential Term, 21st Applied Linguist, Kenyans

Linguistics Elements and Meaning: Imagery as a Subtle Communication of Ideologies in Poetry

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Abstract

Language is the vehicle through which ideas are communicated. In order to have a holistic criticism of the works of art, the critic is called upon to break down language into small elements that embody the meaning intended to be communicated. One such an element of language is imagery which encompasses metaphors, similes, images, and symbols. Artists use imagery to appeal to audience's senses. Over the ages, different images have been used to describe the two genders, thus inviting different perceptions. The interrogation of the said elements is a rich repository for analyzing the position each gender occupies as seen from the point of view of the community from which the artist draws his or her materials. As such, gender subjugation and or elevation can be analyzed through interrogating the images that poets employ to bring forth their thematic concerns. By analyzing the images, one is able to identify traces of gender subjugation or otherwise in the poetry of the early East African Poets whose poetry is informed by the (then newly) acquired Western education. This paper interrogates five poems by East African early male poets namely: "The Motoka" by Theo Luzuka, Richard Nturu's "Rhythm of the Pestle", Jonathan Kariara's "A Leopard Lives in the Muu Tree" Eric Ng'amaryo's "I will Cling to Your Garment" and Austin Bukenya's "I Met a Thief." The paper analyses gendered images employed by the selected East African (male) poets with a view to deconstructing the representation of female gender in their poetry. The poems will be analyzed within the deconstructionist literary theory. The paper aims at finding out whether the images used by male poets in making reference to female characters are chauvinistic.

Postgraduate Attrition: Supervisor Feedback too is to Blame

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Abstract

Despite the importance of postgraduate training to research, leadership, policy development and implementation, education and professional practice, statistics indicate that half or more than half of students do not persist to completion of their studies. In the Kenyan context, Master's and PhD holders are almost certain to land prestigious positions in research organisations, educational administration, public policy units and the universities. It is therefore worrisome that a large proportion of those enrolling in postgraduate programmes slump into attrition yet the rewards for sought after qualifications are lucrative. Factors attributable to this state of affairs have been categorized into three: students themselves, the supervisor(s), and the university environment. The supervisors are expected to mid-wife the research process and offer mentorship that sustains students' attention to the graduate work at hand. Research has shown that a satisfactory relationship between the student and the supervisor(s) is critical to persistence and eventual completion of postgraduate degrees. What, then, stifles this relationship and kills the spirit and hope of the postgraduate student? This paper addresses the hypothesis that negative feedback by supervisors is congruous to postgraduate attrition. Analysing anecdotal accounts by postgraduate students from selected Kenyan Universities, the paper uncovers how (mis)advice by supervisors is decimating postgraduate student numbers in the universities. The paper recommends supervisor capacity-building efforts based on the Researcher Development Framework (RDF). The aim is to attain desirable consciousness-raising to communicative practices which attract and retain postgraduate students in the academy.

Kinyanjui Kombani: Didactic Escapee or Just a Story Teller?

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Abstract

Whereas arguments in literature abound with reference to cognition and aesthetics, it is uncommon to come across a creative writer who particularly defends his or her work against literary scholars' deductions of the work as moralistic. Usually, theorists would argue that a literary text is independent and literary critics can have their way in (re)constructing meaning therein in the text. However, there have been certain cases where creative writers have engaged literary critics in relation to their works. In such circumstances, some writers accuse critics for imposing non-existent meanings, interpretations, veiled symbols and coded language among others to their texts. For the case of Kinyanjui Kombani, the banker who writes, he reiterates that his creative process is to generate an aesthetically appealing story and that the didactic utility of his texts is secondary. This begs the question, who determines the utilitarian value of a literary text? Is literary analysis all about a text's aesthetics or cognition only? Consequently, using Kombani's *The Last Villains of Molo*, *Den of Inequities*, *Finding Colombia*, and *Pawns and Players*, this paper seeks to argue that the writer's attempt to satiate the audience's desire for a good story cannot be bereft of a message. Indeed, literature from antiquity to date, has relied on this axis as humans have sought to communicate meanings and lessons in the most appealing way(s) possible. Guided by a close reading of Kombani's selected texts, I underline that a creative writer and a literary critic have a symbiotic relationship through which works of art and their purpose can be determined.

Key Words: Didactic, Aesthetics, Popular, Storytelling, Contemporary Literature

Subversion of Grand Narratives in Trevor Noah's Story 'Run'

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Abstract

Western thought systems have for many centuries come to be seen as the key pillars of knowledge in the world. African scholars like Ngugi waThiong'o and Okot p' Bitek have repeatedly questioned this tendency to view the world from a western standpoint. They claim that what is universal is often deliberately equated with western ways of knowing and conceptualising the world. Often, the uniqueness and subtleties of local realities are ignored when western oriented frameworks are imposed on African phenomena. This article examines how Trevor Noah privileges local narratives at the expense of Western grand narratives to faithfully illuminate South African experience in the story 'Run'. Other relevant stories in the collection are also examined to give more insights into Noah's concerns. The article is therefore a critical evaluation of Trevor Noah's story 'Run' through the lenses of postmodernism. 'Run' captures the complexities that characterised South Africa as it transitioned from apartheid to democracy. Specifically, the article aligns itself with Lyotard's (1979) rejection of modernist's grand narratives which tend to interpret the world using single frameworks which are often based on Western experience. A close reading of 'Run' reveals that the reality of Apartheid South Africa is informed by multiplicity, fluidity, fragmentation and even contradiction, which is in keeping with postmodernism. The article thus lays bare how Noah subverts the grand narratives of colonialism, liberation, Christianity and gender in 'Run' and other stories in the collection *Born a Crime*.

Key words: Trevor Noah, Run, Postmodernism, Apartheid, Grand Narratives

Research and publish, publish or perish, so what?

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Abstract

Research primarily is geared towards creation of new knowledge. Researchers in Applied Linguistics are expected to identify and solve linguistic problems in the society. For this to be realized scholars in applied linguistics should engage in research that influences policy formulation or change of policy and also engage stakeholders at the formative stages of the research process. Over the years, scholars have pursued Applied Linguistics and explored varied issues in an endeavor to acquire certificates for different motivations. In each and every institution of higher learning in Kenya, there has been a research policy that at the undergraduate level, each and every student must come up with a project before graduation. The Commission of University Education has passed that at the post graduate level, a candidate pursuing masters should publish a paper from their research project or dissertation before graduation. At the PhD level, one has to publish two papers from their research work. Of what value are these research activities? As applied linguistics researchers we need to bring the policy actors and stakeholders on board. This paper explores platforms, strategies and opportunities which an applied linguist can maximize in engaging the policy actors. Further, the paper examines the tools and skills that an applied linguist should have for effective communication with various types of stakeholders to get value for the research

conducted. Also, the paper explores the tools which an applied linguist can use for mapping policy actors. Lastly, the paper strives to establish whether the research work so far conducted in applied linguistics has impacted on formulation or change of policy. It is hoped that the issues addressed in this paper will be instrumental to an applied linguist on how to engage the stakeholders in the research process and also the implementation of the research findings.

Key words: Publish, Perish, Policy Actors, Stakeholders, Commission of Higher Education, Applied Linguistics

Analysis of the Motives Elicited by Use of Symbolic Names in Swahili Novel Kidagaa Kimemwozea

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Abstract

In literature, there are various stylistic devices that the writer employs in literary work to elicit various motives and themes and also to portray various character traits of the characters used. In the Swahili novel Kidagaa Kimemwozea, Ken Walibora has predominantly used symbolism style on his characters who have elicited various motives in his novel. In literature, symbolism entail among many other things use of the name of a person or of a place to symbolize and stand for something else. The main objective of this research was to investigate the motives depicted by the use of symbolic names in Swahili novel Kidagaa Kimemwozea by Ken Walibora. The researcher was guided by the tenets of Socialism Theory that was propagated by Adam Smith. The research is qualitative in nature and the researcher used purposive sampling procedure to arrive at his data. It was investigated that the writer use of symbolism in portrayal of his characters has elicited various motives and themes such as poverty, robbery, leadership and power, good morals and many others. It is believed that the research will be of great importance to researchers dealing with stylistics devices, themes and motives in literature.

Key Words: Symbolism, Socialism, Stylistics Devices, Motives and Character Traits.

The Role of Vernacular Radio in Peace Building and Post-Conflict Reconstruction Initiatives in Kenya

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Abstract

10 years ago, Kenya experienced the worst post-election violence in the country after the disputed the elections of 2007. Over 1000 people lost their lives and over half a million others were declared internally displaced. The violence, as was the case in previous elections was fundamentally occasioned by the fact that Kenyans tend to vote along ethnic lines. What was significant about the 2007 post-election violence was that vernacular radio stations were said to have played a significant role in propagating the violence by promoting the use of hate speech against other communities. This study examines the contribution of

vernacular radio stations towards peace-building and reconstruction efforts in Kenya since the post-election violence of 2007. It focuses on how a particular vernacular radio station has restructured their programming in an effort towards promoting peace and reconciliation among members of their community with other communities, and especially in preparation for the just concluded 2017 election period. This study recognizes the important role that vernacular languages play in promoting peace in post-conflict situations and in discouraging negative ethnicity and hate speech. The data will be collected through content analysis of specific radio programmes whose aim is to promote peace and reconstruction, as well as through interviews with radio presenters and producers of the radio station. The study seeks to answer the following research questions: What kind of media messages do vernacular radio stations broadcast during the election period to promote peace? In what context do vernacular radio stations refer to other communities during the election period? The study will use the Framing theory to explain how a particular radio station tries to persuade its audience to embrace peace through its media messages.

Key Words: Radio, Conflict, Peace, Kenya

Matatu Design Culture in Nairobi Kenya: Iconological Analysis

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Abstract

The Kenyan transport industry is synonymous with customised design solutions identifiable mainly in form of graffiti and enhanced interiors (Johnson, 2013). The main objective of this research was to document the iconography of 'Matatu' culture using iconological research techniques. The information collected will help academicians and interested stakeholders understand matatu design culture easily because the artwork on the 'Matatus' has been interpreted. This research also helps in documenting the culture before it becomes extinct. Iconological analysis methodology uncovers the cultural, social, and historical background of themes and subjects in the visual arts (Straten V.R, 1994). Matatu vehicles, public transport users and entrepreneurs who have invested in the matatu culture in Nairobi constitute the study population. The sampling technique used was a combination of purposive and snowballing sampling techniques. A questionnaire with two sections was used. Section one entailed questions for travellers using 'matatus' while section two entailed questions for Matatu operators or owners. Section one of the questionnaire was administered on social media platforms targeting respondents living in Nairobi while section two was administered both on social media platforms and in the form face to face interviews. An analysis of the questionnaire revealed that ladies were the least interested and conversant with Matatu design culture in comparison with their male counterparts. Iconological analysis methodology used was able to achieve the objectives of the research. Visual design elements were identified and their symbolism explained. Finally, the design concepts were grouped to their specific thematic context such as social, economic, cultural and historical themes. This increases the knowledge on matatu culture and clears any existing misconceptions.

Key Words; Iconography, Iconology, Matatu Culture, Visual Design, Semiotics, Style

Itikadi katika Riwaya za Dunia Yao (2006) na Mhanga Nafsi Yangu (2013) za S. A. Mohamed

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Ikisiri

Nakala hii inanuia kuonyesha kuwa itikadi ni dhana badilifu na nyumbufu kulinga na nama endeleo yaki jamii, kiuchumi, kisiasa nakiteknolojia. Itikadi ndiyo huelekez amisimamo, mielekeona Imani ya mtunzina hivyo kuathiri mtazamo wa mwandishi kuhusu ulimwengu unaomzunguka, ambao huweza kubadilika kulingana na wakati na mahitaji yaki jamii. Katika mkabala huo Makala hii inalenga kutathmini itikadi ya mtunzi katikariwaya za Dunia Yao (2006) na Mhanga Nafsi Yangu (2013) za S. A. Mohamed. Kwa kutumia riwaya hizo, Makala hii inatarajia kuthibitisha kwamba, itikadi nidhana badilifu na nyumbufu na hutangamana najinsi mtunzia navyo badilisha mikakati yake ilikukidhi mahitaji ya jamii lengwaki wakati.

Usawiri wa Mitazamo ya Vijanana Wazee katika Ukombozi wa Mwanamke: Tamthilia ya Kitumbua Kimeingia Mchanga (Said A. Mohamed) na Migogoro (Mwenda Mbatiah)

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Ikisiri

Suala la ukombozi wa mwanamke limekuwa nalinaendelea kuwa nyeti na lenye kuibua mijadala na mitazamo kinzani miongonimwa wanajamii. Fasihi nayo kwaupande mwingine, ikiwazao la jamii hainabudi kuangazia kadhia zilizomo. Yamkini tofauti ya mitazamo miongonimwa wana jamii ndiyo inayozidisha tatizo hilo. Suala hili limesawiriwa na tamthilia za Kiswahili katika karne ya ishirini. Lengo la makala hii nikudhihirisha usawiri wa mitazamo ya wazee na vijana kama walivyosawiriwa katika tamthilia ya Kitumbua Kimeingia Mchanga (S. Kohamed) na Migogoro (Mwenda Mbatia). Ili Kufikia lengo hili, tutaongozwa na nadharia ya Ufeministi wa Kiharakati. Waitifaki wa mreno huu wa naamini kwamba mwanamke anaonewa katik aulimwengu unaotawaliwa na mwanamume na kwamba inambidi kupingana kupigana na hali hiyo ilikujinusuru. Tunachukulia kuwalengo la mwanamke kupata ukombozi litabaki ndoto ikiwa mitazamo ya vizazi tofauti katika jamii haita shughulikiwa. Aidha, kubainika kwake kutatoa mwanga katika namna yakulikabili tatizo la usawa wakiuana. Tunakisia kuwa wazee na vijana wana jukumu kubwa katika kutoa mchango wao ikiwa vita hivi vya kukomboa jinsia ya kike vitafaulu.

Ujitoshelezaji wa Kiswahili kama Chombo cha kutafsiria Nyaraka Teule za Kima hakama Tanzania

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Ikisiri

Wataalamu mbalimbali katika tasnia ya Sheria, wameonesha wasiwasi wao juu ya matumizi ya lugha ya Kiswahili kwenye tasnia ya Sheria. Wataalamu haoni kama vile Atkinson, J.M. na Drew, P. (1979) katika *Order in Court: The organization interaction in Judicial settings*; Berk-Seligson, S. (1990) katika *The Bilingual Courtroom Court Interpreters in the Judicial Process*; Carroll, J. (1995) katika *The use of interpreters in court*; Mukoyogo, M.C. (1991) katika *Can Law be taught in Kiswahili?* Rwezaura, B. A. (1993) katika *"Constraining Factors to the Adaptation of Kiswahili as a language of the Law in Tanzania"*. na Ulrike, W and F. Twaib, (1996) katika *The Presentation of Claims in Matrimonial Proceedings in Tanzania: A problem of Language and Legal Culture*, kuwataja kwa uchache. Mahitimisho ya maandiko yao yana egemea katika kuaminisha wasomaji kwamba lugha ya sheria ningumu inayoweza kuelezeka kwakutumia Kiingereza kwaki wango kikubwa. Wasiwasi wao ni kwamba Matumizi ya lugha, kama Kiswahili, katika sheria yana wezakupotosha dhana za kisheria ambaz zimedhamiriwa namaudhui ya sheria husika. Swali la msingini je kunau kweli wowote kuhusu mahitimisho yao? Nyaraka mbalimbali ambazo tayari zinatumika zingali katika lugha ya Kiswahili zinamapungufu yoyote? Makala haya yanaa ngazia maswali haya na kujadili namna ambayo Kiswahili kinajitosheleza katika kuelezea maudhui mbalimbali ya sheria yaliyoandikwa kwa Kiingereza. Mjadala utajiegemeza katika kuonesha ujitoshelezaji wa Kiswahili katika kuandaa nyaraka teule za Kimahakamakama vile nyaraka zinazo husu Uendeshaji wa Mashauri, uandikaji wamwenendo wamashauri, nyaraka za fomu mbalimbali za polisi, za kubadilisha jina au viapona fomu ya kuitwa shaurini Kuandaliwa kwa nyaraka hizi kwa Kiswahili, kumesaidia jamii kufahamu lugha iliyotumika na hivyo kutoa uelewawa masuala y sheria na wakati huo huo kukuza Kiswahili. Mifano mbalimbali itatolewa ya nyaraka na hukumu za mashauri ya Mahakamani yaliyotafsiriwa kwa Kiswahili nayanatoa mchango mkubwa katika uelewa wajambo na mwenendo washauri husika. Makala yana hitimisha kwamba Kiswahili kinajitosheleza kwa kutumika kama lugha ya kuandikia nyaraka mbalimbali za sheria na hatimaye na sheria yenyewe.

Manenoya Msingi: sheria, nyarakateule, shauri, Kiswahili, Kiingereza

Mchango WA Kiswahili katika Upunguzaji Wa Ajali za Vyombo vya Moto Barabarani: Mifano kutoka Madereva WA Magari Tanzania

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Ikisiri

Makala haya yana jadili mchangowa Kiswahili katika kupunguza ajali za vyombo vya moto barabarani. Tangu serikali ya Tanzania iboreshe miundo mbinu ya barabara baada ya uhuru, mwaka 1961, kwaupana wa barabara na ubora wake ilitegemewa kwamba kutakuwa na upungufu ama uondoshwaji kabisa wa ajali za barabarani. Kinyume chake, kupitia kwenye vyombo mbalimbali vya habari, hata baadhi ya ndugu zetu wakiwa wamepoteza maisha kwa

ajali za mara kwa mara. Zababu nyingi kati ya zilizo tolewa ni mwendokasi wa madereva, uchakavu wa magari (vyombo hivyo), kukosa umahiri wa maderevana hoja zinazo husiana na hizo. Waandishi na wataalamu hawajaangazia namna matumizi ya lugha ya maelekezo yana vyo weza kuchangia kupunguza ama kuongezeka kwa ajali za barabarani ambazo hupunguza nguvu kazi ya taifa lileliwalo. Madereva wa vyombovya moto hapa Tanzania hutumia lugha kuumbili za mawasiliano wana poendesha vyombo hivi yaani Kiingereza kwa madereva wachache sana na Kiswahili kwamadereva wengi. Lengo la makala haya nikuonesha kwamba Kiswahili kina mchango mkubwa katika upunguzaji wa ajali barabara nihasa kwa kuangalia lugha za maelekezo zinazo tolewa barabarani kwa madereva na hata lugha ya kuelimisha mnadereva wa vyombovya moto. Vibao na maelekezo yana yotole wa barabara ni baadhi yake yapo kwenye lugha ya Kiingereza, lugha ambayo madereva wengi hawaifahamu wala kujua kilicho andikwa. Makala hii inaona kwamba mabango ya maelekezo haya, vitabu vya heria za usalama barabarani nama funzo na semina za muda mfupi naelekezi kwa madereva, zikitole wakwa Kiswahili, zitachangia sana kupunguza ajali za barabarani. Makalamadereva wa magari ona pikipiki kwa kuwa madereva ni jamii ya Watanzania wengi wanatumia vyombo hivi katika usafiri na shughuli za kila siku na ndizo zinazoongoza vifo vya Watanzania kuliko vingine vyo.

Manenoyamsingi: Vyombovya moto, mabango, vibao, Kiingereza, Kiswahili

Mustakabali wa Ufundishaji na Ujifunzaji wa Fonolojia ya Kiswahili kwa kutumia Uwili Lugha katika Elimu ya Juu Tanzania: Mifano kutoka Programu za Uzamili

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Ikisiri

Tangu serikali ipanue wigo wa utoaji elimu ya juu Tanzania, hususani elimu ya Chuo Kikuu, kumekuwa na ongezeko la elimu ya vyuo vikuu. Ongezeko hili limechangiwa na taasisi zisizo za umma kuanzisha vyuo vikuu binafsi ambavyo hutoa shahada kuanzia za awali mpaka za Uzamivu kwa kutumia ama lugha ya Kiswahili au Kiingereza. Katika vyuo Vikuu hivi, lugha ya Kiswahili imekuwa ikitumika kujifunzia na kufundishia somo la Kiswahili na taaluma za Kiswahili kwa shahada za awali. Katika jitihada za kupanua taaluma za Kiswahili, baadhi ya vyuo vikuu hapa Tanzania, kama vile Chuo Huria cha Tanzania na Chuo Kikuu cha Dar es Salaam, zimeanza kufundisha taaluma za Kiswahili kwa lugha ya Kiswahili katika kiwango cha shahada ya Uzamili na Uzamivu. Hivyo, kozi za fasihi na isimu kama vile fonolojia, mofolojia, semantiki, sintaksia, isimu Jamii, kuyataja kwa uchache, katika ngazi za uzamili hufundishwa kwa lugha ya Kiswahili. Katika ufundishaji na ujifunzaji wa taaluma za Kiswahili kwa kutumia lugha ya Kiswahili kumekuwa na changamoto ya namna lugha inavyoweza ufundishaji na ujifunzaji wa fonolojia katika ngazi ya Umahiri na Uzamivu. Lengo la makala haya ni kujadili changamoto na mustakabali wa namna ufundishaji wa fonolojia katika ngazi ya Umahiri kwa kutumia lugha ya Kiswahili. Vyuo vinne vilitumika kama sampuli ya kukusanya data na Mkabala wa Kifafanuzi na Ulinganisho zilitumika katika uchambuzi wa data. Utafiti huu utasaidia kuona namna maboresho yanavyoweza kufanyika hasa katika kipengele cha tafsiri za istilahi za fonolojia yanavyoweza kusaidia kukuza taaluma ya fonolojia na lugha ya Kiswahili kwa ujumla kwa kuwa vitabu mbalimbali vya fonolojia (vingi) vimeandikwa kwa lugha ya Kiingereza ambayo huwatatiza wajifunzaji na wafundishaji. Makala yanahitimisha kwamba pamoja na changamoto za tafsiri na ukosefu

wa vitabu vya rejea vilivyoandikwa kwa lugha ya Kiswahili, upo mwanga mkubwa kwamba lugha ya Kiswahili inaweza kutoa maarifa ya kutosha kuhusu taaluma ya fonolojia kwa ujumla wake.

Dhana za Msingi: Kiswahili, fonolojia, ufundishaji, ujifunzaji, elimu ya juu.

Dhamira Zinazoibuliwa Na Umajazi Wa Wahusika Katika Riwaya Ya Kidagaa Kimemwozea

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Ikisiri

Utafiti huu unahusu kuchunguza dhana zilizobebwa na wahusika na zinavyo landana na majina yao ilikuleta dhamira mbalimbali katika riwaya ya Kidagaa Kimemwozea iliyo andikwa na Ken Walibora (2012). Ili kufikialengo la utafiti huu, mtafiti alichunguza nakubainisha jinsi majina yawa husika mbalimbali yalivyo jaama jazina kuchambua dhamira mbalimbali zilizobebwa na wahusika hao na jinsi zina vyo landana na majina yao katika riwaya teule. Data za utafiti huu zilikusanywa nakuchambuliwa kwa mbinu ya kimaiezo kutoka katika riwaya teule. Utafiti huu uliongozwana Na dharia ya Sosholojia iliyo asisiwana Adam Smith. Mtafiti aligundua kuwa, riwayaya Kidagaa Kimemwozea ime wasa wiriwa husika mbalimbali kwakutumia mbinu yaumaja zinauibua dhamira anuwai katika kazi yake. Utafiti umegundua kuwa, dhamirakatika riwaya teule zimelandana na majina ya wahusika. Dhamira hizo ni kama vile umaskini, ujambazi, utuwema, hadhina uongozi na hata kazi.

Manenoелеkezi: Uhusika, Umajazi, kulandana, dhamira, sifa –tabia.

Mifanyiko Ya Unyambulishaji Wa Vitenzi Katika Kigichugu

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Ikisiri

Unyambulishaji wa vitenzi ni moja wapo ya masuala yanayo shughulikiwa katika taaluma ya mofolojia katika lugha nyingi za Kiafrika. Makala hii ina shughulikia unyambulishaji wa vitenzi katika Kigichugu, moja wapo yalugha za kiafrika, kwa kufafanua mifanyiko inayo husika katika utaratibu wa unyambulishaji wa vitenzi katika Kigichugu na kutathmini kanuni zinazo ruhusu au kuzuia mifanyiko hiyo yaunyambulishaji. Katika uainishajiwa Guthrie (1967), Kigichugu ni moja wapo yalugha za Kiafrika ambayo hudhihirisha unyambulishaji. Nadharia ya MofolojiaLeksia (Kiparsky 1982 na Katamba 1993) na KanuniyaKioo (Baker 1985) zimetumiwa kueleza mfuatano wa mofimu nyambulishi katika vitenzi vya Kigichugu. Data ya vitenzisitini (60) vya Kigichugu ilitumika katika makala hii. Vitenzi hivi viliwekwa katika kaulisita za unyambulishaji nakuainisha mifanyiko inayo husika katika utaratibu waunyambulishaji kwakutumia jedwali la mnyambuliko wa vitenzi. Makala hii inachangia katika kuongeza maarifa ya kiutafiti kuhusu sarufi ya Kigichugu nakuhifadhi lugha ya Kigichugu kama moja wapo ya lugha za Kiafrika katika maandishi.

Maneno makuu: Unyambulishaji, Mifanyiko, Vitenzi, Kigichugu

Tathmini Ya Ujumi Mweusi Katika Tamthilia Ya Mashetani Wamerudi (S.A.M 2016)

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Ikisiri

Tamthilia ya Kiswahili ina historia fupi ikilinganishwa na tanzu zingine, hasa ushairi. Tamthilia za kwanza kuwa hikutafsiriwa kwa Kiswahili nazilizo andikwa kwa lugha hii zilizingatia sana maudhui ya kidini, kizalendo utetezi dhidi ya dhuluma tawala za kigeni nahasa ukoloni mambo leo. Kinyume na hali hiyo, tamthiliaya Kiswahili katika kipindi cha kuanzia 1950 hadi miaka ya 2000 umesheheni wingi wa tungozi nazo sifia Uafrika na heshima ya mtu mweusi hapa barani Afrika nakote ulimwenguni. Uchunguzi wa tamthilia hii unadhihirisha kujitolea kwa dhati kwa watunzi wake kuelezea, kutetea nakuhimiza heshima ya Mwafrika. Maudhui yake yana kiuka yale masuala finyu yautaifa, uraia natawala za mataifa ya Kiafrika. anaujumi mweusi na jinsi fikira zao zilivyo athirina kuongoza mitazamo ya watunzi watamthilia. Data ya makala haya itakusanywa katika tamthilia ya Mashetani Wamerudi (Mohamed 2016). Tamthilia hii iliteuliwa kwa kutumia mbinu kusudio. Hii ni kwa sababu usomia wa liulionyesha kuwatamthilia hii imetumia misingi yana dharia ya ujumi mweusi. Data yenyewe itakuwa ya kinaelezo naita changanuliwa vile vile kwanjia ya maelezo. Makala risha kuwa amejitambua na anapaswa kutambuli wana kuheshimi wana ulimwengu mzima. Hii ni baada ya Mwafrika kuelewa kwamba watu kutoka mabara mengine sio bora kumliko kama ambavyo watu hawa hutaka ichukuliwe na Mwafrika.

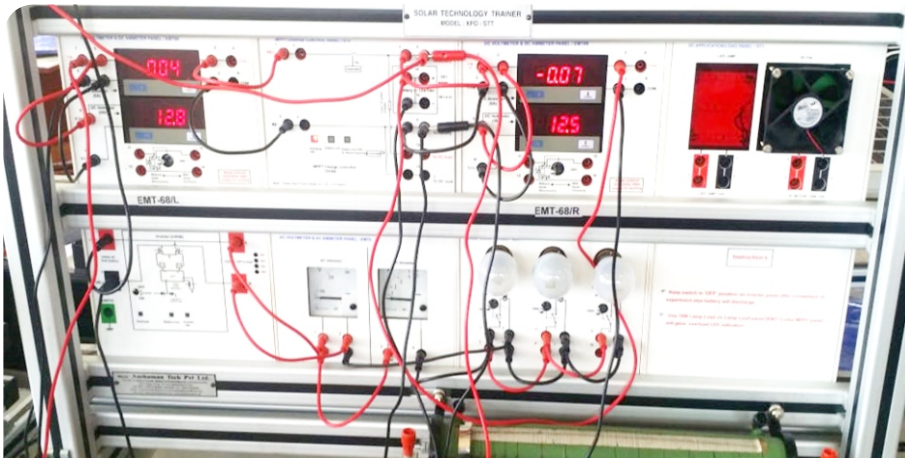
Istilahi Muhimu: Ujumi Mweusi, Uafrika, Ukoloni Mamboleo naU taifa

SUB~THEME 4:

**BUILT ENVIRONMENT,
INFRASTRUCTURE DEVELOPMENT
INDUSTRIALIZATION:
EMERGING TECHNOLOGIES,
MANUFACTURING AND AGRO~
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A Service Oriented Architecture Approach to Implementing an Omnichannel Personal Health Record System

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Abstract

Interoperability of eHealth systems has been a problem that has been unresolved due to variations in platforms, protocols, data formats, patient matching criteria and lack of universal patient identification. Most of the eHealth systems are owned and controlled by individual hospitals and not exposed to other third parties by choice or fear of losing competitive advantage when they share with other institutions. The popular Personal Health Record (PHR) systems, instead of patient centric, are also institution-specific, proprietary, expensive and mostly permit patients to collect and enter all their medical information manually as only few physicians or hospitals submit their medical information electronically to a PHR. Having a unique patient identifier that is consistent nationwide is the ultimate solution to patient matching across different healthcare provider's systems. There is also a need to manage and avail PHR data anytime, anywhere and to any terminal with patient consent. The data need to be kept up to date as soon as medical information is available preferably automated upload from EMR or in real-time from monitoring devices through open APIs. We thus designed an Omnichannel PHR solution based on Service Oriented Architecture to enable patients to sign up, manage profile and share medical information through cross platform mobile application, web application and monitoring devices in real time. IBM's Service Oriented Modelling and Architecture (SOMA) phases was used to model, identify, select, implement, deploy and monitor the services in the Omnichannel PHR solution. The main goal of using SOA was to provide consistent services across all channels, terminals or devices. This research therefore recommends open APIs using SOA for central identification and management of personal health records, use of open source technologies and adoption of Internet of Things to collect vital patient medical information in real-time.

Key Words: Personal Health Record, Omnichannel, SOA, Service Oriented Architecture, mHealth, IoT, Internet of Things

Creating the Infrastructural Framework for Innovation in Africa

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Abstract

The slow rate of development and advancement of many nation states in Africa has been of great concern for many years. Every opportunity afforded to Africa owing to global development and advancement does not seem to have resulted in any significant gains for Africa. In the last 30 to 40 years, Asia in particular as well as Latin and South America have appeared to enjoy more advancement and progress than nation states in Africa. The current rapid global development in terms of technological advancement, innovation and entrepreneurship is providing another great opportunity for Africa to explore how to leap

frog in any of these areas to close the development gap in comparison to the developed nations. To not fail the next generation of Africans, it is time for Africa to pay attention to Innovation and Entrepreneurship. In order for Africa to do this and start making credible progress in development and advancement, I posit that the nation states must establish an infrastructural framework that can provide the foundational basis for development and advancement. The purpose of this paper is to enunciate comprehensively the infrastructural framework that African nations need to establish as a primary basis and foundation future development. This would require an understanding of the current state of education, development and infrastructure that currently exists, develop workable and actionable policies for such framework and then set in motion the strategy and procedures for the infrastructure development. Critical aspects of the infrastructural framework would include inter-alia: national/political governance infrastructure, physical infrastructure, Educational infrastructure, economic infrastructure, technological infrastructure and so one. It is intended that this paper would be a “lightning rod” that creates a significant impetus and direction for African nation states to adopt and implement to achieve desired innovation and sustainable development in the 21st century.

Keywords: Innovation, Entrepreneurship, Infrastructure, Development, Technology, Advancement,

Towards Self Sustaining Communities through the Art of Basketry: The Case of Mumo Wa Manyala Group, Masii Sub-county, Machakos County, Kenya

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Abstract

The concept of a self-sustaining community is one that is inevitable as developing nations work towards achieving the United Nation’s Sustainable Development Goals. Community Based Organizations as well as Self Help Groups play a major role in improving the livelihoods of the people, especially women in the developing nations. Basketry is a tacit skill among many African communities employed without much thought, and can be passed on through observation imitation and practice. It has proven to be a source of livelihood for many in the developing nations through production for local as well as export markets. This paper will study the relevance of basketry as a tool in achieving a self-sustaining community and the role it plays in the lives of those involved. The literature review will focus on two key fields of study: the first is the use of tacit knowledge in the production of crafts in this case basketry, involving the definitions of key words such as tacit knowledge, craft and basketry. Secondly is theoretical framework that will look into sustainable livelihood approaches and the design theory. The case ‘MumowaManyala Group’ has been selected with the view/hope that it shall inform the nation on ways through which similar groups can be employed towards achieving sustainable communities. Participants in the Case Study shall include members of the group as well as other members involved in the product supply chain. These shall be purposively sampled. The research will employ both qualitative and quantitative research techniques in data collection and analysis including but not limited to observation, interviews, note taking, tabulation, graphs and thematic analysis. The main objective of this study is to establish ways through which basketry can be used as an approach towards building sustainable communities in Kenya and the world at large.

Keywords: sustainable livelihoods, craft design, basketry, tacit knowledge.

An Assessment on the Impact of Information Technology: Case Study of University of Maiduguri Teaching Hospital, Nigeria

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Abstract

The objective of this research study was to investigate the impact of information technology (IT) adoption and its effect in healthcare management at University of Maiduguri Teaching Hospital (U.M.T.H) North East, Nigeria. The data were collected using a quantitative methodology. This includes carrying out a direct observation and interviews among 50, respondents of target groups who are primarily staffs of the hospital (administrative, doctors, nurses, laboratory technologies and pharmacists). The research was carried-out based on the result of an earlier study, which revealed that the implementation of information technology management at University of Maiduguri Teaching Hospital was affected by numerous influences. Furthermore, the end users (staffs) of the IT facilities are alleged to have come across many challenges in the cause of using the technology. Equally, there are numerous paybacks which can be gained from the use of IT.

Building Condition Survey and Systematic Defects Diagnosis on Library building in Nigeria

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Abstract

The building under investigation is Mai Idris Aloomo Polytechnic Geidam library situated in Yobe State North eastern, Nigeria. The building is being occupied by large number of people many defects propelled were associated with moisture, cracks, discoloration, settlement, dampness, peeling and mold grow growth on the buildings besides environmental factors. These compelled the researcher to conduct the investigation to look into possible remedies in line with the bulk stage of diagnostic the items that will be useful in identifying the aspect. The gathering process of the survey information of the buildings conducted based on spatial severity degree of damages suffered on the buildings. Moreover; the analysis conducted based on Building Assessment Rating system (BARIS) that provide very high-resolution to process the interferometric techniques. However, after a critical survey of the building facades from each side the researcher explore the major defects found on the building that are mostly attributed due to poor workmanship, general climatic conditions and practical inadequacy during construction.

Keywords: Building Defects, Defects Analysis, Building Survey, Diagnosis Condition Survey

Description of Traffic Flow on an Inclined Road: The Fundamental Diagram Approach

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Abstract

The dynamics of traffic flow involving cars and trucks on a multi-lane inclined road shall be studied. Generally, trucks move slower than cars and their speed is significantly reduced when they are moving upwards on an inclined road. This situation creates a moving bottleneck (Villa et.al. 2017). If the inclined road is multi-lane, then the cars will tend to change lanes with the aim of overtaking the slow-moving trucks to achieve free flow. These lane-change maneuvers affect the dynamics of flow of traffic on the multi-lane road, leading to traffic phase transitions between free flow (F) and synchronized flow (S) (Kerner, 2009). Therefore, in order to adequately describe this kind of traffic flow, a model should incorporate the effect of road inclination. However, such a macroscopic model is currently non-existent (Ndunguet.al. 2018). This study proposes to account for the road inclination through the fundamental diagram, which relates traffic velocity to traffic density, and ultimately through the anticipation term in the velocity dynamics equation.

Key Words: Road Inclination, Moving Bottleneck, Fundamental Diagram, Phase Transitions.

Participatory Forest Management (PFM) Performance within the Mau Forest Complex, Kenya

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Abstract

Forest resources are faced with challenges that range from mismanagement, overutilization, conflicts and competing claims. Consequently, this has given rise to legislation and policy to protect forests. However, many governments in the developing countries have difficulties in implementing sustainable forest management (SFM). One of the strategies advocated to foster SFM is participatory forest management (PFM). The PFM approach has been practised formally in Kenya since 2005 when the Forests Act of 2005 came into force. The aim of this study was to assess PFM performance since the inception of three project areas (Nairotia, Nyangores and Olenguruone) in the Transmara Forest Block within the Mau forest complex, Kenya. The data and information ranged from reviews from field meetings and in-depth focus group discussion with Community Forest Associations (CFAs), Kenya Forest Service (KFS) officials and various key stakeholders. The results indicated that there are variations in results and progress towards PFM implementation in Kenya across the different community based forest regimes. While a number of activities had been carried out at each of the CFAs reviewed in the study, there was variation in terms of how the forest management agreements and plans were being implemented. In particular, the level of community and stakeholder participation, number of consultative meetings held and level of donor funding to facilitate participatory forest management plans (PFMP) development and project activities. A number of issues were also noted by CFAs as having been omitted in the management plans, specifically, benefit sharing. Absence of benefit sharing framework was cited often as a major drawback

in PFM as it has constrained some of the anticipated benefits from forest activities. However, the community members indicated that there was improved awareness amongst them on the need to conserve the forest resources and controlled access to sustainable utilization of the forest resources.

Key Words: Performance, Sustainable, Participatory, Management plan, Community Forest Association

Comparative Analysis of Compressive Strength of Bamboo Leaf Ash and Baggash Ash Concretes

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Abstract

Billions tons of conventional concrete are produced yearly as well as cement which emit large tons of carbon dioxide due to huge millions of metric tons produced annually. Sequel to this, there is need to produce a sustainable product due to pollutions from cement production, using agricultural waste materials with pozzolanic features will curb these problem. Bamboo leaf ash and baggash ash are produced as a result of combustion which serves as supplementary cementitious materials and can be used for construction purposes. This study determines the compressive strength of bamboo leaf ash concrete blended with baggash ash at varying percentage replacement of 5%, 10%, 15%, 20%. Durability test such as water absorption, porosity, and density on both concretes. A total of 111 cubes were produced using 100*100*100 size cube cured at 7, 28, 56 and 90 days, of which 48 cubes each were to ascertain compressive strength for both ashes while 15 cubes were used for durability test. According to experimental results obtained and the analysis performed, the compressive strength of bamboo leaf ash concretes surpassed that of control sample while that of baggash ash concrete increased in strength at later ages, furthermore, bamboo leaf ash concrete gained more strength as compared to concrete containing baggash ash at both early and later age of curing at 10% as optimum replacement level each.

Keywords: Concrete, Compressive Strength, Durability Test, Bamboo Leaf Ash, Baggash Ash, ANOVA

Review of Ancillary services provided by Solar PV plants.

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Abstract

The high penetration of Solar Photovoltaic plants into the electrical energy supply imposes the requirement that the bulk addition of large-scale generations to the grid not to be of any harm to the stability and reliability of the power system network. One way of ensuring this is to require renewable to play a role not only in energy generation, but also supply of ancillary services which are needed to ensure the system stability and reliability both at transmission and distribution level. Solar Photovoltaic generation systems are widely utilized in distributed

generation, and, recently, they are also considered for ancillary services provision. This review paper will survey photovoltaic generation papers published in the last decade especially the technical proposals, with their feasibility and limits. The review will present the opportunity to be aware of what is already done, representing a reference tool.

Keywords: Ancillary services, Distributed generation, Photovoltaic Systems

Global High-Tech DigitalbasedCompany (E~Global)

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Abstract

eGlobal is a high-tech based service provider company. As eGlobal, we acknowledge the inevitable changes in the world where space-time has been reduced greatly making the world a one global village. All this results from two unstoppable forces of the 21st century; digitalized technology and globalization. To enhance the two forces in improving and developing the modern world, eGlobal has come up with 5 main products, namely: eInvestment, eMarket, eBanking, eInfo, and eTransport. eGlobal is in the process of developing an application where all these products can be accessed from. Upon installing the application on their mobile phone, tablets, PCs, or any other internet accessing device, the user can log in to this eGlobal APP and access services from any of this listed products. eInvestment- Is a secure online based product where those willing to invest can access various opportunities to invest their money on. Similarly, those willing to start or expand their businesses or ideas can access capital (upon agreed bases). eBanking—is a digitalized (onlinebased) banking system. With the help of Banking, one can access banking service anywhere at any time using internet. eInfo. -it is a product that enhances sharing and accessing of information and knowledge at any time, with the help of technology. eTransport—it is an internet based logistic and travel product. Through this product, eGlobal simplifies and modernizes movement of people, services and commodities from one place to another. As a 'link-up' service provider company, eGlobal is purposed to connect the world and simplify life by enhancing full realization of technology's potential. Through its various products (as listed above), eGlobal bridges the gap between people, places, locations and time.

Key Words: eglobal, ebanking, einvestment, Internet

Supporting Green Growth and Knowledge Economy through Research, Innovation and Technology for Sustainable Development

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Abstract

Achieving global goals for Supporting Green Growth and knowledge economy, will require widespread innovation implementation. Establishing a sufficiently large suite of innovative technology options, suitable to diverse economies, and at the urgent pace required will involve unprecedented (first time) innovation activity not only from developed regions, but also from new clusters and enterprises in emerging economies and least developed countries. Supporting Green Growth and knowledge economy will require innovation and the adoption of new green technologies through research. Emerging economies represent a new tier(level)

of innovators that are developing deeper capabilities, establishing enabling conditions and achieving a strong innovation supply chain in parallel to their growing economic activity and industrial development. Innovation activities suggests that gaps between developing and developed countries remain large across both frontier and adaptive innovation. Only a handful of emerging countries may be on course to close these gaps, and many less developed countries are only beginning to build out their innovation infrastructure. Continued growth from emerging leaders and a quicker move to close remaining gaps would provide a welcome boost to global innovation capacity, activity and outcomes. No developing country apart from China is spending more than 1.2 percent of GDP on R&D, and the least developed countries spend well below 0.5 percent, as compared to developed countries, which spend on average 2.5 percent, and as much as 4 percent. Renewable energy R&D is dominated by developed countries (75 percent of total R&D in 2011), with the remainder taken up largely by China. High-income countries also produce the largest number of green technology patents. Despite these trends, analysis shows that research capacity in emerging countries is large relative to existing innovation activity, representing a positive trend in ecosystem maturity and suggesting some countries are underutilizing their potential capacity.

Key Words: Emerging technologies, Manufacturing and agro-processing, Innovation

Creating Favorable Macroeconomic Environment for Manufacturing Industry in Kenya

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Abstract

Kenya's vision 2030 which is a development blue print seeks to transform Kenya into a newly industrialized middle-income country that offers high quality life to all its citizens. To achieve its goal, it recognizes the role of manufacturing sector in creation of employment and wealth as well as its vital contribution to the economy's GDP. The big four agenda launched by the president of the republic of Kenya in 2017 identified manufacturing as a key pillar to propel Kenyan economy and aims to raise the sector's contributions to the GDP from 9 percent to 15 percent by 2022. The agenda seeks to concentrate on improving specific sectors in the manufacturing industry; textile and apparel, food and beverages, leather, timber, cement, automotive, chemicals, and pharmaceutical. Creating a favorable macroeconomic environment is a key enabler to achieve the manufacturing sector goals. According to Dunning, J.H. (2004), among the macroeconomic factors that affect manufacturing are; in terms of macro-economic factors; economic development and growth, a consumption possibility of a society, a level of inflation, a possible current account balance, and a state of public finances, in terms of socio-cultural factors; a system of education and higher education, expenditure on education, in terms of political and legal factors; political stability and legal factors; political stability, a strategy against FDI, public support for foreign investors, procedure for business registration, licensing and permits. The purpose of this paper is to look deeper into macro-economic factors and to analyze their impact on the manufacturing sector and recommend various interventions to improve manufacturing sector in Kenya. Policies to promote growth in the manufacturing sector should aim at alleviating pressure on manufacturing costs by; reducing rigidities in the market for labor, promoting competition in the market for the services, providing incentives for productivity by enhancing technology adoption, and maintaining a low and predictable rate of inflation and keep exchange rate volatility within reasonable limits. The paper seeks to utilize MSME 2016 data and use linear programming model to achieve its objectives.

Key Words: Kenya, Manufacturing, GDP.

Application of Design in Enhancing Quality Handmade Products in Kenya

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Abstract

Kenyan handmade products have gained popularity in the local and export market attributed to the products aesthetic value and the use of indigenous techniques and materials. These products exhibit the creativity and skills of the artisan; however, they cannot be said to be successful because they are not well executed to product design standards. Products are craft oriented hindering industrialization as little is known of the design practice and processes involved brought about by the informal setting of the enterprises. An originator contributes to the 'good' or 'bad' quality of the product as he/she is the source of the concept and materials. A design process looks at the product's needs, research production scenarios, innovate ideas through concept developments, prototype for assessment and detailed production drawings. Function and aesthetics quality in the design process are assured at available costs and materials. In Kenya, traditional skills and techniques are emphasized in the development of quality products through master craftsmen. Few have adopted design tools and technology in the production but not fully explored due to constrain such as supply, limited labor skills and poor facilities. The recent 'Made in Kenya' quality mark requiring products conceptualized and implemented by a designer to at least 40% of the production process is a government's effort to ensure quality. Using a sample of three handmade products, this paper analyses the use of design in enhancing quality. The paper is mainly qualitative and the findings are presented under specific headings. It is proposed that a system or process be developed to guide artisans in the development of handmade products that adhere to quality and design.

Key Words: Design, Handmade products, Production, Quality

Digitizing the voice of the community: The use of ICTs in Community Radio Broadcasting in Kenya

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Abstract

Communication for social change through community radio is a growing phenomenon in the African continent. The historical philosophy of community radio was to use the medium as the voice of the voiceless, the mouthpiece of the oppressed people, and generally as a tool for development. Unlike mainstream media, the main objective of community media is to serve people, to encourage expression and participation and to value local culture, with the sole purpose of giving a voice to those without voices, the marginalized groups. This paper will focus on the role of ICTs within the perspective of alternative approaches to community development and to explore the relationship between the use of ICTs and the democratization of the process of community development, with particular reference to community radio. ICTs have the potential of providing an arena to the marginalized that could be used for democratic deliberations and negotiations that would in turn, help to form a more responsive alternative public sphere. The use of the internet as a media platform is creating greater possibilities for the practice of community media by opening up the channels of media content distribution without the need to use the radio frequency spectrum, that is by making use of internet distribution enabled radio. Various scholars have argued that the value of

new media lies in the extent to which they enmesh with old media to provide multimedia platforms that allow for greater democratic participation, inclusion and expression. Using qualitative data collection methods, this paper seeks to investigate how various community radio stations in Kenya are using new digital media in their operations as a way to enhance community engagement.

Key words: Community radio, ICTs, alternative media, community engagement, public sphere, Kenya

Control Volume Analysis of Unsteady MHD Mixed Convection Nanofluid Flow as A Result of Stretching Surface and Suction

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Abstract

Many practical situations such as engineering require the knowledge of nanofluids. Investigations leading to deeper understanding role of nanofluids in heat transfer enhancement processes is areas such as, nuclear reactors and electronics, as well as in biomedicine and food industry is vital. Numerous investigations on nanofluids are being conducted by researchers worldwide for its benefits in industrial, commercial, and residential associated with low energy costs and less negative environmental impact. Water is commonly used as base in heat transfer applications. In this study we investigate heat and mass transfer in magnet ohydrodynamic mixed convection flow of a nanofluid over a stretching sheet. In the study water is used as the base fluid in a nanofluid composed of either Copper or Silver as nanoparticles. Unsteady case is investigated numerically on a flat surface. The physical problem is modeled using systems of nonlinear differential equations which are solved numerically using Finite volume method. Characteristics such as liquid velocity, temperature profile, concentration profile, shearing stress at the wall, skin friction coefficient, heat transfer coefficient and mass flux coefficients at wall of the stretching surface are examined. Momentum, heat and mass transfer equations are non dimensionalized and discretized in rectangular coordinate domain. The effect of nanoparticle volume fraction, Hartmann number, suction and stretching parameter values on velocity profiles, temperature profiles, concentration profiles, skin friction coefficient, heat transfer coefficient, the mass transfer coefficient are analysed. Computer application program, matlab is used to compute values of velocity, temperature, concentration and flux.

Key words: Nanofluid, straight stretching surface, mixed convection, discretized, finite volume method, non dimensionalized.

Community Radio and Women Empowerment in Kenya: Case of Mama Milambo Programme of Radio Milambo in Migori County

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Abstract

Most researches that have been conducted globally on the role media plays in women empowerment show discrimination where press distorts women's status in the social world and produces contents that majorly favour men. It is in this understanding that this study looked at the role Mama Milambo programme of Radio Milambo has played in empowering

women in Migori County. The Mama Milambo is a radio programme at Radio Milambo, a community radio in Migori town. Study looked at four thematic areas ascribed to the programme objectives, namely: women and entrepreneurship, women and health, women's responsibilities in families and the rights of women in the society. The study administered 399 questionnaires in eight wards of Suna East and Suna West sub counties. It used Yamane's formula to find 399 sample population from population of 191, 248. The researchers used subsequent mixed research method for quantitative and qualitative data collection. The qualitative data was collected through Focused Group Discussions where gender officers, staff from Milambo FM, women groups and men groups were engaged, while quantitative data was collected by administering the questionnaires. The Systematic Random sampling procedure was used to reach respondents while purposive sampling procedure was used to pick respondents for Focused Group Discussions. The research looked at the Message Learning Theory propounded by Carl Hovland that describes how attitude formation and attitude change work. Presentations have been done in forms of tables and texts. The study findings are useful to people working in the fields of gender and media.

Key Words: Employment, Empowerment, Discrimination

Relationship between Human and Social Capitals and Community Participation in Development Initiatives in Coastal Region of Kenya

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Abstract

Effective community participation in development initiatives as beneficiaries of the intended outcomes is of paramount importance to the Governments and development partners as implementing agencies. The global emphasis of community participation is due to its benefits which include capacity building and empowerment of the beneficiaries. Despite the rising emphasis on community participation with its benefits, little research has been done to examine extent community capitals influence community participation in development projects and programmes in coastal region of Kenya. The present study sought to examine the relationship between selected community capitals namely human and social capitals and community participation in development initiatives within the coastal region of Kenya. The research was carried out in the six counties of the coastal region. Multi-stage sampling techniques namely purposive, proportionate and systematic random sampling was used to select the study area and the sample size for the study. Data were collected using semi-structured questionnaire and Focus Group Discussion, and analysed using descriptive statistics and regression analysis at p value of 0.01, 0.05 and 0.1 with the help of the Statistical Package for Social Sciences Version 22. The findings revealed that human capital namely basic education, engagement in economic activities coupled with membership to common interest groups with linkages to development partners and networks with other groups are more likely to participate in community development initiatives than those with no education and not affiliated to productive projects with linkages to development partners. The study makes key policy recommendations that the County governments should put in place structures that will encourage individual members of the communities to attain basic education and join groups with economic activities to benefit from the outcomes of participation in Government and county governments development projects and programmes implemented in the Coastal region.

Keyword: Community participation, Human capital, Social capital, Development initiatives, Coastal region

The History of Tanzania Industrial Research and Development Organization (TIRDO) 1976 to 2018.

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Abstract

This paper historicizes research, innovation and technology for sustainable development as an imperative in industrialization from historical point of view. The paper utilizes the case study of TIRDO as a research institution established for the purpose of advancing industrialization in Tanzania. The paper focuses on the circumstances which prompted the establishment of the institution and the purpose for which it was established. The functions and roles of the institution have been reviewed and dissected historically. The successes, challenges and future prospects have been discussed in line with industrialization. The paper links the current state of industrialization in Tanzania and the potential of TIRDO as a research and innovation institution in enhancing and charting out the correct path towards objective and integrative industrial base. Methodologically the paper has been designed from historical exploratory design utilizing a case study strategy. The approach engaged in this paper is that of qualitative nature utilizing both primary and secondary historical sources to gather information through in depth interviews, oral histories, observation, intensive archival documentary review and many other authoritative documents relevant to the study. Research instruments such as interview guides, checklists and questionnaire were designed to facilitate smooth collection of the required data. Most of the secondary data were generated from libraries at and diverse resource centers. The findings revealed that TIRDO was created with very strong ambitions to advance industrialization in Tanzania. However, the functions of which were marred by lack of commitment and unnecessary bureaucratic bottlenecks. Budgetary problems and structural organizational inconsistencies crumbled the smooth functioning of the institution. As a way of conclusion this paper recommends that, for Tanzania to become industrialized there is a need to focus on the history of previous industrialization strategies and basing on that experience, to chart out the way forward. Short of that the slogans will come and go without leaving any trace behind.

Key Words: Industrialization, Innovation, TIRDO, Research

Medium Network Optimal under VoltageLoad Shedding using Cuckoo Search with Levy Flight Algorithm for System Stability

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Abstract

Load shedding is an emergency control action to ensure system stability through curtailing the system load. Emergency load shedding is only used if the frequency or voltage falls below a specified frequency/voltage threshold. This condition exists when the governor's action has reached upper limit or the automatic voltage regulators in the system are unable to stabilize the voltage. Existing Load shedding schemes use a 14-Bus Test bus in the study. In order to adequately determine the performance of various load shedding techniques, a larger test network is proposed. In this study, an optimal load shedding algorithm based on Cuckoo Search with Levy Flight was developed and tested on a medium network of 39-Bus Test bus for under-voltage load shedding condition. Various conventional under voltage load shedding schemes have been considered in this paper and their limitations highlighted.

In addition, recent metaheuristic algorithms and their applications to load shedding have also been discussed and their performance compared. In this study, optimal under-voltage load shedding using a Cuckoo Search with Levy Flight based algorithm was carried out and the results compared to other metaheuristic based algorithm. The proposed Cuckoo Search with Levy Flight based Load shedding algorithm was found to be superior in performance in optimal load shedding as compared to other metaheuristic algorithms.

Key words: Load shedding, Metaheuristic algorithm, Voltage stability Frequency stability, cuckoo search with Levy flights.

A new pressure wave theory for a transient draw down in an unconfined aquifer during pumping

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Abstract

When an unconfined aquifer is pumped at a constant rate, the time-drawdown exhibits a three-segment graph; a steep early time segment that follows the Theis (1935) confined aquifer non-equilibrium model, a flatter intermediate segment that is less steep than that predicted by the Theis' model, and a steeper late time segment that again conforms with the Theis model. Previous studies have reported that using type curves developed from the existing analytical models, for the prediction of a transient drawdown in unconfined aquifer during pumping, give unrealistically low values of specific yield. The existing analytical models were developed on the assumptions that the steep early time segment of the time-drawdown is due to the elasticity of the aquifer and water, and that the water table is a material boundary. On the contrary, previous field observations have reported that the steep early time segment of the transient drawdown corresponds with the period of increasing hydraulic gradients (perturbations in energy conditions) and that the water table falls more rapidly than drainage of the water (material) from the aquifer. In this paper, we present a new pressure wave model that has been developed on the basis that a water table is a pressure-head (energy) boundary. The new model can reproduce the entire three-segment time-drawdown graph, and based only on the changing energy boundary conditions at the pumping well, without considering the compressibility of the aquifer and water.

Keywords: Groundwater, Pressure-Head Diffusion, Transient Drawdown, Unconfined Aquifer

Importance of Applied Geology in Mining Perspective

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Abstract

Mining sector provides most of the raw materials used on a daily basis in infrastructure, food and energy production, electronics and agriculture. The sector continues to play a leading role in facilitation of improvement to life for mankind across the globe. Mining activities of the sector require knowledge and technical skills from geoscientific and engineering specialties to yield optimal results. Applied geology as one of the geoscientific specialties contributes a fair share of the required knowledge and skills. It has continued in the past decades to play an important role in mining by focusing on the application of geological knowledge in harnessing of natural resources while simultaneously addressing issues that are related to mining activities and environmental impact caused to the mining sector. The geological knowledge focused on is in core areas of; geodynamics, sedimentology, stratigraphy, volcanology, engineering geology, environmental geology, hydrogeology, mineral resources, energy resources, marine geology, soil mechanics, rock mechanics, applied geophysics, applied geochemistry, geo-hazard and allied mitigation measures. These core areas are of great significance as they need to be captured in the engineering design of mining and mineral processing systems before carrying out any mining operations. Indeed, these core areas provide vital information on the genesis of natural deposits, their geotechnical perspectives and methodologies on how to locate residence of the deposits. It all begins with gathering the relevant geological information that is essential for surveying geological environments in which natural resources occur. The natural resources that are surveyed include; petroleum, natural gas, coal, geothermal, ore deposits, gemstones, groundwater and geological materials for construction needs. Vital geotechnical information is learned from surveys, that are usually in the areas of remote sensing, geological, geophysical and geochemical explorations, and/or drilling. The information learned also provides useful leads to environmental issues that need to be mitigated. Furthermore, provision of impact assessment and audit report for mining engineering projects is mandatory for approval and implementation of such projects that are of national concern. Learning applied geology is also vital for understanding dynamics of natural hazards, particularly on earth quake and landslide related events since relevant geotechnical parameters learned can be factored in engineering designs. The parameters are also of benefit to construction needs for projects that are related to mining engineering. Furthermore, understanding past geological processes, including geohazards, climatic and hydrogeological processes enhances capabilities of designing 90% of remedies for environmental problems that occur in mining and construction industries. Applied geology provides appropriate technologies for making relevant objective decisions that are practical. The decisions made can then be reviewed and evaluated as projects progress thereby enhancing optimal economic performance. Thus, applied geology will develop a firm foundation for understanding fundamental concepts and solving pertinent problems that are related to mining engineering for self-reliance and to the satisfaction of stakeholders in the mining, geological and infrastructural industries. This paper aims at evaluating the importance of applied geology in mining activities because success of future mineral exploration and mining investments will highly depend on the input realized from its core areas if applied appropriately while protecting the environment forthwith.

Keywords: Applied geology, mining engineering, natural resources, mineral exploration, mineral extraction, climatic, geohazard, environment impact and mitigation.

Nanotechnology: A New Dawn for Kenya

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Abstract

Nanotechnology is a field where scientific knowledge and ideas emanating from the sub-atomic, atomic and molecular levels are applied in the manufacture of new and smart materials. Nanotechnology makes use of the novel properties exhibited by materials in the nanoscale. Nanocrystalline materials have microscopic grain sizes of up to 100 nm with remarkably distinct optical, electrical, chemical, mechanical properties different from those of bulk materials. Nanoparticles can be used to develop materials with unique properties since the number of atoms on the surface of a particle in the nanoscale is comparable to that inside the particle. Hence in order to meet the advanced technological demands in the areas such as electronics, catalysis, ceramics magnetic data storage, structural components etc, it is important to make use of materials in the nanometer scale. Nanoscience and Nanotechnology is a rapidly growing field of science which encompasses researchers and scientists from the areas of biology, chemistry, engineering, materials science and physics. This technology provides the basis for research and manufacture of materials in the 21st century. In addition, this interdisciplinary technology will provide a strong platform for the growth of pharmaceutical industry, medical diagnosis, materials industry and the overall economy of the country which will eventually enhance creation of job opportunities, good health and affordable housing in line with the government's "big four" agenda. It promises improved efficiency in ICT equipment used in computing, data storage (chips) and communications (fibre optics). It can be used to develop renewable energy sources such as solar cells and panels. It can also be utilized to synthesize filters that can be used to get rid of pollutants; contaminants, harmful salts and viruses in water and sewerage systems and for the diagnosis and treatment of diseases including cancer and to restore damaged human organs or tissues using engineered tissue.

Key Words: Materials, Manufacture, Nanoscience, Nanoscale, Technology, Research

Validation of GIS based approach to optimally locating Drilling Targets during Exploration of Gold in Kakamega, Western Kenya.

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Abstract

When a new borehole is drilled during mineral exploration, it needs to be located in the field at a location that will hit a mineral target yet not interfere with the exploration budget. Due to the heterogeneity in field properties, there may be places where drill holes need to be located close from each other or further apart. Drilling is also time-dependent in that the entire exploration program is legally and technically time bound. The choice of the drill holes' configuration during gold exploration is based on the knowledge of the occurrence of the subsurface mineralization. Geological, geochemical and geophysical nature of the surface environment obtained through respective exploration methods as reflected in anomalies in a particular locality individually do not sufficiently define the subsurface

nature of mineralization which is the basis for the drilling decisions. An attempt to overcome the problem of optimally locating drilling targets a criteria was proposed and defined by Mutua et al. (2018) where data from preliminary surface exploration methods was used in a GIS based optimization approach for exploration drilling. This study therefore seeks to validate the criteria defined by Mutua et al. (2018) where he postulated that the nature of surface environment in relation to the subsurface for Lirhandia corridor gold prospect can be used in generating a predictive model giving recognition to the geological aspect in defining mineralized blocks. His approach involved a check on the available surface data related to gold mineralization and correlating them to the subsurface environment to generate a consistent link. The research validates the reliability of preliminary exploration data in identification of gold mineralization.

Key Words: Validation, Drilling, Targets, Model, Exploration, Optimization

Light Energy (solar and luminescent materials) in Service of Man Kind ~ from Nanoscale to Microscale

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Abstract

Nanotechnology is the manipulation of matter on an atomic, molecular, and supramolecular scale. The earliest, widespread description of nanotechnology referred to the particular technological goal of precisely manipulating atoms and molecules for fabrication of macroscale products, also now referred to as molecular nanotechnology. A more generalized description of nanotechnology was subsequently established by the National Nanotechnology Initiative, which defines nanotechnology as the manipulation of matter with at least one dimension sized from 1 to 100 nanometers. This definition reflects the fact that quantum mechanical effects are important at this quantum-realm scale, and so the definition shifted from a particular technological goal to a research category inclusive of all types of research and technologies that deal with the special properties of matter that occur below the given size threshold. It is therefore common to see the plural form “nanotechnologies” as well as “nanoscale technologies” to refer to the broad range of research and applications whose common trait is size. Materials science, also commonly known as materials science and engineering, is an interdisciplinary field which deals with the discovery and design of new materials. This relatively new scientific field involves studying materials through the materials paradigm (synthesis, structure, properties and performance). It incorporates elements of physics and chemistry, and is at the forefront of nanoscience and nanotechnology research. In recent years, materials science has become more widely known as a specific field of science and engineering.

Keywords: Keyword: Nanomaterials; Nanotechnology; Nanophosphors; Solution-combustion; Structure; Luminescence

Limestone Production Optimization by Fragmentation Control – Case Study of Bissel Quarry

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Abstract

Blasting is one of the most economical production excavation method in hard rock mines. Few studies about blasting fragmentation exist due to lack of reliable fragmentation data. Many researchers have attempted to predict blasting fragmentation using the Kuz-rams model, an empirical fragmentation model suggested by Cunningham. This investigation is to relate the blasting parameters such as the drill hole diameter, the burden, spacing, charge length and explosive weight to the fragmentation size distribution in order to obtain controlled fragmentation blasting. The investigation further studied the final profile of the excavated wall and adopted a presplitting blasting techniques to produce a smooth stable wall which reduced dilution of the limestone muck piles. Blasting data from the Bissel quarry was analyzed. It was observed that 16.25% of the blasted material used to be retained on the mesh hence accounted as boulders. The best blasting parameters for the quarry were defined and by application of researchers empirical models and the developed blasting design model, the amount of material retained on the mesh were reduced from 16.25% to 0.65%. This was a clear indication that application of these parameters can be used to solve the issue of large boulders currently experienced at the Bissel Quarry leading to required size reduction and avoiding secondary blasting which is costly in blasting.

Keywords: Blasting, Kuz-rams model, blasting parameters, presplitting

SUB~THEME 5:

**ENERGY, WATER, CLIMATE
CHANGE AND ENVIRONMENTAL
SUSTAINABILITY**

Machakos University 2nd Environment and Cleaning Day in Pictures



Community Participation in Sustaining Safe and Clean Water: The Case of Kyampisi Child Care Ministries Water Project in Mukono district, Central Uganda

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Abstract

The purpose of this study is to examine how community participation can support the sustainability of community based projects in Uganda, using Kyampisi Childcare Ministries clean water project as a case study. Although safe water has been emphasized and promoted as a human basic need by several agencies such as WHO, UNICEF and other UN agencies, this has only worked in some parts of the world while others are still in need of safe clean water. The clean water project in Kyampisi, Mukono district in Central Uganda is implemented by Kyampisi Childcare Ministries (KCM) and provides the community with bore holes and protected wells, though the community seems not to take care of these facilities once KCM hands them over to be locally managed. This has kept the communities with unsafe water which has resulted in several atrocities such as child abductions and sacrifices that happen when children go looking for safe water. The objectives of the study were; to investigate the perceptions of the community at the stage of project inception, to examine the role of the community during implementation of the project, and to analyze the community preparedness to maintain the project after the hand over by Kyampisi Childcare Ministries. Data was collected from 10 community members, three local leaders and two staff members of Kyampisi Childcare Ministries purposely selected. In-depth interviews were used to gather views from the selected participants. The results are expected to improve the participation of the community in planning, implementation and maintenance of projects installed in the community and to increase community ownership of such projects.

Key words: Community Participation, Safe and Clean Water, Sustainability, Community Based Projects

Effects of Anthropogenic Activities on the Water Quality of Malewa River for Animal Consumption: ~ A Case Study of Kenya Agricultural and Livestock Research Organization (KALRO)-Naivasha.

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Abstract

Anthropogenic activities such as agriculture and livestock have transformed River Malewa basin in Kenya. The objective of this study was to assess the effects of the anthropogenic activities on the water quality of Malewa River for animal consumption; a case study of Kenya Agricultural Research Organization (KALRO)-Naivasha. River Malewa is located in Nakuru County. The River has its source at the western slopes of the Aberdare range and drains at Lake Naivasha. KALRO-Naivasha has a considerable portion of the 1,730 square Kilometres River serving KALRO's animals with water needs. This study analyzed nutrient inputs from agricultural production, spatial crops distribution, human activities and their influence on

the ecological state of River Malewa. The evaluation entailed physicochemical and biological parameters in the indexes of water quality, pollution and the aquatic macro invertebrates' community. Results showed that aggregated crop fields occupy 25.2 % in the River and the biological water quality through the Biological Monitoring Working Party (BMWP) index denotes the presence of tolerant-pollution organisms, at the same time, the biodiversity was low (Shannon H' 1.1). Higher concentrations of nutrients in the lower area with 2.20 mg/L nitrates and 1.49 mg/L of phosphates, besides the loss of nutrients by runoff, which was 2.57 mg/L nitrates in the middle area and 0.18 mg/L phosphates in the upper area. In this case, the nutrient concentration input increases toward the lower area of Malewa River. The water quality in the River satisfies the Kenyan regulation criteria for both human and animal consumption.

Key words: Anthropogenic, Water Pollution, Agriculture, Biodiversity, Water Consumption.

Biodegradability of Polyethylene by Bacteria and Fungi from Dandora Dumpsite-Nairobi Kenya

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Abstract

This study aimed at isolating and identifying bacteria and fungi with the capacity to degrade low density polyethylene (LDPE). The level of biodegradation of LDPE sheets with bacterial and fungal inoculums from different sampling points of Dandora dumpsite was evaluated under laboratory conditions. Incubation of the LDPE sheets was done for sixteen weeks at 37°C and 28°C for bacteria and fungi respectively in a shaker incubator. Isolation of effective candidates for biodegradation was done based on the recorded biodegradation outcomes. The extent of biodegradation on the polyethylene sheets was assessed by various techniques including weight loss analysis, Fourier Transform Infrared Spectroscopy (FTIR) and GC-MS. Fourier Transform Infra-Red spectroscopy (FTIR) analysis revealed the appearance of new functional groups attributed to hydrocarbon degradation after incubation with the bacteria and fungi. An overall analysis confirmed that fungi are generally better degraders of polyethylene than bacteria. The highest fungal degradation activity was a mean weight reduction of 36.4 ± 5.53 % attributed to *Aspergillus oryzae* strain A5, 1 (MG779508). The highest degradation activity for bacteria was a mean of 35.72 ± 4.01 % and 20.28 ± 2.30 % attributed to *Bacillus cereus* strain A5, a (MG645264) and *Brevibacillus borstelensis* strain B2,2 (MG645267) respectively. Genus *Aspergillus*, *Bacillus* and *Brevibacillus* were confirmed to be good candidates for Low Density Poly Ethene bio-degradation. This was further confirmed by the appearance of the aldehyde, ether and carboxyl functional groups after FTIR analysis of the polythene sheets and the appearance of a ketone which is also an intermediary product in the culture media. To improve this degrading capacity through assessment of optimum conditions for microbial activity and enzyme production will enable these findings to be applied commercially and on a larger scale.

Key Words: biodegradation, low-density polyethylene, 16S rDNA, 18S rDNA, Fourier Transform Infrared Spectroscopy, *Pseudomonas*, *Brevibacillus*, *Aspergillus*

The Role of Religion in Environmental Conservation in Kenya

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Abstract

Today, there is massive destruction of the mother earth particularly clearing of indigenous forests that are major water catchment areas and sources of most Kenyan rivers. The implication of this phenomenon is that many rivers are drying up. The ripple effect is the acute shortage of water in most Kenyan cities leading to water rationing in some parts while in other parts they are characterized with dry taps. Also, due to high rate of deforestation this has destroyed inhabitants of most wild animals that are now at the verge of been extinct. Furthermore, careless and irresponsible disposal of industrial wastes has culminated into environmental pollution that has lead to death of aquatics. While religion is an integral part of the society, it has played a significant role in the life of the human beings. In Kenya, religion has been a force to reckon with since independence in 1963 and at the wake of multiparty system. Her outstanding contributions in social, economic and political spheres of life are undisputed. However, her marginal role and voice in environmental conservation as divine mandate and core mission have being conspicuously noticeable. It is against this aloofness of religion in matters of environmental degradation that has prompted this article seeks to investigate the integral role of religion to mitigate this escalating environmental degradation trend in Kenya and Africa at large.

Key Words: Environmental Degradation, Environmental Sustainability, Religion, Kenya, Habitats, Earth

Optimizing Access to Safe Water through Chlorinated Dispensers in Rural Kenya, Uganda and Malawi

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Abstract

The use of unsafe water has been the primary cause of diarrhea, the main child- Mortality contributor causing 1 in every 10-child deaths (WHO, 2009), yet 58% of diarrhea cases can be averted through safe-drinking water, sanitation and hygiene (WHO, 2014). Use of chlorine treatment reduces diarrhea risk by 40% for regular users. Evidence Action is implementing a community-based “Dispensers for Safe Water (DSW)” program aiming at improving community access to safe drinking water by installing chlorine dispensers at communal water points in rural areas. The installed free chlorine dispensers currently provide 4.7 million people across Kenya, Uganda, and Malawi with access to quality household safe drinking water. This study utilized a cross-sectional design with multi-stage stratified sampling techniques to assess chlorine adoption among communities in Kenya, Uganda, and Malawi. The sample consisted of 73,513 households and 8,319 water points across three countries. Two-stage sampling technique was used to select water points and households to be visited; stratified sampling method where Uganda, Malawi, and Kenya were treated as strata and used a simple random sampling method to select 1.5% water points within each stratum. The simple random sampling method was used to select eight households per water point that were visited every two months to assess; dispenser hardware functionality,

community Chlorine adoption rates and availability of chlorine. Results indicated that; female respondents from Uganda and Malawi were respectively 4.3% and 3.7% more likely to chlorinate their water. Educated households were 18% more likely to use chlorinated water than the uneducated. Households with children under 5 years were more likely to chlorinate their water in Kenya and Uganda, unlike in Malawi ($p=0.001$). Furthermore, community knowledge about the chlorine dispensers and other water treatments methods contributed significantly ($p<0.001$) to a household using chlorine across the three countries. In Kenya, households that attended Village Community Sensitization forums were 3.2% more likely to treat their water, while in Uganda and Malawi, households who attended Community Education Meetings were 2.5% and 7.0% respectively more likely to chlorinate their water, unlike in Kenya. Community members who heard from promoters (within 30 days) were 32% in Kenya and 89% in Malawi more likely to chlorinate their water. Rural community adoption of chlorine safe water treatment is associated with gender, education level, community dispenser knowledge, social clubs' attendance and access to promoters. Future programs need to prioritize increasing Community's knowledge and skills of chlorine water treatment mechanism through strengthening community Promoter model, extending water treatment education to children ensuring adequate Chlorine supply chain and leveraging on call centers/ text message as communication channels.

Key Words: Dispenser, Chlorine, Mortality, Promoters, Treatment, Logit

Describing an Effective Volunteer in Program Implementation: A Case of Promoter in the Dispensers for Safe Water Program in Rural Kenya, Uganda and Malawi

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Abstract

Diarrheal diseases due to inadequate water and poor sanitation, are the most common causes of mortality and morbidity in children and accounts 3.6% of the disease burden globally. About 1.1 billion people do not have access to an improved drinking water source, 20% to 35% of diarrhea episodes can be prevented by improving drinking water through chemical disinfection, filtration, flocculation/disinfection or heat. Dilute chlorine solution is an inexpensive and effective water treatment method and can provide residual protection for up to 72 hours. To enhance access to safe water, Evidence Action through the Dispensers for Safe Water Program (DSW) has installed over 27,000 chlorine dispensers at public water points in Kenya, Uganda and Malawi. Although the program uses volunteer promoters to undertake community engagement and sensitization to sustain high adoption rates, only 58% of households using water point with dispensers chlorinate their water. The study adopted a cross-sectional design utilizing periodic program monitoring data. 3,946 water points were sampled using stratified random sampling while 8 households were randomly selected per every water point in each Monitoring period. A total of 3946 promoters and 31,568 households were interviewed to measure adoption¹. Fractional regression model was used to assess significant variables that describe an effective promoter. On average 53% of promoters have at least one child aged below five years and they take about nine minutes to walk to and from the water point. Promoter are highly knowledgeable of water dispensers with an average

score of 3.9 out of 4. About 7% of the promoters also act as community health workers or voluntary counselling and testing agents. However, only 17% of promoters visit households to sensitize them on water chlorination. Additionally, only 5% and 8% of promoters reported to having organized community forums to sensitize on water chlorination or spoken about dispensers in public gathering. Distance, promoter having a child aged below 5 years, promoter engagement in part-time and full time job, promoter involvement in community activities, community engagement and dispenser knowledge were found to statistically influence adoption. Community served by promoters who also work as community health agents had higher adoption rates. A unit decrease in promoter proximity to water point increased adoption by 0.2% in Kenya. There is need to facilitate continuous development of new skills and knowledge among promoters, accelerate community mobilization and sensitization, development of simple training manual for the promoters translated in local dialects and train promoters to facilitate community forums and how to deliver training to local communities. There is need for the program to develop a promoter identification brief which should guide the community as they select the promoters. There is need to ensure service period for promoters after which a community can re-appoint a promoter or select new one altogether

Key words: Promoter, Adoption, Dispenser, Chlorine, Fractional Regression

Environmental degradation and poverty nexus: The Twin threat and barrier to Sustainable Development

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Abstract

Developing countries experience high population growth rate and agriculture remains the main stay of the economy although other sectors like industrialization are coming up. Population growth is associated with a growing demand for land, food, social amenities and energy. In order for the growing population to subsist, it has to extract and use different natural resources. Exploitation of natural resources by communities has never been done with frugality due to lack of knowledge on the connection between human life and the environment. Poor extraction, utilization and management of resources cause environmental degradation which in turn causes climate change which leads to depressed rainfall regimes, ozone layer depletion and extreme weather conditions which cause food insecurity. Poverty in turn forces people to extract more natural resources to meet their needs and this aggravates environmental degradation. The ensuing nexus (environmental degradation-poverty) is a hard to break barrier to sustainable development. This study attempts to analyse the cyclic nature of the linkage between poverty and environmental degradation to show how their interaction slows down transformational development processes and the achievement of sustainable development. The study will use a descriptive design to examine the different human activities that cause degradation in two ASAL areas, Makueni and Machakos counties. It will further explore the relevant literature on environment-poverty nexus to support the findings which will guide the drawing of conclusions and the formulation of recommendations.

Key Words: Poverty, Sustainable Development, Transformational Development, Environmental Degradation, Natural Resources.

Mapping Geographical Features; Case Study of Bungoma County

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Abstract

In the present time and age, Geographic Information Systems (GIS) has gained momentum tremendously including mapping of geographical features for example rivers, valleys, slopes, escarpment, plains and others. GIS entails data input, data management, data manipulation and analysis and data output. GIS has found great precedence as opposed to conventional methods including paper maps because its data is in digital format hence compact than paper maps and other conventional methods; large quantities of data can be stored, maintained and retrieved speedily; and capability of integrating different data sets or databases in a onetime analysis. In line with the present theme of “Supporting Green Growth and Knowledge Economy through Research, Innovation and Technology for Sustainable Development.”, GIS has been used to map physical features in Bungoma County with a remarkable success. The objective of the study has been to map the physical features in the study area with a view to enable the residents plan well where to settle and identify areas suitable for farming. Arc GIS 10.3 software has been used successfully to map soils, land covers types and rivers successfully. One can easily know the kind of structural surface patterns of rocks with the kind of spatial river patterns and distribution portrayed in the study area. For example, dendrite pattern shows the areas of weakness in the rock structures or the underlying surface. The technology is ideal currently because any meaningful sustainable development including sustainable farming can be done in areas in the study area which are well suited for such activities.

Key Words: Mapping, GIS, digital format, data sets/databases, data management, data manipulation

Land cover changes and its Implications on Urban Heat Island in Nairobi County: A GIS and Remote Sensing Approach

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Abstract:

As cities expand and more megacities emerge, the impacts on the environment are increasingly becoming apparent. One of such impacts is the Urban Heat Island (UHI) phenomenon. Several studies have identified progressive vegetation losses and decrease in pervious surfaces as two of the main factors contributing to UHI. However, location-based studies help identify the pertinent contributing factors, thereby providing valuable basis for the formulation of efficient mitigation strategies in such areas. This study aims to understand the impact of land cover changes on the extent of UHI and its evolution from year 2000 to 2018 in Nairobi – a major city in East Africa. This is achieved through GIS and Remote Sensing techniques by using medium resolution Landsat 7 ETM+ and Landsat 8 (OLI) data for assessing the Land cover changes and establishing the relationship between these changes and the corresponding Land Surface Temperatures (LST). The datasets were obtained in intervals of 2000-2009-2018. A pixel-based supervised classification was used for assessing the land cover changes and the NDVI was estimated for each LC map. The land cover classes were based on the urban growth in the study area. The radiometric normalization of the thermal bands was achieved using a quadratic regression model. Final surface temperature maps indicating the extents of UHI

were created using emissivity correction equation. Relationship between the NDVI values and the LST was established by performing a quantitative mapping of the changes based on an image differencing approach. The results show that increases in NDVI values strongly correlated with increase in LST in many parts of the study area. This implies that progressive losses of forests cover from 2000 to 2018 engendered a wider spread of UHI.

Key words: Urban Heat Island (UHI), Land surface temperature (LST), Vegetation Index, Land cover (LC) change, Urbanization, Remote sensing

Small Holder Tea Industry Sustainability: Environmental Accounting and Reporting as A Strategy to Cushion On Environmental Concerns

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Abstract

Human activity over the years has caused environmental degradation which in turn has led to climate change. The reversal of climate change is one of the most pertinent agenda as expressed in the World's SDGs, Africa's Agenda 2063, and Kenya's Vision 2030. However, there has been unclear relationship between economic performances and environmental performance in organizations. Whether or not environmental reporting can be used as a mitigation measure to cushion environmental conservation and ensure sustainability is still unanswered. It is in this context that this study's objective was to establish the influence of environmental reporting on sustainability accounting in the Tea industry in the Mount Kenya region by analyzing. Data was collected from 93 factory unit managers and accountants selected through simple random sampling and analyzed by simple binary and hierarchical multiple regression techniques. It was established that environmental reporting influences sustainability accounting as anchored under stakeholder theory. The study also found out that tea factories practice social activities and environmental activities for which they incur costs which were treated as overhead costs and benefits derived by tea factories in terms of long term financial gains and by stakeholders in terms of social and environmental gains. Tea factories are therefore advised to adopt and practice environmental accounting and reporting by integrating it in annual financial reports which will refocus attention to environmental concerns in the tea sector and cushion the tea industry from continuous degradation and eventual collapse.

Key words: Tea Industry, Environmental Accounting, Environmental Reporting, Sustainability

Assessing the Extreme Temperature Dependence in the East African Region

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Abstract

Drought occurrences in the East African region have increased in the last few years owing to prolonged extreme temperatures and low rainfall levels. From the viewpoint of extreme temperatures, this paper aims to establish the existence/non-existence of extremal dependence

between the annual maximum temperature in Kenya and that of its neighbouring countries {Ethiopia, Sudan and Somalia for the years 1901 to 2015. The Generalized Pareto distribution is tied to the marginal threshold excesses. The extremal dependence structure is assessed using the Logistic and Bilogistic parametric dependence models. Only the bivariate case is considered. Findings indicate that the degree of extremal dependence varies between weak to moderate tail dependence. The weakest being the Kenya-Somalia pair and the strongest is the Kenya-Sudan pair. The probabilities of exceeding temperatures that are beyond the observed range are calculated under the independence and dependence assumptions. Estimates from both cases are compared and the difference is found to be quite significant.

Keywords: Bivariate extremes, Extremal dependence, Maximum temperature, Logistic model, Generalized Pareto distribution, Frechet marginals.

Threshold Determination for Maximum Product of Spacing Methodology with Ties for Extreme Events

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Abstract

Extreme events are defined as values of the event below or above a certain value called threshold. A well chosen threshold helps to identify the extreme levels. Several methods have been used to determine threshold so as to analyze and model extreme events. Maximum Product of spacing is one of these methods. However, there is a problem encountered while modeling data through this method in that the method breaks down when there is a tie in the exceedances. This study improved MPS method in order to determine an optimal threshold for extreme values in a data set containing ties, estimated the GPD parameters with the optimal threshold derived and then applied the method to determine the Gpd parameters for a real market data that could be containing ties. The study applied a method to determine optimal threshold based on improved maximum product of spacing method and used Generalized Pareto Distribution (GPD) and Peak over threshold (POT) methods as the basis of identifying extreme. The peaks-over-threshold (POT) models are models for all large observations which exceed a high threshold. The POT models are generally considered to be the most useful for practical applications. The study used the method developed to deal with the ties to model the market volume data. This study will help the Statisticians in different sectors of our economy to model extreme events involving ties. To Statisticians, the structure of the extreme levels which exist in the tails of the ordinary distributions is very important in analyzing, predicting and forecasting the likelihood of an occurrence of extreme event.

Key Words: Generalized Pareto distribution, Peak Over Threshold, Improved MPS.

Assessing the Constrains of Water Supply for Irrigation in Hadejia Valley Irrigation Project Area, Jigawa State Nigeria

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Abstract

The study assess water supply constrains to irrigated crops in the Hadejia Valley Irrigation Project (HVIP). The HVIP has been identified with declining yields over the years. Different researchers have investigated the reason why soil quality has been the target of many of the researchers. However, findings on the soil have indicated that, the problem is not only on the soils but to water supply. Considering the importance of water supply to irrigated crops, the study investigates into the water supply situation. This study uses random sampling in selecting the sectors and questionnaire survey in the field for data collection. The study shows that there is no problem of water availability but the constrains are in the destruction of irrigation infrastructures and the apathy of farmers towards canal maintenance couples with the emergence of a notorious invasive species of plant (typha grass). Simple statistical techniques and descriptive statistics were used in the study. It recommends that H-J.R.B.D. A should provide funds for provision of more irrigation infrastructures and maintenance of existing ones and for research. It also shows the need to encourage Farmers Associations to undertake self-help activities for the maintenance of the irrigation structure.

Keywords: constraints, water, supply, irrigation, valley, project.

Spatio-Temporal Analysis of Rainfall Trends and Fluctuations in Northwestern Nigeria

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Abstract

The rainfall trends in Northern Nigeria are still poorly understood despite the significance of rainfall to agriculture. This study focused on spatio-temporal analysis of rainfall trends in Northwestern Nigeria. In order to achieve this, rainfall data for Kaduna, Kano, Yelwa, Katsina, Sokoto, and Gusau from 1956 to 2015 were used. Standardized coefficient of Skewness and Kurtosis for the six meteorological stations was employed to test the normality of the data. In order to examine the trend, 10-year running mean and linear trend lines were calculated and plotted using Microsoft Excel Statistical tool (2013). The rainfall series was also sub-divided into 10 years non-overlapping sub-periods and Cramer's test was then used to compare the means of the sub-periods with the mean of the whole record period. The result revealed that rainfall amount is generally increasing in the northwestern part of Nigeria in recent years; and that the amount is unevenly distributed. The study recommends that more opportunities should be provided by the government for professionals to study and develop realistic methods for utilization of ground water without socio-economic concerns, as well as managing flood events. In such a case, it would be possible to counter drought and flood crises occurrence in the northwestern zone and other areas having the same climatic conditions.

Keyword: Northwest zone, rainfall, running mean, sub-periods and trends

Reflections on Disaster Management Regulatory Frameworks in Kenya

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Abstract

The profile of disasters in Kenya includes climatic extremes of droughts and floods, technologically related disasters and accidents, terrorism and various epidemics and diseases. The multiplicity of the disasters that ravage the country cause serious social, economic and environmental impacts in terms of losses to people's livelihoods, massive destruction of infrastructure, diversion of resources and interruption of many development activities that lead to loss of investments and retarded progress across the country. To manage the recurrent disasters facing the country, several approaches have been used based on various elaborate regulatory frameworks such as policies, laws and institutions. The objectives of this paper are to provide an overview of some major disasters that the country faces, assess the impacts caused by these disasters and evaluate the existing regulatory arrangements for the management of the disasters. Conclusions and recommendations are provided at the end of the paper.

Key words: Disaster, drought, flood, impact, regulatory framework

Fostering resilience to climate change through institutional innovations and gender inclusion in Africa

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Abstract

African economies are hit hard by Climate change as they mainly rely on agriculture. Small scale farmers, especially women, are mainly worse off in the phase of climate change due to low resource endowment hence are less prepared for climate risks. Informal institutions can be major stimulators in building resilience as they can enhance innovative ways to tackle climate change impacts. The study aims to identify effective ways to build resilience especially of poor and women through adoption of Climate Smart Agriculture (CSA) and examine ways to enhance gender inclusiveness in institutions to build livelihood resilience to climate risks and shocks. Through literature review, we conceptualize an innovative approach of how existing institutions, especially informal, can achieve resilience within available resources through innovations and adoption of CSA practices with a gender inclusion system. Focused group discussions help identify various institutional innovations and CSA practices that communities have so far adopted and their welfare effects. The study argues that adoption of CSA practices as adaptive strategies can develop livelihood resilience which is best fit to tackle climate and non-climate stressors. Secondly, we outline that having a gender equality aspect in adoption of CSA has commendable outcome in households and communities in agricultural sector as it enhances participatory decision making which enables innovative strategies to best handle shocks and risks. Lastly, we argue that innovative group approaches –business oriented, micro-finance provision, CSA oriented, and portfolio alignment groups help households and communities build livelihood resilience hence sustainable livelihoods in Africa. Capacity building of communities on good agricultural practices and CSA through groups is necessary to catalyze adoption of adaptive strategies and enhance institutional innovations to increase livelihood resilience.

Key Words: Climate risks, Gender inclusion, Climate smart agriculture, Innovations, livelihood resilience, Africa

Feasibility Study for Development of 2 MW Solar PV power Plant at Machakos University, Machakos County

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Abstract

Solar energy technology is an emerging alternative energy source to meet specific demands around the world. However, integration of electronic based volatile renewable energy sources such as wind, hydro, solar and storage units equipped with complex fast-acting control systems to the weaker portion of the grid has been a challenge for commercially viable green growth projects. These barriers stem from the fact that datasheet on solar energy potential and design models for target sites is scarce. If these barriers are not addressed during the planning and design stage of the integration project, postponing the generation interconnection or curtailing the generation output will be inevitable imposing significant financial risk on renewable energy generation developers. The paper capitalizes on such aspects by conducting a feasibility study for the proposed 2 MW solar PV power plant at Machakos university, eastern Kenya. The clean energy financial models including SMA Sunny Design planning and PVGIS financial models will be employed. Hopefully, the paper findings could be useful to the solar PV designers and institutions embracing green energy growth.

Keywords: Solar energy; design model; solar PV; energy potential; feasibility study

Solar PV Potential and Energy Demand Assessment in Machakos County

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Abstract

Machakos County has the need for renewable energy access due to its rapid industrial development, growing population, higher living standards and electrification of remote areas. Wind-solar hybrid system has been proposed for small scale energy production in Machakos County rural areas. This paper analyzes the solar photovoltaic (PV) potential for the hybrid connection. Assessment of solar PV potential was done using the Photovoltaic Geographical Information System (PVGIS), a tool that gives access to PV performance and solar radiation patterns for a period of over 10 years. Monthly variations in energy output and solar irradiation were investigated at a fixed angle of Inclination of and Azimuth angle of at a latitude and longitude of S and E respectively. Yearly average PV energy production and yearly in-plane irradiation were determined as and at an installed capacity of 1kWp. This yearly average energy value was used in sizing of the solar panels and battery capacities required for the wind- solar hybrid system installation in the site. A survey on energy use patterns was conducted in form of a questionnaire in three rural zones of Machakos County. 100 households in each zone were sampled for electrical energy consumption analysis. The data included household income, average month electricity bill, power rating of appliance used, house hold size and daily use time of each electrical appliance. Monthly income and daily load demand profiles were plotted to determine the energy use patterns, energy preferences and living patterns in energy use.

Key words: PVGIS, Solar PV potential, Energy Demand, wind-solar hybrid. Renewable energy. Electricity Consumption

SUB~THEME 6:

**MATHEMATICS, STATISTICS
& DATA SCIENCE; BASIC AND
APPLIED SCIENCES**

Results on Model Based Robust Estimators in Finite Populations

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Abstract

In this article, we review and present results on nonparametric regression for estimating unknown finite population totals in a model based framework. Consistent robust estimators of finite population totals are derived using the procedure of local polynomial regression and their robustness properties studied. Results of the bias show that the Local Polynomial estimators dominate the Horvitz-Thompson estimator for the linear, quadratic, bump and jump populations. Further, the biases under the model based Local Polynomial approach are much lower than those under the design based Horvitz-Thompson approach in different populations. The MSE results show that the Local Linear Regression estimators are performing better than the Horvitz-Thompson and Dorfman estimators, irrespective of the model specification or misspecification. Results further indicate that the confidence intervals generated by the model based Local Polynomial procedure are much tighter than those generated by the design based Horvitz-Thompson method, regardless of whether the model is specified or misspecified. It has been observed that the model based approach outperforms the design based approach at 95% coverage rate. In terms of their efficiency in comparison with other estimators that exist in the literature, it is observed that the Local Polynomial Regression estimators are robust and are the most efficient estimators. Results also show that the local polynomial regression estimator outperforms the local polynomial regression estimator in the linear, quadratic and bump populations. Generally, the Local Polynomial Regression estimators are not only superior to the popular Kernel Regression estimators, but they are also the best among all linear smoothers including those produced by orthogonal series and spline methods. The estimators adapt well to bias problems at boundaries and in regions of high curvature and they do not require smoothness and regularity conditions required by other methods such as boundary Kernels.

Keywords: Finite population, Local polynomial regression, Model based framework, Nonparametric regression, Robust estimators, Survey sampling.

Modeling Stock Returns Volatility Using Regime Switching Models

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Abstract

In the previous financial modeling studies the issue of stock returns volatility is seen to have a tremendous reflection of the market microstructure behavior. The issue has caught the attention both in developed and emerging stock markets because of its implication for investors. Investors are encouraged to invest by high returns and as a result there is cash flow in the market. On contrary, in volatile environments investors cannot be sure of the returns and consequently they shy off to invest which ultimately has adverse effects on the stock market economies. The linkage between stock market returns, volatility and trading volume is paramount issue that has received considerable attention among researchers because it provides insights into the microstructure of stock market economies. The existing literature has concerned itself with modeling the relationship between stock returns, volatility and trading volume in developed stock markets than it has in emerging stock markets. Moreover, studies that have been carried out to model this connection and comparing both developed and emerging stock markets are scanty. This paper, therefore, seeks to model the dynamic relationship between stock returns, volatility and trading volume in both developed and emerging stock markets. In particular, three markets will be studied, two of which represent developed stock market (FTSE 100 and S&P 500) and one representing

the emerging stock market (Nairobi Securities Exchange). Previous studies have widely utilized GARCH model whose results have been pleasant but this paper finds that a comparison of GARCH model and regime switching model has not exhaustively been carried out. In an effort to model this relationship, we seek to fit GARCH model on daily, weekly and monthly stock indices return and compare its results with those of Regime-Switching and Markov-Switching GARCH models.

Keywords: Volatility, Stock Returns, GARCH, Regime Switching, Markov-Switching GARCH

Change point analysis in the Generalized Pareto Distribution

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Abstract

The general goal of data statistical analysis is to find a near perfect translation to reality such that minimal information is lost in the approximating model. In this paper change point problem is viewed as a model selection problem where the point in time that model parameters change is estimated. This paper develops a change point estimator of the shape parameter of the generalized Pareto distribution which is shown to be consistent through simulations. The likelihood ratio test statistic based on the kullback-Leibler divergence is used to detect a change point under the assumption that the model is correctly specified. The maximum likelihood estimation method is used to estimate the change point. The estimator is then used to detect a change point within extreme events with a climatic application in mind.

Keywords: Change point, Kullback-Leibler, Generalized Pareto distribution

Numerical Analysis of Mathematical Model for Carbon Pollution in Roads with Ventilated Embankments in Absence and Presence of Forced Convection

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Abstract

In this paper, a two dimensional grid based numerical carbon pollution model for the estimation of carbon pollutant concentrations in roads is developed. The simulations of carbon pollutants in roads with ventilated embankments have been presented. Based on a two dimensional advection-diffusion transport equation, the modeling system incorporates the combined influence of both model input and environmental parameters. Absence and presence of forced convection are considered, with the provision of ventilations on the walls of embankment. Boundary conditions and environmental factors are varied to achieve the desired results. Carbon concentration is approximated by using Godunov finite volume technique. The solutions of calculated carbon pollutant concentrations at different distances, both in the horizontal and vertical directions from the source are compared. The results suggest that the advection-diffusion model is satisfactory for simulating the effect of free and forced convection on carbon concentrations in roads with ventilated embankments.

Keywords: Advection, Diffusion, Convection, Pollution, Embankment, Godunov Finite Volume Method.

Change Point Estimation in Volatility of a Time series Using a Kolmogorov Smirnov Type Test Statistic

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Abstract

Detection of structural change in volatility in time series is very important for understanding volatility dynamics and the stylized facts observed in financial time series. By applying the Nadaraya Watson kernel estimator of the mean function, estimated residuals are obtained. In this paper a Kolmogorov Smirnov type test statistic for change point estimation is developed and applied to conditional variances obtained from the squared residuals. The consistency of the change point estimator is shown through simulations. The developed estimator is then applied to KES/USD exchange rate data set to estimate a single change point.

Keywords: Volatility, Change point, Kolmogorov-Smirnov

Nonparametric Prediction Interval for Conditional Expected Shortfall Admitting a Location-Scale Model using Bootstrap Method

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Abstract

In financial risk management, the expected shortfall is a popular risk measure which is often considered as an alternative to Value-at-Risk. It is defined as the conditional expected loss given that the loss is greater than a given Value-at-Risk (quantile). In this paper at hand, we have proposed a new method to compute nonparametric prediction bands for Conditional Expected Shortfall for returns that admits a location-scale model. Where the location (mean) function and scale (variance) function are smooth, the error term is unknown and assumed to be uncorrelated to the independent variable (lagged returns). The prediction bands yield a relatively small width, indicating good performance as depicted in the literature. Hence, the prediction bands are good especially when the returns are assumed to have a location-scale model.

Keywords: Bootstrap, Expected Shortfall, Location-Scale Model, Nonparametric Prediction Intervals, Value-at-Risk

Bragg Trans-reflectance OADM based VCSEL Optical Fibre Access Networks within the 1550 nm Transmission Window

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Abstract

The ever-increasing demand for bandwidth and efficient and reliable connectivity by fixed terminals and mobile devices have stretched the limitations of available resources resulting from fibre cuts and faults affecting service provisions to endusers. In this work,

we experimentally demonstrate an all passive OADM using a single Bragg grating fibre, a pair of optical circulators and the low cost and energy efficient VCSELs designed to manage channels at a node. In this study, double reflection due to Bragg effect on a single mode fibre grating has been used to create drop and add multiplexers at 1549.9 nm wavelength with 31.4 dB wavelength isolation ratio. In the performance evaluation at the 10⁻⁹ BER threshold level, a 0.3 dB add and drop receiver penalty for a 8.5 Gb/s data signal is incurred while a 0.8 dB transmission penalty is incurred for 25.5 km fibre distance. Using optical trans-reflectance, this work, provides a less costly and less power consuming channel management using OADMs for high speed VCSEL transmission enabling reliable, effective and efficient access networks

Key Words: Data, Bandwidth, Fibre, Wavelength

Graphenated Polypyrrole Nanocomposite for Real Time Determination of Pollutants in Water

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Abstract

In Kenya, Cancer is estimated to be the second leading cause of non-communicable diseases related deaths after cardiovascular diseases and accounting for 7% of overall national mortality. Hydrazine has been classified as human carcinogen by the Environmental Protection Agency (EPA). It has been reported that its exposure to humans causes damage to liver, kidney, lungs and respiratory tract system and has long-term effects on the central nervous system. Due to these side-effects, it is highly desirable to fabricate portable, economical, sensitive and rapid methodologies for the determination of hydrazine. This work focuses on the methodologies of harnessing the unique properties of electro-conductive polymers and nanomaterials and their application in sensor technology. A highly sensitive, rapid and simple electrochemical sensor for the detection of hydrazine has been developed using graphenated polypyrrole-Ag-Au nanoalloys nanocomposite. The electrocatalysis of hydrazine on the synthesized nanocomposite was investigated in aqueous medium using cyclic voltammetry (CV) and square wave voltammetry (SWV). An increased current density, decreased oxidation overpotential and low detection limits were observed. The results showed that the synthesized nanocomposite exhibited excellent characteristics for their application in the development of highly sensitive, cheap and easy to use electrochemical sensors for hydrazine detection.

Key words: Hydrazine, Nanoalloys, Cyclic voltammetry, Carcinogen, Overpotential

Poly (Amic) Acid Nanostructured Membranes for Capture and Detection of VENGES Generated Nano-Aerosols: Air and Water Purification

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ABSTRACT

Environmental Remediation technologies are diverse, but very few can be used for both air and water detoxification. Increasingly, numerous articles have reported that exposure to engineered nanoparticles (ENPs) is a potential health and environmental hazard. This

presentation will thus focus on a novel approach for tracking hazardous airborne ENPs and AgNPs by applying online poly (amic) acid membranes (PAA) with offline electrochemical detection methods. nPAA contains amino and carboxyl groups, which can undergo chemical modification. At the same time, these groups can interact with metals thus making them less available. The tested nano-aerosol were produced using the Harvard (Versatile Engineered Generation System) VENGEN system while AgNPs was purchased from Sigma Aldrich and characterized using SEM, XRD and EDS. The PAA membrane electrodes used to capture the ENPs were either stand-alone or with electron-beam gold-coated paper substrates. Cyclic voltammetry (CV) was used to conceptually illustrate that exposure levels of industry-relevant classes of nanoparticles could be captured and electrochemically detected at PAA membranes filter electrodes.

Key Words: Environmental Remediation, Poly(amic) acid, Membranes, VENGEN, Nano-aerosols.

Ranks and Subdegrees of the Cosets of Its Subgroups

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Abstract

This paper is set to compute the ranks and the subdegrees of acting on the cosets of its subgroups namely; and . This is done using the method proposed by Ivanov et al. which uses marks of a permutation group. For the action of on the cosets of the subdegrees are shown to be and and the rank is . For the subdegrees are and and the rank is.

Keywords: Marks, Permutation representation, Conjugacy class, Table of marks.

Near Infrared Hybrid Graphene Embedded Plasmonic Metasurface With Dual-Band Tunable Birefringence Performance Based On Localized Surface Plasmons

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Abstract

Weak graphene plasmon is a major challenge for graphene based metasurfaces in the visible and nearinfrared regions. This challenge is caused by weak coupling between the graphene plasmons and the shorter incident wavelengths. In this work, we have numerically designed and theoretically howna hybrid metasurface that has the capacity to enhance coupling between incident light in the near infrared and induce birefringence in the metasurface. Additionally, tunable and dual band quarter wave plate performances have been demonstrated. The metasurface comprises of graphene, a plasmonic metal, and a silica glass substrate. The metal rods play a strategic role: they act as resonant dipole antennas and convert the incident light into localized surface plasmons (LSP). The LSPs then enhance launching of

propagating surface plasmon polaritons over the graphene surface. Birefringence tuning has been obtained through variation of the number of layers of graphene, the Fermi energy of graphene, metal physical dimensions, and the periodicity of the metasurface unit cell. The design also achieves a high polarization conversion ratio (0.95) transforming the state of incident light from a linear state to a circular state with a near unity value of ellipticity at a design wavelength in the nearinfrared (1500 nm). The thickness of the structure is about $0.5 \frac{\lambda}{n}$ -which is ultrathin and suitable for integration into photonic sensing devices.

Key words: Dual band birefringence, graphene plasmons, hybrid metasurface, near infrared metasurface, localized surface plasmons, tunable quarter wave plate

On Characterization of Classes of Hilbert Space Operators and Applications

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Abstract

There are many studies in operator theory which are very useful in applications to other fields like engineering, medical sciences among others. One of such studies is the characterization of operators in Hilbert spaces. A lot of useful results have been obtained on norms of normal operators particularly by Kitaneh, Dragomir among other authors. However, characterizations of normality and norm-attainability of these operators have not been exhausted. Therefore, in this paper, the general objective is to determine the relationship between normal operators and norm-attainable ones in Hilbert spaces. We outline the theory of normal, self-adjoint and norm-attainable operators. The specific objectives of the study were: To determine numerical radius attainability of self adjoint operators; to establish conditions for norm-attainability of self-adjoint operators; and to investigate reflexivity of self-adjoint norm-attainable normal operators. The methodology involved the use of inner products, tensor products and some known mathematical inequalities like Cauchy-Schwarz inequality, parallelogram identity and the triangle inequality. The results obtained show that there is a strong relationship between normal operators and norm-attainable operators' i.e. normal operators are norm-attainable if they are self-adjoint. Further results show that there is norm equivalence for normal operators and norm-attainable operators of which the equivalence is brought about by the existence of a canonical homomorphisms. These results concur with the results of Dragomir which verify normality for compact operators when the Hilbert space is taken to be infinite dimensional and real. In conclusion, the results obtained are useful in quantum theory in generating quantum bit and estimation of ground state energies of various molecules like ethane.

Keywords: Hilbert space, normality, norm-attainability, self-adjoint operators, Tensor products.

Mathematical Modelling For Behavioral Dynamics Of Controlled Evacuations Based On Visual Perception

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Abstract

Evacuation is the expression which refers to the movement of people getting away from the source of hazard. In general, evacuations are complex in their dynamics due to the variation of the behavioral responses of individuals as part of evacuating crowds. Independent of the type of emergency, evacuation times are a common design measure for guaranteeing personal integrity for people inside buildings. The accomplishment of design standards regarding evacuation times lead in practice to modifications of architectural design and construction materials of new buildings. Modifications in historic buildings are in contrary limited due to their cultural significance and difficulty of adaptation to modern safety standards. In addition to this, general safety regulations do not cover all aspects required for preventing fatal incidents due to evacuations. In this sense, the study of evacuation dynamics is relevant to the reduction of risk of fatal events. The present project proposes a mathematical model for the description of the behavioral dynamics of controlled evacuations based on visual perception. The object-oriented model of PerPedES (Perceiving Pedestrian Evacuation Simulator), which is developed for this project, is intended to describe the global dynamics of an evacuation by means of individual rules. Walking direction and speed of the modelled pedestrians are obtained based on information derived from a model for visual perception utilizing a modified ray-tracing. Within PerPedES, an individual criterion for moving decision motivated by psychological considerations is introduced. The resulting traces of simulated evacuations present similar characteristics to motion patterns described in literature. In particular, arch- and lane-formations, clogging-effect, overtaking- and collision avoidance maneuvers. Within the context of risk reduction in the built environment, the presented behavioral model is applied in a case-study. In particular, for the analysis of the vulnerability of the occupants of a complex building, when pursuing an evacuation, mean evacuation times and individual walking speeds were computed together with the evacuation traces left by the occupant in this project.

Key Words: Evacuation, Mathematical Modelling, Behavioral Dynamics, Visual Perception

SUB~THEME 7:

ISSUES IN EDUCATION AND TRAINING

The smart phone Revolution Has Arrived in Classroom! What Are my Options?

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Abstract

Smartphones can enhance universal access to education, equity, quality and efficiency in education. ICT can also play a major role in improving education management, governance and administration. While the introduction of Personal Computers into the school system and the building of school networks are happening all over Africa, use of digital learning content in schools and colleges is rapidly increasing world over. Smartphones continue to evolve as ICT inspired tools and teaching approaches offered the possibilities of transforming students learning experiences by heightening their motivation and a sense of autonomy. The smartphone revolution from retail into corporate market is now getting into our classrooms. It has become an ordinary resource for teachers to use to enhance instruction. To maximize its effectiveness in the classroom, the teacher needs to have positive attitude and technological skills. The objectives of the study are to; examine the benefits of using tablets in the classroom, options available for using m-learning and challenges faced by both teachers and learners in use of the smart phone. This study is informed by the Technology Adoption Model (TAM) which is an information system theory that models how users' come to accept and use a technology. I shall use the mentioned objectives for argument to probe the research and to provide a path to understanding how tablets in education transform the pedagogy. In an effort to ensure smartphone integration in teaching and learning in schools, the Government has over the years invested heavily in establishment of the requisite ICT infrastructure.

Keywords: Smart phone Revolution, Classroom, Options.

Influence of Teacher's Preparation of Professional Documents on Students' Academic Achievement of Kiswahili Language in Public Secondary Schools in Kathonzi Sub-County, Kenya

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Abstract

Poor performance in the Kenya Certificate of Secondary Education (KCSE) Examination has been of a great concern by all stakeholders particularly the students' academic achievement of Kiswahili language. For five years Kathonzi Sub County has been posting poor results in Kiswahili language. The purpose of the study was to establish the influence of teacher's preparation of professional documents on students' academic achievement in Kiswahili language. This study was guided by Teacher Efficacy theory. The study was conducted in Kathonzi Sub County, Kenya. The target population comprised of 60 Kiswahili language teachers and 39 principals in all the 39 public secondary schools in the Sub County. The Kiswahili language teachers and the principals were purposively sampled. The sample size was all the 39 principals and 60 Kiswahili language teachers hence Census Survey. Questionnaires for principals and teachers were used as instruments of data collection. The objective of the

study was; to establish the influence of the teacher's preparation of professional documents on students' academic achievement in Kiswahili language on students' academic achievement in Kiswahili language in public secondary schools in the Sub County. Both questionnaires were piloted for reliability and yielded Chronbach Alpha Coefficient of 0.833 for principal's questionnaire and 0.838 for teachers' questionnaire. The data collected was quantitatively analyzed using Statistical package of Social Sciences (SPSS). Frequencies and percentages were used to summarize and describe data whereas Pearson correlation was used to establish relationships. The findings established that; teacher's preparation of professional documents did not have a significant influence ($r=0.273$, $p\text{-value}=0.649$). The findings of the study will be useful in advising the Ministry of Education (MOE) on ensuring thorough grounding of teachers in teacher training colleges and universities to produce fully baked Kiswahili teachers. It may be used for future researches on related studies.

Key Words: Teacher Preparedness, Student Achievement, Professional documents, Kiswahili Language

Academic Advising Needs of University Students: The Case of Machakos University

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Abstract

Academic mentorship has been practiced in a number of universities including Machakos in Kenya though ineffectively due to the big student numbers and the presumably misconceived assumption that all students are in need and will voluntarily seek assistance. Most of the students admitted in public universities have the potential to excel academically if properly guided, supported and challenged. For academic mentorship to be successful and profitable to students there is need to identify areas of need for purposes of prioritization. Study findings have identified academic advising needs of university students including maintaining high grades, handling heavier academic workload, setting career goals, setting academic goals, time management, personal development, social relationships, financial management and study skills among others. This survey was conducted on 187 students from Machakos University. Data was analysed using descriptive statistics. The findings show that students have a fairly positive (mean 3.62, $n=187$) perception towards academic mentorship. Despite rating themselves highly on various competences, the respondents expressed need for mentorship on orientation (73%), examination preparation (88%), financial management (79%), developing a good study schedule (78%), maintaining high grades (78%), setting academic goals (83%), setting career goals (85%) among other areas. It was concluded that students have a positive attitude towards academic mentorship, mentorship can provide information required by students to excel academically and advantage can be made of students' feelings of inadequacy in certain competency areas that are necessary for academic excellence. It was recommended that Schools and departments should take advantage of the positive perception to operationize and institutionalize academic mentorship and the mentorship programmes should focus on areas that students expressed need for academic advising.

Keywords: Academic, Learning outcomes, Mentorship, Student, University

The 8-4-4 School Curriculum: Is it still relevant for the Kenyan Child?

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Abstract

The relevance of a school curriculum is pegged on how it addresses the immediate needs of the consumer (learner). Since the inception of the 8-4-4 curriculum in Kenya in mid-1980s, the quality of its graduates has ever been questionable. This concern about the caliber and competences of the 8-4-4 school graduates has persisted for three decades, despite the several reviews and reforms made in the school curriculum. The purpose of this study was therefore to investigate the relevance of the 8-4-4 secondary school curriculum in Kenya. It was guided by two research objectives, that is, to examine the content of the 8-4-4 secondary school curriculum and to establish whether the 8-4-4 school curriculum equips learners with values and competences that are useful in their daily life. This study adopted qualitative research design. It was carried out in 30 secondary schools in Machakos and Nairobi counties, Kenya. The sample of study was 30 principals, 75 teachers and 160 students yielding a total of 265 respondents. The findings of the study revealed that although the content of the 8-4-4 secondary school curriculum was adequate in terms of its scope, it generally focused on the acquisition of the cognitive learning outcomes at the expense of the other two domains; psychomotor and affective. The study further revealed that the 8-4-4 secondary school curriculum gives little attention to the local needs of the learner. Similarly, 73.3 % principal, 75% teacher and 87% student respondents reported that much of the teaching was more examination oriented rather than developing values and capabilities of the learner. It was therefore concluded that content of the 8-4-4 secondary school curriculum was not focused on developing skills, values and capabilities among the youth. In addition, the teaching was more focused on drilling students on how to pass examinations rather than equipping them with appropriate competences and life values. The study recommends that the 8-4-4 secondary school curriculum should be further reviewed or overhauled to make it relevant to the needs of the Kenyan child.

Key words: Capabilities, curriculum, learner, skills and values

Influence of Material Selection Criteria on Acquisition of Numeracy Skills among Children in Pre-School Institutions in Kathiani Sub-County

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Abstract

This paper underscores the Influence of Material Selection Criteria on Acquisition of Numeracy Skills. The study was done in Kathiani zone in Kathiani Sub-County, Machakos County. The objective of the study was to establish the criteria of material selection and how they influence acquisition of numeracy skills. The target population comprised all pre-school children and pre-school teachers and headteachers in Kathiani Sub-County. Questionnaire, interview schedules and observation schedules were used for data collection. Qualitative data were derived from open-ended responses received during interviews. The research instruments were piloted in two public schools and one private pre-school institution that were not included in the study sample, but within the target population. The data collected

were edited and coded according to themes that emanated from the research objectives and questions. The quantitative data were analyzed and presented using descriptive statistics such as frequency distribution, tables and percentages. Qualitative data were presented in narrative form. The study established that appropriateness is key when selecting play materials. (52.6%) of ECDE teachers indicated that selecting play materials based on sophistication has made it difficult for ECDE teachers to enhance acquisition of numeracy skills in ECDE centres in Kathiani Sub-County. It was concluded most of the ECDE teachers rarely consider criteria for selecting play materials as important. Thus, the study recommended that ECDE teachers should consider relevance, suitability, appropriateness and quality of the instructional resources. Further, the resources should not be sophisticated, nor should these be complex to make acquisition of numeracy skills easier for ECDE learners. It is expected that the findings of this study will contribute to the efforts towards early interventions to improve numeracy learning outcomes among learners in Kenya.

Key Words: Influence, Material Selection Criteria, Acquisition of Numeracy Skills, Pre-Schools

An Empirical Analysis of the Effects of Mastery Learning Strategies (MLS) on Self-Esteem and Learning Outcomes of High School Students

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Abstract

This study was conducted in India at Panjab University-Sector 14:160014 in the Union Territory of Chandigarh, 160014. The study was undertaken with a purpose of studying the effects of Mastery Learning Situations with Generalization and Analogy as Advance Organizers and their Effects on Learning Outcomes of High School Students in Relation to their Cognitive Style. Two –Way ANOVA was applied to analyze the results. Sample comprised of 509 IX TH Graders from Four Different Senior Secondary Schools in Chandigarh –India. The main findings of the study were:

- For Self-esteem, three instructional groups (ML-GEN; ML-ANAL; and CGL) were found equal in respect of self-esteem gain Means yielded by them.
- For the main effect of cognitive style, the gain means of self-esteem scores were not found to be significantly different for both Field-Dependent and Field-Independent groups of the respondents.
- The treatment groups (ML-GEN; and ML-ANAL) outperformed the CGL group in terms of their gain mean scores suggesting that both ML-GEN and ML-ANAL achieved higher gain means as compared to the control group.
- For Effect Sizes, Mastery Learning Strategy with Generalization and Analogy as an Advance Organizers (ML-GEN and ML-ANAL) was more effective than the Conventional Group Learning (CGL).
- Mastery Learning Strategies (ML-GEN; and ML-ANAL) had large effect sizes and are therefore the best differentiating factors between experimental and control groups.
- On self-esteem, on average, the experimental groups (ML-GEN and ML-ANAL) far exceeded the control group on self-esteem scores, and
- Mastery Learning Strategies (MLS) was found to be more effective than CGL group.

Key Words: Learning, Self esteem, Students, Strategies

Using path analysis for determining parental involvement on child academic performance in selected primary schools in Adamawa state, Nigeria

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Abstract

The purpose of this study was to determine the impact of parental involvement on child academic performance in selected primary schools in Yola south Local Government Area. The study use path analysis model to test the hypothesis. Independent variables were parental educational level, age of parent, income of parents, house hold size, and parental interest in child education, while child ambition index, school participation, motivation to learning as well as quality of school served as intervening variable. The child class performance is dependent variable. Target population were, 100 parents as participants and 10 private nursery and primary schools in Yola south local government area. Simple random sampling techniques was used in selecting the parents and 10 private nursery and primary school selected purposively. Then the data was collected through questionnaires for parent and child evaluation checked. The data for the study was computed and analyzed using Statistical package of social Science (SPSS) programme. Based on the research findings, the result shows that parental involvement in the child education significantly influence child performance. This study has contributed the need for parent to be involved actively in the education of their children. Parent should have full involvement in their children education, thereby providing some means to cater for the children daily needs, Parent should give maximum financial support to their children to enhance their educational services, School administrators and teachers should endeavor to create a welcoming school involvements, such as inviting parents during open days and of holding PTA meetings regularly, should be vigorously pursued.

Key Words: Parental, Child, School, Education

Technical Vocational Education and Training (TVET) Institutions' Contribution To Promoting Sustainable Development

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Abstract

The concept of sustainable development can be possible if people possess the necessary skills and competences for work in a sustainable manner. Technical, Vocational Education and Training (TVET) has been identified as the type of education that can contribute to the development of a workforce that is skilled and can embrace the ideas of sustainability. In this paper, the researcher presents ideas developed through a plenary discussion with 12 master's students at his university about the role TVET institutions can play through their traditional roles of teaching and research. The paper reviews literature and explores the concept and concerns for sustainable development, the models for sustainability and sustainable development, and identifies the role TVET institutions can play in the transformation to sustainable societies. Further, the paper identifies the challenges TVET institutions face in imparting sustainability skills and concludes by suggesting possible solutions to the challenges.

Keywords: Technical, Vocational Education and Training, Sustainable Development

Impact of In-Service Training in Enhancing Management Skills of Public Primary Schools Headteachers in Meru County, Kenya

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Abstract

Training on management of public primary schools is vital, as education is dynamic and managers are experiencing challenges due to modern technology and demand for quality services. The government of Kenya offers in-service training in form of seminars and workshops to education managers to equip them with necessary management knowledge and skills. This is meant to enable them keep abreast with the changes in education and the management of learning institutions. Despite the effort made, effective management of public primary schools remains a concern to the stakeholders and the public. This study sought to establish the impact of in-service training in enhancing management skills of public primary schools' head teachers in Meru County, Kenya. The researcher used descriptive survey and correlational research designs. The target population for the study was 570 subjects comprising of 509 teachers, 59 head teachers and 2 curriculum supporting officers (CSOs). Simple random sampling was used to sample schools in Igembe South Sub-County. Proportionate sampling was used to determine the number of teachers from the selected schools, and teachers were selected using simple random sampling. Head teachers and CSOs were selected using purposive sampling. This was to enable the researcher realize a sample size of 250 respondents who were used for this study. The questionnaire was used to collect data from the head teachers and teachers. Interview was conducted with a CSO. Piloting was carried out with 25 respondents at Igembe central. Reliability was estimated using Cronbach's Coefficient Alpha. Reliability of instrument was set at $\alpha = 0.7$. The correlation coefficient (r) of 0.736 was realized, which was sufficient and acceptable. Validity of the instrument was established through supervisors' opinion and judgment. Data analysis was done using descriptive statistics (Frequencies, percentages, mean and standard deviation) and inferential statistics (linear regression and correlation). Hypotheses were tested at the alpha (α) value of 0.05 level of significance. Statistical package for social sciences (SPSS) version 21 computer software was used. The findings revealed that despite the head teachers having been in-serviced, management skills were still inadequate in curriculum supervision, staff motivation, procurement processes and preparation and implementation of budget. The study concluded that Lack of staff motivation partly contributed to poor performance in schools. Inadequate procurement processes and inadequate preparation and implementation of budget were responsible for mismanagement in schools, in the area of study. The following recommendations were made; the head teachers should use both financial and non financial incentives to motivate teachers to enhance staff motivation. The head teachers to ensure that there are functional tendering and inspection committees for smooth procurement processes. Head teachers should involve qualified personnel in preparation and implementation of budget. Further research should be carried out to establish the impact of staff motivation in enhancing proper management and academic performance in public primary schools, in a wider area and with a larger sample. The study will help the policy makers and other planners of professional development activities on the priority areas of in-service and address such areas for effective primary schools management.

Key Words: Training, In-service Training, Pre service, refresher course, Management skills, Enhance.

Kenyan Curriculum and Self-reliance: A Decolonizing Perspective

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Abstract

Education is meant to develop capacity and enable members of society to become productive. African indigenous education systems inculcated self-reliance among members of society and every individual had a specific defined role within the society. The colonial education system introduced the aspects of unemployment, underemployment and job seekers. In an effort to address growing mismatch between expectations by graduates and societal employment provisions, the government has regularly formed commissions and made reforms in the education system. Despite these efforts there has been growing concerns on the effectiveness of the current education system to inculcate self-reliance among graduates. This study sought to establish the influence of decolonizing the Kenyan education system on self-reliance among students. The study was carried out in universities in Kenya. This study utilized the descriptive survey design and the correlational research design. A sample size of 384 respondents made up of 60 members of teaching faculty and 324 fourth year bachelor of education students was selected to participate in the study. Data collection was done using questionnaires and interview schedules. Descriptive statistics was used for measures of central tendencies including mean, standard deviation and coefficient of variation. Inferential statistics through correlation analysis using the Pearson 's coefficient of correlation was applied to measure the degree of influence of decolonizing curriculum on self-reliance. To test hypothesis, simple linear and multiple regression models were used to test significance between independent and dependent variable. Qualitative data from interviews was organized into themes, categories and patterns pertinent to the study. The study found that the contemporary Kenyan curriculum influenced self-reliance to a moderate extent and that integration of selected elements of African indigenous curriculum was capable of improving the Kenyan curriculum to a large extent. It was concluded that decolonizing curriculum had a statistically significant relationship with self-reliance among students in the Kenyan education system.

Key Words: Self-Reliance, Decolonization, Curriculum, Indigenous Knowledge, Integrating, Anti-Colonial

An integrated early literacy intervention model for children living in disadvantaged contexts: Snapshots from the Reading Kenya Intervention

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Abstract

Early literacy plays a key role in enabling children not to fall behind in school achievement. Research has consistently indicated that when children are reached with high quality early learning experiences, their chances of academic success, higher grade graduation rates and productivity in adult life are enhanced. This however, requires that all the concerned players in children's literacy development actively get involved. Across Kenya, literacy rates in primary schools have significantly been lower than expected despite the increased access and enrollment rates. This is particularly more pronounced among the marginalized communities. This paper presents the 'Reading Kenya early literacy development Model' for children's early literacy development. It explores the National Book Development Council of Kenya's (NBDCK) partnership with the Canadian Organization for Development through Education (CODE) in facilitating an integrated literacy model in rural Kajiado. The findings

from the baseline study indicated that literacy learning outcomes were poor. Data for this research was collected through a baseline study, classroom observation and interviews with head teachers, Education officers and teachers. Interventions were therefore instituted to mitigate this situation through a four-year literacy intervention project. The results showed that the model made a significant impact on learners' reading achievement, parental literacy support and increased supply of grade level literacy materials in three languages. The findings support the importance of an integrated model in project implementation so as to improve learning outcomes. Recommendations are made on improving the scale up to all schools in the County and the Country. This is specifically more important now that Kenya is implementing the Competency based curriculum (CBC).

Key Words: Integrated Intervention Model, Early Literacy, Disadvantaged Contexts, Reading Kenya.

The Phenomenon of Missing Marks in Kenyan Public Universities – Reality or Myth: The Case of Maasai Mara University in Narok County, Kenya

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Abstract

Incidences of missing marks in universities in Kenya, particularly, public universities have increased in the recent past, barring many students from graduating or progressing to the next year of study. This has elicited a lot of views from various stakeholders in education ranging from the government ministerial level, through the university officers and scholars to the parents in reference to the reasons leading to missing marks. The phenomenon has been dubbed with various identities such as the puzzle of missing marks, the scandal of missing marks, the song of missing marks, among others, to the extent that some universities have developed investigative forms designed to trace and resolve the problem to the affected students like in the case of Kibabii University. At one point in 2016, the then minister of education, Dr. Fred Matiang'i warned about the government's intolerance to the problem of missing marks in public universities. According to Matiang'i, cases of missing marks and delays in availing results was increasingly becoming a common occurrence among institutions of higher learning, pointing to the question the integrity of examination processes in universities. With such concerns, there is a need for increasing empirical data drawn from the affected stakeholders to aid in coming up with valid and reliable measures to reduce hence streamline examination results processing procedures in the universities. This will reduce the frustrations that students face around and about graduation periods as related to missing marks. Thus, this paper presents the findings of a study carried out to explore the problems and remedies to the phenomenon of missing marks in universities focusing on Maasai Mara University as a case of study.

Key Words: Missing Marks, Public Universities, University Students

Teachers' Professional Development Issues and their Impact on Teachers' Service Delivery: A Case Study of Coast Girls Secondary School in Mombasa County, Kenya

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Abstract

The misunderstanding between Teachers Service Commission (TSC) and Teachers Unions on teachers' professional development (TPD) and its impact on teachers' service delivery has not been investigated. The purpose of the study was therefore to document the issues the TSC and Unions have on TPD and how they impact on teachers' performance in service delivery. The study was carried out at Coast Girls Secondary School in Mombasa County, Kenya. The study employed ethnographic research design. The target population was 324000 teachers employed by the TSC in schools in Kenya. Respondents were 43 teachers at Coast Girls Secondary schools in Mombasa County, Kenya. Data was collected using observation, probing and document analysis. The descriptive statistics used were frequency and percentage to compare the issues on teachers' professional development between teachers' union, TSC and their effect on teachers' service delivery. Chi square was used to determine the relationship between TPD issues and teachers service delivery. The hypotheses testing was done at = 0.05 level of significance. The data collected in this study was analysed using Statistical Package for Social Sciences (SPSS) computer programme version 20.0. The research findings established that it was not clear who was in charge of quality standard in schools between TSC and MoES&T; TPD was not used to promote teachers; certificate teachers earned were not recognised by the TSC; and that junior teachers were used by head teachers to manage and rate senior teachers' TPD in the school. There was a silent war between TSC officers and MoES&T officers in trying to win control over teachers' management, quality and standards and students' management. The teachers were therefore demoralised, frustrated and prepared professional documents that they never used in classroom. It was therefore recommended that TSC, teachers unions and MoES&T should solve the identified issues on TPD for better teacher's service delivery in schools

Key Words: Issues, Professional Development, Service Delivery, Content Knowledge, Teaching Skills, In-Service Training

Indigenous Methods of Education as Practised by the Kipsigis

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Abstract

This paper presents an overview of indigenous methods of education used by the kipsigis and its Relevance to modern education. The article is descriptive and relied heavily on published works. It shows that kipsigis instructed children through formal and informal methods. Informal methods of instructions included involving children in productive work and observation. The boys were engaged in looking after livestock while girls looked after younger brothers and sisters. Children also learnt how to observe. They also learned through play. Other forms of informal methods were myths, legends folklores, riddles and songs. Myths are regarded as tales imaginatively describing or accounting for natural phenomena. The kipsigis had songs for various occasions. Besides the numerous folksongs with which children were associated with as they grew up, there existed rich children's oral literature. Folktales among

kipsgis were based on day to day happenings. Asking of riddles was a very special form of amusement. Some riddles seemed to be simple while others were complex. Proverbs were used wisely in ordinary conversation. Formal methods of instructions were initiation and apprenticeship. The period of circumcision was the most important time in the life of the kipsigis. It marked the passage from childhood to adulthood. Medicine was widely practiced in kipsigis pre-colonial times. When children were sick or ill, the mother was responsible for giving advice and first aid before the father's assistance was resorted to. Men and women learned this skill from their parents. There were individuals who were recognized as better herbalists. A person who wanted his child to learn the skills from a specialist would pay a fee and training took a period of time. The skill of iron work was transmitted from father to son. Weaving was done by women and was taught to girls. The art of pottery was learnt by the Kipsigis women from Luo and Abagusii. The paper concludes that there were two methods of instructions used by the Kipsigis to teach their children in pre-colonial times; these were formal and informal methods.

Key Words: Informal Methods, Formal Methods, Myths, Legends, Riddles, Proverbs

Effect of Level of Enforcement of KNEC Rules and Regulations on the Prevalence of Examination Malpractice in Public and Private Secondary Schools in Kisii County Between 2008 ~ 2014

Margaret Nekesa Shibo

Abstract

Examination malpractice in Kenya Certificate of Secondary Education examinations in Kisii County has been on the increase despite the strict enforcement of Kenya National Examinations Council (KNEC) rules and regulations that govern the exercise. This study set out to examine the effect of the level of enforcement of KNEC rules and regulations by invigilators on the prevalence of examination malpractice in Kisii County. This study employed ex post facto and survey research design. The target population comprised of 363 principals, 726 invigilators and 30 examination officers drawn from 317 public and 46 private secondary schools in Kisii County. A sample of 109 principals, 218 invigilators and 10 examination officials was selected through stratified random sampling. The study utilized questionnaires and interview schedules to collect both qualitative and quantitative data. Pearson Correlation Coefficient was computed using SPSS to analyze quantitative data. Qualitative data were analyzed thematically; related themes were summarized and reported in prose. The study found that level of enforcement of KNEC rules contributed to the high level of examination malpractice. Pearson correlation results were as follows: Level of enforcement of KNEC rules and regulations ($r = 0.087$; $p = 0.275$). The study recommended that: KNEC should consider engaging in extensive sensitization campaigns aimed at regularly reminding all concerned stakeholders and that, the school management should consider organizing prior assessments to check on compliance levels in respect of the set KNEC rules and regulations.

Key Words: KNEC Rules and Regulations, Examination Malpractice, Kisii County

Management of Co-Curricular Activities and Its Implications on Quality Education in Public Secondary Schools in Kisii County, Kenya

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Abstract

The nation's economic and social health depends on the quality of education offered to its citizenry. Active participation in co-curricular activities is presumed to be a major ingredient to quality education among other quality indicators. Assessments show that provision of quality education is a challenge in many countries. The objective of the study was to assess co-curricular activities management and its implications on quality of education in Kisii County. This study employed the Production Function Theory. Concurrent triangulation design was employed within mixed methods approach. Study population constituted of 10 education officers, 334 principals and 334 senior teachers. Simple random sampling was used to pick the number of schools required. Purposive random sampling was used to select principals and senior teachers in the study while saturated random sampling was used to select education officers. Krescie and Morgan's formula was used to obtain the sample size. Instruments for data collection were questionnaires, interview schedule and document analysis guide. Reliability was ensured by piloting in 34 schools. Pre-testing of the instruments was done for validation. Validity was ensured by expert judgment. Quantitative data was analyzed using descriptive and inferential statistics. Qualitative data was analyzed using thematic analysis. The findings indicate that few co-curricular activities (CCA) are being carried out in the schools and their implementation are influenced by resource allocation, pre-planning of the activities, monitoring and evaluation. Consequently, this affected quality of education. The researcher recommends that the government and schools revisits its policies related to provision of quality education and work towards their implementation.

Key Words: Co-curricular activities and Quality education

Effects of Gender Stereotyping on Women's Social Development: A Case of Urbanized Turkana Women in Eldoret Town-Kenya

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Abstract

This study investigated the effects of gender stereotyping on urbanized Turkana women's social development in Eldoret, Kenya. It identified the cultural factors that influence their involvement in social development. It also examined the role of local leaders in addressing gender stereotyping, while suggesting strategies that would address it and improve urbanized Turkana women's participation in social development. The study utilized the Convergent Parallel Research Design. Consciousness Raising and Radical Feminist theories guided the study. The sample size was 549 respondents. Questionnaires, interviews and focus group discussions were used to collect data. Findings revealed that gender stereotyping has a negative moderate relationship with women's social development with "r" value of -0.337. Results also demonstrate that there is a negative weak relationship between cultural factors and women's social development with "r" = -0.131, and statistically influence it since "p" = 0.015, less than 0.05. Similarly, findings indicate that there is a negative weak relationship between local leaders and women's social development with "r" = -0.201, and that they have a on women's social development since "p" = 0.000 which was less than the ideal

value. Based on these results, the researcher proposes an action plan as a way forward. One of the proposed activities is the sensitization of Eldoret local leaders and the community on effects of gender stereotyping, creation of support groups for women to help them to work together and have their voices heard. The researcher believes that the findings in this study will contribute to the fight against gender stereotyping and have more inclusiveness.

Key Words: Gender Stereotyping, Women's Social Development, Urbanized Turkana Women

Influence of Self Esteem on Student's Psychomotor and Cognitive Academic Performance

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Abstract

Self-esteem is a significant life skill that touches on the affective, cognitive and the psychomotor domain of every individual and can lead to promoting individual development if effectively implemented in all secondary schools. This study aimed at examining the influence of self-esteem on students' discipline and academic performance in secondary schools in Tharaka-Nithi County, Kenya. The study was guided by the following specific objectives; to establish the relationship between self-esteem and students' discipline, to explore the relationship between self-esteem and students' academic performance, to find out whether there are gender differences in relation to self-esteem and students' discipline, to compare boys and girls in relation to self-esteem and students' academic performance based on gender and to find out strategies employed by school administration to positively influence self-esteem among secondary school students in Tharaka-Nithi County, Kenya. The study adopted the descriptive survey research design. The target population was form three students in secondary schools in Tharaka-Nithi County, Kenya. To ensure schools of all categories were represented, proportional sampling technique was used. Through stratified and simple random sampling techniques, a sample size of 301 students was selected. Purposive sampling technique was used to select the 13 heads of curriculum, 13 deputy head-teachers and 13 heads of guidance and counseling. Data was collected using questionnaires and interview schedules. The validity of instruments was confirmed by research supervisors and other experts. The study found out that there was insignificant influence of self-esteem on students' discipline (Pearson coefficient=0.027 and sig(p-value) =0.655). This implies that an improvement of self-esteem does not enhance students' discipline in secondary schools. The study found that self-esteem has statistically significant influence on students' academic performance in secondary schools (Pearson coefficient=0.120; sig(p-value) =0.047). This implies that low or high self esteem influences students' academic performance. The study also, revealed that there is statistically significant difference of the influence of self -esteem on students' discipline based on gender in secondary schools (t-value= 4.773; p-value=0.000). Further, the study established that there was no significant influence of self-esteem on students' academic performance based on gender (Chi-square value 13.92, df=8, p-value=0.084). The study revealed that low self-esteem among boys contribute to high cases of indiscipline, hence there is need for school administration and stakeholders to put emphasis on improving the level of self-esteem to enhance boys' discipline in secondary schools. It is anticipated that the findings of this study will provide necessary information useful to the policy makers, academicians, students, teachers, school administration and other stakeholders to enhance discipline and academic performance of students in secondary schools in Kenya.

Influence of Educational Support on Academic Performance of Orphans and Vulnerable Children in Public Primary Schools in Kalama Sub County, Machakos County, Kenya

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Abstract

Education gives children hope for life and work, and a strong protector against HIV to which Orphans and Vulnerable Children may be particularly susceptible. Despite the Kenyan government effort in mobilising and supporting community based interventions and ensuring access for Orphans and Vulnerable Children to essential services including but not limited to education, health care, psychosocial support and legal protection, OVC in Machakos County and especially Kalama Sub County have been experiencing challenges in meeting their psychosocial, nutritional, academic and health care needs. The purpose of the study was to establish the influence of educational support on academic performance of OVC in public primary schools in Kalama Sub County in Machakos County, Kenya. The study objectives were to examine the influence of class teacher's individualized support of OVC learning, to assess the influence of the school provision of OVC feeding programme and to establish the influence of teachers'/caregiver cooperation on OVC academic performance in Kalama Sub County. The study was premised on Abraham Maslow hierarchy of needs motivational theory. The study adopted descriptive survey design. The study sampled 36 teachers and 11 head teachers. The study data was collected through class teachers questionnaire and head teachers interview schedule. Content and construct types of validity were ascertained through scrutiny by a panel of university lecturers. Using test retest technique, teachers' questionnaire was found to have a reliability coefficient of 0.78. Both descriptive and inferential statistics were used to analyze the data. The study's three formulated null hypotheses were analyzed using multiple regression analysis. School provision of OVC feeding programme had the most significant relative contribution to the prediction of pupils' academic performance ($B = 0.578$) followed by level of teachers' individualized support ($B = 0.452$) while teacher/caregiver's cooperation had the least influence ($B = 0.329$). The study recommended that all the School Management Committees in collaboration with head teachers should be proactive and start income generating programmes in order to support the home grown school food programme in situations when the government stipend is not forthcoming and when it is inadequate. Further, the SMC should collaborate with local community welfare groups and the larger community in order to extend the food programme to the OVC families.

Key words: Academic Performance, Educational Support, Orphan, Vulnerable children, School Feeding Program, Home-Grown School Feeding

Influence of Non-Governmental Organizations Education Support Activities on Academic Performance of Students in Public Primary Schools in Kenya: A Case of Machakos County

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Abstract

Non-governmental organizations have initiated education support activities which have improved school performance of students in public primary schools. The researcher looked at the influence of the nongovernment organizations education programs on academic performance of public primary schools. The study concentrated on influence of non-governmental organizations education support activities on academic performance of students in public primary schools in Machakos only. The study delimited itself to the target population of 324 participants in Machakos. The study adopted descriptive method because it provided a quantitative or numeric description of trends, attitudes and opinions of a population by studying a sample population. The researcher has put in mind that participation in research is voluntary, thus quality time was taken to explain to the respondents the importance of the study thus requested them to participate in the study by giving relevant and honest information. Questionnaires were used to collect information from the selected respondents. The researcher then analysed the data using descriptive statistics, the findings will help various key stakeholders including the government and Non-governmental organizations. The results of the data analysis are presented in chapter of this report thus data has been organized and presented as per the objectives of the study and demographic information captured at the beginning of the analysis. The researcher thus concluded that multiple factors influence academic performance of students negatively for instance lack of scholarly materials, lack of well-structured school feeding programs and lack of well installed physical facilities. The study however was not negatively influenced by lack of clean water.

Keywords: Non-governmental organizations, education, school performance and public primary schools.

An Investigation on Student-Teachers' Acquisition of New Skills during Teaching Practice Exercise: a case Study of University of Embu

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Abstract

Teaching practice gives students an opportunity to apply theoretical knowledge into practical skills. The student- teacher is able to interact with school administration, teachers and students as well as non- teaching staff. The study investigated student –teachers' new skills acquisition during teaching practice exercise. A descriptive survey design was employed. The respondents were one hundred and sixty and they were randomly selected from four hundred and ninety-five the instruments for data collection were student's questionnaire and researcher's observations schedules. Data was analysed through descriptive statistics. The findings revealed that some teachers acquired new knowledge on professional ethics in teaching career while other student teachers acquired new skills of interacting with school administration, teachers and students as well as non-teaching staff. In addition, the study reported that the student- teachers acquired skills on how to cope with different personalities. Further, the study indicated that some student- teachers acquired skills on

innovations and improvisation of teaching learning resources while other student –teachers sharpened their skills in co-curriculum activities. Therefore, the study recommended that all student-teachers should actively be involved in teaching practice exercise. Further, the study recommended that proper induction for students proceeding for teaching practice exercises paramount. Moreover, the schools providing attachment to students need to provide conducive environment. The findings from this study will help universities and colleges when preparing students for teaching practice.

Key words: Student- teachers, Skills, Teaching practice, Acquisition. Students

Inculcation of Societal Norms in School System in Meru County, Kenya: An Afrocentric Perspective

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Abstract

The school system is expected to inculcate desirable societal norms in the learners. However, cases of unacceptable norms such as immorality, destruction of property, riots, strikes, drug abuse and disrespect for authority have been on the increase despite numerous interventions put in place by the government and individual educational institutions such burning of external exams, abolition of visiting days and holiday tuition. This study sought to examine the application of Afrocentric evaluation methods to enhance societal norms among secondary school learners in Meru County, Kenya. The study adopted exploratory descriptive research approach. Questionnaires and interview schedules were used to collect data. Data was analyzed using descriptive statistics which included mean, standard deviation and coefficient of variation. Inferential statistics used for data analysis was Linear Regression Analysis. The study found out that integration of Afrocentric evaluation methods into the contemporary school system enhances societal norms among secondary school learners in Meru County, Kenya. The study recommended that there is need to integrate Afrocentric evaluation perspectives into the contemporary school system in Kenya to enhance societal norms among learners. The findings of this study provide useful knowledge in regard to Afrocentric evaluation methods and societal norms and provide a basis for further studies.

Key Words: Inculcation, School, Afrocentric, Evaluation, Societal norms

Philosophical Foundations and Ethics: A Deconstruction and Reconstruction of Kenyan Education System

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Abstract

One of the objectives of education is to promote ethical behaviour among learners. This is emphasized by various commissions and reports on education. Despite the enormous investment in education over the years and the high academic qualification, the level of impunity, corruption and intolerance among graduates and other leavers has become a major concern among educationists and stakeholders. Efforts through reforms and commissions have not yielded much in developing ethics among learners. This raises concern on the influence of contemporary philosophical foundations on ethics. The current study aimed at determining the influence of deconstruction and reconstruction of Kenyan philosophical

foundations on ethics among learners in all levels of education. The study was carried out in Kenyan universities and communities. Descriptive survey and correlation research design were adopted for the study. A sample size of 384 respondents comprising of 324 students and 60 academic staff participated in the study. Data collection was done using questionnaires and interviews. Instrument validity was enhanced through expert judgement by supervisors. Reliability of instruments was estimated by use of Cronbach Alpha. Descriptive statistics and inferential statistics were used to analyze the data. Research hypothesis was tested using regression and correlation analysis at a significance level of $\alpha = 0.05$. The study found out that the contemporary philosophical foundations and reconstructed philosophical foundations contribute significantly towards ethics. The null hypothesis that there exists no significant influence on deconstruction and reconstruction of philosophical foundations on ethics is not supported in the current study. The study recommends the need to deconstruct and reconstruct the contemporary philosophical foundations in order to influence ethics among learners in all the levels of education.

Key words: Deconstruction, Reconstruction, Contemporary, Philosophical Foundations, Ethics

Promotion of Child Friendly Schools Model

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Abstract

This paper explores the relatedness between the practices of the principles of ethical governance in enhancing social equity and inclusion in inclusive child friendly (IFCS) schools for the benefits of the child. Reports indicate that in many countries, students are still experiencing marginalization for their racial or ethnic identity, disability, poverty level, gender or sexual identity, religious beliefs, and to some degree, their generational status. This is contrary to the principles of inclusivity, ethical governance and social equity. In the principle of social equity, each child in inclusive child friendly schools (CFS) should have access to the amount of opportunities, resources, and learning time that they individually need. This study will find out how school managers practice ethical governance in their CFS so as to eliminate seclusion, inequality in education, improve access, and help learners acquire acceptable moral virtues. The paper too describes the features that make a school “inclusive child friendly”. Factors to be considered in the paper will be such as, the role of the school managers in allocation of resources, implementation of policies, and the collaboration of parents and community for the achievement of inclusive child friendly school’s goals, and elements of social equity in the best interest of the child and the planning measures needed to underpin them. The study too will consider aspects of transparency, responsiveness, the empowerment, equitability, inclusiveness and moral values and how the principles of ethical governance will be correlated with society equity principles. Findings will show what school managers in (CFS) do in order to implement and achieve the of CFS model which is a rights-based approach to ensuring all children have access to basic, quality education across the world. The model is comprised of five components including, universal education; academically effective and relevant; health, safety and protection; gender-responsivity; and community support and involvement. Widespread collection of policy documents, reports and government documents created in conjunction with UNICEF will be reviewed in the children’s best interests and to be pursued by all responsible for the fulfillment of the children’s rights.

Key Word: Ethical governance, inclusive, Child friendly, Social Equity, Education,

Comprehensive sex education in Kenya: Islamic perspective

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Abstract

This paper is an attempt to address the Comprehensive sex education debate in Kenya curriculum. It will use Islamic perspective in its discussions in Kenya currently, there is a hot debate on Comprehensive sex education, with faith based organizations rejecting it. The paper will address these fundamental questions: (1) What are the sexual values addressed by Islamic shariah (2) What are the sexual lessons permitted by Islam (3) what are sexual behavior currently observed among Muslim students? (4) To which extent does Islam allow teaching of sex education (5) what are causes and solutions to teen pregnancies in Kenya? Sex education in Islam is paradoxical: on the one hand, Islam allow it and actually call for students to exercise their sexuality but, on the other hand, there seem to be discrimination between male and female sexuality due to scriptures misinterpretation. Due to ignorance, boys are given more rights with regard to the expression of their sexuality; The combination of these contradictory views with current issue on teenage pregnancy leads to more problems. urbanisation, modernization and globalization pose more challenges to our societies which if not addressed wisely will deteriorate the entire nation. But restrictive sexual education has gained a lot of strength and have become idealized as a result of the current faith based organizations rejection of the Comprehensive sex education. Currently, religion is not any more the only reference which provides guidance concerning sexual practices but policies on sexual laws influence this field on its own merit. So the only solution is to reform our societal morals through the reinterpretation of holy texts.

Assessing Skills Supply and Youth Employability in Kenya: secondary school education graduates training (miss-) match with Mumias Sugar Company labour market needs

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Abstract

In recent years concerns have arisen about growing disparities between education and labour market needs with new focus on the roles of both quantity and quality of human capital in the development process. This study assesses skills supply and youth employment at Mumias Sugar Company in Kenya, identifying skills gap as one of the major challenges that face labour market growth in the country. This study is guided by Labour Market Analysis Approach (LMA). LMA refers to measures of education and training requirements that are used to translate occupational classifications into skills requirements. LMA identifies and continually adjusts to current short-term needs. The study adopted demand and supply theories as espoused by Livingstone who believes that supply-demand theories provide better explanations of education-employment relations and uses them to argue that underutilization of knowledge and underemployment will be most common among those with the least power, including younger people. These theories also hold that demand – the number and types of jobs available – is influenced by “competition, technological innovation, and conflicts between employers and employees over working conditions, benefits and knowledge requirements” (Livingstone, 2002) and that the supply of labour is altered by changes in population, household needs and legislation. At the same time, the demand for education increases as people seek the knowledge, skills and credentials needed in a changing society. To understand

labour market needs at Mumias Sugar Company, data was collected on openings, placements and un/employment rates so as to provide information which was analyzed for insights into shortages and/or surpluses. Shortages were reflected in high levels of un/employment and salary scales. The data also contained concrete information about the skills and qualifications that the sugar company is looking for in certain positions which contribute to occupational profiles. Particularly, profiles of employees who are secondary school graduates were studied so as to understand the skills they possess and were triangulated against skills required by the company. Interviews were held with secondary school's graduates working at Mumias Sugar Company in various positions to know a great deal about the scarcity or abundance of both soft and hard skills and hiring practices. Findings indicate that specific skills prioritised by MSC for employment include fabrication of bolts, and other machines that could be used at the plant. This is especially in the factory where breakdowns are common and some of the parts that breakdown may not be accessible easily yet they need urgent repair and maintenance. Direct and intense interaction between the workers and machines is emphasised in order to fully understand the behaviour of the machines and fellow workers. The study concludes that whereas the hard skills such as literacy and numeracy which are emphasised in secondary school curriculum are desirable in Mumias Sugar Company, they cannot guarantee one any formal employment. This is because such skills were found important only for further tailor made training.

Key words: Employer, Supply, Mumias Sugar Company (MSC), Skills, Employment, Training, Market Needs

The contribution of ICT in teaching and learning Tone of Tanzanian Bantu languages

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Abstract

This paper was intended to discuss the contribution of Information Communication Technology (ICT) in teaching and learning tone of a given language. The paper urges that apart from depending only traditional education technology and methodology in learning and teaching, ICT can contribute successfully in teaching and learning tone. In traditional perspectives, it is believed that teaching and learning of subject matters is very much related and necessitated by offering training on formal settings which involve classroom interaction an organized classroom with hardcopy books and other related matters. With the development of ICT, and the rise of network, the correspondence and interaction through networking has expanded globally. One of the tools used in teaching and learning of Tone is ICT, specifically Computer. The theoretical framework adopted in this paper are Classic learning theories which include behaviorism (Skinner, 1953), Cognitivism (Gagne, 1984) (Akinsanmi, 2008). Qualitative approach was employed to involve the researcher's interpretation of linguistic narrative data which were obtained from the documentary reviews and focus group discussions done by respondents both students and instructors on tone class by giving them freedom of expression on how ICT was facilitated them tone learning. The study was carried out in two programmes in MA. Linguistics class, in one university. This study used three methods such as focus group discussion, interview and documentary review. The findings of the study were: (i) that ICT facilitates teaching of tone through application of symbols and equations that couldn't be possible or difficult in using free hand drawings, (ii) easy manipulation of sounds and tone marking strategies of which the mechanical listening of sounds through ear that may miss-lead tone interpretation has facilitated the accuracy tone analysis. The conclusions drawn

from this study were that the Institutions which are involved in teaching tonology can get use of ICT technology in a very formal way thus contributing to high level of mastering the of subject matter with a minimum time waste. The paper recommends that both learners and instructors should be ICT illiterate and get use of it as through establishing computer laboratory to enable students to have an access to computer facilities, thus contributing to sustainable development in terms of human resource utilization and innovation.

Key words: ICT, network, social media, language, teaching, tonology, Bantu

A Comparative Study of Academic Performance of Students Admitted Through Pre-NCE & Direct Entry in Final NCE Examination (A Case Study of English Department Federal College of Education, Yola)

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Abstract

This research is designed to compare the academic performance of students admitted through the Pre-NCE and Direct entry in the NCE final Examination. The purpose of this research works was to ascertain whether the performance of Pre-NCE and Direct entry students in final NCE examination relate to their entry qualifications. A total of 314 students was used as population sample for the study out of 314 students, 150 are students admitted through PRE-NCE while 164 are those admitted through direct entry. A table format was designed to collect data concerning the already graduated students, the two-tailed z-test statistics was used to test the research hypothesis and the findings of the research revealed that students admitted through direct entry performed significantly higher than those admitted through the Pre-NCE in the final NCE Examination.

Keyword: Comparative Analysis, Academic Performance of Students NCE Examination

The Craze for Students' Numbers in Kenya's Public and Private Universities and the Optimal Operation of Masinde Muliro University of Science and Technology: Towards A Cost Recovery Strategy

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Abstract

From 2003 when the university came into being as a constituent college of Moi University upto 2013, Masinde Muliro University of Science and Technology (MMUST) had experienced unprecedented growth. Student population had grown tremendously. As of 2012/2013 academic year, student enrolment stood at 10,100 majority of who were enrolled in the Privately Sponsored programme (PSSP). The University had also witnessed growth in new programmes, departments, schools and faculties. Quite a reasonable number of infrastructural

facilities had also been developed such as the library, science complex building and hostels (CHE,2011). The university had also expanded its wings in study centers and campuses. These included, Bungoma Campus, Sangalo campus, Webuye, Kaimosi, Kobujoi, Ebunangwe, Nambale, Budalangi, Busia, and Nairobi campuses among others. Despite these expansions, the University had faced myriad challenges.

Key Words: Students, University, Academic

Factors influencing Integration of ICT and Sustainable Development in Secondary Schools in Nyamira County

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Abstract

The strategy of Vision 2030 is to undertake reforms in the ICT sector as a vital basis for society's socio-political and economic growth. IT enabled services was part of six priority sectors that made up the larger part of Kenya's GDP (57%) and provided for nearly half of the total formal employment. In this digital era any aspect of human venture cannot be effectively and efficiently carried out without Information communication technologies (ICTs) including education. The paper focuses on the factors influencing integration of ICT in rural secondary schools in Nyamira County. This study adopted the Survey method research design. The target population included all the secondary schools in Masaba North Sub-County, and Schools were selected through stratified sampling method. Structured questionnaires were used for data collection and analyzed by use of both descriptive and inferential statistics. The study findings revealed scarcity of ICT infrastructure, limited competency, limited/lack access to technical support, lack of ICT policies in school and financial constraints that thwart the integration of ICT in teaching- learning process in secondary schools. This research will be significant to the Ministry of Education in that the findings can be used by National Education managers, administrators, planners and policy makers in the provision of ICT resources and establishment of policies geared towards the integration of ICT in Schools. The study therefore recommends that, the government should increase ICT funding in schools to help subsidize the high ICT costs and increase the number of computers in our institutions. In-service teacher training programmes should incorporate ICT courses to enhance ICT skills in teaching and learning.

Key words: Information Communication Technologies; ICT Integration; Digital era

The Influence of School Climate on Students' Discipline in Public Secondary Schools in Makueni County

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Abstract

The fourth goal of the United Nations' Sustainable Development goals is to provide quality and inclusive education. Despite the Kenya government's efforts to create a healthy school climate, the education sector has been plagued by challenges such as labour disruptions and students' unrest which undermine the quality of education. This study sought to investigate

the influence of school climate on students' discipline in public secondary schools in Makueni County. The objectives of the study were to determine the influence of school physical facilities on students' discipline, the influence of teacher student interpersonal relationships on students' discipline and to determine the influence of the process of formulation of school rules and regulations on students' discipline. The study employed descriptive survey design. The target population for the study was 324 principals, 3,865 teachers and 97,200 students in public secondary schools in Makueni County. The sample size of the study was obtained by proportionate stratified sampling and simple random sampling procedures. The total sample matrix was 98 principals, 350 teachers and 380 students. A questionnaire, interview guide and observation schedule research instruments were utilized for the study. Data was analyzed using descriptive and inferential statistics and presented in frequency tables. Pearson's correlation was used to test the four hypotheses at 0.05 level of significance. From the data analysis, it was found out that adequacy of physical facilities, teacher-student interpersonal relations and the process of formulation of school rules and regulations have a positive significant relationship on levels of student's discipline in public secondary schools in Makueni County.

Key Words: School Climate, Physical Facilities, Interpersonal Relations, Formulation of School Rules

The Educational Role of Nation and Standard Newspapers in Creating Awareness on Functions of County Governments among Residents of Embakasi East Sub County, Nairobi

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Abstract

After the promulgation of the Constitution in 2010 and the inception of devolution in 2013, it was necessary for Kenyans to understand the functions of the devolved units. Media, through educational role is one of the institutions that is expected to make people aware about the functions of the county governments. This study, therefore, assessed the role the media play in educating its audience to create awareness about the functions of the Kenya's devolved governance. Specific objective of the study was to examine the extent to which The Nation and The Standard newspapers have educated Kenyans about the functions of county governments. The researcher used the Framing theory, developed by Bates (1974). Framing theory is the schemata of interpretation that enables individuals to locate, perceive, identify and label occurrences or life experiences. The study covered five thematic areas representing the devolved functions, namely: health, water, education, transport and lands. The study used sequential mixed method design where qualitative and quantitative designs were combined in data collection. For quantitative data, questionnaires were administered to collect data, which was analysed and presented in forms of tables and texts. The researcher analysed the contents of The Nation and The Standard newspapers for qualitative data and analysis done; the results were presented in forms of tables and texts. The Systematic Random sampling procedure was used to reach respondents while purposive sampling procedure was used to pick the required 208 weekend newspapers of The Nation and The Standard for a period of 12 months for content analysis. The study was conducted in Embakasi East Sub County of Nairobi County that had a study population of 48, 983 households. The research used the Yamane's formula to determine sample size of 399 households. The study is significant as the results may be used to come up with policies and bills or supplement on the existing ones on matters devolution. It may also assist in promoting the Sustainable Development Goals' tenet of peace, justice and establishment of strong institutions

The Role of Knowledge Workers in Innovation and Technology for Sustainable Development

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Abstract

This is a study on the role of knowledge workers in innovation and for sustainable development. In the knowledge economies and emerging knowledge economies, knowledge work is particularly crucial in innovation, technology and sustainable development. Innovation and knowledge-based organizations, are increasingly becoming aware of the importance of the creation of new knowledge. Knowledge workers are largely responsible for creating new knowledge for knowledge-based organizations and knowledge economies. Knowledge-based organizations are different in many ways from traditional organizations. Such organizations tend to employ knowledge workers who are endowed with expertise in different areas of specialization. Objectives of the study include establishing who knowledge workers are, assessing how knowledge workers are becoming a dominant factor in the knowledge economy. Finding out the role of knowledge workers in innovation, technology and sustainable development, establishing the characteristics of knowledge workers, finding out about the type of environment in which knowledge workers thrive and to suggest ways of enabling knowledge workers to boost their innovative performance. An extensive literature review was employed to collect data for this study. It is concluded that knowledge workers are different from traditional workers and that they are most innovative when they work in an enabling environment.

Keywords: Knowledge Workers, Technology, Innovation, Knowledge Economy, Sustainable Development

E-Learning: The Emerging Technologies in Instruction

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Abstract

The digital revolution has triggered huge changes in how learners access, consume, discuss and share content. E-learning encompasses a wide variety of online initiatives such as utilizing electronic technologies to access educational curriculum. E-learning is being adopted as an additional method in the educational process for it extends and enrich the learning opportunities hence it is necessary for instructional designers to discover innovative ways to make e-learning more effective for learners. The e-learning is more modern, efficient and flexible alternative thus there is need to transform to it. The researcher used mixed-method analysis of research articles to find out available and valid information on e-learning. Thus researcher conducted an extensive literature review to collect the communicable knowledge on e-learning from various sources where e-learning is analysed and discussed such as books and book chapters related to e-learning, academic and scientific journals and open virtual spaces by recognized authors. The paper reveals vital information on definitions of e-learning from the field of education and information and communication technology, myths and facts about e-learning, goals of e-learning, potential benefits and demerits of e-learning. The paper is designed to provide practitioners, instructional designers, researchers and policy makers with some insights about e-learning. The recommendations are drawn highlighting areas that academic scholars and researchers can do further research to increase the effectiveness and scalability of e-learning. It should be acknowledged that the information is by no means exhaustive but rather a starting point for critical and informative discussion on e-learning.

Keywords: e-learning, Online Education, Electronic Technologies.

Influence of Teacher Teaching Strategies on Children Literacy Development in Pre-Primary Education

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Abstract

Literacy in Early childhood education is the ability to read, view, write, design, speak and listen for effective communication. The power of literacy lies not in the ability to read and write, but in a person's capacity to apply these skills. The process of literacy development is influenced by many factors that involve sociocultural and ecological perspectives of learning. The study sought to establish teacher teaching strategies on literacy development in pre-schools in Masinga Sub-County, Machakos County. The study was based on sociocultural theory by Lev Vygotsky and the Emergent theory by Marie Clay. The researcher used research mixed methods that is both qualitative and quantitative methods. The study applied concurrent triangulation design and the target population for this study was nine hundred and forty respondents. The sampling procedure used was simple random sampling and the sample size for the study in each pre-school center was fifteen pupils, one or two teachers and one head teacher. Piloting was conducted among the ECDE centers' teachers, ECDE pupils and Head teachers from the neighboring Yatta Sub-County. The validity of the instruments was tested and the test items were examined carefully while reliability was determined by use of split-half method. Data was collected using questionnaires, interview guidelines and observation checklist. Data collected was coded, analyzed, synthesized and interpreted using tables. Ethical consideration was sought from Ministry of Education offices in Machakos County, Mount Kenya Research and Ethics Board, National Commission for Science, Technology and Innovation, and the respondents. The study established that quite a number of preschool teachers do not see the relationship between strategies used and children literacy development in pre-primary education. The study further established that a number of learners didn't have phonological awareness, proper communication and proper reading. It is recommended that the Ministry of Education in conjunction with the county government ensure that all teachers are trained, and the selection of teachers should be based on quality academic performance to enhance profession development of teachers. Pre-primary school teachers should be better prepared with practical skills required in literacy development. The study concluded that there are many strategies that can be used that helps children acquire literacy skills. Also, there is a strong relationship between teacher teaching strategies and literacy development in preschool but teachers understanding and perception about them defers.

Key Words: Influence, Teaching Strategies, Literacy Development, Pre-primary

Influence of Participation of Student Councils in Conflict Resolution on Management of Public Boys' and Girls' Boarding Secondary Schools, Nyeri County, Kenya

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Abstract

The purpose of this study was to determine the influence of participation the students' council's in conflict resolution on management of public boys' and girls' boarding secondary schools. The study adopted the descriptive survey and correlation research designs. The study was conducted in 12 boys' and 12 girls' public boarding secondary schools in Nyeri County that were identified using purposive sampling technique. A sample of 384 respondents was used. Data was collected using questionnaires and interview schedule. Data was analyzed using both descriptive and inferential statistics. The study found that participation of student council in conflicts resolution had statistically significant difference on management of public boys' and girls' boarding secondary schools. The study concluded that a unit increase in participation of student councils in conflict resolution enhances school management by a factor of 0.887. The study recommended that there is need to promote guidance and counseling, students' open forums, mentorship, mediation, moral behavior and characters of student councils to empower them to manage conflict resolutions among students for realization of a conducive learning environment in boarding secondary schools.

Key Words: School Management; Students Council; Conflict Resolution; Public Boys' and Girls' Boarding Secondary School.

Rediscovering the Core Cognitive Processes that Define Scientific Competence

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Abstract

Scientific competence has largely been portrayed in terms of observable attributes like: observation, classification, experimentation, problem-solving, explanation among others. This conceptualization ignores the cognitive processes involved in the construction and assessment of scientific knowledge. This paper argues that the greater focus should be on the justification of the central cognitive processes if scientific competence is to be the goal of any science curriculum.

Key Words: Scientific, Competence, Core, Cognitive, process, Construction, Assessment

An Interplay between Higher Education, knowledge economy and Green Growth towards Achieving Sustainable Development in Africa

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Abstract

The sustainable development Goals adopted by the United Nations in the year 2015 have placed particular responsibilities on Higher Education as the key driver of economies in the world. The idea of knowledge economy continues to dominate the agendum of the institutions of higher education globally with the question; how to produce the next generation of individuals with the expertise to generate new knowledge, skills, innovation and technology for greener economies. To realise sustainable development, institutions of higher learning should engage in strategic collaboration centered on research, innovation and technology leading to sustainable development. Consequently, the paradigm shift in institutions of higher education should be on their ability to put synergy between the SDGs and national development. The greatest challenge posed is 'how will institutions of higher learning harness knowledge economy concepts in their quest for sustainable development?' This paper will explore the interplay and opportunities between higher education and knowledge economy that can be harnessed in order to realise sustainable development in Africa. The major objective in the discussion will be on knowledge economy concepts available in higher education that African countries can tap into so as to spur not only green growth but also sustainable development. Other objectives will be the role of institutions of higher learning in achieving sustainable development in Africa. The paper will employ documentary analysis as a way of getting the requisite information.

Key Words: Harnessing, Innovative Opportunities, Sustainable Development Higher Education

SUB~THEME 8:

**BUSINESS, ENTREPRENEURIAL
INNOVATION, SMES &
MARKETING**

Role of Bio-Entrepreneurial Skills Opportunities in Biology Education in Eliminating the Current Economic Crisis in Some Selected Tertiary Institution in Borno State

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Abstract

The study explored the roles play by Bioentrepreneurial skill opportunities in Biology education in salvaging Nigerian economic crisis in some selected tertiary institution in Borno State, Nigeria. Four objectives were raise and four research questions were formulated and tested in the study. The research design employed was descriptive survey design. The targeted population of the study comprised of all students offering Biology as a course of study in the selected tertiary institutions. The targeted population was 600 students for the two selected colleges of education. Out of these numbers, 300 students were randomly selected from the list of students. The questioner and oral interview was developed by the researcher based on the four (4) research questions of the study title Bioentrepreneurial skills Opportunities available in Biology Education (BESOABE) the face and content validation of the research instrument was established by expert in Biotechnology education from University of Maiduguri and the instrument yielded a coefficient value of 0.85. Data collected were analyzed using descriptive statistics of frequencies and percentage to answer the research question. The finding study of the study revealed that are many entrepreneurial skills that should be acquires by students in Biology Education. Also the result reveals that 80% of students (Respondents) agreed that they were not aware of the Bioentrepreneurial skills opportunities areas in Biology. Furthermore, respondents agreed that Bioentrepreneurial skills acquired by students will no doubt eliminate the current economic recession by making Biology Education as cash productive. Based on this findings, it was recommended that the teaching of this skill should be part of the curriculum and must be taught to students, also the government should increase the fund allocations to these colleges so that the program could be sustained.

Key words: Biology Education, Bioenterpreneurial Skills, Economic Crisis

Service Quality Delivery and Customers' Satisfaction in Nigeria Banking Industry

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Abstract

The paper assesses the service quality delivery and Customer's satisfaction in some selected Banks in Nigeria. Primary data is used where (600) respondents were selected through convenient Sampling. The study uses gap analysis where the difference between the Banks customers' expectations and perception of service quality dimensions are analyzed to obtain the mean score. The result revealed that the mean score of the net perception is negative indicating that the customer's expectation is higher than the perceived service quality at the Banks. Similarly, the individual dimension average scores are all negative meaning that there is service failure in all the facet of service quality dimensions of Tangible, Assurance, Empathy, Reliability and Responsiveness in Nigeria banks. Thus, it is an indication that the service deliveries in Nigerian Banks do not meet customer satisfactions. Banks are required by this revelation to consider repackaging and redesigning of its service operations to match up with customer expectations.

Keywords: Service quality, Customers satisfaction, Banks, Nigerian.

Good Economic Governance of African Economies with Special Reference to Uganda

Betrum Namanya and Firimooni Rweere Banugire

Abstract

The aim of the essay is to develop the concepts of economic governance and good economic governance as principles of economic management of Africa economies. It answers the questions; (1) Why do we need good economic governance (GEG) mechanisms as foundations for economic policy management and (2) What are the potential best practices for operationalizing them. We conceptualize economic governance as a multi-level concept for improving the management of economies at global, regional, national and local levels. It argues that global economic governance driven by globalization is a major constraint on African countries capacities to reform their economies towards industrialization and endogenous development. Hence the need for institutionalized good economic governance mechanisms for collective self-reliance at African Union level; for structural transformation for endogenous development at national level; and decentralized economic governance (DEG) at local and community level. It concludes by identifying a framework for operationalizing decentralized economic governance for sustainable rural development, and the relevant research agenda

Influence of Budget Efficacy on Household Effects in Kenya

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Abstract

The purpose of this study is to find out whether Budget Efficacy influences household effects under Fiscally Decentralized economy as it is today in Kenya. The study was anchored on the theory of fiscal federalism and Agency Theory and adopted a positivist research philosophy in determining the research strategy and method of this strategy. A Census involving the 47 county governments was conducted based on population size, nature of the county i.e. rural or urban set up and size of the annual budget support from the national government. The Study adopted the Survey and Evaluation Program (NASSEP V) frame that the Kenya Bureau of Statistics currently operates to conduct household-based surveys to also conduct a household survey in the county governments on household effects in Kenya. The study employed an inductive ex post facto cross sectional quantitative survey design. Secondary panel data was collected from County Treasuries while Primary data was collected through household surveys and Fiscal and Monetary Departments of county assemblies. Data for the period 2015-2017 was used to run a univariate and multiple regressions using STATA software. Both descriptive and inferential statistics were generated and provided results for interpretation. The study established a significant association between budget efficacy and household effects. The findings of this study are expected to empower citizens through access of information on the real meaning and effects of fiscal asymmetric decentralization while policy makers will know the strength of the correlation between fiscal asymmetry and household effect in order to match monetary policy with the needs of lower government levels for implementation of the country's financial framework.

Key Words: NASSEP V, Budget Efficacy, Household Effects, Positivist Philosophy, Fiscal Decentralization

The Moderating Effect of Stereotype on the Relationship between Organizational Strategy and Implementation of Workforce Diversity Policies in Public Universities in Kenya

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Abstract

This study sought to establish the moderating effect of stereotype on the relationship between organizational strategy and implementation of workforce diversity policies in Public Universities in Kenya. A review of the existing literature in the area of strategy, stereotype and workforce diversity was done. A positivist paradigm using descriptive cross sectional survey research design is used. The population of the study comprised of employees of 22 Public Universities in Kenya that existed prior to December, 2014. Purposive sampling was used to select seven universities that participated in the study while Yamane's (1967) formula was used to calculate the sample size. A sample size of 393 was used from academic and non-academic staff from the participating universities. A structured questionnaire with Likert-type interval scale anchored on a five-point scale was developed to collect primary data. Linear and multiple regression, as well as stepwise regression analytical models were employed to analyze data. Descriptive statistics of mean and standard deviation were calculated for the respective variables. This was done through use of Statistical Package for Social Science (SPSS) Version Nineteen. Inferential statistics were used to test the significance of the overall model at 95% level of significance. As anticipated in this research, the findings revealed that stereotype moderated the relationship between organizational strategy and implementation of workforce diversity policies. A recommendation is made to the effect that civic education on the dangers of stereotyping should be enhanced. Future research should target other institutions in both the public and private sector.

Key words: Organizational strategy, policy implementation, gender, diversity, university, management

Analysis of Cost Leadership Strategies Adopted by Contractors in Kenya on Organizational Performance: A Case of National Construction Authority of Kenya

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Abstract

A company needs to apply proper strategies in order to respond to every changing needs of the environment and remain successful. The construction industry in Kenya is very dynamic and competitive with a lot of challenges which need to be met with skill in order to enhance efficiency and meet the customers' needs. Cost leadership strategy involves developing ways of reducing the cost of operation per unit of production as compared with others in the same industry. The main purpose of this study was to analyze the effect of cost leadership strategy applied by contractors in Kenya. The study adopted a descriptive research design and target population was 18,000 registered construction companies and the research concentrated on category one contractors who were 111 construction companies. The sample size was 94 contractors who were selected using simple random sampling. Primary data was collected by the use of semi-structured questionnaire and the results of the study were analyzed using SPSS version 22. The study found out that contractors can use cost leadership strategy to gain competitive advantage. Respondents

to a great extent strongly agreed that companies that apply cost leadership (low cost strategy) would gain competitive advantage. By implementing cost cutting technologies, reducing overhead and administrative cost and cost reduction by emphasizing on economies of scale will reduce the cost. The study recommended that contractors are encouraged to use cost leadership strategy by emphasizing and perfecting the value chain activities that can be achieved at affordable cost without compromising the quality and sustaining the company growth.

Keywords: Strategy, Cost Leadership, Value Chain

Knowledge economy interventions for the Achievement of Kenya vision 2030

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Abstract

One of the strategic intent of the vision 2030 was the gradual transition into a knowledge based economy. Knowledge based economy is manifested by the extensive creation, diffusion and use of knowledge that can be realized through application of research, science and technology coupled with policies and systems that have implications for the country's productivity and competitiveness as they affect the overall business climate. The main component of knowledge economy is greater reliance on intellectual capabilities than the physical or natural resources inputs. The objective of the study was to find the influence of knowledge economy interventions for the achievements of Kenya vision 2030 such as technology and innovation, centrality of research and innovation, human capital development, competitive business climate and a robust financial system. The study used secondary data by doing a critical review of studies related with knowledge economy interventions. The results showed that if the right interventions are applied, the knowledge based economy can be achieved in Kenya. The study recommended that the government of Kenya should put up appropriate structure to facilitate the implementation of the factors that affect the gradual transformation towards knowledge – intensive economic activities.

Key Words: Knowledge Based Economy, Interventions, Kenya Vision 2030

Towards Decentralized Economic Policy Making and Management of Developing Economies with Special reference to Uganda

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and Firimooni Rweere Banugire*

Abstract

The aim of this essay is to develop the concepts of decentralized economic policy making and management as the basic foundations for accelerating the economic growth and development of developing economies like Uganda. The quality of policy making process and the policy itself determines the rate at which a given country will grow. This paper includes; (i) The Case studies on policy making of selected countries both in Uganda and Abroad, (ii) Why we need decentralized economic policy making and management, and (iii) the potential best practices for operationalizing them. In this essay, we look at different economic policies both at the global level and how these policies influence economic development. The essay also analyses policies at the regional level, policies at the national level as well as policies at the community level. The essay argues that global economic governance driven by globalization is a major constraint on African countries capacities to reform their economies towards industrialization and endogenous

development. Hence the need for decentralized economic policy making and management as a way of enhancing endogenous development that is spear headed by the community members themselves.

Key words: Decentralization, economic policy making, economic policy management, globalization.

The Effects of Holidays on the Ghanaian Equity Market

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Abstract

This paper sought to determine if the Ghanaian equity market is a semi-strong efficient market by investigating whether or not the holiday effect exists by adopting an ARMAX (2, 2) -GARCH (1, 1) model with innovation. The Value at Risk (VaR) and Conditional Value at Risk (CVaR) were also estimated at 5% significance levels. It employed the daily closing prices of the financial main index from 3rd January, 2007 to 30th December, 2016. The results show that there are significant positive pre-holiday and post-holiday effects which may not be as a result of bearing higher levels of risk. This suggests that investors on the Ghanaian equity market currently trade more on the 7th trading day preceding and on the 7th trading day after a holiday particularly the Farmers day holiday. Also, the 7th trading day after the Workers day holiday also recorded positive and significant returns. The associated risk levels for the Farmers day pre-holiday effect and the Workers day post-holiday effect were relatively low, however this was not the case for the Farmers day post-holiday effect. This finding is important to investors to assist strategise better in order to take advantage of this calendar anomaly discovered on the Ghanaian equity market.

Keywords: ARMAX, calendar anomalies, efficient market hypothesis, GARCH,

Corporate Governance in Kenya: Ownership Structure and the Performance of Listed Firms

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Abstract

In this paper we address the question whether ownership structure affects corporate performance. Does it matter who owns a public company? It seems! Evidence from studies dealing with Anglo-Saxon countries is rather inconclusive and empirical results from emerging markets are mixed and inconclusive. Some studies suggest that managers who do not own stocks have incentives to maximize their own utility regardless of the interests of shareholders. Thus, managerial ownership makes interests of managers converge with those of shareholders and consequently positively influences corporate performance. In contrast, a negative relationship can be explained by the so-called entrenchment hypothesis, predicting that insider ownership above a certain threshold will have a value destroying effect due to the inherent conflict between large block holders (in this case the management) and the dispersed shareholders. It is also argued ownership concentration allows majority shareholders, or insiders engage in opportunistic behavior at the expense of other shareholders. Ownership structure is

therefore an important internal mechanism of control of corporate governance, with effects in the companies' value and performance. Might ownership structure be an important variable explaining the long term value creation in the corporate sector? The present study investigates the relationship between ownership structure and firm performance for Kenyan public companies listed in the NSE, between the period of 2008 to 2018.

Key Words: Ownership, Management, Entrenchment

Influence of Business Entrepreneurial Skills, Innovation and Marketing on Performance of small and Medium Enterprises (SMES) in Machakos County, Kenya

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Abstract

The Small and Medium Enterprises (SMEs) sector plays an increasingly important role in many economies in the world. Innovation is an important issue for many SMEs. Innovation causes the company to be distinguished and attractive to customers. Consequently, innovation generates revenue and profit. Innovation based on a close connection with customers' needs and expectations are characterized by lower risk of failure. Innovation is the creation of new products and services in all sectors of the economy, new marketing methods and changes in ways of organizing businesses, in their business practices, workplace organization and external relations. Marketing is a very important firm activity and brings a new dimension to creating competitive advantage on the market. The entrepreneur in SMEs is often engaged in promoting novel products and in relating to relevant clients and partners through effective communication processes and instruments such as word of mouth and personal networking. Entrepreneurial is about identifying opportunities, using resources and expertise that are available to the entrepreneur to help them realize value in a creative and innovative way. Entrepreneurial marketing offers added-value and is influenced by competitor activity. It is subject to external change factors, depends upon flexibility and negotiation and it is based on the entrepreneur's knowledge and experience. This study will adopt a qualitative approach in exploring the importance of SMEs and presence of innovation, marketing in entrepreneurship. The main findings of our study will be presented and discussed in order to analyze how they would add to an understanding of the existing theories.

Key words: Influence, Entrepreneurial skills, Innovation, SMEs, Marketing, Added Value

Corporate Boards, CEO Compensation, and Firm Performance

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Abstract

In modern corporations, the decision of how to compensate the CEO and senior managers rests with the board of directors. But this commonly held assumption that boards of directors are representatives of shareholder interests is now being seriously questioned by academics and practitioners. A great deal of discussion has been devoted to the surge in CEO pay in recent days in Kenyan corporates. This has arisen due to the widespread concern that CEO compensation represents a huge fraction of firm's earnings, notwithstanding the difference between CEO pay and managers. Another puzzling observation is the rising managerial compensation, often not in congruence with firm performance, as the board faces no penalty for misaligned managerial wages under delegated-governance. A key research question then is, how closely the CEO pay is tied to performance? And what's the role of corporate boards of directors in setting CEO compensation? This study will look at compensation practices of firms in the financial sector and analyze the nexus between CEO pay and performance. Several scholars have emphasized the importance of board structure in determining CEO compensation. For example, managerial power hypothesis, namely that non-independent directors allow CEOs to extract rents in the form of higher pay suggest that CEO pay should decline according to the managerial power hypothesis. But are independent directors' good monitors of CEOs? Theory suggests that there is less demand for performance-based compensation when the concentrated holdings by large shareholders enable them to effectively monitor firms' management. And recent theoretical studies suggest that director overlapping leads to a less effective CEO compensation package and reduces effectiveness of board oversight. So how exactly does the CEO pay come about?

Assessment of Human Resource Analytics and Employee Performance and Motivation Reviews

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Abstract

Human resource analytics is an area in the field of analytics that refers to applying analytic processes to the human resource department of an organization in the hope of improving employee performance and therefore getting a better return on investment. This paper applied desktop research where several online papers were assessed to get the gray areas and give direction on the field of human resource analytics on performance and motivation as the main thematic areas. The findings revealed that human resource management analysis is used to make better decisions about all aspects of HR strategy with the goal of improving business performance. Predictive analytics can be applied to the workforce to identify traits/patterns that account for bad or good performance on an individual and team basis. Since analytics is an amalgamation of powerful mathematical algorithms, it also gives objective insight into their work preferences and the factors that drive their performance. The paper found out that motivation of employees is achieved when decision applied through analytics achieves organizational objectives. This boosts the morale of employees and even the founders of the organization as this translates to sustainable profits and business expansion. The challenge cited included lack of personnel in most organization with knowledge of human resource analytics. Therefore, the paper recommended empowerment of staff through short courses on data analytics.

Key words: Human Resource Analytics, Performance, Motivation

An Assessment of Team Work Relevance in the Twenty First Century on Organizational Performance

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Abstract

Teams and teamwork help to promote deep learning that occurs through interaction, problem solving, dialogue, cooperation and collaboration. Effective teamwork can affect the successful delivery and implementation of learning designs and likelihood of boosting performance. The study reviewed online articles related to teams including virtual team. The findings of the study revealed that a virtual team which refers to a group of individuals who work together from different geographic locations and rely on communication technology such as email, FAX, and video or voice conferencing services in order to collaborate are key to organizational performance in the twenty first century. Virtual teams are affordable and flexible in nature from which companies can benefit from superior and rare experts. However, the study noted the challenge of incompetent team members, poor leadership and delayed or communication barriers. The paper concluded that indeed there is need for adoption of virtual teams especially for small and medium enterprises which cannot afford dear experts. The paper recommended public awareness of virtual teams.

Key words: virtual teams, Team work, Organizational Performance

Assessment of Artificial Intelligence and Human Resource Management: Empirical Reviews

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Abstract

Artificial intelligence is that branch of computer science dealing with the simulation of intelligent behavior in computers the capability of a machine to imitate intelligent human behavior. The paper reviewed literature from various online sources on the thematic areas of artificial intelligence and its uses in the various fields and then on human resources. The findings indicate that there is an emerging consumption on the use of artificial intelligence on the work place aimed at replacing human beings and reducing the cost of operations. The use of artificial intelligence is an emerging field which is still in exploration in most African countries. Artificial intelligence is here to stay with much innovations taking place hence its moving to become a strategic tool for companies to invest in order to reduce the costs of operations especially in tasks that are repetitive in nature. The study recommends those institutions which have not embraced the artificial intelligence to do so as fast as possible in order to compete with their counterparts in the developed countries.

Key Words: Artificial intelligence, Human resource management, Human capital

Demystifying the relationship between insurance intermediaries and their clients in Nakuru County in Kenya

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Abstract

Seeking to find out the relationship that exists between the clients and their intermediaries, including what causes the disagreements between the two parties, this study sought to demystify the relationship between intermediaries and their clients in the insurance industry in Nakuru County, by seeking to make understanding the relationship easier and clearer. The norm globally is for the insurance products to reach the client through an insurance intermediary, who is the main channel of distribution. The intermediary can fall under one of the following categories; an in-house agent also referred to as direct sales staff, an independent agent registered either as a sole proprietorship, partnership or limited company, a broker and a bank assurance agent which is structured as a business unit of a commercial bank or any other financial services providers like Saccos and MFIs. Most clients find themselves been represented by an agent by default not so much by choice. However, few clients choose not to be represented by an intermediary and when this happens, they place business direct via the insurance company. Most of those who chose this option do it as a last resort and have on occasion probably had a misunderstanding leading to disappointment. The intermediary client relationship is based on the law of agency. In practise, this relationship has been misunderstood and abused by either the client or the intermediary leading to a dissatisfaction and lack of trust of the insurance product and industry as a whole. Using a quantitative paradigm, this paper sought to establish the causes of the misunderstanding between the two parties. 50 respondents were randomly selected and asked to fill questionnaires concerning the causes of the disagreements between them and their clients and vice versa. The study confirmed that their indeed existed disagreements between the clients and the intermediaries because of lack of professionalism by the intermediaries, lack of information on the role of the intermediaries in the whole process. The study also found that in some cases there was lack of respect of the client by the intermediaries. The study thus recommended that there is need to educate both the client and the intermediary on their roles, duties and expectations. The study also recommended that the mystery about insurance operations be demystified and the public be made aware of what to expect including their rights when they buy an insurance product.

Key words: Insurance, products, intermediaries, client, broker, partnership, proprietorship.

Emotional Intelligence and Organizational Performance

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Abstract

Emotional Intelligence is the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically. It is a strong predictor of service performance of employees in the work place. It has been observed that employees who perform well in their organization usually stayed longer in these organizations. This study examined emotional intelligence on organizational performance. The study used desktop research in which online journals on the themes emotional intelligence on peace and performance were reviewed. Results showed that individuals with high emotional intelligence

contribute to high performance and delivery of quality services hence a peace catalyst unlike their counter parts with low emotional intelligence and whose services may be inferior and do not often accept corrections hence usually source of conflict and are associated with reduced organizational performance. We recommend continuous empowerment programs on emotional intelligence to all employees as a means to boosting interpersonal relationships, peace initiatives and overall organizational performance.

Key Words: Emotional intelligence, Organizational performance.

Merger Strategy and its Effects on Profitability for Commercial Banks Listed in the NSE in Kenya

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Abstract

For some of the commercial banks that are listed in the NSE in Kenya, merger strategy has been previously used, more-so to grow their profit margins. But for the past two decades, these commercial banks have been experiencing a lot of economic turbulence. The business environment has changed, which has led to an influx of banks in the country, the result of which is increased competition. This has not been made any simpler by the introduction of lowered interest rates in terms of loan-rates (a result of the government introducing the Capping Bill). Therefore, as an alternative strategy to closing down of branches and retrenching employees, this study seeks to find out if the re-use of merger strategy by these commercial banks will lead to a growth in profitability once again. The main objective of the study is therefore to analyze the effect of merger strategies on profitability of commercial banks listed in the NSE in Kenya. The research methodology used in the study was mixed research design methodology. The primary data was collected using questionnaires; while secondary data was collected from the audited financial statements. The researcher used purposive sampling in the study. The study was guided by the synergy-gains theory. In regard to correlation analysis being, it was observed that, merger strategy and ROA (after merger) had a positive and significant relationship. In regard to the regression analysis, the calculated p-value was 0.018, which was lower than the critical p-value of 0.05 for the study. This led to the researcher rejecting the null hypothesis that there was no significant relationship between merger strategy and profitability for commercial banks listed in the NSE. For primary data, using the five-point Likert scale, the responses average mean was found to be 3.75. This meant that, majority of the respondents agreed with the questions that were asked in the questionnaire for the study, which led to the conclusion that, merger strategies had significant effect on the profitability of commercial banks listed in the NSE. Therefore, a conclusion that the use of merger strategies by commercial banks listed in the NSE led to a growth in their profitability was drawn.

Key words: Merger Strategy; Profitability; Nairobi Securities Exchange (NSE); Commercial Banks in Kenya

Human Resource Management Practices and Employee Turnover in Commercial Banks in Kenya

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Abstract

The banking industry suffers an onslaught of employee turnover costs denting its profits hence lowering its returns on investment. Depending on the kinds of operations they engage in, banks rely on human capital to deliver services to their clients'. It is therefore prudent to look into Human Resource Management (HRM) practices in the banking sector and their impact on employee's turnover and organizational performance. The objectives of this study were; to establish whether training, compensation, performance appraisal and recruitment, influence Kenyan commercial bank employees' turnover. The study was guided by three theories: resource based, universalistic and contingency theory. Quantitative data was collected from 2667 staff from Kenyan Commercial banks using self-administered questionnaires comprising of 5-point Likert scale. To establish the nature and magnitude of the relationship between variables, the study applied inferential statistics. The study established that training offered by the banks neither motivate the staff nor impacted employees' turnover reduction. The employees were further not involved in decision making on which training to undertake, while the quality of on and off training affected employee turnover. Remuneration was not comparable to other banking organizations and there was no clear explanation of remuneration policy and its implementation, and this knowledge gap may cause insecurity among the employees. The recruitment process was free and fair to all eligible within and outside the bank and sufficient induction and orientation was undertaken by the banks. Performance appraisal was not found to be used as a system of laying off employees in the banks, though the performance evaluation systems were not favourable to the employees, and there was conflict of interest between the organization targets and individual targets. The study concluded that among the four variables, staff training, compensation and appraisal had a significant influence on employee turnover in commercial banks.

Examination of Government Policies that Address Tacit Knowledge Sharing and How Well these Policies Have Been Applied and Fortified to Enhance Public Sector Performance

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Abstract

Knowledge is an integral part of the factors that impact growth in an economy; more so in this knowledge age. Both public and private sector enterprises have embraced the knowledge concept, through not only harnessing the knowledge that abounds, but also managing it as they also ascertain that it is shared. Out of the numerous facets of knowledge, the most elusive and difficult to share is tacit knowledge, yet it highly impacts performance of organisations. The public sector generates and is also exposed to a lot of knowledge which in most cases is acquired but rarely shared. In the Kenyan civil service, there seems to be ignorance in the following areas: the amount of knowledge that flows through the Kenyan civil service every day, accounting for the knowledge that the Kenyan civil servants require for present and future needs, how to acquire that knowledge, the kind of knowledge that individual employees in the civil service possess and how to share such knowledge so as to enhance public sector performance. This situation then begs the question: are there tacit knowledge

sharing policies in the Kenyan civil service and if there are how are they applied and fortified to enhance public sector performance?

Key Words: Knowledge, Tacit Knowledge, Public Sector, Civil Servants, Performance

Strategic Inventory Management Practices and Performance of Supermarkets in Nairobi County, Kenya

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Abstract

Strategic inventory management practice is posited to have the ability to enhance the performance of companies by reducing operational fees related to stock mainly within the retail industry where inventory accounts for a big portion of enterprise costs. Thus in this study strategic inventory management practices (SIMPs); vendor managed inventory, lean-inventory systems, E-inventory systems and activity-based costing systems were conceptualized to have an impact on the performance of supermarkets in Nairobi County, Kenya. The study used descriptive cross-sectional research design to survey 114 supermarkets sampled through random sampling technique from a frame of 158 supermarkets in Nairobi County. A structured questionnaire was administered to senior managers to facilitate collecting primary data. A pilot study was conducted to identify potential problem areas and deficiencies in the data collection instrument. Descriptive statistics and multiple regression techniques were employed to aid data analysis. The study established existence of a positive significant relationship between strategic inventory management practices and performance of supermarkets. E-inventory management system and activity-based costing systems had the highest explanatory power of 41.1 percent and 40.1 percent respectively, while lean inventory management systems had the least explanatory power at 9.4 percent. The study therefore concludes that strategic inventory management practices such as vendor managed inventory, lean inventory management, E-inventory management and activity-based costing systems do influence supermarket performance. Consequently, the study recommends that supermarkets in Kenya should implement e-inventory management systems and practices activity-based costing in order to improve their performance through reduction of operation costs and improved inventory control. Further, the government should give tax rebate on IT infrastructure related to e-inventory management systems to encourage up-take of the systems as a way of boosting performance and growth of supermarkets. Management of supermarkets should prefer qualify cost accountants to help them implement activity based costing as a strategy to control costs and improve their performance. Finally, the study recommends for further research with a focus on elements affecting the effectiveness of strategic inventory management practices once they are implemented by supermarkets in order to obtain a comprehensive understanding of the subject matter and contribute towards literature in the area of study.

Promoting the Big 4 Agenda: HIV and AIDS Stigmatizations and Discrimination, Their Effect and the Way Forward- A Review from Literature

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Abstract

Statistics show that in recent decades, Kenya has been a huge HIV prevention success story in the region. It was one of the first countries to approve the use of PrEP and has led the

way in providing VMMC. As a result, new infections have fallen dramatically in recent years. Indeed, in 2016, 64% of people living with HIV in Kenya were accessing treatment. However, while the Kenya AIDS Strategic Framework (KASF) key strategic objectives in the next five years (2014/15-2018/19) include; reducing new HIV infections by 75%, reducing AIDS related mortality by 25% and reducing HIV related stigma and discrimination by 50%, Kenya has the joint fourth largest HIV epidemic in the world, alongside Mozambique and Uganda. Kenya's HIV epidemic affects most of its general population, but the special population groups of men who have sex with men, women, sex workers and people who inject drugs are still more vulnerable to infection. Additionally, more than half (51%) of all new HIV infections in Kenya in 2015 occurred among adolescents and young people (aged 15-24 years), a rapid rise from 29% in 2013 while treatment coverage among adolescents is much lower at approximately 24%. Indeed, according to a new UNICEF report around 30 teenagers (Kenyans among them) aged 15 to 19 were newly infected with HIV per hour in 2017. Although awareness of HIV and AIDS is high in Kenya, many people living with HIV face high levels of stigma and discrimination which prevent people accessing HIV services, lead to increased infection among the highly sexually active youth population and ultimately affects the productivity of the infected due to opportunistic infections and the affected who have to provide care and support to the affected. This study aims at theoretically reviewing the forms of stigma and discriminations experienced by HIV and AIDS infected persons, their effect and strategies that have been used to minimize these in other parts of the world with a view to recommending the use of the latter in Kenya.

Key words: HIV and AIDS Awareness, Stigmatization, Discrimination, Productivity

Influence of Organizational Culture and Information Communication Technology on Knowledge Management in Organizations~ A Review from Literature

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Abstract

In this era of globalization and high labour mobility, knowledge management is a critical practice in organization. It plays important roles in establishing long term internal strength and supporting external competitive advantage to ensure sustainability of firms. In many instances even after organizations have spent heavily either directly or indirectly exposing, training and developing their staff. Some of the staff look elsewhere taking with them all the knowledge acquired. The purpose of the study was to theoretically explore the influence of organizational culture and information communication technology on knowledge management in organizations. The specific objectives were to explore the influence of organizational culture on knowledge management in organizations and to investigate the influence of organizational technology on knowledge management in organizations. The reviewed empirical and theoretical literature from textbooks and journals revealed that elements of culture such as organizational values, organizational artifacts, and organizational basic assumptions had a significant influence on knowledge management in organizations. It also revealed that components of ICT including e-learning management systems, content and document management, data management, expert networks and knowledge portals had an influence on the organizations knowledge management. Based on the findings the study recommends that organizations should document stories and values that bind the organization together and metaphors that inspire the organization and incorporate them in the knowledge management modules as a way of enhancing knowledge management. There is also a need to invest more in e-learning platforms to accelerate the adoption of knowledge management

at the organization. Additionally, there is need to invest more in data management system module that feeds into the knowledge management.

Keywords: Knowledge Management, Culture, Information Communication Technology,

Effect of Risk Retention Techniques on Theft in SACCOs in Embu County, Kenya

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Abstract

Majority of Kenyans receive financial services from SACCO's. As a result, there is a need then to ensure that personal and SACCO properties are fully protected from theft. To guarantee this protection, SACCO's have adopted risk retention techniques aimed at reducing the severity of theft incidences. Unfortunately, theft in SACCO's has become a common problem with statistics showing that theft stands at 61% compared to other crimes in Kenya. The study sought to determine the effect of risk retention techniques on theft in SACCO's in Embu County, Kenya. The study adopted a descriptive research design. The target population of the study comprised of the 65 SACCOs in Embu County, Kenya that were operationally active. Data was collected using questionnaires. Validity of the research instruments was ensured through opinions and expert judgments. A pre-test study was done in Sacco's operating in Tharaka Nithi County and reliability of the instruments tested using split half technique. The pre-test results yielded a correlation coefficient of 0.766 implying the instrument was good. Data was analyzed using frequencies and percentages and the results presented in cross tabulations. Chi-square was used to test the hypothesis. The results revealed that most SACCO's had adopted various techniques aimed at reducing theft severity. The results further revealed that there was a significant association of risk retention technique with theft in SACCO's since results obtained had a p-value of $0.046 < 0.05$ and chi-square value of 20.00 at 5% significance level. The study forms a basis of policy formulation on risk retention and theft matters in SACCO's in Kenya and provides a basis for further research in the field of retention techniques on theft in SACCO's cooperatives.

Keywords: Risk, Loss, Risk Retention, Captive, Risk Transfer

Determinants of tax compliance by small and medium businesses in Embu County, Kenya

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Abstract

Small and medium enterprises are a key engine of economic growth in both developing and developed countries. Small and medium businesses being profit making institutions are expected to pay taxes to the government. Therefore, tax compliance is critical in all economies which recognize the role played by revenue collected from tax in national development. Nonetheless, developing countries are dominated by low tax compliance levels, in the face of the frequent appeal from tax collectors for voluntary compliance. As a result, identification of tax evasion approaches and ways to diminish it is one of the central aims of many governments' agenda with the view of achieving higher levels of compliance. As such, many governments have embraced administrative measures such as fines, penalties, rates and

tax audits to enforce tax compliance. Interestingly, despite the phenomenal growth of small and medium businesses, the tax collection from the sector is still low. This study therefore, sought to establish the determinants of tax compliance among small and medium businesses in Embu County, Kenya. The study sampled 185 enterprises in Embu County using stratified random technique. The findings show that fines and penalties, tax compliance costs and tax knowledge and education significantly influence tax compliance among small and medium businesses in Embu County. The study recommends that the Kenya Revenue Authority should prepare education and training programs to ensure that small and medium businesses embrace voluntary compliance with all the tax requirements. Further, the study recommends that Kenya Revenue Authority should also evolve policies to decrease tax compliance cost incurred by small and medium businesses to avoid curtailing their growth potential and inspire voluntary tax compliance.

Key Words: Tax, Tax Compliance, Tax payment, Tax Collectors, Tax Audits, Tax Penalties

How much does labour turnover cost? A case study of Kenyan Small and Medium Tour Operators

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Abstract

Employment in the hospitality sector is characterized by high labour turnover. High employee turnover rates is of great concern to stakeholders in the hospitality sector as turnover rate of SMEs is nearly double that of other industries. Employee mobility is a major cost and leakage of human capital. In addition, labour turnover affects organizational performance, customer quality and employee productivity. Despite these adverse effects on growth, survival and sustainability of SMEs, there is limited research on the turnover costs. This paper provided an understanding of the turnover rates and direct financial costs of small and medium tour operators. A descriptive research design was used. Primary data was collected using a self-administered questionnaire. Simple random sampling technique was used to select 30 respondents, owner/managers of small and medium tour operators registered with the Kenya Association of Tour Operators operating in Nairobi and its environs. The study findings revealed major direct financial costs such as hiring costs and recruitment costs were attributed to labour turnover. The study findings also indicated that tour operators experienced acute turnover rates. The implications of these findings for managerial practice and suggestions for further research are discussed.

Key Words: Labour Turnover, Turnover Costs, Tour Operators

An Assessment of Health System in Kenya: Towards the Achievement of Universal Health Coverage

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Masese and Pollyene Mutunga Mbithe
Machakos University*

Abstract

Crude death rates and mortality rates have been high in most of the developing countries due to inaccessibility to health care facilities. For this reason, the Kenyan Government, in its bid to realize the universal health care, it has made many changes in the health sector. This study was

therefore carried out to assess Kenya's health system so as to determine its role in the achievement of universal health coverage. While using the desk review approach, the study was carried out between September and December 2018. The main key indicators which were used include; Leadership and Governance, Health Financing, Health Workforce, Medicines and Vaccines, Information Systems and Service Delivery. It was found out that that Kenya has real made a great milestone in most of the key aspects in its journey to realize universal health coverage. Transformational leadership skills have been put into practice and many policies have been formulated and implemented. The number of qualified workforce with necessary skills and experience is increasing and proper guidelines on the use of medicines have been given. It is also worth noting that most of the systems in health facilities have been integrated and this has eased information tracking for patients. The study recommended that if the realization of universal health coverage is going to be a reality, the following need to be done; Increase health budget allocation from the current 7% to 15% as per the Abuja declaration, Align NHIF to UHC which includes; redefinition of NHIF to include Multi- Tier benefit packages, Improve terms of service for medical doctors and Equip public health facilities so that it becomes the best option as opposed to private(Health financing to improve health infrastructure) health facilities.

Dividend Policy and Behavior in Kenya: An Empirical Analysis

*Joséphat Mboya Kiweu and Alpha Nunda
Machakos University*

Abstract

This paper examines corporate payout policy decisions among publicly listed companies on the Nairobi Securities Exchange (NSE). Dividend decisions are recognized as centrally important because of their implications to investment, firm value, but also the real economy. However, despite decades of study, we have yet to completely understand how companies make dividend decisions or determine the size and pattern of distributions to shareholders over time. Dividend policies of firms may follow different patterns; or vary from year to year, and from industry to another, often lacking obvious rational explanations. Dividend literature posts two lines of hypothesis: agency cost and signaling- which this study will explore. The study will also seek to address the question of, "what dividend payment patterns obtain overtime for an emerging market like Kenya? and relate the behaviour to theoretical explanations". Using a sample of NSE firms from 2000–2015, the paper will seek to provide evidence on the phenomenon of "disappearing dividends", smoothing dividend behavior, as well examine recent trends in payout policy. Based on an analysis of historical data of publicly listed companies, it is hoped the study will shed light on what motivates corporate managers in Kenya to pay in a particular way. Practice has it that, managers make several considerations before making the dividend decisions. This study will endeavor to survey what managers say about payment policy and investigate the effect of executive compensation on payout choices. The managerial perspective is expected to explain the observed variation in payout patterns over time than the traditional motives. Hopefully this study will contribute to the literature by exploring the determinants of dividend policy of Kenyan firms.



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SCHOOL OF ENGINEERING AND TECHNOLOGY

INTAKES ANNUALLY IN THE MONTH OF SEPTEMBER

BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Science (Electrical and Electronic Engineering) (b) Bachelor of Science (Civil Engineering) (c) Bachelor of Science (Mechanical Engineering)	i) KCSE Mean Grade C+ (Plus) with a minimum of B+(Plus) or equivalent in Mathematics and Physics and B(Plain) in Chemistry and English; OR ii) Mean Grade of C (Plain) at KCSE or equivalent with a Diploma of Credit pass in relevant field of study from a Recognized Institution.
(d) Bachelor of Science (Information Technology) (e) Bachelor of Science (Telecommunication & Information Technology)	i) KCSE Mean Grade C+(Plus) with C+(Plus) in English and C+(Plus) in Mathematics; OR ii) Mean Grade C (Plain) at KCSE and a Diploma in IT with Credit Pass

(f) Bachelor of Science (Computer Science)	i) KCSE Mean Grade C+ (Plus) with B+(Plus) in Mathematics, B+ in Physics and C+ in English; OR ii) Diploma in Computer Science or related field with Credit Pass and Mean Grade of C(Plain) in KCSE with C+ in Mathematics and Physics.
DIPLOMA COURSES	MINIMUM REQUIREMENTS
(a) Diploma in Information Communication Technology	i) KCSE Mean Grade C(Plain), with C(Plain) in both Mathematics and English; OR ii) Certificate holders in a related field with KCSE Mean Grade C-(Minus) and a C-(Minus) in both Mathematics and English.
(b) Diploma in Electrical Engineering (Power & Telecommunication Options) (c) Diploma in Building Construction Technology (d) Diploma in Civil Engineering (e) Diploma in Mechanical Engineering (Production, Plant and Automotive options)	i) Mean Grade of C (Plain) at KCSE or equivalent with at least C- (Minus) in Mathematics, Physics or Chemistry and English or Kiswahili; OR ii) Mean Grade of C-(Minus) at KCSE or equivalent with certificate in related field from a recognized institution
CERTIFICATE COURSES	MINIMUM REQUIREMENTS
(a) Certificate in Building Construction Technology (b) Certificate in Mechanical Engineering (c) Certificate in Electrical Engineering	KCSE Mean Grade of C-(Minus) or KCE Div. III

SCHOOL OF BUSINESS AND ECONOMICS	
INTAKES ANNUALLY IN THE MONTH OF SEPTEMBER	
DOCTORATE DEGREE COURSES	MINIMUM REQUIREMENTS
Doctor of Philosophy (PhD) in Business Σ Human Resource Management Σ Finance Σ Strategic Management Σ Marketing	i) A holder of a Master of Business Administration (MBA) Degree or its equivalent in Business from a University or other Institution recognized by University Senate; OR ii) A holder of a Master degree from a recognized University in areas of specialization relevant to Disciplines in the School of Business & Economics.
INTAKES ANNUALLY IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER	
MASTER DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Master of Business Administration (MBA) – (Marketing; Strategic Management; Human Resource Management; Accounting & Finance Option)	Holders of Bachelor Degree Upper Second OR Holders of Bachelor Degree Second Lower with at least Two (2) years' relevant work experience.
(b) Master of Science (Human Resource Management)	Holders of Bachelor Degree (Human Resource Management Option) Upper Second OR Second Lower with at least Two (2) years' relevant work experience.
(c) Master of Science (Finance)	Holders of Bachelor Degree (Finance Option) Upper Second OR Second Lower with at least Two (2) years' relevant work experience.
(d) Master of Economics	Holders of relevant Bachelor Degree in Economics Upper Second OR Second Lower with at least Two (2) years' relevant work experience.
(e) Master of Economics (Finance)	
(f) Master of Economics (Econometrics)	
(g) Master of Economics (Policy & Management)	

BACHELOR DEGREE COURSES		MINIMUM REQUIREMENTS
(a) Bachelor of Commerce (b) Bachelor of Economics and Finance (c) Bachelor of Economics and Statistics (d) Bachelor of Economics (e) Bachelor of Science (Banking & Credit Management)		KCSE Minimum Mean Grade of C+ (Plus) with C (plain) in Mathematics and English
DIPLOMA COURSES		MINIMUM REQUIREMENTS
(a) Diploma in Procurement and Supply Chain Management (b) Diploma in Accountancy (c) Diploma in Business Management		KCSE Mean Grade of C (Plain) OR Certificate in relevant field OR KCE Division III
CERTIFICATE COURSES		MINIMUM REQUIREMENTS
(a) Certificate in Procurement and Supply Chain Management (b) Certificate in Business Management		KCSE Mean Grade of C-(Minus) or KCE Div. IV
SCHOOL OF EDUCATION		
INTAKES IN MAY AND SEPTEMBER 2018		
DOCTORATE DEGREE COURSES		MINIMUM REQUIREMENTS
Doctor of Philosophy (PhD) in Σ Educational Administration Σ Educational Planning Σ Curriculum Development Σ Economics of Education Σ Educational Communication Technology Σ Educational Psychology		i) A holder of a Master degree from a Recognized Institution. ii) Must have covered at least five (5) Units at M.Ed level in the area of specialization with a 'B' and above or equivalent grade. iii) Must show ability to undertake academic research in the areas of specialization.

INTAKES ANNUALLY IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER

MASTER DEGREE COURSES	MINIMUM REQUIREMENTS
Master of Education (M.Ed):- Σ Educational Administration Σ Educational Planning. Σ Curriculum Development Σ Educational Communication Technology. Σ Early Childhood Education Σ Educational Psychology	i) Holders of Bachelor's Degree with 2nd Class Honour's (Upper Division) from a Recognized Institution or its equivalent in the related Area/Subject; OR ii) Holders of Bachelor's Degree with 2nd Class Honour's (Lower Division) with two years of Working Experience.
POSTGRADUATE DIPLOMA COURSES	MINIMUM REQUIREMENTS
Postgraduate Diploma in Education	Bachelor's Degree of at least a pass with Two (2) subjects taught in Secondary School.
BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Education(Arts)	i) Minimum of C+ (plus) in KCSE OR equivalent with at least C+ (plus) in Two Teaching Subjects; OR ii) Minimum of C (plain) in KCSE OR equivalent with a Diploma in Education and at least C+ (plus) in Two Teaching Subjects
(b) Bachelor of Education(Science)	i) Minimum of C+ (plus) in KCSE or equivalent with at least C+ (plus) in two teaching subjects and C+ (plus) in Mathematics; OR ii) Minimum of C (plain) in KCSE or equivalent with a Diploma in Education and at least C+ (plus) in Two Teaching Subjects.

(c) Bachelor of Education in Early Childhood Education.	i) Minimum of C+ (plus) in KCSE or equivalent; OR ii) Minimum of C (plain) in KCSE or equivalent with a Diploma in ECE from a recognized Institution; OR iii) Minimum of C-(minus) in KCSE and progressed from Certificate to Diploma in a recognized Institution.
(d) Bachelor of Education in Special Needs Education	i) Minimum of C+ (plus) in KCSE or equivalent with at least C + (plus) in two teaching subjects; OR ii) Minimum of C (plain) in KCSE or equivalent with a Diploma in Education; OR iii) Special Needs Education and at least C+ (plus) in Two Teaching subjects.
DIPLOMA COURSES	MINIMUM REQUIREMENTS
(a) Diploma in Education (Science) - Secondary Option	KCSE Mean Grade of C (Plain) with at least C+ (Plus) in two teaching Subject and at least C- (Minus) in Mathematics
(b) Diploma in Education (Arts)- Secondary Option	KCSE Mean Grade of C (Plain) with at least C+ (Plus) in two teaching Subjects.
(c) Diploma in Early Childhood Development Education	i) KCSE Mean Grade of C (Plain) OR Division III at KCE OR ii) KCSE Mean Grade of C-(Minus) with either a P1 Certificate or an Early Childhood Education Certificate from a recognized Institution.
CERTIFICATE COURSES	MINIMUM REQUIREMENTS
Certificate in Early Childhood Development Education.	KCSE Mean Grade of C- (Minus)

SCHOOL OF HOSPITALITY & TOURISM MANAGEMENT

INTAKES IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER

BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Science (Hospitality Management) (b) Bachelor of Science (Hospitality and Tourism Management)	i) KCSE Mean Grade C+ (Plus) or equivalent with at least C+(plus) or equivalent in any three (3) of the following subjects: Biology/Biological Sciences; Chemistry/Physical Sciences/Physics; Mathematics; Home Science; English/Kiswahili/ Foreign Languages; Geography/ History/Business Studies/Commerce/ Economics/Agriculture OR ii) KCSE Mean Grade C (Plain) or equivalent with a Diploma (Credit Pass) in a relevant area from a recognized institution. OR iii) KCSE Mean Grade of C- (minus) and Progressed form Certificate to Diploma from a Recognized/ Accredited Institution.
DIPLOMA COURSES	MINIMUM REQUIREMENTS
(a) Diploma in Hospitality Management (b) Diploma in Food and Beverage Management	KCSE Mean Grade of C (Plain)
CERTIFICATE COURSES	MINIMUM REQUIREMENTS
(a) Certificate in Hospitality and Tourism Operations (b) Certificate in Food and Beverage	KCSE Mean Grade of C- (Minus) with at least D (Plain) in Mathematics

SCHOOL OF AGRICULTURAL SCIENCES	
INTAKES IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER	
BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Science (Agricultural Education and Extension)	i) KCSE Minimum Mean Grade C+ (Plus) or equivalent with at least C+ (Plus) in Agriculture and Biology, C (plain) in Chemistry/Geography or Physics/Mathematics and C (plain) in English/Kiswahili. OR ii) A Diploma in Agricultural Education or related Agricultural Course.
(b) Bachelor of Science (Agribusiness Management and Trade)	KCSE Minimum Mean Grade C+ (Plus) at KCSE or equivalent with at least C (plain) in any of the following subjects; Mathematics, Agriculture, Geography, Chemistry, Biology and Business Studies.
Diploma in Agricultural Education and Extension	KCSE Mean Grade of C (Plain) must have a minimum of C+ in Agriculture and Biology, C (plain) in English/Kiswahili and C- (Minus) in Mathematics/Chemistry/Physical Sciences.
SCHOOL OF ENVIRONMENT & NATURAL RESOURCE MANAGEMENT	
INTAKES IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER	
BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Environmental Science	i) Minimum of C+ (plus) in any three of the following subjects: Biology, Chemistry, Geography, Mathematics or Physics or Physical Sciences. ii) Grade C in KCSE or its equivalent and Diploma with a minimum of credit in a subject related to Environmental Studies from a recognized Institution. iii) Mean grade of C-(minus) at KCSE and progressed from certificate to Diploma from a recognized/accredited institution

(b) Bachelor of Environmental Studies (Community Development)	i) KCSE mean grade of C+ (plus) or its equivalent with at least C+ (plus) in any three of the following subjects: Mathematics, Biology, Physics, Chemistry, Geography, History and Government, Home Science and Agriculture. ii) Candidates with C (plain) must have a diploma of at least Credit Pass in a field of study related to the Environment and Community Development. They must have attained at least C+ (plus) in two of the subjects above. iii) A-level candidates must have at least two (2) principles in relevant subjects above. iv) Mean grade of C- (minus) at KCSE and progressed from recognized/ accredited institutions.
(c) Bachelors of Environmental Studies (Resources Conservation)	KCSE mean grade of C + (plus) or its equivalent in any three of the following: Mathematics, Geography, Biology, or Biological Sciences, Physics or Physical Sciences or Chemistry, Agriculture.
SCHOOL OF PURE AND APPLIED SCIENCES	
INTAKES ANNUALLY IN THE MONTHS OF SEPTEMBER	
MASTER DEGREE COURSES	MINIMUM REQUIREMENTS
Master of Science (Chemistry)	i) Holders of Bachelor of Science degree (B.Sc) with at least an Upper Second class honours; OR ii) Holders of Bachelor of Education degree (B.Ed) with at least an upper 2nd class honours degree and who have studied chemistry either as a major or as a regular subject. OR iii) Holders of Bachelor of Science degree (B.Sc) or Bachelor of Education degree (B.Ed) with at least a lower 2nd class honours degree and who have studied chemistry either as a major or as a regular subject with at least Two (2) years relevant working experience.

BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Science (Statistics and Programming)	i) KCSE Mean Grade C+ (Plus) with at least B (Plain) in Mathematics and C+ (Plus) in English. OR ii) Must have passed with Two (2) principal Passes, one of which must be Mathematics at Kenya Advanced Certificate of Education (KACE) or equivalent. OR iii) Must have a Minimum of C (Plain) at KCSE and a Diploma in Statistics with at least a Credit Pass from an Institution recognized by the University Senate. OR iv) Must have a mean grade of C-(Minus) at KCSE and progressed from Certificate to Diploma at Machakos University or any other recognized/accredited Institutions.
(b) Bachelor of Science (Mathematics and Computer Science)	i) KCSE Mean Grade C+(Plus) with at least B(Plain) in Mathematics, C+(Plus) in English and C(Plain) in Physics; OR ii) Must have passed with Two (2) principal Passes, one of which must be Mathematics at (KACE) or equivalent plus a subsidiary pass in General Paper. OR iii) Must have a Minimum of C (Plain) at KCSE and a Diploma (credit Pass) in Computer Science, Computer Engineering, Electrical Engineering or any other relevant Diploma to be determined by the department of Mathematics, Statistics and Actuarial Science at Machakos University. OR iv) Must have a mean grade of C-(Minus) at KCSE and progressed from Certificate to Diploma at Machakos University or any other recognized/accredited Institutions

(c) Bachelor of Science (Mathematics)	i) KCSE Mean Grade C+ (Plus) with at least B-(Minus) in Mathematics or equivalent; OR ii) Mean grade of C- (Minus) at KCSE and progressed from Certificate to Diploma at Machakos University or any other Recognized/Accredited Institution.
(d) Bachelor of Science in Biology	i) KCSE Mean Grade C+ (Plus) or equivalent with at least B-(Minus) in Biology/ Biological. In addition, the student MUST have passed any Two (2) subjects at the grades shown in the following alternatives; $\sum$ <u>Alternative A:</u>Chemistry C+, Physics C (Plain), Mathematics C (plain), Geography B- (minus), English C+ (plus) $\sum$ <u>Alternative B:</u>Physical Science B- (minus), Mathematics C(plain), Geography B- (minus), English C+ (plus), Agriculture B- (minus) OR ii) Must have passed with Two (2) principal Passes, one of which must be Biology at (KACE) or equivalent. OR iii) KCSE mean grade of C (plain) and a Diploma in Forestry, Education (Biology, Agriculture), Applied Biology, Wildlife or Wetlands with at least a credit pass from an institution recognized by the University senate; OR iv) Mean grade of C- (Minus) at KCSE and progressed from Certificate to Diploma at Machakos University or any other Recognized/Accredited Institution. OR v) Have any other qualification accepted by the University Senate.

(e) Bachelor of Science (Actuarial Science)	i) KCSE Mean Grade C+ (Plus) with at least B(Plain) in Mathematics and B-(Minus) in English; OR ii) Must have passed with Two (2) principal Passes, one of which must be Mathematics at (KACE) or equivalent plus a subsidiary pass in General Paper. OR iii) Diploma holder in Actuarial Science with at least credit pass from an accredited institution and a C+ in Mathematics at KCSE; OR iv) Mean grade of C- (Minus) at KCSE and progressed from certificate to Diploma at Machakos University or any other Recognized/Accredited Institution.
(f) Bachelor of science (Analytical Chemistry)	i) KCSE Mean Grade C+ (Plus) with a C+ (Plus) in Chemistry and Mathematics or equivalent and must have passed with a minimum grade of C+ (plus) in Physics or Biology. OR ii) KCSE mean Grade C (plain) or equivalent with a Diploma of at least Pass in the relevant field of study from a recognized institution.

(g) Bachelor of Science (Applied Physics & Technology)

i) KCSE Mean Grade C+ (Plus) with a minimum of C+ (Plus) in Physics/ Physical Science. In addition, the student MUST have passed with at least a C+ (plus) in Mathematics and in the any Two (2) subjects from any of the following alternatives;

Σ Alternative A:Chemistry, Biology/Geography

Σ Alternative B:Biological Science, Geography

OR

ii) Have passed a principal pass in Physics and Mathematics at (KACE) and at least a credit in Chemistry and Biology or Geography in the Kenya Certificate of Education (KCE).

OR

iii) Have a Diploma in Physics and Applied Physics or Relevant field from an institution recognized by the University Senate;

OR

iv) Have a Diploma in Applied Sciences or Science Education (Mathematics and Physics) from an institution recognized by the University Senate;

OR

v) Have a Higher National Diploma in Applied Physics or Relevant from an institution recognized by the University Senate;

OR

vi) Have any other qualification accepted by the University Senate as equivalent to Sections (i) to (v).

Those falling under Sections (iii) to (v) and had passed with Credit or Distinction may join the Program at Second or Third Year Respectively

DIPLOMA COURSES	MINIMUM REQUIREMENTS
Diploma in Science Laboratory Technology	i) Mean Grade of C (Plain) at KCSE or equivalent with at least C- (Minus) in English or Kiswahili and a Pass Mathematics, MUST have a C-(minus) in any of the following Subjects; Physics or Chemistry or Biology; OR ii) Mean Grade of C-(Minus) at KCSE or equivalent with certificate in related field from a Recognized Institution
SCHOOL OF HEALTH SCIENCES	
INTAKES IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER	
BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Science (Public Health) (b) Bachelor of Science (Food, Nutrition & Dietetics)	KCSE Mean Grade C+ (Plus) or equivalent with at least C+ in the following subjects, Mathematics or physics, Chemistry, Biology, English or Kiswahili
DIPLOMA COURSES	MINIMUM REQUIREMENTS
(a) Diploma in Occupational Health and Safety	KCSE Mean Grade of C (Plain) with a Minimum of C (plain) in English/ Kiswahili, Biology/Biological Sciences and a minimum of C- (minus) in any two of the following Subjects; Physics/Physical Sciences, Chemistry, Mathematics or Agriculture.
(b) Diploma in Health Records and Information Technology	i) KCSE Mean Grade of C (Plain) with a Minimum of C (plain) in Biology and a minimum of C- (Minus) in Mathematics or physics, English/ Kiswahili. OR ii) KCSE Mean Grade of C- (minus) and a Certificate in Health Records and Information Technology From a recognized Institution.

(c) Diploma in Foods, Nutrition and Dietetics	i) Mean Grade of C (Plain) at KCSE or equivalent with a minimum of C (plain) in English, Biology/ Biological Sciences and Chemistry/ Physical Sciences and a minimum of C- (Minus) in either Physics/ Mathematics/Home Science/ Agriculture. OR ii) Mean Grade of C-(Minus) at KCSE with a Certificate in Nutrition and Dietetics from a Kenya Nutritionists and Dieticians Institute (KNDI) recognized Institution, and must be registered by KNDI or by equivalent International bodies for International Students.
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SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

INTAKES ANNUALLY IN THE MONTH OF SEPTEMBER

DOCTORATE DEGREE COURSES	MINIMUM REQUIREMENTS
PhD in Applied Linguistics	i) A holder of a Master of Arts(MA) degree or its equivalent from a University or other institution recognized by University Senate; OR ii) A holder of a Master degree from a recognized University in areas of specialization relevant to disciplines in the School of Humanities and Social Sciences

INTAKES IN THE MONTHS OF JANUARY, MAY AND SEPTEMBER

MASTER DEGREE COURSES	MINIMUM REQUIREMENTS
Master of Arts in; - Σ English and Linguistics - Σ Kiswahili - Σ Applied Linguistics - Σ Religious Studies (Christianity, Islam and ATR) - Σ Literature	i) Bachelor of Arts or Bachelor of Education (Arts) Degree of at least Second Class Honours (Upper Division) or its Equivalent in related disciplines from recognized University. ii) Those with Second Class (Lower Division) may be considered on condition that they have Grade B and above in Units relevant to their Areas of Specialization.

BACHELOR DEGREE COURSES	MINIMUM REQUIREMENTS
(a) Bachelor of Arts NOTE; Subject Combination of English/Literature; Kiswahili/History; Kiswahili/Geography; Kiswahili/Religious Studies e.t.c	KCSE Mean Grade C+(plus) or its equivalent as determined by the Kenya National Examination Council (KNEC) with at least C+(plus) or its equivalent as determined by KNEC in Two(2) Subjects Selected.
(b) Bachelor of Arts in; ∑ Psychology ∑ Sociology ∑ Philosophy ∑ Counselling Psychology ∑ English and Linguistics ∑ Gender and Development Studies ∑ Archeology and Political Studies ∑ Public Policy and Administration	i) KCSE Mean Grade C+(plus) or its equivalent as determined by the Kenya National Examination Council (KNEC) with at least C (plain) in English and Mathematics OR ii) KNEC Mean Grade of C (Plain) with a Diploma (Credit Pass) in relevant field of Study from a recognized/accredited Institution. OR iii) KCSE Mean Grade C- (minus) or its equivalent as determined by the Kenya National Examination Council (KNEC) and progressed from Certificate to Diploma in relevant field of study from a recognized/accredited Institution.
(c) Bachelor of Science in Community Resource Management	i) KCSE Mean Grade C+ or its equivalent as determined by the Kenya National Examination Council (KNEC). OR ii) Mean Grade of C (plain) at KCSE or equivalent with a Diploma of at least Credit Pass in Community Development, Social Work or Extension-related work at Machakos University or any other recognized accredited Institutions. OR iii) Mean Grade of C- (Minus) at KCSE and progressed from Certificate to Diploma of at least Credit Pass in Community Development or Extension-related work at Machakos University or any other recognized/ Accredited Institutions. OR iv) KNEC Diploma or its equivalent.

(d) Bachelor of Science in Fashion, Design and Marketing	i) KCSE Minimum Mean Grade C+ (Plus) with at least C+ (Plus) in Art and Design or Home Science or any one science Subject; OR ii) Mean grade of C (Plain) at KCSE or equivalent with a Diploma of at least Credit Pass in Fashion Design or Clothing Technology from a Recognized Institution; OR iii) Mean grade of C- (Minus) at KCSE and progressed from Certificate to Diploma of at least a Credit Pass in Fashion Design or Clothing Technology from a Recognized Institution.
DIPLOMA COURSES	MINIMUM REQUIREMENTS
Diploma in Fashion Design and Marketing	KCSE Minimum Mean Grade C (Plain)
CERTIFICATE COURSES	MINIMUM REQUIREMENTS
Certificate in Fashion Design and Marketing	KCSE Minimum Mean Grade C- (Minus)

TVET PROGRAMS

Applications are also invited from Qualified Persons for admission into TVET Programs Examined by the Kenya National Examination Council (KNEC) listed below;

(a) Full-Time Programs (All programs are for BOTH Certificates and Diplomas unless Stated)

Electrical and Electronic Engineering (Power & Electronic Options), Building Technology, Civil Engineering, Welding and Fabrication(Certificate Only),, Masonry(Certificate Only), Plumbing(Certificate Only), Garment Making (Certificate Only), Mechanical Engineering(Plant & Production Options), Food and Beverage(Production and Service), Business Management, Cooperative Management, Sales & Marketing, Procurement & Supply Chain Management, Human Resource Management, Information Communications Technology(ICT) and Library/Information Science, Social Work and Community Development, Automotive Engineering, Carpentry and Joinery (Certificate), Science Laboratory Technician.

(a) (b) Short Courses (Artisans, Craft and Competence Courses)

- i) National Industrial Training Authority Courses - Electrical wireman, Motor Vehicle Mechanic, Motor Vehicle Electrician, Arc Welding, Plumbing, Masonry, Dress Making, Tailoring and Carpentry.
- ii) KNEC: Single and Group Courses

INTAKES AVAILABLE ANNUALLY AS FOLLOWS:

- SEPTEMBER — Early intake for July Examinations.
- JANUARY— Late intake for July Examinations and Early intake for November Examinations.
- MAY - Late intake for November Examinations

Entry Requirements for TVET courses: C- (minus) for Diploma Courses, D+(plus) /D (plain) for

Craft/Certificate Courses and D- for Artisan courses. Fees for TVET courses: As per Ministry of Education guidelines

For more details on TVET Fees, Mode of Study and other related information Please: CALL; +254 (0)735 247 939/(0)723 805 829 or Email; tvvet@mksu.ac.ke or visit our website: www.mksu.ac.ke

HOW TO APPLY

Application forms may be obtained from the Admissions Office or Reception at the Main Campus or downloaded from our website at www.mksu.ac.ke. Duly filled application forms with copies of result slips, application fee –bank deposit slip (KES.500/= for Diploma and Certificate, KES.1,000/= for Undergraduate, KES.2,000/= for Masters & KES. 3,000/= for Doctorate) and other relevant Certificates/Transcripts should be sent by Post, Courier or Hand Delivered to:-

Registrar (Academic & Student Affairs)
Machakos University
P.O.Box 136-90100
Machakos ~ Kenya

Our Fees Collection Accounts are:-

Kenya Commercial Bank:	Account No. 1137145064	(Machakos Branch)
National Bank of Kenya:	Account No. 01020078499400	(Machakos Branch)
Standard Chartered Bank	Account No. 0152017845602	(Machakos Branch)

ñ For more details on Minimum Entry Criteria, Fees, Mode of Study and other related information Please visit our website: www.mksu.ac.ke

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Mobile: 0716 371 769, Email: letechnisch@mksu.ac.ke



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LE TECHNISCH RESTAURANT**

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