



**MACHAKOS
UNIVERSITY**

**3RD ANNUAL INTERNATIONAL
CONFERENCE**

DATES:

22ND - 25TH JUNE 2021

PROGRAMME & BOOK OF ABSTRACTS

THEME:

*Responding to Emerging Global Challenges
through Research, Innovation and Technology
for Sustainable Development*

Supported by;



Soaring Heights in Transforming Industry and Economy

ISO 9001:2015 CERTIFIED

MACHAKOS UNIVERSITY PRESS



MACHAKOS UNIVERSITY

3RD ANNUAL INTERNATIONAL CONFERENCE PROGRAMME AND BOOK OF ABSTRACTS

DATE

22nd -25th JUNE 2021

VENUE

MACHAKOS UNIVERSITY VIRTUAL PLATFORM

THEME

***Responding to Emerging Global Challenges through Research,
Innovation and Technology for Sustainable Development.***

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

CONFERENCE COMMITTEE

- | | |
|------------------------------|-----------------------|
| 1) Prof. Peter N. Mwita | ~ Chairman |
| 2) Prof. Mugendi K. M'Rithaa | ~ Alternate Chair |
| 3) Dr. Wycliffe Amukowa | ~ Secretary |
| 4) Prof. Fredrick Ogola | ~ Alternate Secretary |
| 5) Prof. Geoffrey Maroko | |
| 6) Prof. Henry Embeywa | |
| 7) Prof. Jones Agwata | |
| 8) Prof. Zachary Getenga | |
| 9) Dr. Eng. Charles Mwaniki | |
| 10) Dr. Richard Kimiti | |
| 11) Dr. Christabel Muhonja | |
| 12) Dr. Julius Nzeve | |
| 13) Dr. Cornelius Okello | |
| 14) Dr. Marther Ngigi | |
| 15) Dr. Larry Ndivo | |
| 16) Dr. Patricia Muendo | |
| 17) Dr. Mark Kimathi | |
| 18) Dr. Elijah Muange | |
| 19) Dr. Tindih Heshborne | |
| 20) Dr. Stanley Makindi | |
| 21) Dr. Peter Kibet Koech | |
| 22) Mr. Watson Kanuku | |
| 23) Mr. Daniel Mulinge | |
| 24) Ms. Consolate Awuor | |
| 25) Ms. Nancy Ingoshe | |
| 26) Ms. Elizabeth Mbatha | |
| 27) Ms. Linet Messo | |

MESSAGE FROM THE VICE-CHANCELLOR



Machakos University has taken a frontline position in the dissemination of knowledge and technology transfer towards the achievement of sustainable development and the socio-economic transformation of our societies. This is the underlying goal of our series of Annual International Conferences. Against this backdrop, it is my pleasure to, once again, welcome you to another Machakos University Conference which is the 3rd Annual International Conference, having previously welcomed you to the 1st and 2nd conferences, respectively.

This 3rd Annual International Conference, under the theme: **“Responding to Emerging Global Challenges through Research, Innovation and Technology for Sustainable Development”**; comes at a time when the world is still reflecting on how to ensure the set socio-political, economic and technological development goals can be sustained in the wake of Covid-19 Pandemic.

The Conference will focus on research, innovation and technology-based solutions in responding to emerging challenges relating to pandemics (such as COVID-19). It will take a closer look on strategies for sustainable agriculture and food security; economic survival; inclusion and access to education, climate change and natural resources management; social and technological disruptions as well as enhancing Post COVID-19 recovery measures in health, hospitality and quality of life.

It is my belief that the researchers and scholars participating from various Universities, Industries and other high-end organizations will use this event as an opportune time to share ideas and experiences to provide solutions to existing global challenges, that will be of benefit not only to Kenya, but also to the entire globe in general so as to come up with development goals that are sustainable all through.

Finally, I wish to thank our Chief Guests, Keynote Speakers, Guest Speakers and all participants for finding time to be with us during this important occasion. I welcome you all to interact freely not only amongst yourselves, but also with the Machakos University fraternity and build collaborations that will outlive the Conference period.

Thank you and God bless you.

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

MESSAGE FROM THE CHAIRMAN, CONFERENCE COMMITTEE



The quest for sustainable development is mired with challenges with the latest being the COVID-19 pandemic. Amidst these challenges, Universities play a key role in unravelling new knowledge, innovation, inventions and technologies that when transferred to our communities become a panacea to improved livelihoods. It is with this in focus that our 3rd Annual International Conference was conceived to drive the theme: **“Responding to Emerging Global Challenges through Research, Innovation and Technology for Sustainable Development”**. To achieve our goals, the

Conference theme was sliced into the following sub-themes:

1. Strategies for Promoting Sustainable Agriculture and Food Security During a Pandemic;
2. Economic Survival Through Responsive Entrepreneurship in the Era of Global Disruption;
3. Catalyzing Change for Inclusion and Access to Education During Pandemics;
4. Implications of Climate Change on Sustainable Environmental & Natural Resources Management;
5. Mitigating the Impact of Social and Technological Disruptions in a Global Pandemic;
6. Enhancing Post COVID-19 Recovery Measures in Health, Hospitality and Quality of Life for Sustainable Livelihoods through Science and Technology.

In strict compliance with the COVID-19 protocols, this Conference is taking place virtually and has attracted a wide range of participants from across the globe. Please do accept my heartfelt appreciations for finding time to research, write papers and presentations around our Conference theme. Your participation is indeed a confirmation of your commitment towards making the world a better place to live.

As it has become our tradition, one of the key post-conference activities will be to have papers presented during this Conference, peer reviewed and published in our Machakos University Journal of Science and Technology, besides being published in the Book of Conference Proceedings. I urge you to observe the timelines that will be provided by editor-in-chief.

Lastly, I thank all our sponsors: Konza Technopolis Development Authority, National Bank of Kenya and KCB Bank for their generous support. I also thank fellow Conference Committee members for working around the clock during the preparatory stage. Together we have made this 3rd Annual International Conference a success.

I wish you all a happy and exciting conference.

Thank you.

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

MEMBERS OF UNIVERSITY MANAGEMENT BOARD



Prof. Lucy Irungu
Vice-Chancellor



Prof. Peter N. Mwita
Deputy Vice Chancellor
(Research, Innovation & Linkages)



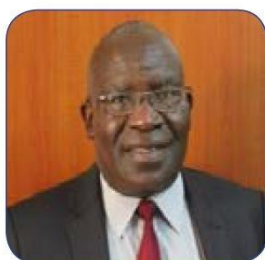
Prof. Joyce Agalo
Deputy Vice-Chancellor
(Academic & Students' Affairs)



Prof. Douglas Shitanda
Deputy Vice-Chancellor
(Administration, Finance & Planning)



Dr. Wycliffe Amukowa
Registrar
(Research, Innovation
& Linkages)



Prof. Ezara Ondari-Okemwa
Registrar
(Academic & Students' Affairs)



Dr. Susan Nzioki
Registrar
(Administration & Planning)



Ms. Aileen Nyatuga
Chief,
Finance Officer

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CHIEF GUEST-OFFICIAL OPENING



AMB. SIMON NABUKWESI

Amb. Simon Nabukwesi is the Principal Secretary, State Department of University Education and Research. He holds a B.Ed, M. Ed. in Education Planning and Management and MA in International Project Management. He is a PhD Candidate in International Project Management. In addition to this, he has a Diploma Level training in Institutional Management from Hiroshima University, Japan and a Pre-university Training from the National Youth Service (1986).

With this training, Simon has had a successful career as a High School Teacher, as a Deputy Principal and Principal in a span of twenty years (1989-2009). He has also served as Kenya's High Commissioner to Canada and Ambassador Plenipotentiary and Extra-ordinary to Cuba. His eleven (11) years of service as a diplomat included being the Director of Foreign Service Institute which he worked to transform into the Foreign Service Academy for training Junior Diplomats, Middle level Diplomats, Senior Diplomats and eight (8) Cohorts of Ambassadors whom he took through induction courses. The Foreign Service Academy served as a soft power tool for the government by training diplomats and ambassadors from the Eastern, Central and Southern Africa in addition to coordination of scholarships from friendly nations. This made members of the Association of Directors of Foreign Service Academies from the IGAD Region to vote Nabukwesi to be their Chairperson, from 2016 to 2019 when he left the Academy to head Europe and Commonwealth Directorate in the Ministry of Foreign Affairs.

Amb. Nabukwesi was appointed to the position of Principal Secretary, State Department of University Education and Research with effect from 28th February, 2020. He is optimistic about working with all stakeholders to improve University Education and Research.

CHIEF GUEST~OFFICIAL CLOSING



PROF. WALTER O. OYAWA

Prof. Walter Oyawa is a Professor of Civil Engineering, and currently the Director General, National Commission for Science, Technology and Innovation (NACOSTI). He is a holder of a PhD in Civil Engineering, and a holder of Executive MBA. He is a Registered Professional Engineer, a Lead EIA Expert with NEMA and a reviewer of several international journals.

In addition to his current position as Director General of NACOSTI, Prof. Oyawa has served in various senior leadership/management positions including having been the Principal/CEO of Multimedia University College, Deputy Commission Secretary at the Commission for University Education (CUE), pioneering Ag. Principal of the College of Engineering & Technology at Jomo Kenyatta University of Agriculture and Technology (JKUAT), Director of a Research Centre-SMARTEC at JKUAT, Chairman of the Department of Civil Engineering at JKUAT, Board member of several boards, among others. He is endowed with vast experience in research/scholarly work, as evidenced by extensive publications in peer reviewed journals, several awards and research grants, keynote lectures and conference papers, and supervision of numerous postgraduate students. His research interest is in the area of sustainable construction materials and technologies.

KEYNOTE SPEAKERS



AMB. DR. KIPYEGO CHELUGET

Assistant Secretary General, Common Market for Eastern and Southern Africa (COMESA)

Ambassador Dr Kipyego Cheluget was appointed COMESA Assistant Secretary General (Programmes) in November 2012. He has a wide experience in regional organisations, having served as IGAD' Chief Conflict Prevention, Management and Resolution officer in the late 90s before joining the East African Community as Deputy Secretary-General for Projects and Programmes from 2001-2007. Dr Cheluget was formerly Kenya's High Commissioner to Zambia and Malawi and Permanent Representative to COMESA. He is a long serving diplomat. He also served in various capacities at Kenya's Ministry of Foreign Affairs, including as Director, Foreign Service Institute, Asia and Australasia, Middle East, Research and as Deputy Chief of Protocol. He holds a PhD in Political Science and formerly lectured at Moi University. He will speak on: **"The Role of Science, Technology and Innovation in Sustainable Development of Africa"**



PROF. GRACE NJOROGE

(Deputy Chief Executive Officer- Accreditation, Commission for University Education)

Professor Grace Njoroge is a Professor of Applied Plant Sciences and currently Deputy Chief Executive, Accreditation at the Commission for University Education. She has over 15 years of senior organizational leadership, providing direction in organizational policy development and implementation. Her vast research work spans from health and food security, nutrition empowerment to utilization of natural resources for communities. Her qualifications include a Ph.D. in Applied Botany from Jomo Kenyatta University of Science and Technology, an MSC from Kenyatta University and Bachelors of Education Degree (Botany& Zoology) from Kenyatta University. She will speak on: **"Responding to Global Educational Challenges and the Quest for Access to Higher Education by Leveraging on Technology in On-line and Blended Learning."**



PROF. GERALD WANGENGE OUMA

Senior Director: Institutional Planning, Monitoring and Evaluation-University of Pretoria

Gerald Wangenge Ouma is a Professor of Higher Education and Senior Director: Institutional Planning, Monitoring and Evaluation at the University of Pretoria (UP). Prior to joining UP, he was an Associate Professor of Higher Education at the University of the Western Cape. Prof. Ouma has an extensive publications record, has participated in many higher education initiatives in Africa and internationally, and has served on various ministerial task teams and steering committees on various aspects of financing post-school education in South Africa. He holds a PhD in Higher Education Studies from the University of Cape Town, a Master of Education from Kenyatta University and a Bachelor of Education (First Class Honours) from Kenyatta University. Prof. Ouma will speak on: **"Towards Post-corona Futures: COVID-19, Rapid Digital Transformation and University Responsiveness."**

GUEST SPEAKERS



Prof. Bitange Ndemo: Is an ICT Champion, academician and newspaper columnist. He currently serves as an associate Professor of Entrepreneurship at the University of Nairobi's Business School. He teaches and researches entrepreneurship and research methods, with most of his research work being focused on ICT within small and medium enterprises, and their influence on economic development in Kenya. He is the Guest Speaker for Sub-theme: **Economic Survival Through Responsive Entrepreneurship in the Era of Global Disruption.**



Prof. Samson Gunga

Prof. Gunga is a professor of Education and currently the Dean, School of Education, University of Nairobi. Presently, he is a Professor of Philosophy of Education at the University of Nairobi having specialized in the Philosophy of Mathematics Education at Master and Doctor of Philosophy levels through scholarships from Kenyatta University, University of Nairobi and the German Academic Exchange Programme (DAAD). is the Guest Speaker for Sub-theme: **Catalyzing Change for Inclusion and Access to Education During Pandemics**



Prof. Richie Moalosi

Richie Moalosi is a Professor in the Department of Industrial Design and Technology at the University of Botswana. He has over 20 years of teaching experience at the university level. He works with small micro-enterprises, community-based organisations and creative communities to uplift their brands and product or service innovation capabilities as these are considered to be the next engine of economic growth in Botswana and Africa. He is the Guest Speaker for Sub-theme: **Mitigating the Impact of Social Disruptions in a Global Pandemic.**



Dr. Oliver K. Kirui

Dr. Oliver Kirui is a Senior Researcher and a Post Doc. fellow at the Centre for Development Research (ZEF) in University of Bonn, Germany. He holds a PhD in Development Economics. Oliver is currently carrying out research that would contribute to sustainable agricultural growth and food and nutrition security in developing and emerging economies. He is the Guest Speaker for Sub-theme: **Strategies for Promoting Sustainable Agriculture and Food Security during a Pandemic.**



Dr. Pacifica Ogola

Dr. Pacifica Ogola, is the Ag. Secretary, Climate Change Directorate, Ministry of Environment and Forestry, Republic of Kenya. She is also a PhD Fellow at the UNU Geothermal Training Programme and the University of Iceland. She is the Guest Speaker for Sub-theme: **Implications of Climate Change on Sustainable Environmental & Natural Resources Management**



Dr. Esther Munyiri

Dr. Munyiri is the Director, Global Tourism Resilience and Crisis Management (GTRCM) at Kenyatta University. She holds First Class Honours in Tourism Management as well as Masters and PhD in Tourism Management. She is the Guest Speaker for Sub-theme: **Enhancing Post-Covid-19 Recovery Measures in Health, Hospitality and Quality of Life for Sustainable Livelihoods through Science and Technology.**

OFFICIAL OPENING AND KEYNOTE ADDRESSES

TIME	DAY 1: TUESDAY 22 ND JUNE 2021	RESPONSIBILITY
8:00-9.00	Log in and Registration	Secretariat and Committee Members
9.00-10.30	OFFICIAL OPENING CEREMONY	
	Opening Prayer	Dr. Julius Nzeve
	Welcoming Remarks by Prof. Peter Mwita, Deputy Vice-Chancellor (Research, Innovation and Linkages, Machakos University) who invites the Vice-Chancellor Machakos University.	Dr. Wycliffe Amukowa/ Prof. Jones Agwata
	Opening Address by Prof. Lucy Irungu, Vice-Chancellor, Machakos University. The Vice-Chancellor invites Chief Executive Officer, Konza Technopolis Development Authority, Eng. John Tanui to address the Conference	Prof. Peter Mwita, Deputy Vice Chancellor (RIL)
	The Vice-Chancellor invites Chairman Machakos University Council, to address the Conference	Prof. Lucy Irungu, Vice-Chancellor
	The Vice-Chancellor invites the Principal Secretary to address and officially 3 rd Machakos University Annual Conference.	Prof. Lucy Irungu, Vice-Chancellor
	SPEECH AND OFFICIAL OPENING OF THE CONFERENCE BY THE CHIEF GUEST, AMB. SIMON NABUKWESI	Prof. Lucy Irungu, Vice-Chancellor
10.30-11.00	PHOTO SESSION & HEALTH BREAK	Dan Mulinge/ Secretariat
11.00-11.30	“The Role of Science, Technology and Innovation in Sustainable Development of Africa” Keynote Address by AMB. DR. KIPYEGO CHELUGET (Assistant Secretary General, Common Market for Eastern and Southern Africa - COMESA)	Prof. Douglas Shitanda Deputy Vice-Chancellor- Administration, Planning and Finance, Machakos University
11.30-12.00	“Responding to Global Educational Challenges and the Quest for Access to Higher Education by Leveraging on Technology in On-line and Blended Learning.” Keynote Address by PROF. GRACE NJOROGI (Deputy Chief Executive Officer- Accreditation, Commission for University Education)	Prof. Joyce Agalo, Deputy Vice-Chancellor- Academics and Student Affairs, , Machakos University
12.00-12.30	“Towards Post-corona Futures: COVID-19, Rapid Digital Transformation and University Responsiveness” Keynote Address by PROF. GERALD WANGENGE OUMA	Prof. Peter Mwita, Deputy Vice-Chancellor (Research, Innovation and Linkages, Machakos University)
12.30-1.00	Plenary (Key Note Speakers)	Prof. Mugendi M'Rithaa/ Prof. Fredrick Ogola
1.00-2.00	LUNCH BREAK	

SUB-THEME 1: STRATEGIES FOR PROMOTING SUSTAINABLE AGRICULTURE AND FOOD SECURITY DURING A PANDEMIC

DAY 2: WEDNESDAY, 23 RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM		
MODERATOR: Dr. Elijah Muange		SESSION CHAIR: Dr. Marther Ngigi
GUEST SPEAKER: Dr. Oliver Kirui, Senior Researcher Center for Development Research (ZEF), University of Bonn, Germany		RESPONSIBILITY
TIME	PRESENTER	Session Chair
8:00- 8.30	Log in and Registration	Session Chair
8.30-9.20	Guest Speaker Address and Plenary	Dr. Marther Ngigi
9.20-9.40	Philip Sitienei, Paul Kimurto, Isabel Wagara & Meshack Obonyo: <i>Occurrence of Aflatoxins in Groundnuts (Arachis hypogaea L.): A Case Study of Four Counties in Kenya.</i>	
9.40-10.00	Tomno Rose, Nzeve Julius, Mailu Stephen, Shitanda Douglas and Waswa Fuchaka: <i>Heavy Metal Contamination in Water, Soil and Vegetables in Urban Streams in Machakos Municipality, Kenya</i>	
10.00-10.20	Angelica M. Kimwele, Sophie A. Ochola, Mary N. Mugambi: <i>Implementation and Strategies for Nutritional Improvement of Home-Grown School Feeding Programme in Makueni County, Kenya.</i>	
10.20-10.40	Elijah N. Muange & Marther W. Ngigi: <i>Mixed Farming and its Impact on Food Insecurity and Dietary Quality in the Context of Varying Aridity in Rural Areas of Kenya.</i>	
10.40-11.00	Asige Mmaiti Lawrence & Obushe Dennis Omuse: <i>Effect of Land Utilization Patterns on Food Security in Narok East Sub-County, Narok County, Kenya.</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	John Kennedy Musyoka, Hezron Nyarindo Isaboke & Samuel Njiri Ndirangu: <i>Analysis of the Factors Affecting Farm-Level Output of Mangoes among Small-Scale Farmers in Machakos County, Kenya</i>	Dr. Alice Kosgei
11.50-12.10	John Kennedy Musyoka, Hezron Nyarindo Isaboke & Samuel Njiri Ndirangu: <i>Determinants of quantity of Mango supply among small-scale farmers in Machakos County, Kenya.</i>	
12.10-12.30	Judy Wachira, Simon Nguluu and Josphert N. Kimatu: <i>Comparative Growth and Productivity Evaluation of Phoenix Oyster Mushroom (Pleurotus Spp.) on Residual Agro-Waste Substrates in Semi-Arid Lands of Kenya.</i>	

12.30-12.50	Martin Musembi Kasina, Marther Ngigi, Elijah Muange, Alice Kosgei, Julius K. Nzeve, Kioko Hellen Ndinda: <i>Modeling Production of Oyster Mushroom (Pleurotus ostreatus) for Food and Nutritional Security in Machakos County, Kenya.</i>	
12.50-1.10	Patrick Andati, Eucabeth Majiwa, Marther Ngigi, Robert Mbeche, Josiah Ateka: <i>Determinants of Adoption of Climate-Smart Agricultural Technologies among Smallholder Potato Farmers in Kenya.</i>	
1.10-2.00	LUNCH BREAK	
DAY 3: THURSDAY, 24TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Julius Nzeve SESSION CHAIR: Dr. Elijah Muange		
8.30-8.50	Log in and Registration	Session Chair
8.50-9.10	Samuel O. Okeyo, Hezron N. Isaboke & Samuel N. Ndirangu: <i>Smallholder Farmers' Participation in Groundnuts Production in Siaya County, Kenya: A Socio-Economic Perspective.</i>	Dr. Elijah Muange
9.10-9.30	Ogolla O. Fredrick, Muraya M. Moses, Onyango O. Benson: <i>Tomato Foliar Fungal Disease Prevalence in Agro-ecological Zones of Kirinyaga County, Kenya.</i>	
9.30-9.50	Mogaka M. Onyambu, Muraya M. Moses, Onyango O. Benson, Ong'au, M. Peterson, Ogolla O. Fredrick: <i>Prevalence of Banana Xanthomonas Wilt in Nithi, Tharaka-Nithi County in Kenya.</i>	
9.50-10.05	Paulson Letsholo & Botumile Matake: <i>Sustainable Animal Feeding Production System: A Case Study for a Stand-Alone Animal Feed-Mixer for Rural Subsistence Pastoral Farmers during COVID-19 Pandemic.</i>	
10.05-10.20	Ong'au, M. Peterson, Muraya M. Moses, Onyango O. Benson, Mogaka M. Onyambu, Ogolla O. Fredrick: <i>Occurrence of Bacterial Wilt Pathogen in Soils and Potato Tubers in Runyenjes in Embu County, Kenya.</i>	
DAY 4: FRIDAY, 25TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Elijah Muange SESSION CHAIR: Mr. Martin Kasina		
8:00-8.30	Log in and Registration	Session Chair
8.30-9.20	Thomas Mbogo Mwangi, Samuel Njiri Ndirangu & Hezron Nyarindo Isaboke: <i>Analysis of Tomato Market Diversity among Rural Smallholder Farmers in Kirinyaga County, Kenya.</i>	Mr. Martin Kasina
9.20-9.40	Thomas Mbogo Mwangi, Samuel Njiri Ndirangu & Hezron Nyarindo Isaboke: <i>Profitability of Tomato Production Systems among Smallholder Farmers in Kirinyaga County, Kenya.</i>	

9.40-10.00	Karing'u Kelvin Njuguna, Hezron Nyarindo Isaboke & Samuel Njiri Ndirangu: <i>Smallholders' Choice of Avocado Marketing Channels in Murang'a County, Kenya</i>	
10.00-10.20	Asige Mmaiti Lawrence & Obushe Dennis Omuse: <i>Patterns on Food Security in Narok East Sub-County, Narok County, Kenya.</i>	
10.20-10.40	Christabel N. Muhonja, Eliud N. Wafula, Josiah Kuja, Eddy E. Owaga, Huxley M. Makonde and Julius M. Mathara: <i>Lactic Acid Bacteria from African Fermented Foods: Potential Biological Control Agents for Mycotoxins in Kenya</i>	
10.40-11.00	Kasyula Patrick: <i>Devolution Framework for Sustainable Agriculture and Food Security in Kenya: The Case of Lower Eastern Counties.</i>	

SUB-THEME 2: ECONOMIC SURVIVAL THROUGH RESPONSIVE ENTREPRENEURSHIP IN THE ERA OF GLOBAL DISRUPTION

DAY 1: TUESDAY, 22ND JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. John Achuora SESSION CHAIR: Prof. Robert Arasa		
TIME	PRESENTATION/ACTIVITY	RESPONSIBILITY
2.00-2.20	Thomas Muli Kilonzo, Ruth Wayua Kimanthi & Winnifred Nduta: <i>Influence of Performance Contracting Strategies on Examination Performance in Technical Training Institutes in Eastern Region, Kenya.</i>	Prof. Robert Arasa
2.20-2.40	Ruth Wayua Kimanthi, Thomas Muli Kilonzo & Winnifred Nduta: <i>Organizational Factors Influencing Strategic Plan Development among SMES in Machakos Town.</i>	
2.40-3.00	Richard Osoro Keroti: <i>Sustainable Entrepreneurship Factors Influencing Performance of Clearing and Forwarding Firms in Kenya.</i>	
3.00-3.20	Esther Kerubo Nyaribo, Wario Guyo, Romanus Odhiambo, Francis Kangure: <i>Effect of Employee Compensation on Turnover among Nursing Employees at National Referral Hospitals in Kenya.</i>	
3.20-3.40	Benta G. A. Oguda, Coleta R. Matayo & Mugendi K. M'Rithaa: <i>Integrating Novel Technologies into Leather Product Development within Kenya's Informal Sector.</i>	

3.40-4.00	Daniel Mwasa Ishmail, Florence Memba & Jane Muriithi: <i>Firm Size, Credit Risk on Financial Performance of Microfinance Banks in Kenya.</i>	
DAY 2: WEDNESDAY, 23RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. John Achuora SESSION CHAIR: Prof. Robert Arasa		
TIME	PRESENTER	RESPONSIBILITY
8:00-8.30	Log in and Registration	Session Chair
8.30-9.20	GUEST SPEAKER: Prof. Bitange Ndemo, Associate Professor of Entrepreneurship, University of Nairobi	Prof. Robert Arasa
9.00-9.20	Guest Speaker and Plenary	
9:20-9:40	Florence Jane Wangui Kamau, Gladys Rotich & Kennedy O. Ogollah: <i>Multiple Delivery Channels and Service Delivery in Huduma Centers in Kenya.</i>	
9:40-10:00	Jackline Akoth Odero & Ezekiel Wechuli Wanyama: <i>The Role of Knowledge Sharing in Enhancing Innovation Performance amongst Commercial Banks in Kenya.</i>	
10:00-10:20	Joshua Abunda: <i>Influence of Regulatory Capital on Financial Performance of Deposit Taking Microfinance Banks in Kenya.</i>	
10:20-10:40	Annfavor Kalei, Robert Arasa & John Achuora: <i>Green Human Resource Management Practices and Environment Sustainability within Chartered Public Universities in Kenya.</i>	
10:40-11:00	Headmound Okari Isoe: <i>Multiple Sophistication Strategy: Flying Beyond Competition Amid Global Disruptions and Radicalised Business Players</i>	
11:00-11:20	Joseph Omondi Oketch, Woshington Okeyo & Timothy Kiruhi: <i>Economic Survival through Responsive Entrepreneurship in the Era of Global Disruption.</i>	
11:20-11:30	HEALTHBREAK	
11:30-11.50	Nyile Erastus Kiswili, Ismail Noor Shale & Anthony Osoro: <i>Supply Chain Leagility and Performance of Humanitarian Aid Organizations in Kenya: Efficient, Effective and Quick Response to Disasters</i>	Dr. Margaret Nganu
11.50-12.10	Evelyn Bosire, Gregory Namusonge & Samson Nyang'au Paul: <i>Influence of Innovativeness on the Performance of Youth-Led Micro and Small Enterprises in Nyanza Region, Kenya</i>	
12.10-12.30	Denish Ateto Matunga, Patrick Karanja Ngugi & Romanus Odhiambo: <i>Relationship between Procurement Audit Practices and Implementation Level of Public Procurement Regulatory Framework in the Devolved Governments in Kenya.</i>	

12.30-12.50	Masaga Barante, Robert Arasa & Susan Nzioki: <i>Risk Management Practices and Performance of Commercial Banks in Kenya</i>	
12.50-1:10	Simon Kamuri: <i>Understanding Pursuing as An Entrepreneurial Competence and The Relationship with Performance of Value-System Actors in Kenya's Leather Industry</i>	
1:10-2.00	LUNCH BREAK	
2.00-2.20	Benedict Mutinda Kimwaki, Patrick K. Ngugi & Romanus Odhiambo: <i>Relational Behaviour and Performance of Manufacturing Firms in Kenya.</i>	Dr. Ann Kalei
2.20-2.40	Angelyne Muthoni Mwabu & Justus Munyoki: <i>A Critical Review of Literature on Product Differentiation Strategy and Brand Loyalty.</i>	
2.40-3.00	Gatari Catherine Njoki, Noor Ismail & Anthony Osoro: <i>Preferences and Reservations Groups and Performance of State Corporations in Kenya</i>	
DAY 3: THURSDAY, 24TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Susan Nzioki SESSION CHAIR: Dr. John Achuora		
TIME	PRESENTER	RESPONSIBILITY
8:00-8.30	Log in and Registration	Session Chair
8.30-9.00	Nderui Ndung'u & Susan Were: <i>Influence of Top Management Support on Procurement Regulatory Compliance Level in Public Universities in Kenya.</i>	Dr. John Achuora
9.00-9.20	Fatuma Ali Rajab, Patrick Karanja Ngugi & David Mburu Kiarie: <i>Influence of Customer Relationship Management on Performance of Manufacturing Firms in Kenya.</i>	
9:20-9:40	Francis Mukatia Asakania: <i>Liquidity and Adoption of Public Private Partnerships in Kenyan Public Universities.</i>	
9:40-10:00	Jackson Barngetuny: <i>Re-Thinking Public Sector Budget Formulation Reforms in the Three East African Countries towards the Participatory Approach of Budgeting</i>	
10:00-10:20	Kirabo Joyce, Gregory Namusonge & Mike A Iravo: <i>Strategic Planning as a Modern Management Tool for Performance of Telecommunication Companies in Rwanda.</i>	
10:20-10:40	Karing'u Kelvin Njuguna, Hezron Nyarindo Isaboke & Samuel Njiri Ndirangu: <i>Smallholders' Choice of Avocado Marketing Channels in Murang'a County, Kenya.</i>	
10:40-11:00	Naomy Jepchumba, Patrick Karanja Ngugi, Noor Ismail Shale & Romanus Odhiambo: <i>Influence of Logistics Information System Management on Performance of Food and Beverage Manufacturing Firms in Kenya.</i>	
11:00-11:30	HEALTH BREAK	

11:30-11.50	Benedict Mutinda Kimwaki, Patrick K. Ngugi & Romanus Odhiambo: <i>Relational Behavior and Performance of Manufacturing Firms in Kenya.</i>	Margaret Musyoka
11.50-12.10	Faith Mwendu Mutegi: <i>Organisational Culture and Public Service Delivery of Huduma Centres in Kenya</i>	
12:10-12:30	Faith Mwendu Mutegi, Susan Nzioki & George King'oriah: <i>Employee Training and Public Service Delivery of Huduma Centres in Kenya</i>	
12.30-12.50	Jane Ileri Muriuki, Wario Guyo, Romanus Odhiambo & Justus Kinoti: <i>Effect of Information and Communication Technology on Procurement Performance in Energy Sector State Corporations in Kenya.</i>	
12:50-1:10	Grace Adhiambo Okello, Patrick Karanja Ngugi & Romanus Odhiambo: <i>Influence of Entrepreneurial Management on the Growth of Micro and Small Furniture Manufacturing Enterprises in Kenya</i>	
1:10-2.00	LUNCH BREAK	
2.00-2.20	Grace Adhiambo Okello, Patrick Karanja Ngugi & Romanus Odhiambo: <i>Influence of Strategic Orientation on the Growth of Micro and Small Furniture Manufacturing Enterprises in Kenya.</i>	Prof. Robert Arasa
2.20-2.40	Kanuku Musyoka, Shitanda Douglas & Nganu Margaret: <i>Factors Determining Adoption of Block Chain in the Insurance Industry: A Case of Kenya</i>	
2.40-3.00	Kenneth Otieno Gor, Agnes Njeru & Esther Muoria: <i>Breadth of Strategic Performance Measurement System and Performance of Medium Sized Service Firms in Kenya.</i>	
3.00-3.20	Christine Nyawira Njogu: <i>Influence of Project Technical Skills on Performance of Community based Human Immuno Deficiency Virus Projects in Kiambu, Kenya.</i>	
DAY 4: FRIDAY, 25TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Ruth Kimanzi SESSION CHAIR: Dr. Ann Kalei		
TIME	PRESENTER	RESPONSIBILITY
8:00-8.30	Log in and Registration	Session Chair
8.30-9.00	Margaret Nganu, Margaret Musyoka & Benedict Mutuku: <i>Entrepreneurial Competencies and Performance of Dairy Cooperatives in Machakos County.</i>	Dr. Ann Kalei
9.00-9.20	John Achuora, Robert Arasa & Annfavour Kalei: <i>SMEs' Supply Chain Resilience Reactive Strategies for Sustainable Food Supply during Pandemic Situations: Lessons for Kenya.</i>	
9:20-9:40	Lillian K Nkoro, Rose Njoroge & Caroline Mutwiri: <i>Knowledge acquisition through business support services and use among tenants to create businesses in selected University Incubation Centres in Kenya.</i>	

9:40-10:00	Emmaboles Rubunda, Gregory S. Namusonge, Oluoch Oluoch: <i>Influence of Trade credit on the Growth of Small and Medium Size Manufacturing Enterprises in Rwanda.</i>	
10:00-10:20	Billiah Maende, Wario Guyo, Romanus Odhiambo: <i>Influence of Communities of Practice on Employee Performance in Public Universities in Kenya.</i>	
10:20-10:40	Polycarp Koome Kubai, Hazel Gachunga, Romanus Odhiambo: <i>Transactional Leadership and Organizational Performance of Private Universities in Kenya.</i>	
10.40-11.00	Dr. Margaret Nganu & Kenneth Gor: <i>Competitive Marketing Competencies of Dairy Cooperatives in Machakos County, Kenya.</i>	

SUB-THEME 3: CATALYSING CHANGE FOR INCLUSION AND ACCESS TO EDUCATION DURING PANDEMICS

DAY 1: TUESDAY 22 ND JUNE 2021: SUB-THEME VIRTUAL PLATFORM		
MODERATOR: Dr. Peter Kibet Koech		SESSION CHAIR: Dr. Richard Kimiti
TIME	PRESENTATION	RESPONSIBILITY
2.00-2.20	Areba George Ngwacho: <i>Reimaging of Basic Education as A Remedy for Catalyzing Change for Inclusion and Access During Pandemics.</i>	Session Chair Dr. Richard Kimiti
2.20-2.40	Billiah Gisore: <i>Catalyzing Change for Inclusion and Access to Education during Pandemics.</i>	
2.40-3.00	Daniel Oduor Onyango & Michaela Mhagama: <i>Contribution of Education Technology to Continuation of Teaching and Learning during Covid-19 Disruption.</i>	
3.00-3.20	Michaela Mhagama & Daniel Oduor Onyango: <i>Covid-19 Pandemic and Implementation of World Bank Supported Education Initiatives in East Africa.</i>	
3:20-3:40	Ariyo Ayodele Oluwakayode: <i>Enhancing Health and Quality of Life: Teenage Pregnancy among Secondary School Students During Covid-19 Pandemic in Akure South Local Government Area Ondo State, Nigeria</i>	
DAY 2: WEDNESDAY, 23 RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM		
MODERATOR: Dr. Peter Kibet Koech		SESSION CHAIR: Prof. Henry Embeywa
8:00-8.30	Log in and Registration	Session Chair
GUEST SPEAKER: Guest Speaker: Prof. Samson Gunga, Dean, School of Education and Professor of Education, University of Nairobi:		
TIME	PRESENTATION	RESPONSIBILITY
8.30-9.20	Guest Speaker: Prof. Samson Gunga, Dean, School of Education and Professor of Education, University of Nairobi: <i>Resource mobilization through research in Kenya:</i>	Prof. Henry Embeywa

	<i>Identification of online opportunities in higher education during and beyond Covid-19 pandemic</i>	
9.00-9.20	<i>Guest Speaker, Plenary</i>	
9.20-9.40	Kanyi Christopher Munene: <i>Use of Animation in Simplifying the Learning of Abstract Concepts of History and Government in Secondary Schools in Kenya.</i>	
9.40-10.00	Ntimi Mtawa: <i>Re-imagining higher education for social change and inclusion during post Covid-19 pandemic: Lessons from the Human Development and Capability Approach.</i>	
10.00-10.20	Ezekiel Nyambega Omwenga: <i>Problems and Prospects Emanating from Catalyzing Change for Inclusion and Access to Higher Education Institutions in Kenya During Covid-19.</i>	
10.20-10.40	Florence Mmbwanga, Evelyn Etakwa-Simiyu & Geoffrey Maroko: <i>Challenges University Students Face in E-Learning as a Result of the Covid-19 Pandemic</i>	
10.40-11.00	Monica Njeri Gachunga, Patrick Ngugi Karanja, Allan Njogu Kihara: <i>Adoption of Information Communication Technology and Competiveness of TVET Institutions In Kenya.</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Wycliffe Amukowa: <i>Professors in Need of Education</i>	Dr. Pamela Muriungi
11.50-12.10	Lornah C.N. Sirima: <i>Effect of Covid-19 on SN Learners' Access to Training in TVETs.</i>	
12.10-12.30	Peter Kibet Koech & Kang'ara Hannah Wanjiku: <i>Using E-Learning as a Tool of Enhancing Teaching and Learning in University Education: Lessons from Machakos and Chuka Universities.</i>	
12.30-12.50	Bernard K. Rop and Wycliffe H. Namwiba: <i>Evaluation Based Teaching as a Confidence Builder in Good Teaching Practice.</i>	
12:50-1:10	Ezra Ondari Okemwa: <i>Open Access Publishing and Knowledge Production in Sub-Saharan Africa: Opportunities and Challenges</i>	
1:10-2.00	BREAK	
DAY 3: THURSDAY, 24TH JUNE, 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Peter Kibet Koech SESSION CHAIR: Dr. David Mulwa		
8.00-8.30	Log in and Registration	Session Chair
8.30-8.50	Orucho Justine Amadi, Onyiko Kennedy Karani & Joseph Misati: <i>Awareness Level of Pupils on CSA in EMESA Sub Location, Kisii County.</i>	Dr. David Mulwa

8.50-9.10	Elphas Luvaso Aliva: <i>The Effectiveness of Closed-Circuit Television Camera in Management of Discipline in Public Secondary Schools in Kenya.</i>	
9.10-9.30	Pamela K. Muriungi & Mugendi K. M'Rithaa: <i>Universal Design for Learning: Promoting Inclusive Education in An Empathic Manner.</i>	
9.30-9.50	David M. Mulwa & Stephen Munguti: <i>Is Re-Admission Policy of Girls After Teenage Pregnancy in Schools Implementable Without Infringing on the Fundamental Rights of Children in Kenya?</i>	
9.50-10.05	Rose Achieng, Nicholas Anyuor & Joyce Agalo: <i>Taking the Blended Teaching and Learning Journey: Implementation in Higher Education Institutions in Kenya.</i>	
10.05-10.20	Ralitsa D. Debrah, Mugendi K. M'Rithaa & Dick Ng'ambi: <i>Design Courses and the 'New Normal': ePortfolios as a Pedagogic Innovation in Advancing University Education.</i>	
10.20-10.35	Elphas Luvaso Aliva: <i>Education in Emergency: Strategies for Access, Equity and Inclusion During Covid-19 Pandemic in Kenya.</i>	
10.35-10.50	Elphas Luvaso Aliva: <i>School Violence as a Social Problem in Kenya.</i>	
10.50-11.05	Francis Kiriimi, Jesca Muthee & Zipporah Gichuhi: <i>Innovative approaches for promoting resilience, inclusion and access to education amidst COVID-19 Pandemics in Kenya.</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Kihara Daniel Wambugu: <i>Appraisal of Education Systems Supporting Vulnerable Children during Covid-19 Disruptions in Public Secondary Schools in Kenya: A Case of Nakuru County.</i>	Dr. David Mulwa
11.50-12.10	Damaris Mwikali Muasa, Fredrick Ogola & Susan Nzioki: <i>Influence of Principal Management Practices of Academic Progress Records on Students' Academic Performance in KCSE in Public Schools in Mashuru Sub-County.</i>	
12.10-12.30	Ariyo Ayodele Oluwakayode, Adelusi Joseph Olusegun & Kareem Sheida Itunu: <i>Enhancing Health and Quality of Life: Teenage Pregnancy among Secondary School Students during Covid-19 Pandemic in Akure South Local Government Area Ondo State, Nigeria.</i>	

12.30-12.50	Henry Etende Embeywa: <i>Mentoring Postgraduate Students on the Use of Meta-Analysis Strategy for Research in Pandemic Times.</i>	
12.50-1.10	Francis Mutua: <i>Relationship between use of assistive technology on student-teacher related factors and performance of VI students in Kiswahili in Public Primary Teachers' Colleges in Kenya</i>	
1.00-2.00	BREAK	
DAY 4: FRIDAY, 25TH JUNE, 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. David Mulwa SESSION CHAIR: Dr. Peter Kibet Koech		
8.30-8.50	<i>Log in and Registration</i>	Session Chair
8.50-9.10	Jacob Kyengo Muthoka: <i>Influence of Government-Initiated Strategies on Inclusion of Vulnerable Children in Education During Covid-19 Pandemic in Public Secondary Schools in Nzau Sub-County of Makueni County, Kenya.</i>	Dr. Peter Kibet Koech
9.10-9.30	Jeremiah Osida Onunga: <i>Towards a Virtual Environment for Sharing Curriculum and Research Collaboration among Universities in Kenya during Covid-19 Pandemic.</i>	
9.30-9.50	Kisilu Kombo & Joshua M. Itumo: <i>Covid-19 Pandemic and its Impact on the Lecturers' and Students' Performance at Kenyatta University, Kenya.</i>	
9.50-10.05	Monica Njeri Gachunga, Patrick Ngugi Karanja, Allan Njogu Kihara: <i>Influence of Resource Mobilization on Competiveness of TVET Institutions in Kenya.</i>	
10.05-10.20	Kunga Gathage John, Henry Embeywa & Peter Kibet Koech: <i>The Effects of Inquiry-Based Science Teaching Approach on Task Competence of Secondary School Physics Students in Kitui County, Kenya</i>	
10.20-10.35	Fellis Nthambi Mutune, Geoffrey Maroko & Alice Kiai: <i>Reflection on English Textbook in the Kenyan Classroom.</i>	
10.35-10.50	H.E. Embeywa: <i>Analogies, Scientific Visualization and Scientific Revolution: Implications for a New Pedagogy in Science.</i>	
10.50-11.05	Kimiti Richard Peter: <i>The Impact of Covid-19 Pandemic on the Implementation of the University Curriculum: A Case of Public Universities in South Eastern Kenya.</i>	

SUB-THEME 4: IMPLICATIONS OF CLIMATE CHANGE ON SUSTAINABLE ENVIRONMENTAL & NATURAL RESOURCES MANAGEMENT		
DAY 2: WEDNESDAY, 23 RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Julius Nzeve SESSION CHAIR: Prof. Jones Agwata		RESPONSIBILITY
GUEST SPEAKER: Dr. Pacifica Ogola, Director and Head of Climate Change Directorate, Ministry of Environment & Forestry		
TIME	PRESENTATION	Session Chair Prof. Jones Agwata
8.00-8.30	Log in and Registration	
8.30-9.20	<i>Guest Speaker and Plenary:</i>	
9.20-9.40	Kipkiror Jepkemboi Loice, Kipsang Bernard Rop & Wycliffe Habel Namwiba: <i>The Recurrent Landslides of Lagam Escarpment, Kaben Location, Marakwet East, Kenya.</i>	
9.40-10.00	Nancy Wanjala Barasa, Jones F. Agwata and Robert Kibugi: <i>Influence of Climate Variability on the Livelihoods of Rural Women in Bungoma County, Kenya.</i>	
10.00-10.20	Steve N. Machan, Jones F. Agwata & Nicholas O. Oguge: <i>Environmental Factors Influencing the Sustenance of Camel Milk Value Chain in Isiolo County, Kenya.</i>	Prof. Jones Agwata
10.20-10.40	Ezekiel Kemboi, Stephen Anyango, Jones Agwata, Collins Odote: <i>Factors Influencing Resilience of Pastoralists to Drought in Kajiado County, Kenya.</i>	
10.40-11.00	Erick Oluoch Opondo, & Obadia Kyetuza Bishoge: <i>Implications of Climate Change on Sustainable Environmental and Natural Resources Management in Kenya.</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Kinikonda Okemasisi: <i>Implication of Climatic Change on Sustainable Environmental and Natural Resource Management: Individual and Collective Responsibility.</i>	
11.50-12.10	Jones F. Agwata: <i>Reflections on Policies and Institutional Mechanisms for Climate Change Management in Kenya</i>	
12.10-12.30	Josphat M. Gikonyo, Stephen O. Anyango and Jones F. Agwata: <i>Influence of Environmental Programmes on Students' Attitudes and Behavior in Addressing Environmental Issues in Murang'a County, Kenya.</i>	
12.30-12.50	Jones F. Agwata: <i>Potential Challenges of Drought Coping Strategies in Machakos County, Kenya.</i>	

DAY 3: THURSDAY, 24TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Veronica Okello SESSION CHAIR: Dr. Stephen Mailu		Session Chair
8:30-8.40	Log in and Registration	Dr. Stephen Mailu
TIME	PRESENTATION	
8.40-9.00	Moses M. Mwanza, Elizabeth N. Ndunda, Geoffrey O. Bosire, Vincent O. Nyamori & Bice S. Martincigh: <i>Fabrication of Molecularly Imprinted Polymers Based Sensor for Determination of Polychlorinated Biphenyls in the Environment.</i>	
9.00-9.20	Bessy Eva Kathambi & Linda Maryanne Obiero: <i>Implications of Covid-19 on Waste Management and Natural Resources Management in Urban Areas</i>	
9.20-9.40	Bernard Kipsang Rop: <i>Petroleum Synopsis of the North West-Kenya Rifts: Evidence and Issues.</i>	
9.40-10.00	Bonface K. Maweu, Kithaka Samson Chabari & James Kyalo Nguku: <i>Assessment of Selected Physico-Chemical Parameters of Groundwater in Chuka Igambang'ombe Constituency, Kenya.</i>	
10.00-10.20	Elizabeth N. Ndunda & Moses M. Mwanza: <i>Advances in Sensor Technology in Determination of Polychlorinated Biphenyls in the Environment.</i>	
10.20-10.40	A.W. Muia, A. Kimisto & O.O. Donde: <i>Sludge Management Technologies for Sustainable Development: An Overview.</i>	
10.40-11.00	Ndiritu James, Isaac W. Mwangi, and Jane I. Murungi³ & Ruth Wanjau: <i>Equilibrium and Kinetics of Adsorption Of P-Nitrophenol (Pnp) From Model Aqueous Solution Using Raw and Quartenis Afronomum Melegueta Peels</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Kitulu Linge, Nzeve Julius, Waswa Fuchaka, Kitur Esther & Shitanda Douglas: <i>Heavy Metals and Bacteriological Contamination of Mitheu Stream in Machakos Municipality, Kenya.</i>	Dr. Elizabeth Ndunda
11.50-12.10	Mwalimu K. Musau, Douglas Shitanda, Michael Githinji & Caroline Mwende: <i>Use of PET Flakes as Coarse Aggregates Replacement in Concrete Paving Blocks.</i>	
12.10-12.30	Patrick Owiny, Jones Agwata & Kariuki Muguia: <i>Factors Influencing Public Participation in Environmental Impact Assessment of Nairobi-Thika Superhighway Improvement in Nairobi City County, Kenya.</i>	
12.30-12:50	Mwalimu K. Musau, Douglas Shitanda, Michael Githinji & Caroline Mwende: <i>Use of PET Flakes as Coarse Aggregates Replacement in Concrete Paving Blocks.</i>	

DAY 4: FRIDAY, 25TH JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Mark Kimathi SESSION CHAIR: Dr. Veronica Okello		
TIME	PRESENTATION	RESPONSIBILITY
8:00-8.30	Benson Wangombe Nganga: <i>Solar Water Desalination in a Vacuum of Infinite Volume.</i>	Session Chair Dr. Veronica Okello
8.30-9.20	Japheth M. Nzangya, Elizabeth N. Ndunda, Geoffrey O. Bosire, Bice S. Martincigh & Vincent O. Nyamori: <i>Synthesis of Molecularly Imprinted Polymers and their Application as Adsorbents in the Preconcentration of Polybrominated Diphenyl Ethers.</i>	
9.20-9.40	Gilbert K. Bett, Daniel Olago, Daniel Ichangi³ and Bernard K. Rop: <i>Geochemical Evaluation for the Hydrocarbon Potential of Source Rocks in the Anza Basin, Kenya</i>	
9.40-10.00	A. Jean-Luc Ayitou : <i>Tailoring Non-linear Light-Initiated Processes for Solar Energy Conversion and Bio-Medical Applications</i>	
10:00-10:20	Michael Musembi: <i>The Effect of Various Fuels on the Yield and Photophysical Properties Zinc Zirconate Perovskite</i>	

SUB-THEME 5: MITIGATING THE IMPACT OF SOCIAL DISRUPTIONS IN A GLOBAL PANDEMIC

DAY 1: TUESDAY 22ND JUNE 2021: SUB-THEME VIRTUAL PLATFORM MODERATOR: Prof. Geoffrey Maroko SESSION CHAIR: Dr. Larry Ndivo		
TIME	PRESENTATION	RESPONSIBILITY
2.00-2.20	Abraham Kiprotich Murgor: & Bernard Kipsang Rop: <i>Origin, Spread and Impact of Islam on Nandi Traditional Religion and Culture: A case of Nandi County, Kenya.</i>	Dr. Larry Ndivo
2.20-2.40	Joyce Akinyi Akach, Lilac Osanjo & Samuel Maina: <i>Co-Design: Catalyst for Inclusion in the Design Process.</i>	
2.40-3.00	Patrick Kasyula: <i>The contribution of Leadership and Governance in Managing Global Pandemic.</i>	
DAY 2: WEDNESDAY, 23RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Evelyn Etakwa-Simiyu SESSION CHAIR: Prof. Geoffrey Maroko		
GUEST SPEAKER: Prof. Richie Moalosi, Professor of Industrial Design, Dept. of Industrial Design & Technology, University of Botswana		
TIME	PRESENTATION	RESPONSIBILITY
8:00-8.30	Arrival, Registration and Entertainment	Session Chair
8.30-9.20	Guest Speaker Address and Plenary	

9.20-9.40	Wanyama Ogutu: <i>Proposed Workshop to Investigate the Effect of COVID-19 Pandemic on Children playing with Painting and Clay Modeling.</i>	Prof. Geoffrey Maroko
9.40-10.00	Wanyama Ogutu: <i>Play with Painting and Clay: A Re-Booth of Psychoanalysis Healing on a Child Affected by Covid-19.</i>	
10.00-10.20	Josephine Obonyo: <i>Mitigating the Impact of Social Disruptions in a Global Pandemic.</i>	
10.20-10.40	Wanjiru J. J. Mugai: <i>Benefits of Psychosocial Interventions on Traumatized Children Living in Difficult Environments in Mbeere North Sub-County.</i>	
10.40-11.00	Geoffrey M. Maroko: <i>Covid-19 is a War: Framing the Pandemic in an Evolving “New Normal.”</i>	
11.00-11.30	HEALTH BREAK	
11.30-11.50	Coletta Ruth Matayo, Lilac A. Osanjo: <i>Craft Design for Improved Livelihoods among Maasai Women in Kenya: A Case of the ‘Love Is’ Project in Kenya</i>	Dr. Larry Ndivo
11.50-12.10	Fellis Nthambi Mutune, Geoffrey Maroko² & Alice Kiai: <i>Reflection on English Textbook in the Kenyan classroom.</i>	
12.10-12.30	Geoffrey M. Maroko, Gladys N. Mokua, Meshack O. Ondora & Augustus O. Nyakundi: <i>Managing HIV/AIDS Amid COVID-19: How to Un-do Things with Words.</i>	
DAY 3: THURSDAY, 24TH JUNE, 2021 VENUE: SUB-THEME VIRTUAL PLATFORM MODERATOR: Dr. Evelyn Etakwa-Simiyu SESSION CHAIR: Prof. Geoffrey Maroko		
8.30-8.50	Log in and Registration	Secretariat
8.50-9.10	Orucho Justine Amadi: <i>The Role of a Social Worker in the Mitigation of Child Sexual Abuse in Kisii County</i>	Prof. Geoffrey Maroko
9.10-9.30	Larry Ndivo & Teresia Kaberia: <i>Transgressing Maxims of Politeness: Effects of Combative Language Used During Covid-19 Televised Updates in Kenya.</i>	
9.30-9.50	Justine Amadi Orucho & Orucho Mark Roders: <i>Attitudes, Perception and Effects of Euthanasia on Families in Wetlands in Kenya.</i>	
9.50-10.10	Orucho Justine Amadi, Onyiko Kennedy Karani & Joseph Misati: <i>A Awareness Level of Pupils on CSA in EMESA Sub-Location, Kisii County.</i>	

SUB-THEME 6: ENHANCING POST-COVID-19 RECOVERY MEASURES IN HEALTH, HOSPITALITY AND QUALITY OF LIFE FOR SUSTAINABLE LIVELIHOODS THROUGH SCIENCE AND TECHNOLOGY		
DAY 2: WEDNESDAY, 23RD JUNE 2021 VENUE: SUB-THEME VIRTUAL PLATFORM		
MODERATOR: Consolate Awuor SESSION CHAIR: Dr. Alice Nzioka		
8:00-8.20	Log in and Registration	Session Chair
GUEST SPEAKER: Dr. Esther Kagure Munyiri, Director, Global Tourism Resilience and Crisis Management Centre- East Africa, Kenyatta University		
TIME	PRESENTATION	
8.20-8:50	Guest Speaker and Plenary	Dr. Alice Nzioka
8:50-9.10	Rose Achieng & Nicholas Anyuor: <i>Digital Media Strategies and Promotion of Domestic Tourism Post Covid-19: A Case of Western Circuit.</i>	
9.10-9.30	Antoneta Njeri Kariru & David Mwangi Ndungu: <i>Strategies to Overcome Damages Caused by Covid-19 in the Hotel Industry.</i>	
9.30-9.50	Winnifred Nduta, Ruth Kimanzi & Thomas Kilonzo.: <i>Covid-19 Recovery Strategies in the Hospitality & Tourism Sector.</i>	
9.50-10.10	Janet K. Malla, Sophie Ochola, Irene A. Ogada & Ann Munyaka: <i>A Review of Dietary Intake and Nutritional Status of Children with Cerebral Palsy in Nairobi County.</i>	
10.10-10.30	Ginn Assibey Bonsu: <i>Cooking During the Covid-19 Pandemic in Africa: a Reverse Design Thinking Assessment.</i>	
10.30-10:50	Maré and Mugendi K. M'rithaa: <i>The Influence of Behaviour Centred Design Approaches on The Flame-Based Cookstove-Related Health and Wellbeing of Indigent South African Households</i>	
10:50-11:10	Mbaabu Silas Muguna, Tarsila Kibaara and Paul Maku Gichohi: <i>Effectiveness of NHIF in addressing Students' Healthcare in Public Secondary Schools in Meru County, Kenya</i>	
11:10-11:30	L. Rotich & S. Boit: <i>Effect of Mission Culture on Performance of Selected 5-Star Chain Affiliated Hotels in Kenya</i>	

CLOSING CEREMONY: VENUE: VIRTUAL PLATFORM

TIME	DAY 5: FRIDAY, 25TH JUNE 2021	RESPONSIBILITY
11:30-12:00	Assembling	Dr. Wycliffe Amukowa
12:00-1:00	OFFICIAL CLOSING PROGRAMME	
	Conference Recap and Ways Forward: Prof. Mugendi K. M'Rithaa	Prof. Henry Embeywa
	Closing Remarks by Prof. Peter Mwita (DVC- Research, Innovation and Linkages, Machakos University)	Prof. Peter Mwita, DVC-RIL, MksU
	Closing Address, Prof. Lucy Irungu (Vice-Chancellor, Machakos University)	Prof. Lucy Irungu, VC, MksU
	SPEECH AND OFFICIAL CLOSING OF THE CONFERENCE BY THE CHIEF GUEST, PROF. WALTER OYAWA	
1.00	PHOTO SESSION	



The vice-Chancellor, Prof. Lucy Irungu welcomes you to Machakos University



**SUB-THEME 1: STRATEGIES FOR PROMOTING AGRICULTURE AND FOOD
SECURITY DURING A PANDEMIC**



Machakos University supports agricultural technology transfer. In this photo, Deputy Vice-Chancellor was Chief Guest during the Machakos County 2019-ASK Show

Smallholder Farmers' Participation in Groundnuts Production in Siaya County, Kenya: A Socio-Economic Perspective

Samuel O. Okeyo^{1}, Hezron N. Isaboke² & Samuel N. Ndirangu³*

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Abstract

This study uses cross-sectional data to evaluate the determinants of participation in groundnuts production among smallholder farmers in Siaya County, Kenya, which is mainly semi-arid. We applied Heckman selection regression model to analyze factors influencing the propensity and extent of participation in groundnuts production. The results reveal that the likelihood of participation in groundnuts production is affected by gender, market participation, market information sources (farmers and buyers), farm size, land size allocated to other crops and the extent of crop diversity whereas; the extent of participation is under the influence of market participation, market information source (buyers), farm size, land size under other crops, farm diversity and income promotion as an incentive for farm diversification. The study highlights the important role played by farm-specific factors, household characteristics, institutional factors and diversification incentives on farmers' uptake of groundnuts farming. Based on the findings, development of policies that ensure gender equity in terms of access to credit, information and other production resources is key in ensuring growth of the groundnuts sub-sector. Policies should also target improvement of institutional support, especially market infrastructure, to enhance farmers' market participation and improve farm income. \

Key words: *Arachis hypogaea*, crop diversity, participation, participation intensity, semi-arid

Tomato Foliar Fungal Disease Prevalence in Agro-ecological Zones of Kirinyaga County, Kenya

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Abstract

Tomato is a significant industrial raw material and household menu component. However, tomato production is characterized by inconsistency in quality and yields that result from constraints such as foliar fungal diseases. Despite of constraints, information on prevalence of tomato foliar fungal diseases in different agro-ecological zones in Kenya is scanty. The focus of this study was to assess the prevalence and distribution of foliar fungal diseases of tomato in five different agro ecological zones (UM2, UM3, UM4, LM3 and LM4) of Kirinyaga County in Kenya through farm survey and structured questionnaires. The study was conducted using ecological survey design. The agro ecological zones were purposively selected based on their tomato

production status. Selection of the farms for the study was done through multistage sampling. At the farm, systematic ecological survey design was used. Transects were laid diagonally from where micro plot were established for assessment of foliar fungal diseases of tomato. Information relating to tomato farming activities were gathered using closed end structured questionnaires. Scores of disease incidences and severity were converted into percentages and subjected to analysis of variance using Generalised Linear Model (GLM) and significant means separated using Least Significant Difference (LSD) at $\alpha = 0.05$. Categorical data gathered by the questionnaire were analysed using chi-square tests of association. Statistical Analysis Software (SAS) version 9.4 was used for the analysis. Incidences and severity of early blight, Late blight and Septoria spot in tomato farms in different agro-ecological zones were significantly different ($p < 0.05$). Incidence of Early blight was high 72.09 % in zone UM3 and lower in zones LM4 52.32 %. Incidence of Late blight was high 51.77% in zone UM3 and lower in zones LM4 40.25 %. Incidence of Septoria spot was high 80.22% in zone LM4 and lower in zones UM4 44.81 %. Severity of Early blight was high 38.21 % in zone UM3 and lower in zones LM4 21.86 %. Severity of Late blight was high 31.12% in zone UM3 and lower in zones LM4 19.27 %. Severity of Septoria spot was high 39.76% in zone LM4 and lower in zones UM2 24.93 %. Gender and tomato farming across agro ecological zones was not significantly ($X^2 (3, 120) = 12.189, p = 0.341$) associated. The ability of farmers to identify foliar fungal diseases was not significantly ($X^2 (8, 120) = 10.921, p = 0.177$) associated with agro ecological zones. Survey on the use of fungicides and compliance has average score of 1.87 ± 0.252 . However, survey on use of fungicides and compliance was found not to be reliable with a Cronbach's alpha of 0.493. Association between legality of chemical use in tomato farming and agro ecological zones was found not to be significant ($X^2 (8, N = 120) = 13.671, p = 0.091$). In conclusion, incidences and severity of foliar fungal diseases of tomato differed in different agro ecological zones of Kirinyaga County. The study recommends on evaluation of fungicide use among farmers in management of foliar fungal diseases. Further, the study recommends studies future studies to consider evaluation of cost benefit analysis to determine economic impact of foliar fungal diseases of tomatoes in Kirinyaga County.

Key words: Agriculture, Fungal diseases, Agro-ecological, Tomatoes

Prevalence of Banana Xanthomonas Wilt in Nithi, Tharaka-Nithi County in Kenya

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Abstract

Banana (*Musa* spp.) is one of the most grown food crops in the world, and is rich in carbohydrates, vitamins and minerals which can supply nutrition in low resourced regions such as Tharaka Nithi County, Kenya. A major constraint to high banana production in the region is banana Xanthomonas wilt (BXW) caused by *Xanthomonas campestris* p.v *musacearum*. The

pathogen attacks photosynthetic leaves and young fruits reducing palatability and marketability. There is currently limited information on severity and prevalence of BXW in Nithi region of Tharaka Nithi County. Different strategies are used in the region to curb the wilt, including use of chemicals, as well as cutting and uprooting infected plants, although effective management of BXW is yet to be achieved. In other parts of the world, an integration of resistant cultivars with other control methods has been the most effective method for BXW management. Yet, data on banana varieties that are resistant to BXW in Nithi region is still limited. The objective of this study was to determine the prevalence of BXW in Nithi region. The prevalence of BXW was assessed on-farm by a survey design using structured questionnaires to banana farmers in five villages (Kiang'onde, Marima, Mitheru, Gibumbu and Giampampo). Data on Prevalence from the questionnaire was analysed on SAS version 9.4 version using chi square t-test of association. Per cent disease prevalence data was subjected to one-way analysis of variance using general linear model in Scientific Analysis System (SAS) version 9.4 at $\alpha = 0.05$. Results revealed that percentage prevalence of BXW in the studied villages was not significantly different ($p > 0.05$), with the highest value of 21.14% at Giampampo while at Mitheru had the least value of 11.24%. Majority of the farmers (92%) were unaware of existence of BXW in the region. In conclusion, majority of farmers are not aware of existence of *Xanthomonas* wilt of banana. Furthermore, farmers who were interviewed expressed lack of adequate knowledge on methods of managing BXW diseases in their banana farms. The respondents appeared not being able to identify common diseases of banana. Based on these observations, there is need to educate farmers on best banana farming practices, disease identification and management. This study broadens the understanding BXW prevalence in Nithi region and provides opportunities for selection of resistant banana varieties for better yields and improved food and nutritional security in the region.

Key words: Banana, *Xanthomonas*-wilt, Tharaka-Nithi, Kenya

Devolution Framework for Sustainable Agriculture and Food Security in Kenya: The Case of Lower Eastern Counties

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Abstract

Devolution in Kenya has brought a new dawn on Governance in general and Agriculture and Food security in particular. Devolved governance sought to respond to the historical challenges bedeviling centralized governance and provide various regions or counties the opportunity to deal with regional specific priorities. This was facilitated by the philosophy of awarding certain governance functions to be dealt with by the counties, while others were reserved for the national government. Article 174 of the Kenyan Constitution stipulates the various objects of Devolution that this paper shall espouse to constitute the framework for devolution operationalization in Kenya. Each of the objects of Devolution accords Kenyans an opportunity to make some contributions to the strategies of promoting sustainable agriculture and food security during a pandemic. This paper shall explore the contribution of the devolution framework in influencing sustainable agriculture and food security in Machakos, Makueni and Kitui Counties. The Devolution Framework shall comprise of the following objects of Devolution; democracy and public accountability; public participation; social and economic development; equity; decentralized units; rights of minorities and marginalized groups. The paper shall utilize

both primary and secondary data. Secondary data collection and review of applicable policy papers shall be interrogated against the empirical program impact in the various counties as shall be gathered from primary data. The primary data shall be gathered from implementing departments at the county level, national and from the citizens.

Keywords: Devolution Framework, equity, social, economic food security sustainable development

Sustainable Animal Feeding Production System: A Case Study for a Stand-Alone Animal Feed-Mixer for Rural Subsistence Pastoral Farmers during COVID-19 Pandemic

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Abstract

Animal compound and supplement feed play a significant part in rural subsistence pastoral farming. During these challenging times presented by the advent of covid-19 pandemic, small farmers were left with no choice but to practice small-scale and / or makeshift feedlot systems in their backyards. Due to the pandemic no-movement policy was enforced by the Botswana government which lead to zero grazing and causing detrimental effects to subsistence farmers. In realising these problems, the government offered subsidises to rural farmers so that they can afford different animal compound and supplement feeds for their stock. However, the main challenge comes with achieving homogenous animal compound and supplement feeds mixtures due to lack of manpower caused by restricted movements and curfews. Hence there is a profound need to aid subsistence farmers with a comprehensive process and / or system of achieving this homogenous animal compound and supplement mixture. Traditional animal feeds are general characterised as dispersible multi-ingredient-mixtures in which particles differ in size, density and shape and tend to segregate. The segregation of animal feeds is frequently a reason for customer and official complaints. To avoid segregation, usually small volumes of liquids – e.g. molasses or vegetable oils – are added in the main mixer of a feed production line to cause fine particles. The presence of small volumes of liquids will affect the distribution behaviour of particles during mixing and it may also influence the material and technological properties. However, the mixing homogeneity of typical compound feeds that can be achieved when small volumes of liquids are present is not adequately characterised at the moment. There is insufficient knowledge of the design process and specifically the time of the mixing application will take. This study strived to investigate the process of mixing amounts of traditional animal feed compounds and supplement to achieve a homogenous mixture. The major material properties, such as flow ability and dusting potential, were determined to evaluate both the results and the product quality. An intensive efficient mixer equipped was used as test facility. The results show that, under certain conditions an intensive mixer may have a positive effect on the achievable mixing homogeneity of mineral feeding stuffs.

Keywords: Less-intensive mixer, Animal supplement feed, Mixture homogeneity, efficient-effective mixing, sustainable design

Occurrence of Bacterial Wilt Pathogen in Soils and Potato Tubers in Runyenjes in Embu County, Kenya

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Abstract

Potato (*Solanum tuberosum* L.) is a starchy tuber crop that is widely cultivated in Africa as an income generator. Nutritionally, potato provides essential amino acids among other important body required nutrients. Despite the significance of potato as a crop, its production is constrained by various biotic and abiotic factors, which includes bacterial wilt caused by *Ralstonia solanacearum*. *Ralstonia solanacearum* is widely distributed in tropical, sub-tropical and warm temperate climates with a wide host range. In Kenya, the infection of potato farms by *R. solanacearum* has spread to all potato growing areas. It affects over 70% of potato farms causing yield losses of between 50 to 100% in Kenya. This study was carried out to assess the occurrence of bacteria wilt in potato farms in Runyenjes in Embu County. A survey of potato farms was conducted in different tomato growing villages in between September and October 2019. Diseased potato samples and soil samples were collected from the farms and taken for laboratory study at Chuka University. Collected data on incidence of pathogen on tuber and soil were subjected to one-way analysis of variance (ANOVA) in SAS version 9.4. Significance means of all the analysis were separated using Least Significance Difference at $\alpha = 0.05$. Incidences of potato bacteria wilt disease in different villages surveyed was significantly different ($p < 0.05$). The incidence of *R. Solanacearum* in farmer's fields ranged from 16.51% (Makutano village) to 50.42% (Kiangodu village), with an overall mean score for the incidence was 32.20% across all the farms studied. In conclusion, incidence of bacterial wilt pathogen in soil and tuber sampled from Runyenjes area of Embu County differ from farm to farm and location to location. Regular testing of soils is recommended to detect pH that might aggravate diseases occurrence.

Key words: Bacterial Wilt, Soils and Potato Tubers, Runyenjes, Kenya

Occurrence of Aflatoxins in Groundnuts (*Arachis hypogaea* L.): A Case Study of Four Counties in Kenya

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Abstract

Aflatoxins are highly toxic compounds produced mainly by *Aspergillus section Flavi* on a wide range of food commodities, including groundnuts. Infestation occurs during both the pre-harvest and post-harvest stages of the crop production and consequently aflatoxin

contamination. The objective of this study was to determine total aflatoxins concentration in groundnut samples collected from farmers in four major groundnuts growing regions in Kenya. A total of forty groundnut samples were evaluated for total aflatoxin content using enzyme linked immunosorbent assay (ELISA). Data was analyzed using one-way analysis of variance (ANOVA) and means separated by Duncan's Multiple Range Test (DMRT). All samples except one were positive for aflatoxin contamination. The total aflatoxin levels in the positive samples ranged between 0-113ppb. Results indicated relatively low levels of total aflatoxin in samples from Baringo and Elgeyo-Marakwet counties (2.12 on average) that are fit for human consumption based on Kenya Bureau of Standards (KEBS) guidelines. However, high levels of total aflatoxin (13.88 on average) were detected in samples from Bungoma and Siaya counties. These levels were far beyond the KBS standard of 10ppb and hence pose grave danger to groundnut consumption and marketing. The reason (s) for the high contamination of groundnuts in the two counties could be attributed to climatic condition and presence of highly toxigenic strains in the soil in these regions. There was significant variation in levels of aflatoxin concentration and across the different counties of this study. Aflatoxin concentration in groundnut samples appeared to be significant with respect to the study region ($p = 0.005$). Groundnut samples from Western Kenya region showed higher concentration than that of the Rift valley region.

Key words: Aflatoxins, Aspergillus species, Groundnuts, ELISA

Heavy Metal Contamination in Water, Soil and Vegetables in Urban Streams in Machakos Municipality, Kenya

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Abstract

Irrigation of agricultural fields with waste water more especially sewage effluent is a common practice in urban and peri-urban areas. However, there is increasing concern due to accumulation of heavy metals in vegetables and other crops grown using such water. This study focused on analysis of Cadmium, copper, zinc, lead and chromium in water from two urban streams, in the vegetables and soil irrigated using water from the two urban streams. The levels of heavy metals in the samples were quantified using inductively coupled plasma mass spectroscopy (ICP-MS). One-way Analysis of variance (ANOVA) was used to test for the significant difference ($p \leq 0.05$) of heavy metal concentrations in the vegetables, soil, and water across the different sampling sites. The relationship between the heavy metals in the soil, water and vegetables was investigated using Pearson correlation. The mean metal concentrations (mg/L) were; Cd (BDL – 0.0011), Cu (0.0034 – 0.0055), Pb (0.0012 – 0.007), Zn (0.0232 – 0.1351), and Cr (0.0036 – 0.0292) in water and Cd (0.0058 – 0.0534), Cu (10.39 – 27.5), Pb (4.23 – 8.35), Zn (20.1 – 28.8) and Cr (8.17 – 10.03) mg/kg in soil respectively. The values

were within WHO permissible limits. Mean concentration values of (Zn (9.05 – 11.8), Pb (0.28 – 0.636), Cr (BDL – 1.002)) in spinach exceeded WHO permissible limits while Cd (BDL – 0.1285) and Cu (3.07 – 14.5) were within recommended levels. Cd (0.004 – 0.243), Cu (0.909 – 3.60) and Pb (BDL – 0.458) concentration levels in kale were within WHO safe limits for human consumption while Zn (12.06 – 18.8) and Cr (BDL – 1.62) exceeded WHO set limits. Presence of heavy metals (Zn, Pb, Cr) in the vegetables signifies a health risk hazard from consumption of these vegetables. Continuous monitoring of heavy metals in stream water, soil and vegetables is critical towards safeguarding public health.

Key Words: Heavy metals, urban effluent, Water, Soil, Vegetables

Implementation and Strategies for Nutritional Improvement of Home Grown School Feeding Programme in Makueni County, Kenya

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Abstract

The study evaluated roles and collected views on strategies for nutritional improvement of homegrown school feeding programme. Participants; that is school head teachers, parents, school meal management committee and sub county officer in charge of school feeding from the ministry of education and study location; Makindu Sub-County in Makueni County were purposively sampled due their direct involvement in the implementation of HGSFP. Descriptive research design was use and qualitative data collected using Key Informant Interviews (to school head teachers and sub county officer in charge of school feeding) and Focus Group Discussion (parents and meal management committee). Thematic analysis was used, where data was grouped into themes and conclusions drawn. The study revealed the roles of sub county director in charge of school meals as the overseer of expenditure of money allocated for HGSFP as received from the government through the Ministry of Education where cash is transferred directly into the bank accounts of participating schools. The decision of which food products to purchase was being done by the school meal management committees. Parents facilitated the food preparation including cooking at the school by providing firewood and salt along with water and salaries for the cooks. School head teachers received the food supplies and monitored the feeding at the school level. The study received suggestions to nutritionally improve school meals; among them was increased programme funding from the government, shorted procurement process, purchase and preparation of diversified food using a nutritionist's guided meal plan. Policy makers in government and non-governmental organizations directly and indirectly involved in the implementation of home grown school feeding should consider the suggestions to help address the problem of malnutrition among school children who face poverty and chronic hunger.

Key words: Home grown School Feeding, Programme, Roles, Strategies

Mixed Farming and its Impact on Food Insecurity and Dietary Quality in the Context of Varying Aridity in Rural Areas of Kenya

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Abstract

Sustainability in agricultural production and food consumption is key in ensuring food and nutrition security. Mixed farming, the practice of simultaneous cultivation of crops and rearing of livestock production in the same farm, has been touted as one of the farming systems for enhancing this sustainability. However, few studies assess results of mixed farming in different biophysical environments. This study investigates the impact of mixed farming on food insecurity and dietary quality in areas with varying degrees of aridity in rural Kenya. The study uses nationally representative data from 10,812 households extracted from the Kenya Integrated Household Budget Survey 2015/2016. The study finds that 60% of the sampled households practised mixed farming, with the practice being highest in the drier semi-arid areas (70.8%) and lowest in arid areas (9.9%). We applied matching techniques to estimate impacts. Our results show that while mixed farming had no impact on food insecurity in the arid areas, the farming system had significant positive impacts on six out of seven food insecurity variables in the non-arid areas, three out of seven food insecurity variables in the marginally dry semi-arid areas, and two out of seven food insecurity variables in the mostly dry semi-arid areas. Further results show that mixed farming increased household dietary diversity score in all but the marginally semi-arid areas. We conclude that mixed farming has positive impact on reducing food insecurity and improving the quality of diets at household level, but impacts vary by degree of aridity.

Key Words: Mixed farming, Sustainability, Food insecurity, Dietary quality, Aridity, Matching

Effect of Land Utilization Patterns on Food Security in Narok East Sub-County, Narok County, Kenya

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Abstract

Global food security is likely to remain a disaster globally for many years if the world cannot formulate methods to control the situation. By the year 2016, an estimated 120,000 people in rural areas and 30,000 in urban centers of Narok County were food insecure. This insecurity attributed to a mismatch in food availability, access and utilization. The purpose of this study was to establish effect of land utilization patterns on food security in Narok East Sub-County. The study adopted human capability approach. A descriptive research design was adopted by the study. The target population comprised of 25078 households distributed proportionally in the 4 wards. A sample of 378 household heads was determined using Krejcie and Morgan's formula of 1970. Primary data was collected using a questionnaire and an interview guide. Data analysis was done using descriptive statistics of frequencies, percentages and inferential statistics

of correlation, ANOVA and regression analysis. The results were presented using frequency and percentages, tables and charts. The relationship between the variables was tested at a significant level of 5%. Results show that there is a very strong positive and significant correlation between land utilization patterns and food security ($r = .752^{**}$ and a p- value of 0.000). This implies that the relationship between the variables is very significant hence land utilization patterns have a strong influence on food security in Narok East Sub-County. The study concludes that the null hypothesis that there is no relationship between land utilization patterns and food security was rejected because there is a very significant and statistical relationship between the two variables. The study will be beneficial to the farmers in the ASAL areas who have consistently experienced food security issues and also other key stakeholders in food security discourse in Kenya.

Key words: Arid and Semi-Arid areas, Food security, Land utilization patterns, Narok East Sub-County

Analysis of the Factors Affecting Farm-Level Output of Mangoes among Small-Scale Farmers in Machakos County, Kenya

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Abstract

The study examined the factors affecting farm-level output of mangoes among small-scale farmers in Machakos County, Kenya. Data was obtained from a sample of 352 small-scale mango farmers that were proportionately selected from six wards of the study area. A structured interview schedule was used for data collection. Both descriptive and inferential statistics were employed in data analysis. The stochastic Cobb-Douglas production function results indicated that active family and hired labor, pesticides, and manure were the inputs that influenced mango output with 0.463 return to scale. This indicates a decreasing return to scale of mango output in the study area. In addition, household size, mango farming income, farm size, amount of credit, and extension contacts were the factors that had a positive effect on mango farm-level output, while cost of pesticides and cost of manure precipitated a negative effect. The study recommends to the Ministry of Agriculture in collaboration with County Government to strengthen the extension contact between farmers and agricultural extension agents by making frequent visits to mango farmers and organizing training programs to encourage them to apply good management practices for improved production. Furthermore, small-scale mango farmers' access to functional input markets will enhance farm-level mango output.

Keywords: Mango, farm-level output, Cobb-Douglas production function

Determinants of quantity of Mango supply among small-scale farmers in Machakos County, Kenya

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Abstract

In Kenya, mango production is mainly practiced by small-scale farmers as a source of income, form of employment, food and nutrition. Farmers are able to produce more than the amount required to satisfy consumption at the household level. However, there exists a weak linkage with the markets, and thus the opportunity to diversify the farmers' livelihood from mango production is limited. This study was conducted to evaluate the factors influencing the quantity of mangoes supplied to the market among small-scale farmers in Machakos County, with the aim enhancing the farmers' market participation. Primary data was obtained using a semi-structured interview schedule. Two-stage sampling technique procedure was used to obtain a sample comprising 352 small-scale mango farmers. The two-stage least square regression model was used to determine the effect of selected factors on quantity supplied to the market. The results revealed that the quantity of mangoes produced, market prices, market access, extension contact, amount of credit accessed positively and significantly influenced the quantity of mangoes supplied. While the age of household head precipitated a negative effect on quantity supplied. Based on these findings, the researcher recommends enactment of appropriate policies by the policy makers to facilitate extension contact, access to credit and market outlets to enhance farmers' market participation.

Keywords: Mango production, quantity supplied, market participation, two-stage least square regression

Differential Growth and Productivity of *Pleurotus* Spp. Mushroom on Agro-Waste Substrates in Semi-Arid Lands of Kenya

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Abstract

Major challenges facing the arid and semi-arid areas (ASALs) of Kenya today are food insecurity and poverty, occasioned by low agricultural production. Diversification into low input agriculture, such as mushroom farming, can help raise agricultural production and incomes, but recommended substrates are not widely available cheaply. Several crops are widely

cultivated in ASALs and literature suggests that some of the crop residues could be used as alternative substrates for mushroom cultivation. However, effectiveness of many of these residues has not been adequately evaluated. This study aimed at evaluating the potential of different agro-waste materials as substrates for cultivation of phoenix oyster mushroom (*Pleurotus spp.*) in the ASALs of Kenya. Five different agro-waste materials and their combinations were tested, namely: maize stalks, beans straw, maize cobs, rice straw, and *Melia volkensii* leaves. The study assessed the effects of these substrates on different mushroom growth parameters. The experiment was done in a randomized complete block design (RCBD), favorable conditions maintained, data collected and analysed using ANOVA. Results showed that substrates containing *Melia volkensii* leaves failed to colonize fully, with only the bean straw + *Melia volkensii* leaves combination yielding mushrooms, while all the other substrates and their combinations yielded mushrooms. Days to first harvest varied significantly, with the mean ranging from 35.1 to 48.1 days. The tallest mushroom obtained was 6.8cm, while the shortest was 4.4 cm. The highest average number of marketable fruit bodies was 9.5 while the lowest was 6.2. The overall average yields varied from 136.2g to 434.9g while the average biological efficiency also varied significantly. Further result showed that stipe length was positively correlated with cap diameter, fresh weight of mushrooms, and biological efficiency. In conclusion, this study showed that maize stalks, bean straw and maize cobs are also technically suitable substrates for oyster mushroom production and combinations of these substrates produced higher mushroom yields than most of the pure substrates and can therefore be recommended as suitable alternative substrates in the ASALs.

Key Words: Oyster mushroom, substrates, agro-waste materials, biological efficiency.

Modeling Production of Oyster Mushroom (*Pleurotus ostreatus*) for Food and Nutritional Security in Machakos County, Kenya

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Abstract

Despite the increased recognition of the nutritional value of the Oyster mushroom, coupled with its ability to tolerate a wide range of climatic conditions, its production is still at infancy stage with low adoption rate in Machakos County. The low uptake could be attributed to lack of skills for substrates preparations or cost of buying the substrates coupled with poor knowledge on its consumption benefits. The objective of this study was to optimize *Pleurotus ostreatus* (Oyster mushroom) yield by establishing the local suitable substrates mixture that maximized the yield in Machakos County, Kenya. To achieve this objective simplex-centroid mixture design was

used. Based on the study findings there was a significant variability on the substrate compositions used under the study, which included sawdust, sienna siamea (*Mukengeta*) leaflets and maize cobs. Sawdust yielded the highest under the pure blend at 1.05 kg per experimental unit while on the mixed blend sienna siamea and sawdust produced the highest yield at 1.1 kg per experimental unit (1kg of dry substrate), giving 5% and 10% biological efficiency respectively. The mixture response was found to be more valuable than the pure blend responses. The simplex-centroid mixture design rightly proportioned the substrates for improved oyster mushroom production, hence it was recommended. A further research on determining suitability of alternative locally found substrates which may be more cost effective and multiple response optimizations aimed at achieving maximal nutritional value and yield against minimal cost of spawns and substrates were recommended.

Key words: Substrates, simplex centroids mixture designs, optimization.

Determinants of Adoption of Climate-Smart Agricultural Technologies among Smallholder Potato Farmers in Kenya

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Abstract

Climate change and variability have led to regression of agricultural productivity that threatens food security, livelihoods and realization of UN Sustainable Development Goals in sub-Saharan Africa. Climate-Smart Agriculture (CSA) aims to enhance adaptation to climate change, build resilience and strengthen livelihoods, food security, improve management and use of natural resources by farmers. This study assessed the uptake of CSA and its determinants among smallholder potato farmers in Nyandarua County, Kenya. A multi-stage sampling technique was used to collect data from 350 smallholder potato farmers. The probit model was used to examine factors that influence the adoption of CSA technologies in potato farming. The major CSA technologies adopted by farmers were ridging (86%), change of cultivation calendar (60%) and use of organic manure (58%). The findings show low adoption of seed management practices such as the use of certified seed and good seed selection practices (23%) and water management practices (12%). The adoption of CSA technologies was significantly associated with employment status, income, collective action, owning a radio, entrepreneurship practices, access to the market and farmer's experience of drought in potato farming. Besides, gender, perception of frost occurrence and willingness to store potato had a negative association with the adoption of CSA technologies. The study recommends efforts to promote uptake of CSA technologies through awareness creation and addressing gendered barriers of technologies adoption such as time, low access to resources and information. Additionally, there is a need to promote seed multiplication platforms and access to the market for clean seed to improve the use of certified potato seed.

Analysis of Tomato Market Diversity among Rural Smallholder Farmers in Kirinyaga County, Kenya

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Abstract

Vegetables are largely cultivated by smallholders and contribute immensely on agricultural growth in Kenya. The crops form a vibrant enterprise with tomato among the widely cultivated vegetables. Tomato underwrites 7 percent of horticultural yield, 14 percent of vegetable output and provides income of about 85 percent rural populations. Despite the contributions, tomato marketing encounters inefficiencies leading to uncertainties which exclude smallholders from accessing reasonable prices. This is attributed to inability of farmers to embrace market diversity through efficient systems. Besides, rural farmers have limited information on strategies to expand tomato markets at farm level. This prompts farmers to sell their produce at inauspicious prices so as to evade enormous losses that result from tomato spoilage. To bridge this research gap, the study assessed available market channels and computed the magnitude of market diversity using SDI and revealed an average score of 0.4771. This articulates an opportunity to diversify further thus enabling farmers minimize risk of losses and explore existing markets. Further, results revealed that land apportioned for tomato production was utmost 0.5 hectares with majority (74%) of farmers recording low incomes. Tobit regression was applied to investigate factors influencing market expansion. Results revealed that market diversity was highly responsive to type of roads and social group membership. Besides, ANOVA was used to show the relation of tomato prices to market diversity and results were insignificant affirming that market diversity did not match best tomato prices except for farmers in contract markets. The study endorses policy interventions aimed at improving road infrastructures, promote organized groups and extension access to reciprocate benefits of diversity. In addition, there is a need for policy makers to focus on improving contract markets which reduce market risks due to guaranteed product prices.

Key words: Market diversity, market channels, smallholder farmers, tomato marketing

Profitability of Tomato Production Systems among Smallholder Farmers in Kirinyaga County, Kenya

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Abstract

Horticulture is an essential contributor to economic development underwriting about 33 percent of agriculture's contribution to the Kenyan economy. Vegetables form the future of horticulture with tomato among the widely cultivated crops. Its popularity as a commercial crop is on the rise among rural populations since it is practical in small-scale farming given the declining land

sizes. Tomato is mainly grown in rain dependent open fields but due to variations in climatic conditions, farmers are progressively adapting to greenhouses. Conversely, information regarding economic performance of these systems has remained scarce thus limiting the ability of farmers to account for costs and returns in the long run. This is so despite concerted efforts to increase tomato production among rural farmers. Using survey data of 384 smallholder tomato farmers, this study sort to fill the research gap by evaluating the economic performance of open field and greenhouse production systems in Kirinyaga County. The study used gross margin and net profit analyses to compute the profitability of both systems while multiple regression was used to determine factors that influence profitability in tomato production. Results showed that use of greenhouses was low (20.3%) owing to the high costs of installation and maintenance though both systems adequately reimbursed the production costs. Further, the systems were economically efficient in tomato production with greenhouses more productive and profitable. Tomato profitability was more responsive to extension and fertilizer quantity. The study recommends promotion of greenhouses by subsidizing the costs of construction, enhancing extension access and provision of low-cost fertilizers since this will increase productivity thus improving livelihoods in rural areas.

Key words: Tomato production systems, tomato profitability, smallholder farmers

Smallholders' Choice of Avocado Marketing Channels in Murang'a County, Kenya

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Abstract

Avocado fruit continues to experience increased demand at both the local and export markets. However, smallholder avocado farmers have not benefited from this expansion in demand. This is attributed to use of non-performing marketing channels that does not link them to the high value markets. The purpose of this paper is to investigate the determinants of choice of avocado marketing channels in Murang'a County. Stratified sampling procedure was used to obtain a sample of 384 smallholder avocado farmers from the seven key producing areas of the County. Descriptive statistics and multinomial logit regression model were used for analysis, with marketing through farmer organizations being the reference marketing channel. Results of Multinomial regression analysis showed that the probability of choosing brokers was significantly affected by farm size, household head's gender, education level of household, time taken to collect avocado, access to extension, farm income and intercropping avocado with coffee. Likewise, probability of farmers' decision on direct sales to market was influenced by off farm income, dairy cattle kept by the farmer, intercropping avocado with coffee, growing organic avocado, travelling costs to buyer locations, farmer organization membership fees and subscriptions. Trainings on avocado farming methods, time taken to collect avocados, delayed buying of avocados and off-farm income were among the factors that significantly affected the probability of choosing to market through local traders. Farm gate price reduced the likelihood of choosing brokers and direct sales. Enhancing adoption of organic avocado production technology would increase the likelihood of smallholders' choice of export markets.

Keywords: smallholders, marketing channels, multinomial logit model

Patterns on Food Security in Narok East Sub-County, Narok County, Kenya

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Abstract

Global food security is likely to remain a disaster globally for many years if the world cannot formulate methods to control the situation. By the year 2016, an estimated 120,000 people in rural areas and 30,000 in urban centers of Narok County were food insecure. This insecurity attributed to a mismatch in food availability, access and utilization. The purpose of this study was to establish effect of land utilization patterns on food security in Narok East Sub-County. The study adopted human capability approach. A descriptive research design was adopted by the study. The target population comprised of 25078 households distributed proportionally in the 4 wards. A sample of 378 household heads was determined using Krejcie and Morgan's formula of 1970. Primary data was collected using a questionnaire and an interview guide. Data analysis was done using descriptive statistics of frequencies, percentages and inferential statistics of correlation, ANOVA and regression analysis. The results were presented using frequency and percentages, tables and charts. The relationship between the variables was tested at a significant level of 5%. Results show that there is a very strong positive and significant correlation between land utilization patterns and food security ($r = .752^{**}$ and a p -value of 0.000). This implies that the relationship between the variables is very significant hence land utilization patterns have a strong influence on food security in Narok East Sub-County. The study concludes that the null hypothesis that there is no relationship between land utilization patterns and food security was rejected because there is a very significant and statistical relationship between the two variables. The study will be beneficial to the farmers in the ASAL areas who have consistently experienced food security issues and also other key stakeholders in food security discourse in Kenya.

Key words: Arid and Semi-Arid areas, Food security, Land utilization patterns, Narok East Sub-County

Lactic Acid Bacteria from African Fermented Foods: Potential Biological Control Agents for Mycotoxins in Kenya

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Abstract

Cereals play an important role in global food security, for example data from the UN Food and Agriculture Organization projects increased consumption of cereals from 2.6 billion tonnes in

2017 to approximately 2.9 billion tonnes by 2027. However, cereals are prone to contamination by toxigenic fungi which lead to mycotoxicosis. The current methods for mycotoxins control involve use of chemical preservatives. However, there are concerns about the use of chemicals in food preservation due to their effects on safety, nutritional quality and organoleptic properties of food. Therefore, alternative methods are needed that are affordable, simple to use and safe. Fermentation technique is based on the use of microorganisms mainly to impart desirable sensory and shelf-life extension properties. The lactic acid bacteria (LAB) are generally regarded as safe (GRAS) due to their long history of application in food fermentation systems, and they are also known to produce antimicrobial compounds (fatty acids, organic acids, phenyl-lactic acid, hydrogen peroxide, bacteriocins and carbon dioxide) with broad range of antifungal activity. Hence, LAB have the ability to inhibit the growth of mycotoxin producing fungi thereby preventing production of mycotoxins. Fermentation is also an efficient technique for improvement of nutrient bioavailability and other functional properties of cereal-based products. We seek to illustrate the types and distribution of mycotoxins in Africa, Aflatoxicosis prevalence in Kenya, Aflatoxin levels and standards in foods and feeds, their effects on human and animal health, degradation mechanisms and to provide evidence of the potential of lactic acid bacteria as biological agents against mycotoxin-producing fungi.

Keywords: lactic acid bacteria, moulds, mycotoxin, aflatoxins, mycotoxicosis, fermentation

**SUB-THEME 2: ECONOMIC SURVIVAL THROUGH RESPONSIVE
ENTREPRENEURSHIP IN THE ERA OF GLOBAL DISRUPTION**



Integrating Novel Technologies into Leather Product Development within Kenya's Informal Sector

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Abstract

Technology is an integral part of the productivity of the leather sector. The leather industry is shifting from its traditional roots in an attempt to revive its fortunes, through the adoption of novel technologies. While Kenya boasts of abundant availability of raw hides and skins, constituting the main raw materials for the leather industry, the weak position of the manufacturing sector and its inability to produce higher value-added products has hampered the full exploitation of these resources. The ever-growing spectrum of leather technologies has the potential to take the leather industry in a completely new and sustainable direction. Employment in Kenya's leather industry is estimated at 14,000 with the informal sector accounting for 10,000 workers. The informal leather sector is however severely disadvantaged by low level technology leading to poor quality products. Insufficient funding for investment in modern technology and facilities related to fine leather production has resulted in most Kenyan leather being produced and sold as a commodity with little quality or design differentiation. With limited access to the domestic market occasioned by the influx of second-hand leather goods and competition from cheap leather substitutes from China and other countries, many Kenyan producers are seeking to diversify their export markets. Following an urgent need for competitiveness in design and product development for accelerated economic growth and eradication of poverty, this study sought conduct an audit on the uptake and integration of technology among the leather craft designers in the informal sector in Kenya. Using an exploratory study, the authors engaged respondents from Kariokor Market in Nairobi City County, Kenya. Purposive sampling was used to select 15 leather craft designers who had at least 3 years of experience in the craft design sector. Semi structured research questionnaires and interviews were administered to the sampled respondents and the findings were used to answer the key objective of the study.

Keywords: informal sector; leather craft; novel technologies; sustainable product design and development, value chain, design differentiation

Firm Size, Credit Risk on Financial Performance of Microfinance Banks in Kenya

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Abstract

Microfinance banks (MFBs) in Kenya have continued to record huge annual losses contrarily to their counterpart, commercial banks that have been resilient and reported improved financial performance. The aim of the study was to explore the effect of Firm Size, credit risk on financial

performance of Microfinance banks in Kenya. The target population was MFBs regulated by Central Bank of Kenya (CBK). The study employed census method. Secondary data for thirteen (13) MFBs was collected from published annual reports for the period 2011-2019. The study employed explanatory research design. Unbalanced panel regression model was employed to examine the impact of independent variables on dependent variable using unbalanced panel data. The dependent variable, financial performance was measured by Return on Equity (ROE). The independent variable credit risk was measured with following ratios Net non-performing loan ratio, Asset quality ratio, Loan Loss Provision to total Loan ratio and Loan Loss Provision to total equity ratio while the total asset of MFBs was the indicator of the moderating variable, firm size. The finding depicted Credit risk had negative significant effect on financial performance. The model F statistics indicated a strong statistical significance of credit risk on financial performance of MFBs at 5% level of significance. The finding further showed that the firm size had a positive significant moderating effect on the relationship between credit risk and financial performance, thus depict that large sized MFBs were better placed in managing credit risk. In conclusion, the negative and significant relationship between credit risk and financial performance indicate poor asset quality or high non-performing. The study recommends that management of MFBs establish stringent credit policy and robust credit risk management framework to reduce non-performing loans and default levels.

Keywords: Financial Performance; credit risk; liquidity risk; Microfinance Bank; Firm Size

Multiple Delivery Channels and Service Delivery in Huduma Centers in Kenya

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Abstract

Most public service institutions are generally different in design and operation compared to several years back. The advances in technology and consumer demand have resulted to public institutions adjusting periodically (Banham, 2010). New technological development and innovations has pushed most governments to modernize their systems in order to address their citizens' demands for reliable and efficient services. As such, the Huduma Program of Kenya was launched in 2013 as a framework through which, a variety of channels which advance citizen-centric public services are supported through the use of digital technology and one stop centres throughout the country. The purpose of the study was to establish the effect of Multiple Delivery Channels in Huduma centers in Kenya. The Researcher used quantitative and qualitative analysis techniques to quantitatively and qualitatively evaluate the effect of Multiple Delivery Channels in Huduma centers in Kenya. A researcher administered questionnaires was used as a data collection tool to study a target population of 51 Huduma Centres and a sample of 153 respondents working at the management level in all operational Huduma centres in Kenya. The study revealed that the Huduma centers employ the use of multiple delivery channels that affects the delivery of public services they offer. The key purpose of this study is to establish the significance and core use of multiple delivery channels and how it affects service delivery in public institutions in relation to Huduma centres. The goal of the study therefore is to enable

public institutions enhance adoption and application of multiple delivery channels in delivery of their services to the public to enhance efficiency and effectiveness.

Key words: Huduma Centre, Service Delivery, Delivery Channels

The Role of Knowledge Sharing in Enhancing Innovation Performance amongst Commercial Banks in Kenya

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Abstract

Modern organizations are exposed to challenges arising due to a complex and an unpredictable competitive environment. Over the years, knowledge sharing has become a major strategic necessity that organizations require to succeed in the global business atmosphere. Knowledge as one of the most vital assets of all corporate organizations must be effectively shared in order to achieve sustainable competitive advantage. The study sought to examine the role of knowledge sharing in enhancing innovation performance amongst commercial banks in Kenya. The study adopted descriptive survey research design. This study targeted 15 commercial banks in Kakamega County. Structured questionnaires were used to collect data targeting forty five managers who were purposively sampled. A census study was done. Data was analyzed using descriptive and inferential statistics. For descriptive statistics frequencies, percentages, mean and standard deviation were used. For inferential statistics the study utilized Pearson's product moment correlation and simple regression analysis. Data was presented in form of tables. Study findings revealed that knowledge sharing had a positive and significant influence on innovation performance. The study recommends that bank managers should pay keen interest to knowledge sharing strategies in order to enhance innovation performance. The paper contributes to scholarly debate on the role knowledge sharing plays in enhancing innovation performance. The results may assist managers to facilitate knowledge sharing in commercial banks in order to boost innovation performance.

Key words: Commercial banks, Knowledge sharing, Innovation performance

Influence of Regulatory Capital on Financial Performance of Deposit Taking Microfinance Banks in Kenya

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Abstract

Capital and financial performance are two important variables in the banking sector. They show the ability of banks to achieve better and sustainable benefits and to address systematic shocks if well regulated. Capital regulations are instituted to prevent too much taking of risk by financial institutions and hence avert possible future financial crises which may possess major challenges to them. The Arguments that favor capital regulations on banks extends to deposit taking microfinance banks. Depositors in DTMBF are disadvantaged in comparison to those of

traditional banks as they possess small amount of money and lack success of DTMB puts them off from partaking in the financial system for an indefinite period. Therefore, the study sought to determine the influence of regulatory capital on financial performance of deposit taking microfinance banks in Kenya. The independent variable in this study was regulatory capital as measured by capital adequacy ratio while dependent variable was financial performance measured by return on equity. The study used Panel data regression using ordinary Least Squares (OLS) methods/ design. The target population for the study was all thirteen (13) deposit taking microfinance banks (MFBs) licensed by the central bank of Kenya as 31st December 2017. The study used Secondary data for the 9 deposit taking microfinance banks which was obtained from audited annual published financial statements of the central bank annual supervisory reports. The data collected was converted in excel format for easier arrangements into panels. The data was then analyzed using Descriptive statistics, correlation analysis and panel regression analysis. Statistical software's Evview version 8 was used to estimate the relationship between the study variables. The autocorrelation among the regression model was tested using Durbin-Watson factors. The augmented Dickey Fuller (ADF) unit root test was used with the null hypothesis for acceptance (non-stationarity) or rejection (stationality). The results found out that capital adequacy had a positive influence on return on equity. The study concludes that there was a statistically significant relationship between capital adequacy and financial performance of the deposit taking Microfinance Banks in Kenya. The study recommends that regulations enacted in 2008 for the microfinance banks by the regulator should not only seek to protect the financial systems and depositors, but also to promote poor people to network across the country to access to formal finance associated positively with their financial performance.

Key words: Regulatory Capital, Deposit Taking, Microfinance, Return on Equity, Panel, Central Bank

Green Human Resource Management Practices and Environment Sustainability within Chartered Public Universities in Kenya

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Abstract

This study objective was to establish the effects of Green Human Resource Management (GHRM) Practices on Environment Sustainability among the Chartered Public Universities in Kenya. One of the emerging issue within business communities is the campaign of going green (GG). GHRM is a drive which helps to create green workforce that can understand and appreciate green culture in higher institutions of learning. It is paramount to note that human resource and their systems are the basic foundation of any business. It is a fact that human resource department in an organization is responsible for planning and executing those eco-friendly policies to create a green environment. The paper, therefore, largely focuses upon the various Green Human Resource Practices to be pursued by chartered public universities in Kenya, and, expounds the concept of GHRM. The study discusses the challenges and opportunities universities have when they go green. The study has dependent largely on websites and journals as sources of evidence. Finally, the paper suggests some key HR initiatives for Green universities. The study is, therefore, designed to establish whether chartered public universities in Kenya have embraced the concept of going green, and if so, how the move might have affected its environment. Further, the paper aims at adding GHRM literature since what is available is western. Hence, the researchers' desire to fill in the gap.

Keywords: Going green, environment, sustainability, eco-friendly, GHRM

Multiple Sophistication Strategy: Flying Beyond Competition Amid Global Disruptions and Radicalised Business Players

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Abstract

Today's business environment is characterised by among other attributes; sharp competition, rapid and unpredictable environmental changes, heightened customer expectations and global disruptions for example the imbalance occasioned by the Covid-19. In the current market, it is almost impossible to interact with the same player twice. For instance; the current customer has profound multiple potential suppliers to source from, multiple expectations, multiple triggers, multiple needs and demands and multiple experiences. This also applies to suppliers as well as competitors. The internet and general digital technology have been major accelerants to creating what this paper refers to as a "radicalised player." A radicalised business player will often hold extreme views and approaches from the centre and will never be content with the status quo. Such players will seek not just to alter the prevailing reality but to recreate it a new. This phenomenon has put corporate and business leaders under pressure to manage and maintain the expected high performance under such turbulent circumstances. The paper sought to understand how top performing organisations have navigated the turbulence by adopting what the paper describes as a "multiple sophistication strategy". The paper is anchored on the resource-based view theory which postulates that a strategic resource should inherently be characterised by valuability, rarity, inimitability and not readily substitutable. The paper relied mainly on review of existing theoretical and empirical literature. Different local and international companies that have had a history of outstanding performance above industry average were studied and their outstanding strategies in the period reviewed with the aim of establishing any element of commonality. The paper concluded that the said companies exhibited a common trend in their strategies; that the companies' leadership purposed to go beyond the ordinary. In almost all the scenarios, these companies employ a significant proportion of multiple "sophistication" strategy which provides them with unmatched agility and resilience towards sustained outstanding performance.

Key terms: Competition, Multiple, Radicalisation, sophistication, Strategy

Economic Survival through Responsive Entrepreneurship in the Era of Global Disruption

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Abstract

Global disruptions such as natural disasters, epidemics and financial crisis affect the flow of economic processes and destabilize the economic equilibrium. They also cause unprecedented labour market distortions and may render many business models ineffective. Global disruptions affect every part of the global economy, the Covid-19 pandemic, for example has led to logistical challenges, unavailability of strategic resources, supply chain disconnectedness, severe price and market distortions, government restrictions, consumer pessimism, loss of trust in international

trade among others. In relations to Covid-19 pandemic, Initial forecasts indicates that this might be the most adverse economic crisis since World War II, substantially serious than the 2008 to 2012 global financial crisis. Some industries such as online businesses and healthcare related may have profited from these disruptions. To survive, many existing firms have had to change their products, services, customers or markets. The pandemic has led to closure of businesses, employees working from home and redundancies. This study will discuss both the positive and negative impact of the COVID-19 pandemic on firms by looking at the processes by which firms respond to the pandemic in order sustain and even accelerate growth. Extant literature shows that firms have had to apply responsive entrepreneurship in order to survive. In spite of the adverse effects, COVID-19 brings forth unique business opportunities for entrepreneurs to develop creative responses. In this era of global health crisis, responsive entrepreneurship can offer creative solutions by utilizing the knowledge of entrepreneurs and innovation across multiple sectors in order to solve the current issues facing the society worldwide. A clear strategy and operational resilience is crucial for firms not only to survive, but to thrive, during this pandemic and beyond.

Key words: Economic Survival, Responsive Entrepreneurship, Global Disruption, Crisis, Pandemic, Covid-19

Supply Chain Leagility and Performance of Humanitarian Aid Organizations in Kenya: Efficient, Effective and Quick Response to Disasters

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Abstract

In today's volatile and uncertain humanitarian environment, adopting a purely lean or agile supply chain is not effective. Humanitarian organizations are struggling to obtain the highest possible performance from their supply chains by adopting various supply chain designs. This is upon realization that despite the huge chunks of money pumped into the sector, humanitarian supply chains respond in a sluggish, inefficient and poorly coordinated manner to emergencies. The purpose of this study was to explore the influence of supply chain responsiveness and waste management on performance of humanitarian aid organizations in Kenya. The underpinning theories and model in this study included; Decoupling Point theory; Theory of Constraints and SCOR model. Survey research design was employed for this study. The study entailed a census survey of 330 humanitarian aid organizations carrying out their operations in Kenya. Questionnaires were used to collect primary data. Descriptive statistics and inferential statistics was used for data analysis. The data was presented using a combination of statistical and graphical techniques. Trend analysis was used to spot a pattern on the sub-constructs of performance of humanitarian aid organizations. The study findings revealed that supply chain responsiveness and waste management are positively associated with performance of humanitarian aid organizations. The findings of this study established that most humanitarian organizations had partially implemented supply chain leagility. The findings further showed the essence of the country to be prepared to reduce the effect of disasters. The culture of preparedness was lacking in the country despite increase in disaster resource allocation. The study recommended that in order to achieve a supply chain that is efficient and responsive to the needs of vulnerable people, humanitarian aid organizations should design, implement and

fully adopt supply chain leagility. Humanitarian aid organizations were also recommended to embrace advanced technologies to improve their supply chain leagility.

Keywords: Supply Chain Responsiveness, Waste Management, Supply Chain Leagility, Humanitarian Supply Chain

Influence of Innovativeness on the Performance of Youth-Led Micro and Small Enterprises in Nyanza Region, Kenya

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Abstract

The main aim of this study is to examine the influence of entrepreneurial orientation on performance of youth led micro and small enterprises in Kenya. Specifically, the study sought to establish the influence of, innovativeness on the performance of youth-led enterprises Nyanza region and the moderating effect of entrepreneurial finance on the relationship between entrepreneurial orientation and performance of youth-led MSEs. Youth-led micro and small enterprises have been synonymous to instability, poor performance and low survival rate. This is despite the continued emphasis on these firms as the key economic backbones in provision of employment and enhancing the livelihoods of majority of Kenyans who are the youth. This raises the question of the underlying aspects affecting the performance of these enterprises. The study employed a descriptive research design and targeted a total of 771 registered youth-led micro and small enterprises classified under Jua Kali Artisans in the Nyanza region. Cochran's sampling formula was used where a sample size of 257 respondents was determined. Stratified random sampling was used to pick the respondents. The study revealed that most of the youth-led micro and small enterprises frequently looked for new sources of working materials for their enterprises. Similarly, majority of the youth-led micro and small enterprises always ensured that the available raw materials in their respective enterprises were cheap and in the right quality as required by the customers and this was enabled by frequent research to establish where and how to obtain better but cheaper raw materials. The study concludes that majority of the youth-led micro and small enterprises always ensured that the available raw materials in their respective enterprises were cheap and in the right quality as required by the customers and this was enabled by frequent research to establish where and how to obtain better raw materials.

Keywords: Innovativeness, Entrepreneurial Finance, Micro and Small Enterprise

Relationship between Procurement Audit Practices and Implementation Level of Public Procurement Regulatory Framework in the Devolved Governments in Kenya

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Abstract

Public procurement in most county governments have been criticized and are under investigation for procurement malpractices, corruption cases, ghost projects and massive wastage of public resources due to non-compliance in the procurement processes. Procurement auditing provides system control and checks on the procedural processes, the reliability and accuracy of the financial management data are assessed, checking the adherence and compliance with other regulatory framework, efficiency and economy of management of public resources; supporting good governance. It has been established that majority of county procurement staff have limited knowledge and experience to undertake procurement professional roles to effectively implement procurement procedures as required by the Act and this has dealt a major setback on service delivery. This study aims to fill a major knowledge gap on management practices and implementation for PPR in devolved governments in Kenya by investigating the relationship between Procurement Audit practices and implementation level of public procurement regulatory framework in the devolved governments in Kenya. The study targeted to generate information that would create an understanding of the procurement management practices and implementation in Counties in Kenya. The population targeted was 47 devolved governments in Kenya. The study findings clearly show that for every unit of Procurement Audit practices, Implementation level of Public Procurement Regulatory was increasing with 1.193 in the presence of the moderator. The p-value registered was 0.000 less than 0.05. Which further implied that there was a positive significant relationship between Procurement Audit practices and Implementation level of public procurement regulatory framework in the devolved governments in Kenya. The study concluded that most Procuring entities at the County governments have store facility and relevant store records, but the major challenges identified were updating store records, security of store and failure to conduct regular stock taking.

Keywords: Audit, Procurement, Public, Regulatory

Risk Management Practices and Performance of Commercial Banks in Kenya

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Abstract

There has been an upsurge in Bank failures in Kenya sparking a lot of debate on the existence of sound risk management practices within the banking sector in Kenya. The main objective of this study was to establish the relationship between risk management and the performance of

commercial banks in Kenya. This study is anchored on the balanced scorecard model on holistic organizational performance. The research design for the study was correlational design. The target population was 273 directors of all the boards of operating commercial banks in Kenya, the sample size was obtained using purposive sampling where all the thirty-nine (39) Chief executive officers (CEOs) one from each bank and thirty-nine (39) non-executive directors, one from each bank were involved in the study thereby giving a sample size of seventy-eight (78). Data was collected using questionnaires. Ordinal logistic regression analysis was performed on the data collected using SPSS software and R technique to estimate and provide empirical evidence on the existence of relationship between bank performance and risk management practices. The research hypothesis was tested by determining the significance of the regression coefficients of the estimated models. Based on the findings, the study concludes that there is a significant relationship between risk management practices and performance of commercial banks in Kenya. Given the findings, the study recommends that; commercial banks should invest in risk management systems that are able to detect risky transactions as opposed to the generic methods of Know Your Customers (KYC), that way they will significantly reduce risky transactions like non-performing loans in the wake of a global pandemic.

Keywords: Bank Performance, Balanced Scorecard, Board of Directors, Risk Management

Relational Behaviour and Performance of Manufacturing Firms in Kenya

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Abstract

The main aim of this study was to assess the influence of relational behaviour on the performance of manufacturing firms in Kenya. While the internal and external environmental factors are pushing businesses to undergo tremendous changes, the supply chain management is becoming one of the core areas that organizations need to align for continued performance. The manufacturing sector in Kenya, although it is one of the critical sectors in the country's economy, has been undergoing through turbulent times in the recent past where over 40% of the industry's leading companies have been posting declined revenues and the profit margin. The tussle of relational behaviour as an aspect of supply chain alignment has however not been adequately addressed in the sector. This study therefore seeks to assess the influence of relational behaviour on the performance of manufacturing firms in Kenya. The study also focused on assessing the moderating effect of quality control and certification on the relationship between relational behaviour and performance of manufacturing firms in Kenya. The paper was anchored on partnership theory. Descriptive research design was adopted. The researcher preferred this method because it allows an in-depth study of the subject. The population of the large sized registered members as per the directory is 461. This study employed Cochran's formula to sample 160 large manufacturing firms from the total population. Semi-structured questionnaires were administered to collect qualitative and quantitative data. Secondary data was collected from firm's reports and websites. Quantitative data was analyzed using both descriptive and inferential statistics and with the help of SPSS while qualitative data was analyzed

using content analysis. Multiple regression models were used to show the relationship between the dependent variable and the independent variables. The findings revealed that relational behaviour was one of the key aspect of supply chain alignment that significantly influence the performance of manufacturing firms in Kenya. The quality control and certification were also found to significantly moderate the relation between relational behaviour and performance of manufacturing firms. The study concluded that relational behaviour through interactions among stakeholders, flexible logistics and customer focus was essential in the performance of the manufacturing firms. The paper recommends that the manufacturing firms have the duty of ensuring the customers are given effective feedback while interaction between the stakeholders is enhanced for better relationship and enhanced collaboration.

Keywords: Relational Behaviour, Supply chain Alignment, Firm performance, Manufacturing Firms

A Critical Review of Literature on Product Differentiation Strategy and Brand Loyalty

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Abstract

The concept of product differentiation goes back to the early 20th century when there were hardly any models of differentiated products. Incremental differentiation of products and services is the main variable that helps define the key aspect of value that marketing adds to a product. Extant literature has no consensus on the relationship between differentiation of products and consumer loyalty to brands. This paper aimed at critically reviewing studies available on product differentiation. The study methodology used involved literature review where empirical studies in the field of product differentiation and brand loyalty were examined. The methodology also involved a critical review of relevant theories. A number of theories were discussed in search of a clear relationship between the two concepts. The measures of product differentiation that were used included the product quality, product innovativeness, product design and costs of products. Brand loyalty measures were product repurchase, top of mind product, advocacy metrics, business referral frequencies, extent of behavioural change, and the willingness to pay premium price. The grounding of the study was on the assumption that various measures of product differentiation would have a substantial effect on the brand loyalty. A conceptual framework for measuring product differentiation and to give more insight into what product differentiation really is was developed. The empirical review indicated that differentiated products are key to an organization's competitive advantage and to customers' satisfaction leading to customer loyalty. Theoretical review led to a conclusion that there is a strong relationship between product differentiation and brand loyalty. This critical review of empirical literature highlighted some gray areas hence future scholars should review critical issues like product differentiation and customer satisfaction, brand awareness and performance; and perceived service quality and reputation.

Keywords: Product differentiation, Brand loyalty, Switching behaviour, Brand equity

Preferences and Reservations Groups and Performance of State Corporations in Kenya

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Abstract

This paper seeks to assess the effect of preferences and reservations groups on performance of state corporations in Kenya. State corporations have been characterized by declined performance which mainly has been tied to inappropriate adherence to the reservations and preferences groups as set in the PPAD Act. However, this is yet to be proved in a local context, hence the subject of the study. The paper also seeks to assess the moderating effect of enforcement of the public procurement act on the relationship between preferences and reservations and performance of state corporations in Kenya. The paper was informed by the theory of public value. A descriptive research design was used which was anchored on positivist philosophy. The target population of this study included all 187 registered state corporations in Kenya. The sampling frame comprised of heads of finance and heads of procurement function in all 187 state Corporations in Kenya. The study used a census where all the 187 state corporations were surveyed. To identify the unit of observation, the study purposively picked the head of finance and the head of procurement function in all 187 state corporations in Kenya. This formed 374 respondents. Primary data was the main data for the study which was collected using questionnaires. The questionnaire involved both semi structured and structured questions. The collected data was prepared and analyzed with the aid of the Statistical Package for Social Sciences (SPSS) Version 26. Descriptive and inferential statistics were used to analyse. The analyzed data was presented in form of tables, graphs, histograms and Pie charts. The study established that preferences and reservations groups through pre-qualification of firms, reporting on contracts awarded and capacity building significantly and positively influenced the performance of the state corporations. The findings further revealed that the enforcement of the public procurement act had a significant positive moderating effect on the relationship between preferences and reservations Groups and the performance of state corporations in Kenya. The study concluded that through well-embraced pre-qualification of firms under the reservations and preferences groups and reporting the awarded tenders to these firms, the state corporations enhance effective operation and save the costs and time thus enhancing performance. It is therefore recommended that the state corporations should adopt effective and well-articulated strategies of ensuring the special groups under the preferences and reservations are catered for during the tendering processes. This serves to enhance performance and effectiveness of the state corporations.

Keywords: Public procurement act, Preferences and Reservations Groups, State corporations, Firm Performance

Influence of Top Management Support on Procurement Regulatory Compliance Level in Public Universities in Kenya

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Abstract

Public procurement has always been a big part of the developing countries economy accounting for 30-60% of their GDPs. Procurement departments in Universities are often involved in the procurement of goods and services such as purchase of photocopiers, computers, stationary, uniforms and university buses among others. This research focused on the influence of top management support on procurement regulatory compliance level in public universities in Kenya. The researcher applied the census sampling technique to select the sample size of 31 public universities and 333 respondents. The study was informed by the Principal-Agent Theory. The study used Ex-post facto design, the research design was chosen because the study aimed at investigating the causal relationship on variables, which cannot be controlled by the researcher. Primary data was collected through the use of questionnaires issued to the procurement staffs in the sampled universities. This study undertook a census because the sample size was small. Data collected from the field was coded and cleaned to remove outliers or missing values and categorized manually according to the questionnaire items using frequency distribution tables and percentages. The researcher used both descriptive and inferential statistics with the help of statistical package of Social Science (SPSS) version 24 to analyze the data. Top management was found to be satisfactory significant in contribution as a factor to procurement regulatory compliance level with a p value 0.000 which was less than the conventional probability of 0.05 at a testing at 95% level of significance. Motivation and rewards to staff can be used as a strategy to combat the personal interest that arise in preference to fulfill their duties and assignments. Management acts as the framework to the functionality of the procurement department and activities thereof. Deficient checking and assessment of the functioning in an organization is connected to the non-attendance to a controllable situation. The existing hindrances from the top management for the staffs to engage and enhance adoption and application of total quality management in procurement should be eradicated. Disciplinary steps should be taken on staff with unbecoming behaviors in effort to uphold ethical practice. Top management making efforts on motivating the staff individually leads to an exemplary performance. There should be freedom of staff to discharge their duties as assigned to them by the top management.

Key words: top management support, procurement compliance level, procurement regulatory, top management and procurement compliance.

Influence of Customer Relationship Management on Performance of Manufacturing Firms in Kenya

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Abstract

The study sought to determine the influence of customer relationship management on performance of manufacturing firms in Kenya. This study employed descriptive research design. The targeted population of this study is comprised of 499 manufacturing companies which are all located in Nairobi and its environs. In order to come up with a representative sample, stratified random sampling method was used since the population is heterogeneous. The stratified technique ensured that each sector in the target population has an equal chance of being selected. There were 217 respondents sampled from the 499 manufacturing firms out of 217,180 respondents returned the questionnaires for analysis. The study adopted a descriptive survey design. Data was collected using self-administered questionnaires which were tested for validity and reliability using 10% of the total sample respondents. Quantitative data was analyzed using both descriptive and inferential statistics and with the help of SPSS version 23 while qualitative data was analyzed descriptively. Linear and multiple regression models were used to show the relationship between the dependent variable and the independent variables. The information was presented using tables, charts, frequencies, percentages and graphs. The study established that there exists a positive influence of customer relations management on performance management of manufacturing firms in Kenya at 5% level of significant ($\beta=0.595$, $P<0.05$). This indicates that as customer relationship management increases to certain level then performance of manufacturing firms in Kenya also increases significantly and vice-versa. The study has proved that indeed customer relationship management as a strategic alliance influences performance in these organizations. In addition, the study is of benefit to the government of Kenya who should create awareness of their policies through training of the key stakeholders for this organizations since the majority of the respondents indicated that the government policies and strategies are ineffective. Customer relationship management had significant effect on organization performance and this requires that to improve on quality production and lead time, manufacturing firms must also improve their customer relationship management. Since the quality of the products has not significantly improved for the last 5 years, more strategies must be put in place to incorporate technology which will aid to improve the quality and also maintain required lead time in these organizations. Other researches and scholars may want to build on this study and explore other areas of interest that were not covered in this work.

Keywords: customer relationship management, performance and manufacturing firms

Liquidity and Adoption of Public Private Partnerships in Kenyan Public Universities

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Abstract

Traditionally the role of infrastructure provision was solely undertaken by the government. However, over time most governments especially in the developing world have continued to experience increasing budget deficits in meeting their infrastructure needs. Such increasing budget deficits lead to reduced allocation to public entities such as public universities. In order to bridge this funding gap, private sector players are brought on board through public private partnerships. Kenyan public universities have in the recent past experienced difficulties in meeting their short-term obligations as they fall due. This is partly attributable to reduced capitation in comparison to the increasing costs of running the university. The study aimed at assessing how the need for liquidity influences adoption of public private partnerships in Kenyan public universities. The specific objectives of this study were to evaluate the extent to which need for timely payment of short term external and internal liabilities influence the adoption of public private partnerships in Kenyan public universities. The study employed a descriptive research design with a target population of 223 comprising of purposively selected management representatives from nine public universities. The sample size was 143. Data was collected using a structured questionnaire. The response rate attained was 86%. Statistical Package for Social Sciences (SPSS) was employed in data analysis. The findings indicated that need for timely payment of short term internal and external liabilities had a statistically significant influence on adoption of public private partnerships. Based on the study findings it was concluded that need for timely payment of short term obligations had a significant positive influence on the level of adoption of public private partnerships in Kenyan public universities. It is therefore recommended that Kenyan public universities should make use of public private partnerships in order to maintain a sound liquidity level since it ensures regular small periodic cash out flows as opposed to heavy lump sum cash outflow that is characteristic of traditional funding. Since liquidity is just one of the financial drivers of public private partnerships, it is suggested that other studies could be done on the other drivers.

Keywords: Liquidity, Adoption, Equity, Debt and Capital

Re-Thinking Public Sector Budget Formulation Reforms in the Three East African Countries towards the Participatory Approach of Budgeting

Jackson Barngetuny

Abstract

This paper discusses public budgeting challenges in East African Countries (EAC) of Kenya, Uganda, and Tanzania. EAC, with myriad challenges and suggest general budget approaches to improve transparency and fiscal health of these countries. Like many other developing countries in Africa, EAC practices traditional incremental (line) item budgeting. The study relied on qualitative multi-case research methods and textual analysis; with a sample of 84 employees involved in Public Budgeting, a qualitative survey was administered to those interested in public budget formulation from the three EAC countries. The following research questions guided the interview; “What are the bottlenecks for participatory Budgeting in EAC? It can be concluded that EAC practices a Traditional (line-item) budget, and it inhibits external stakeholder participation. There is also an attempt to introduce Program based Budgeting, there is an unreliable revenue stream, There are always limited resources, decisions rotate around funding, policy & program projects, there are severe financial constraints, there are poor prioritizations of programs and projects during Budgeting and sometimes figure are inaccurate: Other findings indicate application of the consensus-based model of participation in Kenya, this model is applied in small scale in rural areas but not at a national level, in Uganda, participatory Budgeting is no longer open to interested external stakeholders, but public sector officials invite individual participants to participate. Tanzania has adopted a traditional participatory approach commonly referred to as ‘TUKI’ (Timu ya Uhamasishi ya Kijiji), a Swahili word for an established committee for conducting the budgeting process at the village level). It is recommended that an integrated approach of participatory Budgeting is ideal for EAC, where all the stakeholders are participants in project identification decisions and monitoring implementation of the same and reap in a big way transparent public budget, public trust, and co-ownership by the citizens.

Keywords: East African Countries, (EAC), Public Budget Formulation, Incremental (line item) budgeting, and Participatory budgeting

Influence of Performance Contracting Strategies on Examination Performance in Technical Training Institutes in Eastern Region, Kenya

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Abstract

In Kenya the performance in national examinations in Technical Training Institutes has been generally poor. This has been the case for both Business and technical courses, which are all assessed by the Kenya National Examinations Council (KNEC). Performance Contracting (PC) was introduced in all tertiary Institutions by the state to boost performance. This study was

carried out on the influence of Performance contracting strategies on examination performance in Technical Training Institutes in Eastern region, Kenya. The purpose of this study was to establish how the introduction of Performance Contracting in Technical Institutions has impacted on external examinations performance. A descriptive survey design was used. A sample of three institutions was selected using simple random sampling method, out of which a sample of two hundred and two respondents was selected using a combination of simple, systematic and stratified random sampling method. The data was analyzed using SPSS (Statistical Package for Social Sciences). The study found out that Performance Contracting was effectively implemented in these TTIs. The study established that the PC curriculum implementation strategies implemented by these Institutions had a significant influence on examination performance. It was however established that Compliance with statutory obligations, timely completion of long term projects and the staff work environment, as PC strategies had no significant influence on examination performance. The study recommended that the Technical Training Institutions should not spend a lot of efforts and resources on these strategies, but instead strengthen and continuously improve on curriculum implementation strategies so as to improve on academic productivity.

Key Words: Performance Contracting, Examination Performance, Curriculum Implementation Strategies, Statutory Obligations, Staff Work Environment, Long Term Projects

Strategic Planning as a Modern Management Tool for Performance of Telecommunication Companies in Rwanda

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Abstract

This research sought to examine the strategic planning practice as tool for performance in the telecommunication companies. This study utilized both qualitative and quantitative data as well as applied a descriptive survey design. The study population included the 42 Top and middle level, managers of mobile phone operator companies in Rwanda. The data collection instruments were pre-tested using the Cronbach's alpha and factor analysis of dimensions reductions to determine the validity and reliability of the tests. The data collected was analyzed and presented using tables, by help of the SPSS statistical Package for Social Science. The results on, reliability test, descriptive statistics, demographic information of respondents, correlation analysis, normality test, heteroskedasticity test, factor analysis and regression results were established on all the variables of strategic planning, plus the intervening variable of the legal and regulatory framework. Notably, the correlation results revealed that Strategic Planning had a positive and significant. The results revealed that Strategic Planning has a positive and significant moderate relationship with Performance of Telecommunication industry. The results on linearity test for strategic planning and performance of the telecommunication industry since the level of linear association was found to be 0.953 which was also positive and statistically significant. The results showed a positive and significant association between Strategic Planning and Performance of Telecommunication industry ($\beta = 0.953$, $p < .05$). Therefore, the hypothesis was rejected. Thus, as the Performance of Telecommunication industry increased, the strategic planning too

increased. It can therefore be concluded that, the companies benefited tremendously when the strategic planning was taken into account for the efficient performance of the telecommunication industry in Rwanda.

Key Words: Strategic Planning, Modern Tool, Performance, Practice, Telecommunication Industry in Rwanda

smallholders' Choice of Avocado Marketing Channels in Murang'a County, Kenya

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Abstract

Avocado fruit continues to experience increased demand at both the local and export markets. However, smallholder avocado farmers have not benefited from this expansion in demand. This is attributed to use of non-performing marketing channels that does not link them to the high value markets. The purpose of this paper is to investigate the determinants of choice of avocado marketing channels in Murang'a County. Stratified sampling procedure was used to obtain a sample of 384 smallholder avocado farmers from the seven key producing areas of the County. Descriptive statistics and multinomial logit regression model were used for analysis, with marketing through farmer organizations being the reference marketing channel. Results of Multinomial regression analysis showed that the probability of choosing brokers was significantly affected by farm size, household head's gender, education level of household, time taken to collect avocado, access to extension, farm income and intercropping avocado with coffee. Likewise, probability of farmers' decision on direct sales to market was influenced by off farm income, dairy cattle kept by the farmer, intercropping avocado with coffee, growing organic avocado, travelling costs to buyer locations, farmer organization membership fees and subscriptions. Trainings on avocado farming methods, time taken to collect avocados, delayed buying of avocados and off-farm income were among the factors that significantly affected the probability of choosing to market through local traders. Farm gate price reduced the likelihood of choosing brokers and direct sales. Enhancing adoption of organic avocado production technology would increase the likelihood of smallholders' choice of export markets.

Keywords: smallholders, marketing channels, multinomial logit model

Influence of Logistics Information System Management on Performance of Food and Beverage Manufacturing Firms in Kenya

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Abstract

The purpose of this paper is to assess the influence of logistics information systems management on the performance of food and beverage manufacturing firms in Kenya. Manufacturing companies in Kenya have been experiencing problems in the performance of their production and operations management. In view of the foregoing, it is relevant to investigate how Kenyan organizations could outsource their logistics requirements through logistics information systems management in the most efficient manner with regard to customer service and cost. In Kenya, studies have reported mixed findings with regard to logistics information systems management and its influence on firm performance among food and beverage manufacturing firms, while published literature on logistics information systems management and firm performance lacks in the country. It is against this backdrop that the present study sets out to investigate the influence of logistics information systems management on performance of food and beverage manufacturing firms in Kenya. This research study adopted a descriptive research design approach. Data was collected using self-administered questionnaires. The data collected was analyzed by use of descriptive and inferential statistics. Multiple regression model was used to show the relationship between the dependent variable and the independent variables. The findings from the study revealed that logistics information systems management had a significant influence on the performance of food and beverage processing firms. Policy and governance framework was also found to significantly moderate the relationship between logistics information systems management and performance of food and beverage processing firms. The study concluded that logistics information system management was critical in enhancing the performance of food and beverage processing firms in Kenya. The study recommends that the management of food and beverage processing firms ought to embrace enhanced use of logistics information systems to enhance performance.

Keywords: Logistics Information System Management, Fourth Party Logistics, Food and Beverage Manufacturing Firms, Firm Performance

Relational Behavior and Performance of Manufacturing Firms in Kenya

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Abstract

The main aim of this study was to assess the influence of relational behaviour on the performance of manufacturing firms in Kenya. While the internal and external environmental factors are pushing businesses to undergo tremendous changes, the supply chain management is becoming

one of the core areas that organizations need to align for continued performance. The manufacturing sector in Kenya, although it is one of the critical sectors in the country's economy, has been undergoing through turbulent times in the recent past where over 40% of the industry's leading companies have been posting declined revenues and the profit margin. The tussle of relational behaviour as an aspect of supply chain alignment has however not been adequately addressed in the sector. This study therefore seeks to assess the influence of relational behaviour on the performance of manufacturing firms in Kenya. The study also focused on assessing the moderating effect of quality control and certification on the relationship between relational behaviour and performance of manufacturing firms in Kenya. The paper was anchored on partnership theory. Descriptive research design was adopted. The researcher preferred this method because it allows an in-depth study of the subject. The population of the large sized registered members as per the directory is 461. This study employed Cochran's formula to sample 160 large manufacturing firms from the total population. Semi-structured questionnaires were administered to collect qualitative and quantitative data. Secondary data was collected from firm's reports and websites. Quantitative data was analysed using both descriptive and inferential statistics and with the help of SPSS while qualitative data was analysed using content analysis. Multiple regression models were used to show the relationship between the dependent variable and the independent variables. The findings revealed that relational behaviour was one of the key aspect of supply chain alignment that significantly influence the performance of manufacturing firms in Kenya. The quality control and certification were also found to significantly moderate the relation between relational behaviour and performance of manufacturing firms. The study concluded that relational behaviour through interactions among stakeholders, flexible logistics and customer focus was essential in the performance of the manufacturing firms. The paper recommends that the manufacturing firms have the duty of ensuring the customers are given effective feedback while interaction between the stakeholders is enhanced for better relationship and enhanced collaboration.

Keywords: Relational Behaviour, Supply chain Alignment, Firm performance, Manufacturing Firms

Re-Thinking Public Sector Budget Formulation Reforms in the Three East African Countries towards the Participatory Approach of Budgeting

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This paper discusses public budgeting challenges in East African Countries (EAC) of Kenya, Uganda, and Tanzania. EAC, with myriad challenges and suggest general budget approaches to improve transparency and fiscal health of these countries. Like many other developing countries in Africa, EAC practices traditional incremental (line) item budgeting. The study relied on qualitative multi-case research methods and textual analysis; with a sample of 84 employees involved in Public Budgeting, a qualitative survey was administered to those interested in public budget formulation from the three EAC countries. The following research questions guided the interview; "What are the bottlenecks for participatory Budgeting in EAC? It can be concluded that EAC practices a Traditional (line-item) budget, and it inhibits external stakeholder participation. There is also an attempt to introduce Program based Budgeting, there is an unreliable revenue stream, There are always limited resources, decisions rotate around funding,

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Keywords: East African Countries, (EAC), Public Budget Formulation, Incremental (line item) budgeting, and Participatory budgeting

Relational Behaviour and Performance of Manufacturing Firms in Kenya

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Abstract

The main aim of this study was to assess the influence of relational behaviour on the performance of manufacturing firms in Kenya. While the internal and external environmental factors are pushing businesses to undergo tremendous changes, the supply chain management is becoming one of the core areas that organizations need to align for continued performance. The manufacturing sector in Kenya, although it is one of the critical sectors in the country's economy, has been undergoing through turbulent times in the recent past where over 40% of the industry's leading companies have been posting declined revenues and the profit margin. The tussle of relational behaviour as an aspect of supply chain alignment has however not been adequately addressed in the sector. This study therefore seeks to assess the influence of rational behaviour on the performance of manufacturing firms in Kenya. The study also focused on assessing the moderating effect of quality control and certification on the relationship between relational behaviour and performance of manufacturing firms in Kenya. The paper was anchored on partnership theory. Descriptive research design was adopted. The researcher preferred this method because it allows an in-depth study of the subject. The population of the large sized registered members as per the directory is 461. This study employed Cochran's formula to sample 160 large manufacturing firms from the total population. Semi-structured questionnaires were administered to collect qualitative and quantitative data. secondary data was collected from firm's reports and websites. Quantitative data was analysed using both descriptive and inferential statistics and with the help of SPSS while qualitative data was analysed using content analysis. Multiple regression models were used to show the relationship between the dependent variable and the independent variables. The findings revealed that relational behaviour was one of the key aspect of supply chain alignment that significantly influence the

performance of manufacturing firms in Kenya. The quality control and certification were also found to significantly moderate the relation between relational behaviour and performance of manufacturing firms. The study concluded that relational behaviour through interactions among stakeholders, flexible logistics and customer focus was essential in the performance of the manufacturing firms. The paper recommends that the manufacturing firms have the duty of ensuring the customers are given effective feedback while interaction between the stakeholders is enhanced for better relationship and enhanced collaboration.

Keywords: Relational Behaviour, Supply chain Alignment, Firm performance, Manufacturing Firms

Organisational Culture and Public Service Delivery of Huduma Centres in Kenya

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Abstract

In Kenya, Huduma Centres was established as a result of inefficient public service delivery, which led to corruption and was both time consuming and costly. The aim of this study was to see if Huduma centers are effective at reducing corruption, petty bureaucracy, and inefficiency in government service delivery. The study looked at the impact of organizational culture on Huduma centers' public service delivery, as well as the mediating effect of government policies on public service delivery. The research was based on the concept of competing values framework. The study employed a descriptive research design. The target population was branch managers of the 52 Huduma centres, 1456 supervisors and 1456 public customers from the government ministries offering public services in Huduma centre branches. Multi-stage probability sampling was used. Both primary and secondary data was used. Primary data used self-administered questionnaires and Secondary data from reviewing relevant literature and government statistics. Pilot study measured validity and Cronbach's alpha measured reliability. Inferential data analysis was used and it involved correlation coefficient (r) and linear regression analysis, which looked for the strength and degree of relationship between the variables. The findings revealed a positive significant low linear relationship between public service delivery and organizational culture, with government policies serving as a mediating variable. Therefore, organization structure has a significant influence on public service delivery in Huduma centres. Based on the findings, the study recommends improvement and sustainability of organizational culture in Huduma centres as well as organizational culture being done in a way that will ensure there is accountability and the rule of law is respected. Public organisations are urged to use guidelines of human resource strategy for the public service, to avoid every ministry, from using its own regulations and standards and learn to cope with Covid 19 pandemic. More study into human resource practices in the public sector is recommended.

Key words: Organizational culture, Competing values framework, Servqual model, New public management and Public service delivery

Employee Training and Public Service Delivery of Huduma Centres in Kenya

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Abstract

This study set to investigate whether Huduma centres are a success in eliminating corruption, petty bureaucracy and inefficiency in public service delivery. The study focused on the influence of employee training on public service delivery of Huduma centres in Kenya and the mediating variable of government policies on public service delivery. The study was anchored on Human capital theory. Descriptive research design was used. The target population was branch managers of the 52 Huduma centres, 1456 supervisors and 1456 public customers from the government ministries offering public services in huduma centre branches. Multi-stage probability sampling was used. Both primary and secondary data was used. Primary data used self-administered questionnaires and Secondary data from reviewing relevant literature and government statistics. Pilot study measured validity and Cronbach's alpha measured reliability. Inferential data analysis was used and it involved correlation coefficient (r) and linear regression analysis, which looked for the strength and degree of relationship between the variables. Results showed a positive significant low linear relationship between public service delivery and employee training and the mediating variable of government policies. Therefore, strategic employee training has a significant influence on public service delivery in Huduma centres. Based on the findings, the study recommends proper implementation and use of employee training in Huduma centres in order to increase the efficiency of public service delivery. In addition, employee training should be done in such a way to avoid duplication and overlapping of roles. Public organisations are urged to use guidelines of human resource strategy for the public service, to avoid every ministry, from using its own regulations and standards. Further research is recommended on more human resource practices in the public service.

Key Words: Employee training, human capital theory, Servqual model, New public management and Public service delivery

Effect of Information and Communication Technology on Procurement Performance in Energy Sector State Corporations in Kenya

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Abstract

Nowadays, there is increasing emphasis on ICT utilization in procurement for enhancing transactional activities with the aim of gaining operational efficiency. With the use of ICT, these activities have been simplified and speeded up greatly. ICT has been embraced by various governments to improve the quality of public service, increase access to information by the public and energize more participation in civic affairs. The general objective of this study was to examine the effect of ICT on procurement performance in the energy sector state corporations in Kenya. The study intended to determine the effects of communication technology, application

soft-wares, information technology, electronic procurement policy and electronic procurement technical support staff on procurement performance in the energy sector state corporations in Kenya. The study adopted an exploratory approach using descriptive survey design and correlational design. A sample of 211 respondents was selected from a target population of 385. The study generated both qualitative and quantitative data. Qualitative data were analysed using content analysis while quantitative data was analysed with the help of Statistical Package for Social Sciences (SPSS) version 21. Multiple regression was used to test whether communication technology, application software, information technology, electronic procurement policy and electronic technical support staff have any effect on procurement performance. The study findings indicated that communication technology, application software, information technology, electronic procurement policy and electronic procurement technical support staff contribute positively to procurement performance. It was therefore concluded that there is a positive significant relationship between ICT and procurement performance in the energy sector state corporations in Kenya. The findings of the study indicate that ICT is a significant area that organizations should consider in their bid to improve procurement performance.

Keywords: Communication Technology, Application Software, Information Technology, Electronic Procurement Policy, Electronic procurement technical support Staff & Procurement Performance.

Influence of Entrepreneurial Management on the Growth of Micro and Small Furniture Manufacturing Enterprises in Kenya

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Abstract

Micro and Small Enterprises are an important segment of Kenya's economy. They contribute 70% to the GDP and over 80% of employment opportunities. Therefore, the promotion of MSEs in the informal sector is a viable approach to development. However, reports indicate that the higher exposure to risk for MSEs leads to stagnant growth and failure. Entrepreneurial management has been fronted as a key determinant for firm growth and profitability. Therefore, this study sought to establish the influence of strategic orientation, resource orientation, reward philosophy and entrepreneurial culture on growth of micro and small furniture manufacturing enterprises in Kenya. To achieve this objective the study was guided by contingency and resource-based view theories, Schumpeter's theory of innovation amongst others. The study adopted mixed method research design. The target population was 10,345 owner/ managers of furniture enterprises in Nairobi. A sample of 393 owner/ managers of MSEs in furniture businesses were selected using stratified random sampling. The study used correlation analysis to establish the degree of association between independent variables and dependent variable. Multiple linear regression model was used to establish the relationships between dependent variable and independent variables. The study established that entrepreneurial management, strategic orientation, resource orientation, reward philosophy and entrepreneurial culture influence growth of furniture manufacturing enterprises in Kenya. Key recommendations are that entrepreneurs be given credit to realize growth of their businesses. Policies on training, research and development be implemented to help entrepreneurs innovate and be successful in their businesses.

Keywords: Credit, Business, Entrepreneurial, Management, Policy

Influence of Strategic Orientation on the Growth of Micro and Small Furniture Manufacturing Enterprises in Kenya

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Abstract

MSEs are an important segment of our economy. They contribute about 70% to Kenya's GDP and over 80% of employment. Promotion of MSEs in the informal sector is viewed as a viable approach to development. However, reports indicate that MSEs are ranked highest to risk exposure related to management. The higher exposure to risk for the MSEs leads to high collapse rate that leads to loss of job and hence low economic development. Lack of entrepreneurial management was ranked highest among the risks by businesses in Kenya. Entrepreneurial management has been fronted as a key determinant for a firm's growth and profitability.

Therefore, this study sought to establish the influence of strategic orientation on growth of MSE in furniture manufacturing industry in Kenya. To achieve the objectives of this study, the study was guided by Contingency Theory and Schumpeter's Theory of Innovation. The research approach adopted in this study was the mixed method. The target population of study was the 10,345 owners/manager of furniture manufacturing MSEs in Nairobi. The study established that strategic orientation influences growth and its one of the elements of entrepreneurial management that can act as remedy to counter stagnation and decline of micro and small furniture manufacturing enterprises in Kenya.

Factors Determining adoption of block chain in the insurance industry: A Case of Kenya

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Abstract

Blockchain is receiving increasing attention from academy and industry, since it is considered a breakthrough technology that could bring huge benefits to many different sectors. In 2017, Gartner positioned blockchain close to the peak of inflated expectations, acknowledging the enthusiasm for this technology. In this scenario, the risk to adopt it in the wake of enthusiasm, without objectively judging its actual added value is rather high. Insurance is one the sectors that, among others, started to carefully investigate the possibilities of blockchain. For this specific sector, however, the hype cycle shows that the technology is still in the innovation trigger phase, meaning that the spectrum of possible applications has not been fully explored yet. Insurers, as with many other companies not necessarily active only in the financial sector, are currently requested to make a hard decision, that is, whether to adopt blockchain or not, and they will only know if they were right down the years. This study seeks to establish the factors which determine successful adoption of block chain in the insurance industry. The study is descriptive in nature, with both qualitative and quantitative data. Stratified random sampling technique was

used to select 16 companies out of the 52 insurance companies registered in Kenya, based on their domain of operation. The study identified several factors, which are the major determinants of the block chain adoption. They were categorized into four domains. Motivational aspect, internal barriers, External barriers and Ecosystem barriers. Out of this research, it came out clearly that there is need for a framework on block chain adoption, putting into consideration the factors identified as the elements of the framework.

Key words: Block chain, Insurance industry, block chain adoption, determinants, framework

Breadth of Strategic Performance Measurement System and Performance of Medium Sized Service Firms in Kenya

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Abstract

Strategic performance measurement systems (SPMS) are essential management tools for generating information that stimulate learning and drives desired organizational adaptations. However, the effectiveness of any performance measurement system is partly dependent on its design, organizational structure, environment, technology and firm strategy. The study adopted a descriptive research design to investigate the effects of the breadth of strategic performance measurement systems on performance of medium sized service firms in Kenya. The target population of this study was 2,039 medium sized service firms registered by Nairobi City County, Kenya with a sample size of 323 firms selected by stratified random sampling design. Standardized questionnaire was used to collect primary data from the chief executive officers of the sampled firms. The study established that the breadth of strategic performance measurement system is a statistically significant positive predictor of performance of medium sized service firms in Kenya. The study also showed that even though both financial and non-financial measures were used, financial measures were the most frequently used indicators. Nearly half (45%) of the firms were not measuring learning and growth perspectives and one-third (31%) of the firms were not measuring customer perspective indicators. Hence, strategic performance measurement systems mostly used by medium sized service firms in Kenya do not have adequate breadth and are not comprehensive enough to elicit crucial strategic outcomes. The firms focus more on measuring short-term objectives (profitability and internal efficiency) with little attention on strategic goals (such as customer relations, learning and growth). The study recommends expansion of the systems to include more non-financial measures such as customer relations and learning and growth indicators.

Keywords: Breadth, Strategic Performance Measurement System, Performance, Medium sized Firms Service Firms

Entrepreneurial Competencies and Performance of Dairy Cooperatives in Machakos County

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Abstract

Sustainable development of agriculture in general and dairy sub sector in particular requires development of entrepreneurial competencies of farmers and dairy cooperatives. By developing entrepreneurial competencies, dairy cooperatives are expected to work in a strategic manner and develop sustainable competitive advantages in order to compete successfully. The objective of the study was to establish entrepreneurial competencies and performance of dairy cooperatives in Machakos County, Kenya. Specifically, to establish the extent to which managerial competencies influence performance of dairy cooperatives in Machakos County, Kenya; to determine the extent to which entrepreneurial traits influence performance of dairy cooperatives in Machakos County, Kenya; and to assess the effects of technical skills on performance of dairy cooperatives in Machakos County, Kenya. The study was descriptive. The study was a census of the 15 dairy cooperatives registered under the Lower Eastern Dairy Cooperative Association in Machakos County. The unit of analysis was the cooperatives while the units of observations were the board members of the cooperatives. A standard questionnaire was used to collect primary data from the board members of the cooperatives. Data analysis included frequencies, percentages, and t- tests. The data was analysed by use of computer statistical packages and data presented in tables and figures. Based on the first study objective, study concludes that there was lack of sufficient evidence to show that managerial competencies have an effect on performance of dairy cooperatives in Machakos County. Based on the second study objective, the study concludes that there is adequate evidence to show that entrepreneurial traits have positive effects on performance of dairy cooperatives in Machakos County. Based on the third study objective, the study concludes that there is adequate evidence to show that technical skills have positive effects on performance of dairy cooperatives in Machakos County. The study recommends development, adoption and full implementation of business and strategic plans for the cooperatives for them to attain sustainable competitiveness and growth. The study also recommends data-based product development and diversification. Further training would be critical in building capacity for creativity, risk taking, situational analysis and opportunity identification. Moreover, the study recommends training to enhance employees' capacity and effectiveness in financial management procurement; production; and marketing. Particularly, loss of revenue due to spoilage of milk can be controlled by training on best processing and quality control methods while training on marketing, would be critical in enhancing product penetration, reducing customer complaints and stimulating positive growth. Finally, further investigations should be conducted to widening the scope of the study to compare Machakos to other parts of the Country and also to identify reasons for high labour turnover and poor public relations between the cooperatives and communities surrounding them.

Keywords: Entrepreneurial Competency, Performance

SMEs' Supply Chain Resilience Reactive Strategies for Sustainable Food Supply during Pandemic Situations: Lessons for Kenya

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Abstract

The capacity of Small and Medium Enterprises (SMEs) in the food sector (FSMEs) to nurture resilience against a pandemic such as the COVID-19 is critical for sustainable food security in Kenya. However, there is limited supply chain resilience literature in Kenya to guide SMEs in the food sector in overcoming disruptions caused by a pandemic. This study therefore intended to provide supply chain resilience literature for reference by food SMEs. Further, the study sought to provide a framework for supply chain resilience reactive strategies (SCRRS) for sustainable food supply during pandemic such as COVID-19. The study was a desktop review and particular attention was given to the literature on resilience in other types of supply chain in the context of food settings in Kenya. The factors were monitored or controlled and those which contribute to FSME resiliency were flagged. From the existing literature it was revealed that the duo of social innovations and business strategy innovations in systems are needed by FSMEs to react to a pandemic to ensure sustainable food supply, and the strategies of each duo are explained in depth. Similarly, the study provides a better understanding of and guidance on reactive strategies for supply chain resiliency as options for FSMEs in dealing with pandemics such as COVID-19. The study concludes that social innovations and business strategy innovations in systems are effective SCRRS and therefore FSMEs should contextualize and adopt them in navigating through pandemic situations to ensure food security.

Key words: SMEs, reactive strategies, sustainable food supply, pandemic situations, Kenya

Competitive Marketing Competencies of Dairy Cooperatives in Machakos County, Kenya

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Abstract

The study explored competitive marketing competencies of Dairy Cooperatives in Machakos County, Kenya. Data was collected through face to face interviews with an interview guide being used as the primary tool for data collection. A census of all the 15 Dairy Cooperatives registered by Lower Eastern Dairy Cooperatives Alliance (LEDCA) was conducted. The unit of observation was the cooperative board and the unit of analysis, the cooperatives. The analysis involved categorization of the responses into common themes. Firstly, the study concludes for low levels of customer perspective marketing competencies. Secondly, the study concludes for low competencies in competitive marketing. Thirdly, the study concludes for inadequacies in the pricing competencies among the cooperatives. Fourthly, the study concludes for inadequacies in the promotion competencies. Finally, the study concludes that the current distribution

competency demonstrated by the cooperatives match the current distribution needs. The current sales demand is well served with the distribution systems in place. The cooperatives are relatively small with most distributions being in small quantities and by use of motorbikes. Poor road conditions present the main challenge but mainly during wet seasons. A factor which does not persist for a long period. For practice, the study recommends targeted regular market surveys to create an understanding of the customer behavior for better niche or differentiated marketing. Secondly the study recommends adoption of marketing strategies that aims at exploiting the known competitors' weakness and overcoming of competitors' strength. Thirdly, the study recommends an adoption of an optimal marketing mix. Further, adoption of best human resource management practices such as competitive recruitment, structured inductions and trainings of personnel, clear separation of roles as well as stable remunerations should be employed to increase staff capability and morale. The study also recommends explicit planning and budgeting for product promotion.

Keywords: Competitiveness, Marketing, Competencies.

Influence of Trade credit on the Growth of Small and Medium Size Manufacturing Enterprises in Rwanda

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Abstract

The purpose of this study was to analyze the influence of trade credit on the growth of manufacturing SMEs in Rwanda. To achieve the objective, the study used a mixed research approach involving both qualitative and quantitative methods. The target population of this study consisted of all the 868 small and medium manufacturing enterprises registered with Rwanda Development Board from which a sample of 273 firms was taken by way of stratified random sampling technique. Close-ended questionnaires were used in data collection. The data collected was analyzed using Statistical Package for Social Science 22 to generate descriptive statistics including percentages, frequency tables and mean scores. Multiple regression analysis was used to explore the relationship between Trade credit finance structure and the growth of small and medium size manufacturing enterprises in Rwanda. R^2 was deployed to measure the extent of the goodness fit of the regression model. The findings from the study show beta values of ($\beta=0.082$, $p=0.047$) for trade credit finance. Hence, trade credit influences the growth of small and medium manufacturing enterprise in Rwanda. Among recommendations, the management of the SMEs should learn how to use account receivables and account payable to fully take advantage of trade credit finance. This will ensure SMEs continue producing or manufacturing during time of low liquidity and financial constraints.

Key words: Trade credit; Small and Medium Size Manufacturing Enterprises; Rwanda

Influence of Communities of Practice on Employee Performance in Public Universities in Kenya

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Abstract

The management of knowledge has generated considerable interest in business and management circles due to its capability to deliver to organizations, strategic results relating to profitability, competitiveness and capacity development. Knowledge Management plays an important role in any organization by facilitating the capture, storage, transformation and dissemination of knowledge in order to achieve organizational goals. It is a collaborative and integrated approach adopted on an organization-wide basis to ensure that an organization's knowledge assets are best utilized to increase organizational performance. Universities as 'knowledge intensive' organizations thrive on the production and dissemination of knowledge which calls for its professional management. Effective management of this knowledge can only happen when well-established platforms exist, which have clear laid down strategies and policies on how employees can share their know-how. Communities of practice is a knowledge management practice that can be used to encourage knowledge sharing among employees in universities. Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. The objective of this study was to determine how communities of practice as a knowledge sharing enabler can influence employee performance in public universities in Kenya. The study adopted the descriptive research design to determine this relationship. Simple regression analysis revealed positive and significant influence of communities of practice on employee performance in public universities in Kenya. Descriptive and inferential statistics used to analyze the data. The target population consisted of 495 employees from 10 public universities in Kenya selected on the basis of their size and age. The study reported a significant and positive relationship between communities of practice and employee performance in public universities in Kenya.

Key words: Knowledge, Knowledge Management, Knowledge Management Practices, Knowledge sharing, Communities of Practice, Employee performance

Transactional Leadership and Organizational Performance of Private Universities in Kenya

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Abstract

Private universities are undergoing through tough times due to reduced number of students, financial crisis, poor academic programs and general management crisis. The manner in which the vice chancellors dispense with their authority has to a great extent affected the performance of lecturers which has great effect to the performance of these universities. Therefore, this study sought to find out the effect of transactional leadership style on the performance of in private

universities in Kenya. Descriptive research design was used as a method of study. The study used primary data collected by use of structured questionnaires. Data obtained was cleaned, coded and entries made into Statistical package for social sciences. Descriptive and inferential analysis was conducted for quantitative data. Mean and standard deviations were also used as measures of central tendencies and dispersion respectively. Results were presented in form of tables and charts. The study found that transactional leadership had a significant and positive influence on performance of private universities in Kenya. The study further established that the perceived supervision support had insignificant moderating effect on the relationship between transactional leadership and performance of private universities in Kenya. The study concluded that as a result of transactional leadership, performance of private universities in Kenya was enhanced. The study recommended that the private universities which face performance challenges should uphold transactional leadership as an aspect of integrative leadership so as to steer their performance.

Key Words: Leadership, Transactional Leadership, Integrative Leadership, Private Universities, Chattered Universities.

Influence of Project Technical Skills on Performance of Community based Human Immuno Deficiency Virus Projects in Kiambu, Kenya

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Abstract

Identifying factors that are critical for the success of HIV projects not only leads to initiating mechanisms for efficiency and effectiveness in projects, but also for implementation of projects on time. This study sought to establish how project environment factors influence performance of HIV projects that are based at the community level in Kiambu, Kenya. The International community has committed to end AIDS by 2030, but this remains a big concern for the 160 Countries under the United Nations Joint Programme on AIDS (UNAIDS) on how to reach this target and achieve the Sustainable Development Goals. HIV prevalence in Kenya has stabilized at 6% for the last ten years, hence the need for more innovative ways of implementing projects. With 53% of HIV financing being channeled through extra budgetary allocation to Not for Profit Organizations to implement community based HIV projects, there is need to identify CSF that will lead to value for money for every HIV intervention. With only half of Africa's development projects succeeding, and with majority of the projects failing to be delivered within schedule, cost, and quality, it is of essence that critical success factors that influence community based HIV projects are established. These factors relate to efficiency, effectiveness, relevance and sustainability. The scope of the study was NPOs in Kiambu, Kenya. The study used descriptive survey research method and adopted stratified random sampling to identify a sample size of 151 respondents out of the target population of 249 NPOs implementing HIV projects in the 12 sub-Counties in Kiambu. A structured questionnaire with closed and open ended questions collected primary data. A pilot study to test the reliability of the research instrument using Cronbach's alpha and validity using Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity was undertaken. The primary data collected was edited, cleaned and analyzed using descriptive statistics with the aid of Statistical Package for Social Science (SPSS 21.0). Correlation and regression was used to

determine the relationship between project technical skills and performance of Community based HIV projects. Data was presented in tables and figures. The study found that technical skills were found to have a positive and significant relationship with project performance. The study recommends that project managers and the project team should possess professional qualifications and training in monitoring and evaluation, and effective communication skills. The projects should also have a monitoring and evaluation plan, and a communication plan or strategy targeting each stakeholder. Lessons learnt should be identified and documented as the project progresses rather than waiting to identify them at key milestones or at the end of the project as the team may have forgotten them or may be focused in closing the project rather than documenting lessons learnt.

Key words: Kenya, Kiambu, critical project success factors, project performance, community based HIV projects, project technical skills

Sustainable Entrepreneurship Factors Influencing Performance of Clearing and Forwarding Firms in Kenya

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Abstract

Businesses play a major role in developing sustainable world through innovation and creativity. However, sustainable development is a challenging task that can be attained through sustainable entrepreneurship development as conceptualized in Sustainable Development Goal 2015. Sustainable entrepreneurship is used to solve problems related to social and environmental sustainability by creating business opportunities through sustainability innovations. Clearing and forwarding sector in Kenya, consist of large and small (SMEs) firms with large firms having 30% of the market share and small firms occupying 70%. There are at least 826 clearing and forwarding firms in Kenya contribute to 5-10% of the country GDP. Out of this firms, 764 operates within Nairobi Metropolitan and serves approximately more than 25 million tons of goods through logistic practices in every year. Based on the statistics, small clearing and forwarding firms serves the largest segment of sector, this shows that lack of sustainable entrepreneurship in the sector may result to dwindling of the economy and low employment opportunities. The study aimed to investigate Sustainable entrepreneurship factors influencing performance of clearing and forwarding firms in Kenya. The study focused on social-cultural entrepreneurship, environmental entrepreneurship, entrepreneurial managerial support and innovative information on performance of clearing and forwarding firms in Kenya. Descriptive design was employed. The study targeted 1128 management and stratified sampling technique to come up with as sample size of 375. Primary data was collected using the questionnaire. Quantitative data was coded in the SPSS. The study revealed that there was significant positive correlation between social-cultural, Environmental entrepreneurship, and innovative information on performance of clearing and forwarding firms in Kenya. The study concludes that entrepreneurial managerial support has no significant influence on performance of C&F firms in Kenya. Organization Culture has a moderating effect in the relationship between sustainable entrepreneurship and performance of C&F firms.

Effect of Employee Compensation on Turnover among Nursing Employees at National Referral Hospitals in Kenya

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Abstract

Voluntary turnover of nursing employees is a major problem worldwide that adversely affects the quality of services and products offered to customers. In Kenya, national referral hospitals have been witnessing high voluntary nurse turnovers and this has affected the quality of services and products offered to customers. It is argued that job satisfaction helps curtail turnovers. One of the facets/dimensions of job satisfaction is employee compensation. The general objective of the study was to establish the effect of compensation on turnover among nursing employees at national referral hospitals in Kenya. Thus the study sought to determine the effect of compensation on turnover among nursing employees at national referral hospitals in Kenya. The study adopted mixed methods research design using descriptive survey design with an exploratory approach and used simple random sampling to select a sample of 315 respondents from a target population of 1779 registered nurses. Positive responses were received as valid from 261 respondents out of the sampled 315 respondents giving an 83% response rate. The study generated both qualitative and quantitative data. The data was analyzed descriptively using measures of central tendency and inferentially using correlation tests and multiple regression models. Quantitative data was analyzed with the help of statistical package for social sciences (SPSS) version 21. Qualitative data was analyzed using content analysis. Correlation analysis was used to test the direction of relationship between independent and dependent variables. The study found out that compensation contributes positively but significantly to nursing employees' turnover at these hospitals. The findings of this study shows that it is imperative for the employers in organizations to put more emphasis on compensation in order to help curtail and/or manage the turnover of employees more effectively. This will lead to their retention for longer which will help improve on the quality of services they provide to customers.

Key words: Employee Compensation, employee turnover, nursing employees, quality of services, quality of products, national referral hospitals

Organizational Factors Influencing Strategic Plan Development among SMES in Machakos Town

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Abstract

The purpose of this study was to explore the organizational factors affecting development of strategic plan among SMEs in Machakos Town in Kenya. Statement problem of this study evolved on the fact that SMEs have suffered in one way or the other from lack of or poorly developed strategic plans and are well aware of the negative impact. The objectives of this study were to;

explore the influence of human resources, organizational culture and information systems on development of strategic plans. The Research study focused on SMEs in Machakos Town. Past and previous studies were reviewed with the aim of identifying research gap and endeavored to fill the knowledge through this current study. This study was achieved by employing descriptive survey design on a sample of SMEs in Machakos for representativeness. Using questionnaire, document analysis and interview guide on selected participants from a population of the SMEs, research data was collected using questionnaires and interviews guides. Automatic inclusion and purposive sampling were employed sampling all respondents at the selected SME firms in Machakos Town. The data was analysed descriptively with the use of analysing techniques like inferential statistics among others of the SPSS and findings presented through tables and percentages. In essence, the study established that human resource, information systems and organizational culture have a great bearing on the development of strategic plans but SMEs in Machakos Town have not fully utilized these factors towards development of strategic plans. The study filled the identified gaps and made various recommendations that will help in development of strategic plans among SMEs. The conclusions evolved recommendations which included: training employees on strategic plan development and initiating motivation schemes to encourage employees to participate in strategic plan development. Secondly, SMEs need to update their organization data and maintain quality and quantity of information. Finally, SMEs should improve their organizational commitment to strategic plan development and cultivate flexibility by adopting to change. The findings, if adopted by the relevant stakeholders, will form the foundation for decisions and steps in formulation of organization policies geared towards efficient and effective strategic plan development in Kenya.

Keywords: Development, Performance, SMEs, Strategic Planning, Organizational Factors

Understanding Pursuing as An Entrepreneurial Competence and The Relationship with Performance of Value-System Actors in Kenya's Leather Industry

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Abstract

Entrepreneurship and associated behavioral competencies continue to be important but insufficiently studied phenomena, especially in African factor-based industries such as leather, and from an ecosystem perspective. Further, entrepreneurial orientations and competencies have not been adequately distinguished nor understood in past studies. By adapting an empirically validated construct of pursuing as an entrepreneurial competence measure, this study investigated the behaviour in determining firm-level performance of industry actors. A sample of players from Kenya's leather industry were studied representative of an entrepreneurial ecosystem. SPSS was used for exploratory and inferential analysis to establish the validity of the constructs and their hypothesized relationship. Pursuing competences of managers as key-informants of Kenya's leather industry business organizations were measured and tested for determination of expected performance outcomes. Mixed sampling of sixty-eight Leather Articles Entrepreneurs Association (LAEA) members and the associated value-system actors were studied, with a response rate of 76%. Factor analysis showed pursuing and performance were uni-dimensional entrepreneurship constructs comprising three and nine indicators respectively. Inferential analysis showed that pursuing determined performance of industry value-system actors. This study affirmed earlier research the validity of pursuing as an entrepreneurial

competence construct and its determination of firm-level performance. The study therefore contributes to a new perspective of the dimensions of entrepreneurial competence and growing scholarship in industry ecosystems. Development of pursuing as an entrepreneurial competence of key decision makers in industry ecosystems can positively impact business performance. The study recommends that scholarship, policies and individual development programs in entrepreneurship should adopt pursuing as a valid dimension of entrepreneurship behaviour.

Key words: pursuing, entrepreneurial competence, performance, value-system actors, leather industry, entrepreneurial ecosystems

Knowledge acquisition through business support services and use among tenants to create businesses in selected University Incubation Centres in Kenya

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ABSTRACT

Knowledge acquisition through business support services and use among tenants to create businesses in incubation centres cannot be overemphasized. Business incubation programme in universities provide tenants with an enabling environment to hone their skills and knowledge in a controlled setting before venturing out. However, previous research has indicated that even after going through business incubation initiatives, the survival rate of young businesses in developing countries is low and there is high rate of business failure. The current research sought to determine the degree to which knowledge from business support initiatives help tenants to create successful enterprises. The study objectives were: Determine the extent to which knowledge from business support services is applied by tenants in the creation of businesses in university incubation centre; establish the challenges facing provision of business support services in university incubation centres. Social Capital Model proposed by Nahaphiet and Ghoshal (1998) was used to guide this research study. Census approach was adopted to involve all the incubator tenants, incubator staff and incubator managers in the two universities that were involved in this research study. An initial target population of 60 comprising of incubator managers, incubator staff and incubator tenants was involved in the study. However, only 48 respondents participated in the actual study. Data collection instruments were questionnaires and interview schedules. The findings of the study revealed that business advisory trainings were held on need basis while mentorship programmes were not well coordinated due to shortage of funds. The findings also noted that a majority of the incubation centre tenant's utilized knowledge

acquired from business support services to come up with business ideas. Lack of competence to tap tacit knowledge impeded knowledge acquisition initiatives in the incubation centres. It was also noted that rivalry among tenants was observed around collaboration activities due to limited workspace and lack of trust. The study recommended that Business advisory and mentorship services to the incubator tenants should be improved. Further research on knowledge acquisition through business support services and use by tenants to create businesses in non -university business incubation centre was recommended.

Key words: Knowledge Acquisition, Business Support Services, Business creation Incubation Centres

SUB-THEME 3: CATALYSING CHANGE FOR INCLUSION AND ACCESS TO EDUCATION DURING PANDEMICS



Machakos University Cloud Computing Centre –Luban Workshop

Apply and Study Bachelor of Science in Cloud Computing and Information Security

Responding to Global Educational Challenges and the Quest for Access to Higher Education by Leveraging On Technology in On-Line and Blended Learning

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Abstract

Higher educational institutions globally have relied on the traditional face to face offering of academic programmes as the chief mode of teaching and learning. Consequently, the outbreak of the Covid-19, caused by the Corona Virus mainly in 2020 brought a serious disruption of learning in these institutions in most parts of the world. This has led to most institutions adapting by integrating on-line and blended learning into their educational systems so as to allow some form of continuity of their educational processes. These modes of learning are not only innovative but take advantage of technological developments that make learning more flexible and student centered, hence contributing to enhanced access to higher education. This paper examines the potential of Online and blended learning in providing an alternative or synergetic pedagogical approach in responding to educational challenges and increased demand for higher education in Kenyan universities, the maintenance of a quality culture, achievement of expected learning outcomes and goals, as well as policy considerations.

Key words: *Technology-based teaching, maintenance of quality, synergetic pedagogy, integrity of assessments, student and staff support services, skills development and enhancement.*

Reimaging of Basic Education as a Remedy for Catalyzing Change for Inclusion and Access during Pandemics

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Abstract

The worldwide health epidemic has glinted serious challenges on the vulnerabilities. However, on the other hand it has provided a clear picture of existing inequalities and a wakening call on what mitigations are needed to be considered. At the top-most is need to address the education of more than 1.5 billion learners whose learning has been interrupted due to the Covid-19 crisis. As the world globally navigates through the Covid-19 crisis and its aftermath, there is need to reflect on core principles and known strengths as we content with unprecedented distraction to economies, societies and education structures. Distractions occasioned by the pandemic are aggravating inequalities both within and across nations. We urgently need reimaging of education so that short-range impediments do not translate into bigger, lifelong challenges. To this end, renewal and reimaging of education takes center stage. This premise is anchored on global solidarity and EFA goals that do not condone the echelons of inequalities that have emerged in the modern-day world. This theoretical study contends that reflections on renewal and reimaging of education may prove fruitful towards catalysing change for inclusion and

access during epidemics to the advantage of our learners. Drawing from the Covid-19 experiences, relevant theories and secondary data, this study will recommend interventions meant to promote inclusive learning to minimize disparities for the vulnerable learners and assist various countries to realize their already initiated 100 per cent transition policy.

Key Words: Reimagining, Education, Catalysing, Change, Inclusion and Access.

Catalyzing Change for Inclusion and Access to Education During Pandemics

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Abstract

Education is a very important instrument of change and for the development of any nation. It is an essential right that should be accorded to all human beings. Over the years there has been disparity in the accessibility of education between the normal children and the children living with disabilities in terms of attention and materials. Kenya has shown some willingness to implement inclusive education through the sessional paper on a policy framework for education, training and research (No. 1 of 2005) which necessitated a programme that would incorporate all handicaps, hence inclusive education. The idea behind inclusive education is assisting students and teachers become better members of a community by creating new vision for communities and for schools. Education for All (EFA) supports inclusive and equitable education. Not only is lack of access to schooling a violation of Article 28 of the UN Convention on the Rights of the Child, but this lack also potentially maintains the cycle of poverty, as without education an adult may not be able to work to earn a living or participate in political processes. At present only 4 to 5% of children with special needs out of 30 million have access to education. Inclusive education can be seen as a stepping stone for a future inclusive society and it is a process of addressing and responding to the diverse needs of all children, youth and adults through increasing participation in learning, cultures and communities and reducing the exclusion within and from education. This effort has been confronted with many challenges, including the COVID-19 pandemic being the most recent challenge which forced learning to abruptly and alternatively engage in use of information and communications technology (ICT) to deliver their programs online for their learners as part of their immediate instructional and institutional response measures. This then poses a question on how learning institutions deal with the challenges of access arising from the widespread use of virtual teaching and learning. There is need to re-look at policies guiding inclusive education, the human resources, Infrastructural barriers among others so as to enable inclusive education be at par with the technological advancement in place.

Key words: Access, Education, Equity, Inclusion, Inclusive Education, Pandemics

Contribution of Education Technology to Continuation of Teaching and Learning During Covid-19 Disruption

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Abstract

Covid-19 pandemic brought about unprecedented challenge to in person learning in secondary schools all over the world. This disruption affected between 1.2 -1.5 billion learners. To ensure that access to secondary education continued, learning in secondary schools transited to e-learning. It was realized that continuing to deny learners opportunity to continue with their education would be catastrophic. It would lead to dropouts and other undesirable outputs. In this desktop study, the researchers sought to consolidate from various literature published between 2020-2021 in order to find out how education technology contributed to teaching and learning in secondary schools in developed and developing countries. Literature shows that immediately world health organization declared Covid-19 as pandemic, developed countries such as United Kingdom switched their learning systems from in person to digital. Literature also shows that during the period, there was very high demand for e-learning platforms in developing countries such as Bangladesh. Most of the developing countries did not possess a ready e- learning system to cater for majority of learners in secondary schools and therefore were not prepared for this disruption. After preparations they adopted e-learning through platforms such as radio and television. Literature highlights that during the adoption of e-learning systems in both developing and developed countries several challenges were experienced such as lack of infrastructure. The study recommended that developing countries should put in place e-learning systems in secondary schools to be used alongside in person learning so that whenever there is a challenge like what was and is being witnessed during Covid 19 disruption they can quickly switch to e-learning.

Keywords: education technology, digital education, e-learning and covid-19, online learning, disruption

Covid-19 Pandemic and Implementation of World Bank Supported Education Initiatives in East Africa

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Abstract

World Bank has been supporting education initiatives among its member states over a long period of time. There are many reasons why World Bank is involved in supporting these initiatives. One of the reasons is to reduce inequalities and disparities in educational achievement in secondary education. Before the onset of Covid-19, World Bank had initiated several

intervention measures to enhance learners achievement in secondary schools in East African countries of Kenya, Tanzania and Uganda. In early 2020, Covid-19 was declared as a pandemic by World Health Organization. Countries rushed to declare lockdown and quarantines so as to minimise infections and deaths. Secondary schools were quickly closed. It affected about 1.5 billion secondary school students globally. In East Africa, secondary schools were also closed. The East African countries were in the process of implementing various World Bank initiatives. This study which is based on literature review examined how World Bank initiatives in three countries were impacted. Literature shows that the closure of secondary schools in Tanzania affected during Covid-19 crisis affected secondary schools' improvement project whose aim was to; keep retain vulnerable students in secondary schools; provide path way to education secondary schools girls who had dropped out school due to early pregnancy. Uganda was also running a secondary education improvement program whose aim was to improve learning environment for girls, more constructing boarding wings in day schools. Kenya was running a secondary education improvement project which had been started in 2018 and it was due to end in 2023. The aim of this project was to; reduce teacher shortage and improving retention. The study found out that the socio-economic disruption brought about by Covid-19 had a devastating effect on the World Bank initiatives which were being implemented in East African countries. Countries like Kenya and Uganda were high risk countries and since the schools were closed for a long time. Vulnerable girls in secondary especially those boarding schools were directly affected. Some of these students, schools were safer back home from school. They were exposed to some social cultural challenges they had escaped from such as Female Genital Mutilation and Early Marriages. This was very devastating as it clawed back on the gains that East African countries had made in secondary education such as improving retention and completion rates in secondary education. Definitely the covid-19 especially for girls had a knock-on effect on secondary education sector. The study recommended that World Bank group should carry out needs assessment to better understand how the initiatives carried out in secondary schools were disrupted and come up with society accepted strategies of implementing the program they were implementing in East African countries.

Key words: Covid-19 Pandemic, Implementation, World Bank, Education Initiatives

Use of Animation in Simplifying the Learning of Abstract Concepts of History and Government in Secondary Schools in Kenya

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Abstract

Students' diverse learning abilities render the need to develop various learning materials for effective learning. Existing literature has shown the increasing use of real-life and documentary videos and teaching aids to complement classroom teaching. While there are studies on effectiveness of documentary videos in existing literature, relatively little is reported on use of animation videos in teaching History and Government in comparison to traditional written text in terms of their impact on learning outcomes in secondary schools in Kenya. In response to this, this study sought to examine the role of animation in simplifying the teaching of abstract concepts of History and Government in Secondary Schools in Kenya and the impact that animation has had on comprehension and learner retention of war-related concepts. The study

adopted a qualitative research model that relied on document analysis, observation and oral interviews to collect data. A sample of 179 History and Government learners was engaged and divided into two groups. One group was exposed to animated videos based on content taught in three subtopics while the other did not watch these videos. Thereafter, a written and oral examination was administered to both groups. The group that had watched animated content performed better than the latter. The second group later watched animated content and was examined. Its performance became better than the first group. These results imply that that animated video can effectively complement text materials. It is recommended that the KICD in collaboration with the TSC should further improve existing learning materials by developing animated content based on the Kenyan syllabus and make the content freely available online.

Key words: animation, learning, comprehend, abstract, recall, secondary school, history.

Re-imagining higher education for social change and inclusion during post Covid-19 pandemic: Lessons from the Human Development and Capability Approach

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Abstract

In the wake of the unprecedented global health pandemic ushered in by the Covid-19, society and social institutions continues to experience and witness major changes. These include among other things, change in socio-economic progress, weakened social cohesion and fabrics, widening social inequality, and increasing social exclusion. For African countries, the Covid-19 has further exposed the already weak social institutions, fragile economy, enduring inequality and slow social change. Higher education (HE) sector and institutions (HEIs) are called upon to actively participate in responding to the impact of Covid-19 and broader recovery plan. HEIs are asked to promote confidence, trust and unity and bring people together to continue to learn, provide essential research and serve society. However, given the magnitude of the impact of Covid-19, it is fundamentally important to re-imagine the kind of higher education and what it can do and how during and post Covid-19 pandemic. On the one hand, is the question of how can higher education institutions contribute to social inclusion within (for students) and beyond their boundaries (in their immediate surroundings)? On the other hand, is the quest for ensuring access and equality of opportunities with respect to education and socio-economic chances of the most Covid-19 hit and affected group in society. Such higher education ought to incorporate dimensions of human development (HD) and capability approach (CA) frameworks. This paper draws on the key elements of the HD and CA to reimagining higher education for social change and inclusion during and post Covid-19 pandemic. At the core of this proposition is how HEIs can ensure active participation, empowerment, equity, expansion of agency, and capability formation to contribute to social change and inclusion. These HD and CA dimensions will be used to critically examine what do social inclusion and access mean to higher education during and post Covid-19 pandemic. The paper is particularly relevant for policy makers, institution managers, and academics audiences.

Keywords: Covid-19, Social change, Social inclusion, Access, Higher education, Human development, Capability approach

Problems and Prospects Emanating from Catalyzing Change for Inclusion and Access to Higher Education Institutions in Kenya During Covid-19

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Abstract

Higher Education institutions are considered the epitome of Knowledge where most solutions for the Country's problems are generated and where inventions, innovations and new ideas are given birth to through research. With the coming of covid-19, it is evident that there is a serious surge of uncertainties pervading all areas of high learning institutions. This touches on modes of learning, unpredictable financials conditions, student well-being and challenged enrolment. This literature review considered problems and prospects emerging from the aforementioned issues in Universities in Kenya. It further focused on suggested remedies and/or solutions in line with catalysing change for inclusion and access to higher education during the Covid-19 era. The study revealed that higher institutions are shifting to remote access (virtual platforms), are more inclusive and more accessible to more student population despite being challenged with limitation of resources, uncertainty in enrolment, issues of advising and counselling students, inexperience of staff on the use of learning management systems and unpredictable financial conditions. The study offers suggestions on making education more inclusive and accessible in terms of recognition of interdependence of institutions in public space, awareness of complexity of teachers' work and community lead learning, digital connectivity and online platform, access to information, affordable internet and reliable connectivity and other ways of protecting the social space provided by schools as education is transformed.

Key words: Problems, virtual platforms, learning management systems, Covid-19, Higher learning institutions, access to education, inclusion

Challenges University Students Face in E-Learning as a Result of the Covid-19 Pandemic

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Abstract

Coronavirus (Covid-19) is a disease that was first identified amid an outbreak of respiratory illness in Wuhan City, Hubei Province, China. The World Health Organization (WHO) declared the Covid-19 outbreak a global health emergency on March 11, 2020, and later a global pandemic. This pandemic has had adverse effects all over the world, not just health wise, but in agriculture, transport and even education. The partial and total lockdown in many counties across the world has brought many economies to near stagnation. In Kenya, like in many countries the world over, all learning institutions were shut down as a precautionary measure

to curb the spread of covid19. eLearning was introduced in most universities to sustain the education sector and ensure that learners go on with their studies in a safe environment. The research aims to investigate the challenges university students face in eLearning as a result of the Covid-19 pandemic and also highlight the hindrances towards adoption of the same within the universities. The study used a qualitative research design. Purposive sampling was used to get students involved in eLearning in five universities across the country. The data collected was analyzed using thematic and narrative analyses. Applied research was carried out during this study so as to highlight the challenges university students face in eLearning around the world and recommend the best practices for adoption of the same in learning institutions.

Key words: Covid-19, pandemic, eLearning, challenges

The Effects of Inquiry-Based Science Teaching Approach on Task Competence of Secondary School Physics Students in Kitui County, Kenya

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Abstract

The purpose of this study was to investigate the effect of Inquiry-Based Science Teaching Approach on learners' task competence of secondary school physics students in Kitui County, Kenya. It adapted a mixed methodology and a Quasi-Experimental Research Design and in particular the Solomon's Four Non-Equivalent Control Group Research Design. The target population of the study was 1600 form four Physics students from 40 Extra-County secondary schools in Kitui County. Stratified random sampling was used to select four Extra-County schools (2 Girls and 2 Boys). Purposive sampling was used to select 40 students from each of the four schools and a Physics teacher from each of the two sampled schools; giving a sample size of 160. A Physics Task Competence Test (PTCT) was the research instruments. A reliability coefficient of 0.847 was obtained. The descriptive analysis was by means of frequencies, means, standard deviation and percentages. Inferential analysis was through Analysis of Variance and the Least Significant Difference (LSD) technique at a significance level of coefficient alpha $\alpha=0.05$. The findings showed a statistically significant difference in task competence between students taught using IBSTA and those taught by the conventional methods. The study established that Students from the experimental groups outperformed the ones from the control group in the results obtained. This showed that IBSTA had a positive effect on their task competence. There was a significant difference in the post-test (PCBT) on task competence mean scores between students in the experimental groups who were taught Physics using IBSTA than those in the control groups taught by conventional methods. Consequently, the study concludes that IBSTA is effective in enhancing students' task competence. Finally, the study makes recommendations key among them the creation of an enabling environment for IBSTA adoption in schools.

Key words: Achievement, Conventional Teaching Approach, Inquiry-Based Science Teaching Approach, Learning outcome, Self-concept and Task competence

Professors in Need of Education

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Abstract

Professorship has become something of an enigma. It is ‘a slippery term’. As a concept, it is unclear; as a role, it is woolly. ‘What it means to be a professor – and more importantly what others think it means – is magnificently opaque’. There’s plenty of advice on how to get there, but little once you’ve reached your destination. There’s no global job description, no template, no handbook, only the example of those who have gone before. There is no consensus: definitions vary by country, institution and mission, and it is unclear whether professors are there to improve research or teaching. This paper is a discourse on emerging needs of the person holding the title of professor and the requisite dispositions for the consequent role.

Keywords: Academic, Education, Innovation, Mentorship, Professor, Student, Research

Effect of Covid-19 on SN Learners’ Access to Training in TVETs

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Abstract

Education is vital as it gives students opportunities for growth, development and hope for a brighter future. This is in line with Sustainable Development Goal four which states that: Quality Education seeks to ensure inclusive and equitable quality education and promoting lifelong learning opportunities for all. During the Covid-19 pandemic schools and higher education institutions closed as directed by the government. The closure put learners with special needs (Especially the Visually and Hearing impaired) at more vulnerability thus increasing pre-existing education disparities by reducing the opportunities for many of the most vulnerable children who experience various challenges. Institutions of higher learning including the Technical and Vocational Education Training Institutes (TVETs) replaced face-to-face lectures with online learning during Covid-19 pandemic thus affecting learning and education of those with special needs. Further, closure of schools has other effects on the provision of essential services in education to children with special needs (Visually and Hearing impaired) including access to digital education and students’ sense of belonging to schools; these are important for inclusion in education. This paper centered on access and inclusive education for all which is in line with SDG 4. The paper further examined the schools re-opening issue by giving the World Health Organization Covid-19 guidelines and strategies aimed at ensuring that the pandemic does not hinder inclusion of children with special needs (Visually and Hearing impaired) in education system in case of future lockdowns.

Keywords: Special Needs Learners, Visually Impaired, Hearing Impaired, Covid-19, Access, Inclusion

Using E-Learning as a Tool of Enhancing Teaching and Learning in University Education: Lessons from Machakos and Chuka Universities.

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Abstract

This paper argues that e-learning is a critical component in teaching and learning especially during the Covid-19 pandemic. The paper interrogates the online teaching and learning environments, the Moodle as an e-learning platform for teaching and learning, the challenges of using e-learning in teaching and learning, and the effect of E-Learning on University Education. The study adopted a desk review approach that focuses on document analysis to get information on e-learning. The documents analyzed were journals, Internet Communication and Technology (ICT) websites, and paper reviews on online teaching and learning. The paper concludes that e-Learning can be adopted and utilized to promote education in Africa even during covid-19 pandemic times. In addition, e-learning can make learning easier and accessible to everyone, everywhere in the third world. It provides the opportunity to achieve great results at lower costs and thus revolutionizing the conventional education system.

Key terms: Online teaching, Moodle as an e-learning platform, Challenges of using e-learning, Effect of E-Learning on University Education, Lessons from African Continent

Evaluation Based Teaching as a Confidence Builder in Good Teaching Practice

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Abstract

Every one requires confidence in order to perform any task. Similarly, students require confidence in their studies so as to pass examinations for the courses they undertake. I treat confidence as a psychological feeling that gives students courage to face challenges in a learning environment with positive expectations. In fact, adequate confidence is most needed for attaining good results from practical assignments and for achieving best results in final examinations. Evaluation based teaching was considered as one of the practices that are good for confidence building. The practice can be applied in competency-based curricula, to yield good examination results and eliminate examination cheating. It allows typical summative evaluation to be carried out in stages throughout the semester while the syllabus is being covered. I personally encourage those participating in harmonization of higher education programs for African universities, to embrace this practice for the common good. The evaluation-based teaching practice was applied to a course unit named Fundamentals in Engineering Geology. The course unit is offered to degree students pursuing Bachelor of Science in Applied Geology during their first semester of third year in my institution. It is a core unit that provides an understanding of geological set up of construction sites so as to permit design of infrastructural structures. A set of past papers for end of semester examinations for previous eight semesters and a copy of model answers for one of the semesters were availed to the students, class size 14, for them to: differentiate levels of learning that are tested as noted for questions that required a candidate to state, outline, explain,

describe, solve etc.; the differences were explained to them; make solutions when each topic is covered as a provision of self-evaluation thereby capturing learner-centered requirement while contents for the entire syllabus are covered; to be able to predict questions that could be set based on probability techniques; and appreciate question answering style and depth of coverage as reflected in the model answer. The topic on geological maps was well represented with questions on geological cross sections that require drawing skills, covered for five semesters consecutively. End of semester examination question papers are open to public for use after the examinations have been done and are always available, although extra similar material can be issued while the semester is on. End of semester examination results for the class that was subjected to evaluation-based teaching method were compared with results for previous groups of similar class size that undertook the same course unit but had not been exposed to same method. Comparative statistical results for the performance were made from the comparison done and conclusions drawn forthwith. The practice, if applied, will make students to have an overview of the syllabus content up to evaluation level right from day one thereby triggering their eagerness to learn and pass final examinations. Repeated exposure to final past paper questions will increase students' skills in problem solving and decision making. However, the students will tend to avoid solving problems outside the syllabus, as a learner weakness, even if the problems are similar to the ones covered by the syllabus.

The Effectiveness of Closed-Circuit Television Camera in Management of Discipline in Public Secondary Schools in Kenya

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Abstract

The attainment of vision 2030 requires students to be offered quality education. The destruction of school infrastructure and disruption of learning and teaching calendar is counterproductive to quality education. This study aimed at finding out the effectiveness of installation of Closed-Circuit Television camera in controlling discipline in public Secondary School in Kenya. Specifically, the study sought to establish the effect closed-circuit television has on preventive, supportive and corrective discipline. The study was anchored on child development theory. The study targeted 200 public Secondary Schools. Data was collected using a questionnaire administered to students, interview for teachers and principals and document analysis for sub-county Directors of Education. Research instruments were validated and multiple regression analysis conducted. It was concluded that Closed-Circuit Television Cameras are a viable investment in management of discipline.

Key words: Effectiveness, discipline, management

Universal Design for Learning: Promoting Inclusive Education in An Empathic Manner

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Abstract

Access to quality education is deemed a basic human right around the world. To this end, universal primary education is available in many countries around the world. To bolster countries' efforts in their quest to support this noble aspiration, the United Nations Sustainable Development Goal 4 whose stated aim is to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all¹”. Notwithstanding such noble efforts, learners with disabilities unfortunately find themselves facing discrimination, prejudice and exclusion from mainstream educational opportunities, or find themselves at the receiving end of arguably lower quality standards of education if granted such access. Whereas there are specific challenges depending on the type and degree of disability, a significant number of learners could perform in terms of literacy through empathic attitudes and interventions by teachers, coupled with improvements in learning environments, content delivery and more effective modes of engagement. This position paper explores the efficacy of Universal Design for Learning (UDL) as a novel approach to Inclusive Education in Kenya, and in so doing seeks to promote this more empathic and inclusive pedagogic and didactic ethos towards teaching and learning.

Keywords: Attitudinal Barriers; Disability; Discrimination; Empathy; Exclusion; Inclusive Education; Literacy; Universal Design for Learning

Is Re-Admission Policy of Girls After Teenage Pregnancy in Schools Implementable Without Infringing on the Fundamental Rights of Children in Kenya?

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Abstract

One of the unintended side effects of the 2020-2021 Covid-19 lockdown was a rapid rise in teenage pregnancy in Kenya. Between April and June 2020 during the lockdown period, there was a 40% rise in the number of teen pregnancies in Kenya, with 152,000 pregnancies reported. All these girls are of school-going age, with a few in primary schools and majority in secondary schools. Tanzania has a controversial policy that discriminates against pregnant students, adolescent mothers, and married girls. This policy bans pregnant and married girls from accessing education in any public school in the country. The Kenya government has a policy that all the school-going girls who become pregnant should be retained in school throughout their pregnancy period until they are due to deliver and immediately allowed back after delivery. Is

the policy in Kenya encouraging promiscuity? How does the policy affect the rights of the unborn child? How do education administrators address the issue of self-esteem and stigma of the affected school-going girls? This qualitative research explores way of implementing the policy without compromising the quality of basic education.

Key words: re-admission policy, teenage pregnancy, married girls

Taking the Blended Teaching and Learning Journey: Implementation in Higher Education Institutions in Kenya

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Abstract

Education, like all the other sectors was impacted significantly by the Covid-19 pandemic. Most learning institutions across the world were closed in early 2020 as the pandemic spread fast to all the continents. In a recent report released by UNESCO, in 2020 alone, learning for more than 1.7 billion children in 188 countries was heavily disrupted. This disruption forced education institutions to seek for alternative means and strategies to salvage the situation hence leading to the introduction of Emergency Remote Teaching (ERT). However, there were attendant challenges ranging from inadequate infrastructure, lack of appropriate devices, instructional content to skills in the delivery and access by staff and students respectively. According to the United Nations, an estimated 500 million children especially those from poorer countries have had challenges accessing online learning. This trend is expected to affect general teaching of students globally in the near future with Africa and Asia expected to be adversely affected. Education in Kenyan was also disrupted when the government closed all learning institutions on 15th March, 2020. This went on for a while before the Ministry of Education recommended virtual learning which has now been blended with physical teaching and learning. To ameliorate the challenges, crash programmes on course design and generally on how to move teaching online, were initiated by institutions such as the Kenya Education Network (KENET), Association of African Universities (AAU). The African Council for Distance Education (ACDE), and Commonwealth of Learning (COL). The Commission for University Education (CUE), also released minimum standards and guidelines to ensure quality as educational institutions shifted to online and blended mode of delivery. The purpose of this study was therefore to establish the adoption and effect of blended education in universities in Kenya. The study was hinged on the Technology Acceptance theory. Mixed method design which involved use of both quantitative and qualitative approaches of data collection was adopted. In quantitative, the study used a survey research design where 200 questionnaires were administered to lecturers and students in three public universities and two private ones in Kenya. For qualitative data, interview schedules were served to 20 key informants who were university administrators, education officers and parents. Selections of the sample sizes for the study were purposively done. The quantitative data collected was analyzed using SPSS while qualitative data was analyzed using content analysis. Findings revealed that higher learning institutions have blended education albeit with a lot of constraints to parents, students and lecturers. It recommended that Higher education institutions and the government should promote blended learning even after the Covid-19 pandemic as a way of leveraging on technological advancements. This will therefore,

ensure inclusive and equitable quality education and promote lifelong learning opportunities for all as stipulated in the United Nations' Sustainable Development Goal 4. The information may also be used to enhance formulation of relevant policies or supplement the existing ones on matters education and ICT.

Key Words: Covid-19 pandemic, blended teaching, learning, remote education, online education

Design Courses and the 'New Normal': ePortfolios as a Pedagogic Innovation in Advancing University Education

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Abstract

Portfolios are crucial for practitioners in the creative industry. Practitioners in the field of art and design use portfolios as a means to show their skills to prospective clients or audiences. Portfolios may either be created in the form of physical artifacts or digital versions depending on the artist/designer's specialised area and preferred medium. Portfolios cannot be taken out of art and design disciplines. A portfolio is the evidence of the designer's work and skills. In most design schools every course requires the creation of a portfolio, which sometimes becomes challenging to manage for design educators and even students at the end of the term. The study aimed at exploring the use of emerging technologies in higher education institutions (HEIs) – specifically in a University of Technology (UoT) – as part of design education to facilitate the creation of ePortfolios. Participants were level 300 Advertising and Media (AD&M) option students who take a core course in photography. Flipped classroom, pedagogical approach and design methods were used to introduce students to the course. In a sandpit session, they were introduced to Google sites and Edmodo to create their ePortfolios and conversations between students and educators respectively. Results showed that Google sites had an affordance that facilitated the creation of ePortfolios and Edmodo was a useful tool for collaboration, communication, discussion and appraisal of students' work in a virtual classroom. It is anticipated that ePortfolios will be beneficial for future virtual exhibitions, reflective learning, sharing, assessment, collaborations, monitoring and evaluation that can make learners work. Suggestions are that other HEIs could reflect on the ePortfolios pedagogies and integrate it as part of learning activities in the era of the Covid-19 global pandemic – which arguably, is the 'new normal'.

Keywords: Afrika; Conversational Framework; Bloom's Digital Taxonomy; Covid-19; Design Education; ePortfolio; Emerging Technologies; Flipped Classrooms; Higher Education Institution (HEIs); Open, Distance and e-Learning; Rhizomatic Learning

Education in Emergency: Strategies for Access, Equity and Inclusion During Covid-19 Pandemic in Kenya

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Abstract

Education in emergency is a crisis situation created by conflicts, disasters or pandemics. The Covid-19 Pandemic is ravaging the World with remarkable and insurmountable consequences. Reasons for education in emergency or pandemic include the psychological needs of students affected by traumas and the need to maintain and develop study skills for survival and stability. This can be achieved through adoption of a new normal in provision of education that does not mirror the normal classroom, lecture halls and theatres. While this is being done, caution should be taken to ensure that the different needs of vulnerable students are taken care of during and post Covid-19. This paper re-examines education reopening; Prescribing measures and effectiveness in allowing access and inclusion of the various socio-economic status groups to education. Hence the aspect of continuing education through alternative learning pathways is given priority.

Key words: Education in emergency, pandemic, access, equity, inclusion, pathways.

School Violence as a Social Problem in Kenya

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Abstract

Severe acts of violence committed by young adults and children capture national headlines and also the public eye. These austere types of violence including school fires are in fact quite usual at schools, yet there are numerous more frequent types of youth violence that do not engross school fires and strikes. Adolescence violence, mainly violence on school grounds, ranges anywhere from teasing and bullying. It's important to control and prevent youth violence that occurs more frequently in order to overcome the issue of school violence that interrupts the educational goals of a country. It's not that only students are threatened by school violence; others like teachers, parents, staff and anyone who is involved in the regular functioning of the school is somehow affected. Schools across the country have instituted violence prevention programs and zero tolerance policies. One step schools take is to increase security levels by issuing name badges which must be worn at all times. This may not stop students from causing violence, but it allows teachers and administrators have to more easily identify the students who cause disruptions.

Key words: Effectiveness, discipline, management

Innovative approaches for promoting resilience, inclusion and access to education amidst COVID-19 Pandemics in Kenya

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Abstract

Education has the potency to not only initiate but sustain change for development of an individual and the society at large. As such education needs to be accessible and inclusive to all members of society regardless of their social and economic status. Education that is accessible to all has the potency to usher in unending returns and benefit to individual and society at large as equal opportunity provider to break the barriers that make it difficult to access education. Kenya has recently commenced implementation of competence-based education curriculum which is geared towards empowering her citizens with innovative skills and competencies for development of self and society. Nevertheless, education in Kenya is faced with serious threats of Covid-19 and other pandemics. Covid-19 and other attendant pandemics have caused untold suffering to Education in Kenya. These pandemics have put education in Kenya in an awkward and precarious situation in terms of access and inclusion of venerable groups in the country. This paper explores various innovative approaches that educational institutions, communities and the government have instituted in order to not only increase access but promote inclusion of all members from different societal backgrounds to access education, promote retention and completion amidst the manifestation of Pandemics which have become more of a norm than exception. However, several challenges and recommendations to inclusion and access have been identified in the paper.

Key words: Inclusion, access, education, resilience, pandemics, innovation

Appraisal of Education Systems Supporting Vulnerable Children During Covid-19 Disruptions in Public Secondary Schools in Kenya: A Case of Nakuru County

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Abstract

Following the disruption of classroom learning due to Covid-19 pandemic, many vulnerable students suffered tragic loss in various dimensions. With no physical schooling going on, these children missed out on safe learning environment, lacked assurance for regular meals, and endured considerable levels of stress and abuse at home amidst deteriorating economic conditions. Despite government's commitment to provide seamless transition to virtual learning, most vulnerable learners lacked equitable accesses to learning due to the existing digital divide and low electricity connection in the rural areas. This study aimed at appraising the education systems supporting vulnerable children during Covid-19 disruptions in public secondary schools in Kenya, with specific focus on Nakuru County. The objectives included evaluating the impact of distribution of online resources, addressing socio-emotional needs and parental

engagement on supporting vulnerable students during Covid-19 disruptions. Descriptive survey method and simple survey design were employed. The target population was 4510 individuals, comprising of 294 principals and 4216 secondary school teachers in Nakuru County. Yamane formula was used to compute a sample of 374 respondents. Stratified random sampling was used to select 2 principals and 32 teachers from each of the 11 zones in the county, summing up to 22 principals and 352 teachers. Self-designed questionnaires of 5 Likert scales were used to collect data from the respondents. Data was analyzed in descriptive statistics by obtaining frequency counts and percentages, and inferentially on IBM SPSS version 23. The findings revealed that distribution of online resources, and parental engagement considerably enhanced equitable learning for vulnerable learners during the pandemic. The study recommended that the ministry of education establishes a free complimentary platform where children who could not afford internet connection or have access to radio could receive learning resources during pandemics.

Keywords: Education Systems, Vulnerable Children, Online Resources, Equitable Learning, Parental Engagement, Socio-emotional Support

Influence of Principal Management Practices of Academic Progress Records on Students' Academic Performance in KCSE in Public Schools in Mashuru Sub-County

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Abstract

The purpose of the study was to determine the influence of principals' management practices of academic progress records on students' academic performance in KCSE in public schools in Mashuru Sub-County. According to records available from the office of the Kajiado County Director of Education, the performance of students in KCSE in Mashuru Sub-County has not only been poor but also spiralling downwards. This has culminated in only 23 students attaining a grade of C+ in a period of four years. The minimum grade for university entry for KCSE graduates is C+ whereas majority of the candidates in the sub-county are scoring below D+. The study utilized a descriptive research design. The target population consisted of 45 principals, 540 teachers and 585 student leaders totalling to 1170. Simple random sampling was employed to select a sample size of 13 principals, 54 teachers and 56 student leaders. Data was collected by use of interview schedule for principals and questionnaires for teachers and student leaders. The collected data was analysed using descriptive statistics consisting of frequencies and percentages with the help of SPSS. The study concluded that that principals' management practice of academic progress records influence students' academic Performance in KCSE in public secondary schools, hence affecting the quality of examination grades achieved in the sub-county. From the students, it was established that this activity had no definite time in many schools and the principals cited that they were facing a number of challenges which hindered efficiency in the practice of management of academic progress records, translating poor academic results. The findings of the study will help the Ministry of Education in formulating of assessment modules for students' academic progress as well as empower the principals to enhance performance.

Enhancing Health and Quality of Life: Teenage Pregnancy among Secondary School Students During Covid-19 Pandemic in Akure South Local Government Area Ondo State, Nigeria

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Abstract

Teenagers are not matured to become parents. Teenage pregnancy is always frowned at owing to the fact that it can affect health status and good quality of life. If teenage pregnancy prevention is to become a priority, then the strategy, as advocates, must contain two key elements which are civic engagement and adequate health education. The fact remains that whether a pregnancy was meticulously planned, medically coaxed, or happened by surprise, one thing is certain, the life of the girl or woman will never be the same. Hence, the ensuing paper focused on enhancing health and quality of life by looking at teenage pregnancy among secondary school students in Akure south local government area Ondo state, Nigeria. In view of the above objective, the study determined to examine the factors responsible for teenage pregnancy among secondary school students. Descriptive survey research design was adopted. The research data was collected through a self-developed structured and validated questionnaire (QTPSSS). The descriptive statistics of frequency count and percentage were used to analyse the demographic information, while inferential statistics of chi-square was used to test hypotheses 1 to 5 all at 0.05 alpha level of significance. In conclusion, all the factors tested were significant. Recommendations and suggestions that could remedy the menace of teenage pregnancy thereby enhancing health status and good quality of life were also stated.

Key words: teenager, teenage pregnancy, quality of life, contraceptive, sex education and peer pressure

Mentoring Postgraduate Students on the Use of Meta-Analysis Strategy for Research in Pandemic Times

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Abstract

During Pandemic times like the current Covid-19, response protocols pose challenges to researchers especially in regard to data collection. The guidelines on social distancing and the introduction of age-related protocols that guide social groupings and interaction are a big hindrance to research designs that rely heavily on human interaction/contact, yet these are the commonest designs in Education and Social Sciences. This context has immediately created the challenge of accessibility to human sampling. Following this new normal, an approach to Research Design and data analysis is inevitable to guarantee continued research without magnifying the effects of the pandemic. This can be addressed in two distinct ways: The use of Meta-Analysis as an appropriate design; and the availability of quick reference tools for Effect Size Calculation among studies already undertaken in related field. This paper is proposing

meta-analysis as the most viable option for research design for Masters and Doctoral research by recommending a set of tools for different options on Effect-Size Calculation and proposing a framework for mentoring post-Graduate Students on this new approach. It suggests a pedagogical approach that may help to mentor graduate students in their statistical core units to enable them first to understand the principles of meta-analysis, then the design of meta-analytical studies; and finally, be able to develop competence in the presentation and synthesis of meaningful conclusions from meta-analytical studies.

Keywords: Educational Research, Meta-analysis, Effect-Size, Sampling Reliability, Research Mentorship

Influence of Government-Initiated Strategies on Inclusion of Vulnerable Children in Education During Covid-19 Pandemic in Public Secondary Schools in Nzau Sub-County of Makueni County, Kenya

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Abstract

Covid-19 has had harmful impacts on the realization of inclusive education among vulnerable children in secondary schools. Many of such learners have not attended any learning sessions with quite a number engaging in non-academic activities to while away time. To mitigate this, the government has initiated strategies to keep learning activities going on despite the scourge of the pandemic. However, the extent to which such strategies have impacted on inclusion of vulnerable children in academic activities is yet to be fully established. Thus, the purpose of the study was to assess the influence of government-initiated strategies on inclusion of vulnerable children in education during covid-19 pandemic in public secondary schools in Nzau Sub-county, Makueni County, Kenya. The study was guided by the strategic management theory. The study adopted concurrent triangulation research design. Data were descriptively analysed using frequencies and percentages and inferentially using linear regression analysis with the help of Statistical Package for Social Science (SPSS 23) and presented using tables. The study established that government, through the Ministry of Education, has initiated intervention strategies to ensure that students in secondary schools continue learning during the covid-19 pandemic. However, such strategies have not included vulnerable children who have been left without meaningful academic undertakings. Many of such learners have sought refuge in non-academic activities and other forms of child labor. Thus, the study recommends that the Ministry of Education ought to redesign the online academic programmes to factor in the needs and interests of vulnerable children and other special interest groups in schools.

Keywords: Vulnerable children, government-initiated strategies, Covid-19 pandemic, education

Towards a Virtual Environment for Sharing Curriculum and Research Collaboration among Universities in Kenya during Covid-19 Pandemic

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Abstract

Universities in Kenya need to be aware of the impact of curriculum and course sharing in order to become world-class academic institutions and to help one another during this period of Covid-19 pandemic. This research filled an unexplored gap in regards to the impact of curriculum and course enablers; trust, knowledge self-efficacy, reciprocal benefits, top management support, organizational rewards, organizational culture, curriculum system infrastructure and curriculum system quality, openness in communication, and face-to-face (F2F) interactive communication on knowledge sharing that supports teaching, learning and research collaboration by University faculty members. The study further classified these enablers into a six-point pyramid of variables on adoption; personal volition, education resource availability, technical capability, conceptual awareness, legal permission, infrastructure access. The purpose of this study was to research factors associated with curriculum sharing that University management should leverage to ensure a strong innovation management process and successfully deliver quality teaching and learning to the intended customer. No prior research has focused on the impact of curriculum enablers that influence research university members to share knowledge, research findings, and curriculum and course materials via a virtual environment. Virtual education environment is a standard and accepted way of life, and many people prefer the virtual system as it comes with numerous advantages such as saving on costs and time spent. A self-administered questionnaire was employed on members of fourteen universities in Kenya. The usable responses were analysed using partial least squares path modelling.

Keywords: Strategies, Curriculum, Virtual environment, Virtual education, Research, Universities, partial least squares

Covid-19 Pandemic and its Impact on the Lecturers' and Students' Performance at Kenyatta University, Kenya

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Abstract

The outbreak of the Covid-19 pandemic brought unprecedented disruptions in all aspects of human life across the globe. In the education sector, university calendars were re-scheduled and in-class learning was commuted to online platforms. The present study focused on performance

of lecturers and students at Kenyatta University. The chosen institution has the second largest number of enrolled students and it is also ranked internationally as number two in Kenya. Performance, in this study, is broadly defined as expectations placed on the lecturers and students during their stay at the University. Performance during the post-Covid period has received little attention in literature relating to adjustments in universities. A case study approach was adopted within the broad mixed-methods research design. Interviews and questionnaires were used to obtain qualitative data. Quantitative data from performance indicator documents was computed into mean and percentage scores using the Statistical Package for the Social Sciences (SPSS). The findings indicated that interactive activities were drastically reduced; a significant number of classes and postgraduate defences were postponed for various reasons. Make-up classes were created from time to time; reduced class attendance; failure by students to remain in classes throughout the entire class sessions; internet interruptions and numerous disconnections were reported. Modules were written as a stopgap measure for augmenting lost time. The paradigm shift in pedagogical approaches impeded, to some extent, the lecturers and students' performance. Activities on proposal writing for funding and research activities were drastically reduced. In conclusion, the University has lost heavily due the sudden occurrence of the pandemic and sluggish approach to confront it. The study recommends a robust online-based system of monitoring classes and postgraduate defences; provision of internet for both students and lecturers in order to avoid numerous disconnections. Lastly, both students and lecturers should be proactive in order to surmount challenges.

Key words: Performance, e-tivities, monitoring, challenges, interactions, disruptions

Influence of Resource Mobilization on Competitiveness of TVET Institutions in Kenya

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Abstract

The aim of this paper is to assess the influence of resource mobilization on competitiveness of TEVT institutions in Kenya. TVET institutions have been facing tremendous challenges, despite their immense contribution in the country's education sector and to the economy at large. The institutions have been characterized with low intakes and their level of competitiveness has been shrinking over the years. One of the key lacking aspects among the institutions has been inadequacy in resources including finances, human resource and infrastructure. This has seen most of the TVET colleges struggle to meet their daily operational needs thus incapacitating them to remain effective. Despite the evidence of lack of resources in the TVET colleges, there have scant evidence on the efforts by the institutions to mobilize these resources for continued performance. It is against this background that this study seeks to assess the ability of the leaders in the TVET Institutions to mobilize the resources and how these resources affect competitiveness of the institutions. This study was informed by the resource dependency theory. A descriptive research design was employed while the target population was TVET institutions in Kenya. A total of 272 respondents were purposively sampled from the 68 TVET Institutions in Kenya. A

structured questionnaire was used to collect data which was analysed using SPSS. The findings revealed that resource mobilization was an integral aspect of strategic leadership that steered the competitiveness of the TVET Institutions in Kenya. The study concluded that TVET institutions lacked adequate resources which could enhance their competitiveness thus recommending the need for leaders in these institutions to develop ways through which adequate resources can be mobilized.

Keywords: Resource Mobilization, Strategic Leadership, TVET Institutions, Institutional Competitiveness

Adoption of Information Communication Technology and Competiveness of TVET Institutions In Kenya

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Abstract

In the wake of 21st century, Information Communication Technology has become one of the most integral aspects of every sector across the globe. Kenya has not been exceptional in use of technology in many sectors including the educational sector. However, the use of technology locally as an aspect of leadership strategies has not been adequately documented. On the other hand, Technical and Vocational Training Colleges remain among the main drivers of the country's vision 2030 and the overall achievement of the government's mandate. The institutions have been on the rise in the country with the government setting at least one TVET college in over 90% of the sub-counties. Despite their immense role in enhancing acquisition of technical skills in the job market, the TVET institutions have been facing steep competition particularly from the already developed universities. This makes the colleges face sustainability challenges characterized by low uptake of students and low course completion rates among other challenges. Based on the role played by ICT in enhancing competitiveness, it would be important to assess how the technology has been utilized in these institutions and whether it has any impact in the competitiveness on these colleges, hence the subject of this study. The study employed a descriptive research design and targeted the 68 TVET institutions in Kenya. A census was employed whereby all the 68 institutions were included in the study. The findings revealed that adoption of Information technology through availing ICT infrastructure, providing the appropriate ICT skills and setting effective ICT policies, strongly influenced the competitiveness of TVET colleges in Kenya. The study concluded that ICT was an integral aspect for the competitiveness of the TVET colleges hence recommending that the management and the government should highly focus on embracing technology among these institutions.

Keywords: Strategic Leadership, Information Technology, Firm competitiveness, TVET Colleges

Reflection on English Textbook in the Kenyan Classroom

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Abstract

A textbook gives newly recruited tutors proper guidelines in a given course or learning activity. It enhances continuity and consistency in the presentation of content and presents students with a sense of system and progress. Further, textbooks play a crucial role in modelling the required values, social behaviour and norm; it provides a lens through which the world is portrayed thus acting as a potential medium of socialization. English is an important language in Kenya and the world at large. Languages textbooks especially the English ones assist learners in attaining communicative competence. English language textbooks play a central role in teaching and learning in many developing countries where English is either a subject and/ or medium of instruction. English is one of the languages offered in the Kenyan secondary school curriculum, and it is the medium of instruction for all the other subjects offered (except for other languages). Textbooks are critical materials used to support the implementation of the curriculum. The textbooks provide input in the form of explanations, texts and activities to simplify educational activities that appear complex. Specifically, the linguistic items and the visual images used in the presentation of the content are key in ensuring production of quality English textbooks. Again, textbooks are agents of effective and long-lasting change that shape learners' mindsets, perceptions, and attitudes in their later life. Textbooks are crucial tools in as far as the conveyance of direct or indirect meanings regarding the how happenings produced in society is concerned. Specifically, the language textbooks are influential instruments, which present indelible experiences to the learners. Consequently, it is important to think about this powerful tool in the Kenyan classroom.

Key words:

Analogy, Scientific Visualization and Scientific Revolution: Implications for a New Pedagogy in Science

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Abstract

Scientific revolution has largely been portrayed in terms of paradigm shifts in the conception or Visualization of Natural Phenomena through: observation, classification, experimentation, problem-solving, explanation among others. The conceptualization of this position reveals a lack of clear description of the interplay between: three conceptions of Scientific Explanation; three modes of reasoning; four types of Visualization involved in the construction and assessment and redirection of scientific growth. This paper argues that greater focus should be put on the

justification of the critical role mathematical analogies have played in the processes of scientific revolution. This interplay may form a basis for harmonization of pedagogy in both science and mathematics.

Key words: Conception of scientific explanation, scientific visualization, scientific growth, scientific revolution, mathematical analogy, reasoning modes, pedagogy.

The Impact of Covid-19 Pandemic on the Implementation of the University Curriculum: A Case of Public Universities in South Eastern Kenya

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Abstract

The outbreak of the Covid-19 pandemic was the least expected catastrophe globally. The first case of Covid-19 infection was reported on March 2020. Due to the panic of its' effects human life, the Government of Kenya issued directives to combat the spread of the disease which, lead to indefinite closure of institutions of learning. Public universities were not an exception. Since then, universities mounted diverse strategies to ensure that curriculum implementation was not disrupted. However, there have been concerns by stakeholders about the quality of the curriculum implementation activities during of the Covid- 19 period (March 2020). The purpose of this study was therefore to investigate the impact of covid-19 pandemic on the implementation of the university curriculum. This study was guided by two research objectives; to examine the teaching strategies used for curriculum implementation in Kenyan universities and to establish the quality of the curriculum implementation in Kenyan universities since March 2020. This study adopted survey research design. It was carried out in two (2) public universities in Machakos and Kitui counties, Kenya. The sample of study was 80 students, 20 lecturers, 10 Chairmen of Departments, 2 directors of ICT, 2 directors of Quality Assurance and 6 Deans of Schools yielding a total of 120 respondents. The findings of the study revealed that curriculum implementation was done using several teaching strategies; Online and blended teaching strategies (pure online teaching, Face to Face, synchronized teaching and digitalization of units). The platforms used for teaching were zoom, google meet and kenet. In addition, the findings of the study further showed that the quality of the curriculum implementation was significantly compromised. This was attributed to poor network, limited technical skills on use of online platforms by lecturers and systemic failures. It was therefore concluded that public universities have put innovative teaching strategies to mitigate the challenges brought by the Covid-19 pandemic, but the quality of curriculum implementation was poor. The study recommends that universities should invest in adequate ICT infrastructural facilities that enhance e-learning.

Key words: curriculum implementation, e-learning, teaching and quality

Awareness Level of Pupils on CSA in EMESA Sub-Location, Kisii County

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Abstract

Child abuse as recorded in literature in many parts of the world continues to affect the children conventionally. The abuse dates back to ancient civilizations as seen in the reports of female genital mutilation, infanticide, neglect, abandonment and child trafficking. Child abuse is a worldwide problem that occur in various forms which is profoundly entrenched in cultural, economic and social practices. It occurs in different forms which are: physical, emotional neglect and sexual abuse. Child sexual abuse (CSA) is a global problem which cuts across all status boundaries ranging from social, economic, cultural and political. Despite a myriad research on CSA, its awareness level has been difficult to estimate among pupils. This study therefore concentrated on awareness level of pupils on CSA. The study used systematic sampling to select pupils, convenience sampling to select parents/guardian and purposive sampling to select key informants. The sample size was 100 pupils, 100 parents/guardians and 10 key informants. The findings of the study reveal that the knowledge of teachers, parents and other caregivers on CSA preventions directly influences the child's prevention awareness. The study recommends a dialogue among the religious institutions, policy formulators, teachers and parents the introduction of sex education both at school and societal level to equip the learners with the possible refusal technics, abuser identification, where to report in the event of abuse and the consequences of the abuse and the emphasize should not only be on girls but also boys since all can be sexually abused.

Key words: Child abuse, Child Sexual abuse, Child trafficking, Prevention awareness, Female genital mutilation, Sex education

Open Access Publishing and Knowledge Production in Sub-Saharan Africa: Opportunities and Challenges

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This is a study on opportunities and challenges which confront the sub-Saharan Africa region in the production of knowledge through open access as a new method of knowledge production. New methods of Producing knowledge have characterized some of the decisive changes that have affected society, and the way that knowledge is produced today. The paper looks at how the sub-Sahara African region has witnessed the emergence of a new regime of knowledge production linked to new regimes of social regulations and information and communication technologies. Sub-Saharan Africa accounts for 13.5% of the global population but produces less

than 1% of global new knowledge. Global changes, as well as technological developments and changes in the way scientific knowledge has been put to use, have radically transformed science with respect to its research practices, institutions, and knowledge production methods. Scholarly publishing enables research findings of scholars to cross international boundaries to provide strong, positive connections between individual scholars, institutions and nations. Such exchanges contribute to the expansion of the global knowledge base to which the sub-Saharan Africa region is purportedly linked. In theory, participation in the global arena through scholarly communication may enable the sub-Saharan Africa region to have access to knowledge and information it needs to succeed in the global economy that is being digitized rapidly. Scholarly publishing is as a result of research and innovation which may improve the quality of knowledge and information produced by scholars in the sub-Saharan Africa region. This paper explores the challenges and opportunities of knowledge production in sub-Saharan Africa through open access. The paper also proposes ways of capitalizing on the vast opportunities of enhancing knowledge production and dissemination in sub-Saharan Africa through open access as a method of scholarly publishing and a Mode1 of knowledge production. Literature review on knowledge production, modes of knowledge production and open access was conducted. A number of challenges confronting knowledge production in sub-Saharan Africa through open access were identified. The challenges include technological, socio-political, economic and environmental. Open access brings with it opportunities that may enhance sub-Saharan Africa's visibility of production of new knowledge.

Key words: Open Access; Knowledge Production; Sub-Saharan Africa; Scholarly Publishing

Relationship between use of assistive technology on student-teacher related factors and performance of VI students in Kiswahili in Public Primary Teachers' Colleges in Kenya

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Abstract

Right to education is universal to all including those with disabilities. Students with visual impairments can struggle with a wide variety of challenges in a mainstreamed classroom setting. Assistive Technology intervention by use of assistive devices in teaching, use of assistive teaching methods, taking care of visually impaired severity and boosting positively the student-teacher related factors improve their performance. The purpose of this paper is examine relationship between use of assistive technology on student-teacher related factors and performance of VI students in Kiswahili in Public Primary Teachers' Colleges in Kenya. The study adopts a quasi experimental design by use of a pre test and post test. It has been appropriate to analyse the treatment effect of using AT in teaching VI students in one group while applying the conventional teaching methods on the control group. The target population is three teachers' colleges in Kenya (Asumbi, Machakos and Mosoriot). A standardized examination is given to the two groups .Another examination was given to the two groups after giving one group a treatment of use of discussion groups, peer consultation and use of teacher assistive teams. The AT devices

were critical in teaching VI students in order to improve their performance in languages and therefore their adequacy in college determined the rate of students' performance. The researcher found out that the attitude of the teachers in teaching VI students was positive but the challenges in ensuring quality teaching of Languages included the students having a negative attitude towards Kiswahili Language, teachers have a negative attitude towards their career and lack of adequate teaching and learning materials. The researcher found out that the most significant methods that the teachers used to teach Languages to students with VI were: lectures, assignments and group discussions.

Key Words: Assistive technology, attitude, instructional resources, student –teacher, teaching aids,

**SUB-THEME 4: IMPLICATIONS OF CLIMATE CHANGE ON SUSTAINABLE
ENVIRONMENTAL AND NATURAL RESOURCES MANAGEMENT**



Influence of Environmental Programmes on Students' Attitudes and Behavior in Addressing Environmental Issues in Murang'a County, Kenya

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Abstract

Environmental degradation is a major challenge which requires appropriate strategies to reverse the situation. One of such strategies is experiential environmental education among high school students who, through change of attitudes and behaviour, are able to participate in various environmental management activities. In this study the pro-environmental attitudes and behaviour of high school students in Murang'a County, Kenya were examined to assess how environmental education programmes among the students affected environmental issues of waste management, water resources management, natural resources management and climate change in the schools. Nine hundred and sixty-one (961) students from nineteen (19) high schools from two sub-counties in the County was used in the study. The Likert type questionnaire and the 2-MEV Scale were used to collect the required data. The t-test statistic was applied to determine any differences between the variables. Results showed significant differences in pro-environmental attitudes and behaviour with regard to solid waste management, water resources management, natural resources management. There were significant differences with regard to solid waste management, natural resources management, climate change and environmental concerns between members of Environmental Clubs and non-members. Pro-environmental attitudes and behaviour were influenced by current membership of the Clubs rather than past membership. It is concluded that experiential environmental programmes improve the student's pro-environmental attitudes and behaviour hence environmental management within the schools. It is recommended that appropriate policies be formulated to enhance the implementation of school experiential environmental programmes to ensure capacity building of the learners to effectively manage environmental issues in the schools.

Key words: Environmental Education, Experiential Environmental Programmes, Pro-environmental Attitudes and Behaviours

The Recurrent Landslides of Lagam Escarpment, Kaben Location, Marakwet East, Kenya

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Abstract

The landslides of the Lagam escarpment in Kaben loction of Elgeyo Marakwet County are not only recurrent but are highly cataclysmic; causing mayhem whenever they occur. The first known landslides on the Lagam escarpment of Kaben location-Marakwet, happened during the 1961 El-Nino, when a major rainstorm hit the area (Kiptungu). These landslides re-

fashioned Embosumer River and left huge boulders scattered over many farmlands. On the night of 12th April 2010, a catastrophic landslide hit Kaben location and again, Embosumer River was the perpetrator, having broken its banks due to excessive water inflow. Fourteen (14) people lost their lives, others got badly injured and lots of property was destroyed. Recently, on Sunday, 19th of April 2020, in the afternoon, heavy rains pounded the area causing massive mudslides that involved many rivers and streams. As a result, twenty-six (26) lives were lost, homes, schools and farmlands were washed away and to date, there are several bodies believed to be trapped in the mudslide material. This study is geared towards investigating the causes of the recurrent landslides and proposing possible mitigation measures. Data was collected through secondary data analysis and has been presented in the form of ground photographs, satellite images and discussions made thereon. It is hoped that this preliminary study of the Lagam escarpment landslides will create awareness pertaining to the recurrent landslides and draw positive action from the area residents and all concerned parties.

Key words: Landslides, Recurrent, Lagam escarpment, Kaben Location, Marakwet

Influence of Climate Variability on the Livelihoods of Rural Women in Bungoma County, Kenya

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Abstract

Women face various challenges due to climate variability which affects their livelihoods at various geographical levels. This is due to their social roles and gender inequalities they face in terms of their access to and control of resources and their low participation in decision-making. To adequately address the challenges faced it is necessary to assess the impact of climate variability on the livelihoods of rural women at the County level. This study assessed the influence of climate change on the livelihoods of rural women in Bungoma County. The study used a descriptive study design to assess the impact of climate variability on the livelihoods of the women in the County. Both primary and secondary data were obtained through qualitative and quantitative means. Rainfall and temperature data were obtained from the Kenya Meteorological Department while data on livelihoods was obtained from the women through questionnaires using random sampling technique and Focused Group Discussions. Data was analysed using the SPSS statistical software. Results indicated that rainfall and temperature varied from year to year leading to occurrence of droughts and floods whilst the distribution of livelihood assets of the women in the County was heavily influenced by drought and seasonal flood occurrence in the County. It is recommended that there should be concerted efforts by the County government to create awareness on how climate change affects the women's livelihoods to enable them cope well with the negative consequences on the livelihoods.

Key words: Climate Change, Livelihoods, Rural Women

Environmental Factors Influencing the Sustenance of Camel Milk Value Chain in Isiolo County, Kenya

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Abstract

Dry land areas experience challenges due to various factors, environmental degradation associated with climate change related risks and other stressors of biodiversity, which pose major threats to the sustenance of camel milk production for most residents in northern Kenya. This study examined some of the environmental factors that influence camel milk value chain in Isiolo County of Kenya based on two hundred and eighty-four (284) households interviewed, fifteen (15) key informants, and twenty (20) focused groups. Semi-structured questionnaires, face to face interviews and the mixed method approach were used to collect primary data while secondary data were obtained from published and grey literature in relevant public and private institutions. Data was analyzed using the SPSS software and the results presented using frequencies, means, percentages, graphs and tables. Analysis of variance and regression analysis were applied to establish the variance in camel milk production between the wet and dry seasons for four years from 2016 to 2019. Results from the study showed that weather conditions and available natural forages affect the value chain of camel milk. There was high significant difference in camel milk supply with ± 2728.6 of milk sold between wet and dry seasons at $P_{(0.05)} < 0.025$ using Fisher's Least Standard Deviation (LSD) at 5% level. In conclusion, it is established that the variations in quantities of milk supplied is due to prolonged dry spells and inappropriate land use systems in the County. A modernized camel milk value chain with improved natural resources management for a sustainable system is recommended.

Keywords: Camel milk, Environment, Value chain, Natural Resources, Isiolo, Northern Kenya

Factors Influencing Resilience of Pastoralists to Drought in Kajiado County, Kenya

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Abstract

Major contributing factors to climate variability including increased atmospheric carbon dioxide, rising temperature, possibly leading to more drought and floods. This will in turn alter the availability of water resources, productivity of grazing lands and livestock, the distribution of agricultural pests and diseases. As a result, adaptation to future changes requires an attention to stability and resilience of the production system rather than improving its absolute levels. The study aimed to evaluate resilience of pastoralists to droughts in Kajiado County. The study used household questionnaires, key informant interviews and focus group discussions as tools to collect data in the field. Data was analysed using both content and thematic methods. Results revealed climate change and variability had escalated negative impacts on the biophysical

environment, pastoralists' food insecurity and livelihoods. Although household livestock reduction by up to 80% was experienced, the terms of trade improved significantly since 2010. The chronic food insecurity was estimated at 66%. Results also revealed that household size, migration, livelihood and herds' diversification and technological adoption (hay making, land zoning, veterinary interventions, and mainstreaming climate change information in planning and project implementation), physical infrastructure development and distance to markets influenced resilience to drought in the study sites. Despite the fact that early warning systems were used to provide timely information on drought incidences, there were no linkages at the community level. The pastoralists faced challenges such as access to credit and lack of extension services provisions. The study concludes that various factors influenced the resilience of the pastoralists to drought in the County and that drought caused worsening resource scarcity among the pastoralists. It is recommended that appropriate policies and strategies should be instituted to help the pastoralists mitigate the adverse impacts of drought in the County.

Keywords: drought impacts; resilience; adaptation; pastoral livelihoods

Implications of Climate Change on Sustainable Environmental and Natural Resources Management in Kenya

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Abstract

The natural environment consists of the atmosphere, the lithosphere, biosphere and hydrosphere interacting with one another and forming a system powered by solar radiation. Human livelihood and growth of the economy depends on natural resources. Sustainable management of environmental and natural resources are important for the achievement of sustainable development goals in a country. Climate change indicators such as changes in precipitation and temperature have an impact on the quality and availability of natural resources. This review aims to assess the implication of climate change on sustainable environmental and natural resources management in Kenya. A seven-step model was used to examine various literature and five identified themes were (i) causes of climate change (ii) evidences of climate change (iii) impacts of climate on natural resources management (iv) climate change adaptation and mitigation (iv) Environmental sustainability. The study revealed that despite different government and climate stakeholders' efforts; climate change continues to jeopardize the sustainable environment and natural resources management. Perhaps, due to low public awareness, institutional and policies failures, poor governance, inadequate technologies, inadequate experts, inadequate scientific data, overdependency on fossil and wood fuels energy and rapid population growth. It is recommended that the nation should invest more in renewable energy; there is a need for effective implementation of sustainable development, Climate Act of 2016 and Multi-International Environmental Agreements (MEAs). The government should put more priority on climate change mitigation programmes. These should be accompanied by public participation and involvement in climate change adaption and mitigation programmes.

Keywords: Climate change, sustainable development, policy, natural resource and environment

Implication of Climatic Change on Sustainable Environmental and Natural Resource Management: Individual and Collective Responsibility

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Abstract

The impact of climate change is quite evident in terms of increasing aridity, disruption of livelihood in terms of food and drinking water supply, risking the collapse of marine ecosystems, food insecurity, Arctic melting, loss of glaciers, Amazon and Siberian fires, droughts and floods. Several studies in literature support the fact that global warming that causes climate change is due to human activity. This is explained first of all by the use of fossil fuels, and secondly by the balance of emissions from changes in land use. The ocean has absorbed about 30% of human made carbon dioxide emissions which has led to acidification of the waters. Global warming relies mainly on the green-house gas emissions, which are currently increasing. There is need to redesign our curricula and demand that ecology be at the centre of learning at all educational levels as young people need to be taught about the urgency, severity and scientific basis of the climate change crisis. Unless we make a paradigm shift in our curriculum design and development and also change our lifestyles, we risk suffering the worst impact of climatic change. The paper is a review of both theoretical and empirical studies on impact of climate change in Africa and brings to the limelight the global views of this impact in Africa. The paper contributes to new knowledge by suggesting the need for the African nations to collectively take responsibility to address the impact of climate change by recommending a Pan African Ecological Curriculum

Keywords: Impact of climate change, Ecological Curriculum, African Nations, Collective Responsibility.

Reflections on Policies and Institutional Mechanisms for Climate Change Management in Kenya

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Abstract

Climate change poses serious challenges worldwide. It manifests itself in the frequent occurrence of various disasters such as droughts and floods which directly or indirectly impact key sectors of the global economy. In Kenya for instance, the drought of 2017-2018 led to more than three million food insecure people, about 5 percent rise in livestock sales and over half a million people without access to water. These impacts are exacerbated even more with the ever-increasing human population in the country which limits the viability of people's livelihood resources such as

land, compromises infrastructure development and lowers productivity. To effectively address the challenges posed by climate change, the government of Kenya has enacted various policies and established institutions with requisite action plans to guide in the management of climate change in the country. This paper provides a reflection on the various policies and institutions that have been established to deal with climate change in the country, elucidates some of the challenges faced and proposes possible interventions to the challenges. Specific recommendations are made at the end of the paper.

Keywords: climate change, policy, institution, climate change management

Potential Challenges of Drought Coping Strategies in Machakos County, Kenya

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Abstract

Drought is a complex environmental hazard whose impacts cut across several sectors of the economy. It is one of the most devastating but least understood climatic phenomena due to its slow onset and the fact that its impacts accumulate over time. The vulnerability of an area, sector of the economy and/or population group to drought is dependent on population growth, changing consumption and production patterns, the level of environmental awareness, poverty levels, extent of environmental degradation, number and nature of environmental regulations, weak governance structures, land use changes and weak or ineffective government policies. Drought affects many people differently and poses various challenges to economic management at all levels. Managing it, therefore, requires various strategies to deal with it. One way to do this is adopting various coping strategies which differ from one household to another and across communities and regions. The thrust of this paper is on the possible challenges faced by households whilst coping with drought occurrence in Machakos County. Possible interventions to the challenges are proposed and recommendations made on how to manage drought in the County,

Keywords: Drought, drought management, coping strategies, Machakos County

Factors Influencing Public Participation in Environmental Impact Assessment of Nairobi-Thika Superhighway Improvement in Nairobi City County, Kenya

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Abstract

Public participation is a key component in environmental impact assessment and governance. Public participation is a process by which public concerns, needs and values are incorporated

into governmental and corporate decision-making with the overall goal being decisions that are supported by the public. Public participation is also important in the development and management of natural resources. Environmental impact assessment (EIA), on the other hand, is a procedure which seeks to ensure that adequate prior information is obtained on likely environmental consequences of development projects, on possible alternatives and on measures to mitigate the adverse impacts. The objective of this study was to examine factors influencing public participation in the EIA process in the Nairobi-Thika Superhighway Improvement Project in Nairobi City County. The study adopted a descriptive research method with a total sample of 120 respondents/households sampled from along the Nairobi-Thika Superhighway within Nairobi City County. Key finding of the study is that despite high levels of public awareness about the Nairobi-Thika Superhighway road construction project, there was low knowledge on the need to participate and low levels of actual participation in the EIA process. The reasons for low participation were attributed to lack of time, lack of knowledge about the need for participation and lack of trust and transparency in the EIA process. The study recommends enhancement of public education about public participation in development projects. The project planners and implementers need to observe transparency in the EIA process for increased public trust, acceptability and support.

Keywords: Public Participation, Environmental Impact Assessment, Public Education, Transparency, Trust, Acceptability

Private Cloud Deployment Model Based on Fusionsphere Openstack

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Abstract

The emergence of Covid-19 pandemic accelerated cloud computing adoption. It demonstrates how a flexible cloud deployment is critical in enabling enterprises to be agile and adaptable with their workloads, processes and the support they can give to remote workforces. With legacy workloads, ongoing security concerns and shifting patterns of network access, the question facing every organization using cloud services is which cloud platform to deploy in order to gain maximum advantage. The choice of an appropriate cloud computing model is vital to the long-term sustainability and profitability. This paper proposes a private cloud deployment model that is based on FusionSphere openStack virtualization suite. FusionSphere openStack is an enhanced open-source solution for server virtualization. It significantly improves data center infrastructure efficiency and improves infrastructure resource utilization data centers, accelerates service rollout, reduces power consumption in data centers and provides powerful restoration capabilities of virtualized infrastructure to provide rapid fault recovery for services, thereby cutting data center costs and increasing system runtime.

Keywords: Private Cloud, Deployment Model, FusionSphere, OpenStack, Cloud Computing, Virtualization

Use of PET Flakes as Coarse Aggregates Replacement in Concrete Paving Blocks

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Abstract

Concrete paving blocks were first introduced in Holland to replace paver bricks which had become scarce due to the post-war building construction boom. In Kenya, paving blocks are used in construction of pavements in both residential and commercial areas. They can be used in areas with light or heavy traffic. Solid waste management has been a big challenge in Kenya for years. With growing population and demand for housing, it is of paramount importance to develop alternative uses of plastic waste. Concrete paving blocks containing PET flakes at 5%, 10%, 15%, 25%, 50%, 75% and 100% replacement ratios for coarse aggregates were prepared against a 30MPa control sample. Compressive strength, tensile strength and water absorption tests were carried out. at 5% replacement ratio, the paving blocks had compressive strength of 44.18MPa which is suitable for medium traffic areas.

Fabrication of Molecularly Imprinted Polymers Based Sensor for Determination of Polychlorinated Biphenyls in the Environment

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Abstract

Pollution of the environment by polychlorinated biphenyls (PCBs) continues to be a global concern because of the carcinogenic, persistence, and long-range transport displayed by these chemicals. Their monitoring in the environment requires novel techniques to achieve detection at very low concentrations that demonstrate harmful effects to the ecosystem. Cheaper and reliable techniques based on molecularly imprinted polymers (MIPs) are being introduced as alternative options to the high investment techniques. MIPs are synthesized via molecular imprinting technology (MIT), which involves creating an impression inside a polymer matrix with the size, shape, and charge circulation which relates to a template molecule or target molecule. This is achieved by co-polymerizing functional monomers in the presence of a template molecule that corresponds to the target molecules, with subsequent removal of the template to create synthetic binding sites. The outcome is a synthetic receptor capable of binding selectively to a given target analyte presenting novel adsorbents for analytical applications and recognition elements in sensors. This study investigated the potential application of MIPs

selective to PCBs as recognition elements in quartz crystal microbalance (QCM) sensor for determination of PCBs in the aqueous environment. MIPs were synthesized using different functional monomers, templates and characterized using SEM, BET, FT-IR, TGA, and batch rebinding assays to determine their chemical and morphological properties and molecular recognition behavior. The highly selective MIPs were then integrated into the QCM sensor by immobilizing MIPs and NIPs into the surface of the QCM crystals. The fabricated sensor was then used to determine the levels of PCBs in spiked laboratory samples and environmental water samples.

Keywords: Polychlorinated biphenyls, Molecularly imprinted Polymers, QCM Sensor

Petroleum Synopsis of the North West-Kenya Rifts: Evidence and Issues

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Abstract

This synoptic research work gives an overview study of geological implications, tectonic features and stratigraphy of north-western Kenya rift basins. The basins evolved through extension tectonics that brought out continental rifting as a part of the major Gondwanaland breakup in the Late Paleozoic time and continued in the Mesozoic and Tertiary. This movement was accompanied by a stupendous outpouring of the lava flows. The gravity anomaly maps and seismic profiles were most useful for the interpretations incorporated in this paper which revealed the presence of several horst- and graben-like structural systems, determined the fault system and the basement depth, and predicted favourable petroleum zones. It was also revealed that the basins attracted potential petroliferous sedimentary piles (~2000 – 5000 m thick) which were deposited on basement rocks of Precambrian age. They later got covered by basaltic flows of mainly Miocene age. The drill core lithologs were available pertaining to wells: LT-1 and LT-2 in the Lokichar and North Kerio-Turkana basin systems (Tertiary) and C1, C2 and C3 in the Chalbi basin (Cretaceous). The north-western Lotikipi basin (Cretaceous?) has not yet been drilled. Comparing the lithologs from these wells, the strata in which there was oil and/or gas indications was further characterised in the light of the organic matter and other sedimentological parameters in order to understand the source-reservoir-seal associations which form favourable targets for future petroleum exploration.

Key Words: source rocks, petroliferous, exploration, gravity, seismic

Assessment of Selected Physico-Chemical Parameters of Groundwater in Chuka Igambang'ombe Constituency, Kenya

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Abstract

Groundwater is an essential source of water for drinking and other domestic uses. Recently, there has been high dependence on groundwater due to water shortage as a result of changing climates, and higher costs of accessing piped water. An occurrence of the physico-chemical parameters of the groundwater in levels past the WHO highest permissible limits can cause serious health implications to the consumers of the groundwater. This study therefore, assessed the extent of the physico-chemical parameters concentration of the groundwater in Chuka, Igambang'ombe constituency. A total of five samples was collected from 5 boreholes in the Mucw'a and Ndagani regions surrounding the Chuka University main campus. Selected physical parameters were recorded onsite by use of portable apparatus. Samples for testing chemical parameters were collected and transported in cooler boxes to Chuka University laboratories for analysis. Physical parameters determined onsite were dissolved oxygen (DO), temperature, and the pH. Dissolved Oxygen meter, mercury thermometer, and pH meter were the equipment used to test the respective physical parameters. UV- spectrophotometry was used to analyze the chemical parameters: nitrates, and phosphates, where absorbance was recorded at a wavelength of 220-820 nm and 880nm respectively. The assessment was conducted during the relatively dry months of January to March. The temperature of the water ranged from 22.8-25.2°C. The pH levels ranged from 4.50 – 9.50. The high-altitude nitrate levels were 2.4mg/L, and 7.37mg/L at the low altitude. The phosphate concentrations were below detectable limits. The results were then compared with WHO standards for the highest permissible levels for the tested parameters to determine the suitability of the water for consumption. All the tested parameters lied within the WHO permissible limits for drinking water except for the pH levels.

Key Words: Groundwater, physical parameters, chemical parameters, infiltration, suitability, Chuka

Advances in Sensor Technology in Determination of Polychlorinated Biphenyls in the Environment

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Abstract

Industrialization witnessed in the last decades has seen introduction of chemicals that are harmful to human kind into the environment. In particular, the presence of polychlorinated

biphenyls (PCBs), which were widely applied as plasticizers and dielectric liquids in transformers and capacitors, in the environment continues to be a global concern because of the carcinogenic, persistence and long-range transport properties displayed by these chemicals. As such, their monitoring in the environment is of particular interest so as to protect the environment and human life from adverse effects of these chemicals. In the past, costly technologies that involve gas chromatography coupled to either electron capture detector or mass spectrometry have been used in quantifying the level of these chemicals in the environment. Continued improvement has seen these technologies advance to formats that achieve high resolution and detection of these compounds at low concentrations. Their utilization for routine monitoring of PCBs is however limited by their cost and the need for trained personnel. To bridge this gap, other technologies that are cheap and favour routine monitoring as well as offer opportunities for on-site determination of PCBs have been introduced. This review discusses sensors as novel technologies that have been applied in monitoring of PCBs in the environment and looks at the future prospects as far as sensor technology is concerned.

Key words: Sensors, polychlorinated biphenyls, molecularly imprinted polymers, environmental pollution

Sludge Management Technologies for Sustainable Development: An Overview

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Abstract

Sludge is a semisolid material produced during treatment of water or waste water in the primary and secondary treatment processes. Depending on the source of the waste water, the sludge may have varied concentrations of organic and inorganic chemical pollutants that could be; toxic, mutagenic, physiological disruptors, irritant, odorous, has pathogenic microorganisms (bacteria, viruses, protozoa and helminths) and may have long term build ups and interactions in soils and bio-concentration in food chains / food web systems) making sludge a major health and environmental concern. From the conventional water and water treatment plants the sludge eventually requires safe disposal either in sanitary landfills, incineration, agricultural and forest land application. Thus, management of dried sludge or bio-solids remains problematic due to the high cost of installing sewage sludge stabilization reactors and dehydration systems as well as transportation to ex-situ sites which may be far away from the treatment plants. A positive and feasible sludge management process requires technologies that embrace the concept of circular economy whereby waste does not exist but rather any emerging waste stream is utilized as secondary bio-resource and helps to recover energy for reuse and recycling. Such a concept is different from the linear economy that considers by-products as wastes. This overview paper discusses the application of circular economy for various green technologies that are used in valorisation and manufacture of useful products from waste water sludge thus discouraging the throw-away culture and encourages cash flow to boost the economy as well as clean up environment for sustainable development.

Key words: Circular economy, green technologies, sludge management, sustainable development, valorisation

Equilibrium and Kinetics of Adsorption of P-Nitrophenol (Pnp) From Model Aqueous Solution Using Raw and Quaternised Afromomum Melegueta Peels

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Abstract

Anthropogenic activities contribute large amounts of pollutants to the environment which threaten animal and human health. There is increased realization of the effect of these toxins on surface and ground water, consequently, their elimination is vital in rendering secure water for drinking as well as culpable release of effluents to our habitats. Phenolic compounds cause serious health effects to both humans and animals, a p-Nitrophenol concentration of 1ppb changes the taste and odour of water as well as meat and fish quality. In humans, exposure to PNP causes eye and skin burns while its interaction with blood leads to confusion, cyanosis and unconsciousness. It is imperative therefore to find ways for removing PNP from water. Among the available techniques for removing PNP from water, adsorption is more convenient and offers more advantages because of its design, simplicity and operating flexibility. The present study involved application of raw and modified peels of *Afromomum melegueta* agricultural wastes to remove PNP from water through adsorption. The raw adsorbents were modified with a quaternary ammonium salt to improve their uptake efficiency. The impact of experimental parameters; contact time, pH, sorbent dose, temperature and concentration were investigated. Attenuated FTIR technique was employed to characterize the adsorbent materials. It was established that the quaternary ammonium compound was anchored chemically within the cellulose structure of *Afromomum melegueta* peels. The behavior of adsorption of PNP was investigated using Langmuir and Freundlich isotherm models. The physical sorption load was 8.70 and 106.38 mg/g for raw and quaternised *Afromomum melegueta* peels respectively from Langmuir adsorption equation. Uptake of PNP is high at the first 30 mins of contact and at sorbent dosage of 0.01 g and 0.03 g for RAM and QAM respectively. Quantity of PNP removed increases as the initial concentration rises however, adsorption decreases after a concentration exceeding 30 mg/L. The ideal pH and temperature for PNP removal is at pH 3 and 25 °C respectively. In conclusion, the findings suggest that *Afromomum melegueta* peels can be friendly to the environment, cheap biosorbents and efficient which can be applied for the uptake of PNP from drinking water.

Key Words: *Afromomum melegueta*, Adsorption, Modification, Quaternised, p-Nitrophenol, Isotherms

Heavy Metals and Bacteriological Contamination of Mitheu Stream in Machakos Municipality, Kenya

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Abstract

Urban streams are increasingly utilized for irrigation farming to supplement the demand for food in cities and towns. However, these streams are threatened by pollution from industrial and municipal effluent. This study investigated the water quality of Mitheu stream with respect to irrigation use and the quality of vegetables grown along the stream. Water samples for physicochemical parameters, heavy metals (Cd, Cu, Zn, Pb, and Cr) and bacteriological (E. coli & total coliforms) analyses were collected in four selected sampling points along Mitheu stream once every month from June to September 2019. Kales and Spinach samples for heavy metals analysis were collected from farms along the stream adjacent to the selected sampling points. Physicochemical and bacteriological analyses were done in Water Resources Authority Laboratory in Nairobi. Heavy metals analyses in both water and vegetables were done using inductively coupled plasma mass spectroscopy (ICP-MS). Data was subjected to One-Way Analysis of Variance to test significant differences ($p \leq 0.05$). The stream was found to contain higher-than-recommended WHO levels of pH, TDS, EC, COD, BOD, and Bacterial contaminants. Concentrations of nitrates and cadmium (Cd) in the stream were also higher than WHO safe limits for irrigation water. The concentrations of Cd, Pb and Cr in kales and spinach exceeded WHO recommended limits. These findings implied inefficiency in the effluent management system within Machakos municipality and that the stream was not fit for use in irrigation farming as it presented a health hazard from bacterial infections, organic chemicals as well as cadmium poisoning to the farmers and consumers of their produce. Vegetables grown along this stream were also unsuitable for consumption as they threatened the health of consumers via Cd, Pb and Cr poisoning. The County Government of Machakos working together with the National Environment Management Authority need to take appropriate measures to curb untreated effluent discharge into the stream.

Key words: Heavy metals, bacteriological loads, urban farming, vegetables

Implications of Covid-19 on Waste Management and Natural Resources Management in Urban areas

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Abstract

Pandemics affect the very existence of human life and their effects going beyond human life to the environment. Nairobi River has been a pivotal natural resource serving the environs of Nairobi County. In the present Covid-19 pandemic, disposal of face masks in the river has been witnessed illustrating the implications of waste management on natural resources and climate change. The risks associated and enhanced from improper waste management continues to add tolls on the state of Nairobi River further aggravating the previous conditions of pollution. The Covid-19 pandemic has had a positive effect on the environment in that the lockdowns resulted to reduced travelling hence reduced global carbon dioxide emissions from the transport sector thereby resulting in improved air quality. However, the pandemic has imposed a further strain on the municipal waste system of many developing economies whose waste management structures and frameworks are still straining from doubled waste generation. As part of the Covid-19 protocol, the world globally was advised to wear face masks, to protect oneself from the corona virus. There is no developed protocol in the management of the used masks, gloves and PPEs. Increased generation of used face masks and gloves has led to an indiscriminate dumping of these wastes not only in water bodies but also in dumpsites. Burning of these wastes will lead to increased production of greenhouse gases that have been cited as contributing to climate change. Beyond the Covid-19 pandemic, it is advisable for the Government to treat waste management as an essential service to avoid future foreseeable and unforeseeable adverse impacts on the environment.

Key words: Covid-19, waste management, climate change, natural resource management, environment

Solar Water Desalination in a Vacuum of Infinite Volume

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Abstract

Presence of fluoride in drinking water sources is a global concern as it causes dental and skeletal fluorosis. This leads to health complications, because the bones of the victims are weakened and results to disability. Furthermore, it affects children personality, especially when their teeth are attacked and tan; smile is beauty. The most common water desalination method is reverse osmosis but it is an expensive undertaking in terms of electric power bills and it is also not accessible to the poor. Places like Kitui, Njoro, Naivasha, Turkana and Baringo, dental and skeletal fluorosis is real. Coincidentally or fortunately, these areas enjoy massive solar energy which can be harnessed to desalinate water sources. A research is currently underway in Machakos University, to apply solar thermal energy to pre-heat water before it is sent into a vacuum created and based on the principle of barometric height. This is illustrated in the figure.

Here, reduction in pressure, cause water to flash or in a more common word, boil, at temperatures below room temperature. Condensing water is then trapped and channeled for drinking purposes. The volume of the vacuum is made infinitely large to counteract negative effects of the non-condensable gases, as they can lead to its rapid depletion. A degassing unit will also be installed to remove these gases before they enter the vacuum.

Geochemical Evaluation for the Hydrocarbon Potential of Source Rocks in the Anza Basin, Kenya

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Abstract

Anza basin is located in the extensional arm of the central African rift system in the North-Eastern part of Kenya. Cretaceous sedimentary rocks were sampled from the four wells namely, Chalbi-3, Sirius-1, Ndovu-1 and Kaisut-1. Anza basin occurs on a fault block within a Paleocene–Cretaceous rift basin. The methodological approach used for the evaluation of source rocks included petrophysical and geochemical methods to ascertain their potential. Well sections with higher shale-volume ratio were sampled for geochemical screening to determine the organic richness and thermal maturity of potential source rocks, respectively. Source rock with organic richness $\geq 0.5\%$ were evaluated further for their petroleum potential using Rock-Eval pyrolysis to determine their thermal maturity, organo-facies and in-situ generated hydrocarbons present in sedimentary facies. The geochemical evaluation of rock samples from the drilled wells' sections of Chalbi-3 and Sirius-1 confirmed both oil and gas potential. Gas Chromatography and Mass Spectrometry (GCMS) were used to characterize the biomarker signatures and oil-oil correlation of Sirius-1 samples. A predictive model was developed to integrate the petrophysical and geochemical data to reveal hydrocarbons' potential in the Anza basin.

Keywords: Geochemical evaluation, kerogen, maturity, petroleum potential, predictive model

Synthesis of Molecularly Imprinted Polymers and their Application as Adsorbents in the Preconcentration of Polybrominated Diphenyl Ethers

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Abstract

The growing global concern over environmental pollution and the need for monitoring of pollutants has seen tremendous advancement in sample preparation techniques in order to achieve trace-level detection of the pollutants. Sample preparation is a critical step that is

considered as the rate-limiting step in determination of environmental pollutants, especially those that manifest in low concentrations and in complex matrices. Conventional adsorbent materials that have been employed in the solid-phase extraction of polybrominated diphenyl ethers (PBDEs) are compounded by a number of limitations including sequential matrix interference and are non-selective in nature. As an alternative, molecularly imprinted polymers (MIPs) have been introduced to offer the desired selectivity and removal of substantive matrices in sample preparation. MIPs are synthesized through polymerization of the functional and cross-linking monomers in the presence of a structural analogue molecule or target molecule as the template. After the extraction of the template from the polymer matrix, recognition sites that structurally mimic the analogue molecule are formed. Molecular imprinting using dummy templates is a promising route, especially for very toxic substances that cannot serve as templates, and such approach has resulted into adsorbent materials with high recognition and selectivity capabilities. The present study sought to develop a novel sample preconcentration method based on highly selective MIPs to enable trace-level detection and quantification of both low and high mass PBDEs in an aqueous media. MIPs were synthesized using different dummy templates and functional monomers and characterized using TGA, BET, SEM, and FTIR then applied as adsorbents in molecularly imprinted solid phase extraction (MISPE) in the determination of PBDEs in spiked laboratory samples and real-world environmental samples.

Keywords: Molecularly imprinted polymers, Molecular imprinting, Polybrominated diphenyl ethers, Environmental pollution, Solid-phase extraction

Tailoring Non-linear Light-Initiated Processes for Solar Energy Conversion and Bio-Medical Applications

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Noninvasive bio-medical techniques can make use of light (as photons, heat, and soundwaves) to trigger in vivo processes such as imaging, drug delivery, and photodynamic therapy. For light initiated procedures requiring the use of high energy UV-blue photons, it's expected that the use of UV-blue photons would result in low quantum efficiencies, since this spectral range can be easily scattered while crossing dermal tissues. Recent advances in light initiated therapies and processes have been relying on non-linear photophysical processes that make use of amplified high-energy photons from low energy green-to-red radiation. This process is generally referred to as photon upconversion (UC), which is also a bi-molecular process requiring a light-harvesting triplet sensitizer (or energy donor) and an acceptor chromophore that will be sensitized to emit the higher-energy photons. Due to recent advances in synthetic chemical science, research groups have recently reported many organic donor-acceptor systems for UC research with various degrees of success. As a contribution to the area of UC, we have been exploring donor and acceptor polyaromatics, which are structurally similar & complementary in a such a way that the rate of the donor \rightarrow acceptor energy transfer (ET) competes with that of molecular diffusion. In this exploration, we have developed novel organic pyrene-like triplet sensitizers that can efficiently harvest green radiation and then transfer the triplet energy to

polycyclic aromatic (PAH) acceptors. Subsequently, two triplet excitons of the PAH could annihilate to generate blue photons. Moreover, we demonstrated that incident light with a power density in the microwatt regime was sufficient to achieve the UC using the aforementioned molecular donor-acceptor systems. Furthermore, I will also highlight our contribution in the field of non-linear photochemical processes, where we explore the feasibility of quantum chain reactions in organic polymeric materials which could be tailored for “on-demand” photo-release of chemicals including drug molecules.

The Effect of Various Fuels on the Yield and Photophysical Properties Zinc Zirconate Perovskite

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Abstract

Dwindling resources and the quest for clean energy has made man explore new nanocomposite materials such as perovskites, which constitute one of the fastest growing energy technologies. Various types of fuels were used in a low-temperature solution combustion synthesis of zinc zirconate nanocomposite at a pH of 7. In the synthesis, the fuels used were citric acid, glycine, urea, hydrazine hydrate, and ammonium nitrate while zirconium butoxide and zinc nitrate were the precursor sources of Zr^{4+} and Zn^{2+} ions, respectively. The samples were calcined for 2 h at a temperature of 600 °C. The study of the structural properties showed varied morphologies ranging from highly agglomerated surfaces, crystalline aggregates as well as nanorods. There was a gradual growth of zinc zirconate perovskite within phases of zirconia and zinc oxide. It was observed that there were prominent photoluminescence emissions spread from violet-blue into the yellow-white regions with peaks varying from about 400 to 490 nm. The energy bandgap of the nanocomposites was between 2.93 and 3.22 eV depending on the fuel used in the preparation of the sample.

**SUB-THEME 5: MITIGATING THE IMPACT OF SOCIAL DISRUPTIONS IN A
GLOBAL PANDEMIC**



New greeting habits amid Covid-19 pandemic



From physical conferences to virtual; "adjusting to new normal"

Origin, Spread and Impact of Islam on Nandi Traditional Religion and Culture: A case of Nandi County, Kenya

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Abstract

In recent times, Islamic religion has been expanding rapidly at the global, regional and local levels. The presence of this religion in Nandi County and its evidence of growth raise the need to comprehend, with comparative ease, its origin, spread and impact on Nandi traditional religion and culture from 1850 to 2012, which has not lately been the subject of scholarly research. The main objective of this research-related work was to investigate the origin, impact and spread of Islam in Nandi County; apart from analyzing other factors that contributed to the acceptance and/or rejection of the religion by the Nandi people, which further enhanced its subsequent spread. Cross-cultural and Islamization theories were applied in collecting data and bridging the gap in knowledge by utilizing both qualitative design and survey data collection methods to arrive at conclusive findings. It was revealed that the spread of Islamic religion in Nandi County involved various factors such as socio-cultural, economic, religious and doctrinal, among others. Quality information was delineated on proselytism in a cross-cultural context and promotion of inter-faith dialogue which government policy-makers, other stakeholders, students, researchers and professionals should find both stimulating and useful. This data is vital in addressing the developmental agenda for Nandi County; particularly in areas related to recently launched competency-based curriculum education, historical and cultural heritage, as well as indigenous religion.

Keywords: Islam, Nandi, traditional and cultural religion, doctrinal proselytism, competency-based education

Co-Design: Catalyst for Inclusion in the Design Process

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Abstract

Older persons are considered custodians of culture and the knowledge they possess needs to be preserved for posterity. Is there a good approach to extract this knowledge and package it for posterity? This paper is an analysis of various co-design tools that were used to induce, capture and collect the knowledge, ideas, wishes and hopes of a group of older persons for the preservation of a cultural museum. Through the use of co-design tools, the older persons provided visual narratives that were used to design RAMA Cultural Centre in Homabay County. A field survey in Homabay County in August 2016 revealed that RAMA Cultural Centre had

many cultural artifacts that were not well preserved and were at a great risk of destruction from environmental factors such as pests, molds and theft. Besides these, the older persons who were the curators of the cultural museum, had not been able to successfully integrate the youth in the management of the museum leading to a possible extinction of this indigenous knowledge. The methodology describes the co-design tools and how they were applied to include the older persons in the design of the RAMA Cultural Museum. The discussion is on possibilities and challenges of co-designing with older persons and concludes with learning on how to effectively co-design with non-designers, specifically older persons, tapping into their dreams and aspirations so as to inform as well as inspire the design development process.

Key Words: Co-design, Co-create, Participatory design, Probes, Prototypes, Generative design tools, Older Persons

The contribution of Leadership and Governance in Managing Global Pandemic

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Abstract

Article 73 of the Kenyan Constitution inspires the responsibilities of leadership to entail consistency with the objects of the constitution, respect for the people, honouring the nation and dignity to public office. Leadership vests state officers with the responsibility to serve the people rather than the power to rule them. This paper shall focus on the guiding principles of leadership as espoused in Art.71 (2). They include selection on basis of personal integrity, competence and suitability, objectivity and impartiality in decision making, selfless service, accountability and discipline and commitment. This paper anchors its theme from the assertion that success or failure of any great enterprise depends on the quality of its leadership. It further remains cognizant of the fact that establishment of sound governance principles is the best ticket to a winning organizational culture. The role of leadership and governance is found alongside the balancing of capitalism and morality, alongside the spirit of service to all for utility of all. The quality of leadership in any country is hinged on the calibre of the decisions so taken. Good governance and positive leadership engenders decisions taken in relatively discrete opportunity to commit national resources to various national demands and priorities. It is the position of this paper that although good decisions are among the most important functions of leadership and governance, they are among the least visible, mostly because they are made behind closed doors. It has been argued that leadership and governance decisions necessitate a distinct framing since they are taken for the unique purpose of advancing the general enterprise, regardless of personal interests. The paper shall employ primary and secondary data to test its objectives, which are summarized on the contribution of Leadership and Governance in Managing Global pandemic.

Key words: Leadership, Governance, Global, pandemic, integrity, principles

Proposed Workshop to Investigate the Effect of COVID-19 Pandemic on Children playing with Painting and Clay Modeling

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Abstract

Children's play welfare was disrupted due to Covid-19 controlling measures that were put in place by various governments. Child's development experts asserted that if a child is inhibited to playing, there are bound to be psychosocial consequences for early childhood development. Various reports on Ngwach (2020), Nandkar (2020), EdTech Hub Survey (2020), Schleicher (2020), United Nation Covid-19 Report (2020), and UNICEF Report (2020) has documented the dynamics and effects Covid-19 pandemic. Educationists and therapists posit that play with painting and clay goes beyond recreation to include the expression of desires, traumas, and elaboration of their conflicts and emotional healing. The aim of proposed workshop is to re-direct children to playing with painting and clay modelling as way of relieving effect of Covid-19 pandemic. It will also re-establish the role of play with painting and clay as mitigating measure on children affected by Covid-19 once school reopens. The researcher will employ a qualitative research approach compliment by quantitative method as deemed appropriate. A case study will be on a sample drawn from pre-school children as defined Competency Based Curriculum CBC (2017) unto children at Embakasi and Syokimau sub-counties. The workshop will employ probability stratified random sampling on children aged 3-7 year. The evaluation and analysis of data will focus on the impart of the Covid-19 pandemic on children playing with painting and clay modeling. The data will be collected through participant observation, where the researcher together with other assistants will participant in the play activities. The researcher shall consider Covid-19 health protocols and children's right principles during workshop participation. The result of the workshop shall hopeful inform the stakeholder in understanding of unresolved psychosocial effects of the Covid-19 pandemic as well positively influence future professional interventions.

Keywords: Covid-19 pandemic, children welfares, play, Paintings, Clay modeling, child development, fine arts

Play with Painting and Clay: A Re-Booth of Psychoanalysis Healing on a Child Affected by Covid-19

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Abstract

The world is a wakening to the nursing of devastating Covid-19 pandemic effects that resulted in the closure of school among others. Children's welfare, especially playing was obstructed due to Covid-19 pandemic protective and preventive measures set by the World Health Organization

(WHO), and other health agencies. Child's development experts asserted that if a child is inhibited to playing, there are bound to be psychosocial consequences for early childhood development. Educationists together with therapists have posited that play with art goes beyond recreation to an expression of their desires, traumas, and elaboration of their conflicts and emotional healing. This paper has re-established the psychoanalysis healing process of a child affected by the Covid-19 pandemic while playing with paintings and clay. The researcher explored desktop descriptive qualitative research design. The psychoanalysis instrument has been employed to evaluate the literature reviews, and theoretical framework on its discussion. The paper has accepted ravages caused by the Covid-19 pandemic in our society, and it is proposed that stakeholder of education should consider playing with painting and clay to playing groups or pre-schoolers as mitigation measures for a child affected by Covid-19. It has recommended an actual implementation of the study in the post-Covid-19 period once schools open to ascertain its validity.

Keywords: Covid-19, play, a child, psychoanalysis healing, paintings, clay

Craft Design for Improved Livelihoods among Maasai Women in Kenya: A Case of the 'Love Is' Project in Kenya

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Abstract

Over the years, there has been an increase in Kenyan population which has led to decrease in the amount of land left for pastoral activities. This has posed a challenge to the pastoral communities with many of them forced to find alternative ways of supplementing their incomes. A number of organizations have been formed to help in improving the livelihoods of marginalized women among the Maasai in Kenya. With the Maasai community being strongly patriarchal in nature, their women were traditionally not involved in decision-making and this resulted to the neglect of women affairs within the community. However, in the recent years, the Maasai woman has slowly evolved to have a voice in the society by engaging in activities that educate and equip them with the skills to earn a living and take care of their families. This is as a result of the growth in the number of NGOs and initiatives geared towards empowering the Maasai woman. Traditionally, Maasai women regularly weave and bead jewelry which is used as a form of adornment and identity among the Maasai Community. The Love is Project is one such initiative which uses beadwork skill, which the women already possess to design bracelets with a love message that are sold worldwide and the sale proceeds used to empower the women. This study explores ways through which the design of craft items has influenced the lives of the Maasai woman in Kenya. Using the Love is Project as the case for the research, a sample of 5 women was studied to help the researchers understand the extent to which craft design has influenced the lives of Maasai women. The paper is mainly qualitative with the findings thematically presented under specific headings. It is proposed that the approaches should be applied by the Love is Project be adopted by other initiatives aiming to change the lives of women within marginalized communities through craft design.

Keywords: Crafts, craft design, co-design, design thinking, marginalized women, sustainable livelihoods.

Socio-economic impact of disruptions from COVID-19 pandemic

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Abstract

This paper focuses on the underlying issues with regards to social disruptions brought about by global pandemics such as COVID-19. It discusses the disruptions, their impact on society and the possible mitigation measures from a gender perspective. It analyses the role played by capitalism in defining how women and men cope with the disrupted environment that they suddenly find themselves in. The paper looks at the socio-economic impact and zeroes in on the upsurge of domestic and sexual and gender based violence as reported in the social and mainstream media and their link to the disruptions brought about by the COVID-19 pandemic. It posits that the perpetrators are majorly men, while the victims are more often than not women. The social disruptions impact on women and men differently thereby requiring their mitigation efforts to be addressed with a gender lens. This paper bases its arguments on both the modernization and the liberal feminist theories and their nexus to the level of impact and the appropriate mitigation strategies for social disruptions brought about by pandemics. It postulates that part of the mitigation measures includes addressing effects capitalism and individualism which are both inspired by the modernization theory.

Key words: Pandemics; Social Disruptions; Feminism, Modernization theory, Gender Violence

Benefits of Psychosocial Interventions on Traumatized Children Living in Difficult Environments in Mbeere North Sub-County

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Abstract

This study examined the benefits of psychosocial Interventions of traumatized children living difficult environments. Psychosocial interventions are additional forms of assistance besides educational or practical interventions for the development of the child. Children need additional and specific psychosocial interventions if they have experienced any trauma or are not receiving necessary basic needs. From reviewed studies, substantial evidence shows that exposure to traumatic experiences out of living in difficult environments can affect brain functions of children, have long-lasting consequences resulting to poor mental health and various psychological and social problems. All forms of abuse, abandonment, neglect, poverty, illness, disabilities, pandemics, loss, and conflict, among others can all have negative effects on a child's psychosocial wellbeing. Trauma directly causes stress fears as well as emotional reactions and memory processes. While several studies have shown the benefits of use of various forms of psychosocial interventions such evidence has been inconsistent, with results varying significantly based on various factors, such as gender, culture, age, economic status setting and conflict-phase, and various forms of disabilities. Very few studies have been conducted in Mbeere North Sub-County, as regards the significance of psychosocial interventions such as psychosocial counselling regardless of the numerous cases of children going through

traumatic experiences and in particular during this time of Covid-19 pandemic. Additionally, the data supporting the importance of psychosocial interventions in Mbeere North on traumatized children has not been well synthesized. Based on the evidential inconsistencies, there was need to conduct a detailed analysis on significance of psychosocial interventions used on traumatized children exposed to traumatic experiences due to living under difficult environments for healing purposes. To establish the benefits of psychosocial interventions, a systematic review and a meta-analysis was conducted by searching published studies from online databases, including PubMed, Clinical trials, and various relevant journals dating from 2000 to 2020. The results from nine randomized control trials indicated that provision of psychosocial services on traumatized children enhances the implementation of children's rights, promotes personal and community peace and reconciliation, helps children improve on self-esteem and social awareness, improves children's emotional intelligence, and brings in healing to broken hearts as well as helping individuals live in more satisfying lives. The results indicated a weighted mean of Cohen's d 0.6 effect size in post treatment period. The results also indicated that the change between the intervention and control groups was statistically significant at $p < .05$. Findings further indicated that the assisted children had positive coping, enhanced hope, and reduced their fears, as well as being able to socialize and some accepted to return to school. Study recommends that teachers and parents and care givers be taught skills of dealing with in child trauma so that they can assist their children. The study also recommends that there is need of all the stakeholders in Mbeere North to sensitize the community and the parents on the benefits of provision of psychosocial interventions so that they can help children deal with post-traumatic stress disorder complications. There is need to empower the local community economically so that they are able to support all children in the family to access education and other services.

Keywords: Difficult Environments, Psychosocial interventions, Psychosocial Counselling, Traumatic experiences

Covid-19 is a War: Framing the Pandemic in an Evolving “New Normal”

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Abstract

Communication on Covid-19 to the general public has been characterized by the repeated use of the war metaphor. Metaphors are a special type of framing in which the source frame belongs to a specific and completely different area of life; and area we are familiar with through everyday interactions. This paper analyses how the war metaphor is framed from a specific, concrete and imaginable area of life to structure how Covid-19 is conceptualized in the Kenyan context. The paper identifies the aspects of the source frame (war) which are mapped to the target domain (Covid-19). Utterances for analysis were elicited from Presidential addresses on Covid-19 as well as the daily press briefings by the Cabinet Secretary for Health on the pandemic. A model for analysing metaphors by Stibbe (2021) was used to classify the metaphors of war into three: those that are potentially destructive, ambivalent, and beneficial in the management of Covid-19 pandemic in Kenya. Results revealed that the war metaphor not only inspires multi-agency actions to the management of Covid-19 but is also a source of stigma, discrimination, hopelessness and despair. The positive and negative implications of the selected war metaphors

could provide directions to new healthcare reporting strategies that destigmatize Covid-19 and lead to desired outcomes from the interventions.

Key Words: Metaphor, Frames, Target domain, Stigma, Mapping

Reflection on English Textbook in the Kenyan classroom

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Abstract

A textbook gives newly recruited tutors proper guidelines in a given course or learning activity. It enhances continuity and consistency in the presentation of content and presents students with a sense of system and progress. Further, textbooks play a crucial role in modelling the required values, social behavior and norm; it provides a lens through which the world is portrayed thus acting as a potential medium of socialization. English is an important language in Kenya and the world at large. Languages textbooks especially the English ones assist learners in attaining communicative competence. English language textbooks play a central role in teaching and learning in many developing countries where English is either a subject and/ or medium of instruction. English is one of the languages offered in the Kenyan secondary school curriculum, and it is the medium of instruction for all the other subjects offered (except for other languages). Textbooks are critical materials used to support the implementation of the curriculum. The textbooks provide input in the form of explanations, texts and activities to simplify educational activities that appear complex. Specifically, the linguistic items and the visual images used in the presentation of the content are key in ensuring production of quality English textbooks. Again, textbooks are agents of effective and long-lasting change that shape learners' mindsets, perceptions, and attitudes in their later life. Textbooks are crucial tools in as far as the conveyance of direct or indirect meanings regarding the how happenings produced in society is concerned. Specifically, the language textbooks are influential instruments, which present indelible experiences to the learners. Consequently, it is important to think about this powerful tool in the Kenyan classroom.

Key words: Language, Classroom, English

Managing HIV/AIDS Amid COVID-19: How to Un-do Things with Words

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Abstract

Since the first case of Covid-19 was confirmed on March 13th 2020, most healthcare discourse has focused on the novel pandemic. Unfortunately, most communication and response efforts to the pandemic appear to have rolled-back the execution of interventions targeting another pandemic - HIV/AIDS. Interventions towards the mitigation of HIV/AIDS have been rattled by the illocutionary force of utterances on the mitigation of Covid-19 leaving the People Living with HIV (PLHIV) to their own devices. This paper analyses selected utterances on Covid-19 response within the Speech Act theoretical framework with a view to showing how the illocutionary force of these utterances have caused unfavourable disruptions in the management of HIV/AIDS. Utterances for analysis were extracted from Presidential addresses to the nation on the Covid-19 pandemic and from the daily briefings by Cabinet Secretary for Health. Basing the analysis on John Austin's parameters in the Speech Act Theory, the study reveals that structural, medical, and behavioural interventions on HIV/AIDS have suffered immense disruptions which will most likely lead to a spike in new infections and/or enhanced loss of life. The study recommends an integrated communication strategy to avert a catastrophic situation where the country will have to contend with two run-away pandemics.

Key words: Locution, Illocution, Perlocution, Illocutionary force, Felicity conditions

The Role of a Social Worker in the Mitigation of Child Sexual Abuse in Kisii County

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Abstract

Child Sexual abuse (CSA) is both a social and public health concern worldwide. A common misconception about CSA is that it is a scarce act perpetrated against girls by male strangers. In spite of a plethora of research on CSA, little is known about its mitigation. In the recent past in Kenya, sexual abuse has been noted in schools most of which the perpetrators go scot-free. It occurs at all levels of society and affects not only girls but also boys in all levels of the society. The purpose of this study therefore was to investigate the role of a social worker in the mitigation of child sexual abuse among pupils in Kisii County. The study utilized descriptive survey design. The sample size was 100 pupils, 100 parents, 10 Key Informants and 10 practicing Social workers. The findings of the study reveal that in order to curb child sexual abuse, the risk factors such as poverty, parental negligence and harmful traditional cultural practices should be

addressed. The Social workers also need to take up their roles in the prevention, restoration and resource provision to curb CSA. The study recommends on offender registration, community notification, mandatory background check for teachers, residency restriction and sentence lengthening as a mitigation strategy to ending sexual violence against pupils.

Key words: Poverty, Harmful traditional practices, offender registration, residency restriction and Social Worker

Awareness Level of Pupils on CSA in EMESA Sub-Location, Kisii County

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Abstract

Child abuse as recorded in literature in many parts of the world continues to affect the children conventionally. The abuse dates back to ancient civilizations as seen in the reports of female genital mutilation, infanticide, neglect, abandonment and child trafficking. Child abuse is a worldwide problem that occur in various forms which is profoundly entrenched in cultural, economic and social practices. It occurs in different forms which are: physical, emotional neglect and sexual abuse. Child sexual abuse (CSA) is a global problem which cuts across all status boundaries ranging from social, economic, cultural and political. Despite a myriad research on CSA, its awareness level has been difficult to estimate among pupils. This study therefore concentrated on awareness level of pupils on CSA. The study used systematic sampling to select pupils, convenience sampling to select parents/guardian and purposive sampling to select key informants. The sample size was 100 pupils, 100 parents/guardians and 10 key informants. The findings of the study reveal that the knowledge of teachers, parents and other caregivers on CSA preventions directly influences the child's prevention awareness. The study recommends a dialogue among the religious institutions, policy formulators, teachers and parents the introduction of sex education both at school and societal level to equip the learners with the possible refusal technics, abuser identification, where to report in the event of abuse and the consequences of the abuse and the emphasize should not only be on girls but also boys since all can be sexually abused.

Key words: Child abuse, Child Sexual abuse, Child trafficking, Prevention awareness, Female genital mutilation, Sex education

Attitudes, Perception and Effects of Euthanasia on Families in Wetlands in Kenya

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Abstract

Euthanasia decision making is perhaps the most difficult practice situation faced by health care social workers. Complex ethical issues arise from decisions regarding use of advancing medical technologies and/or other artificial treatments that may prolong life and compromise its quality. NASW has set forth a policy to help guide social workers dealing with euthanasia decisions and the preservation of client self-determination in these situations. Moreover, the Public and healthcare professionals differ in their attitudes, perception and effects on euthanasia and physician-assisted suicide (PAS). In addition to medical training and experience, religiosity, locus of control and patient characteristics (e.g., patient age, pain levels, number of euthanasia requests) are known influencing factors. This study is based on secondary data collected through review of studies, reports, policy documents and surveys from various data sets from national, regional and international organizations more especially in social work field. Multivariate analyses reveal differing predictor models for attitudes towards euthanasia and PAS and confirm the importance of individual differences in determining these attitudes. Specific implications for PAS and its interface with the social work profession are described with respect to multiculturalism; identity; perceptions of disease, illness, and pain; attitudes towards therapy; family decision making; ethics; and professional roles. Ethical dilemmas most often faced in end-of-life care situations relate primarily to issues of communication between and among patients, families, and professionals. Practitioners indicate that more specific practice guidelines and increased education regarding bioethics and issues of end-of-life care are needed to be effective in end-of-life decision making.

Key words: Euthanasia, physician-assisted suicide (PAS), end-of-life care, ethics, ethical dilemma, social work practice, bioethics

Transgressing Maxims of Politeness: Effects of Combative Language Used During Covid-19 Televised Updates in Kenya

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Abstract

Anchored on critical discourse analysis theory, this paper interrogates language used by Health Cabinet Secretary, Mutahi Kagwe and President Uhuru Kenyatta during the televised Covid-19 updates. It examines how the transgression of maxims of politeness in the daily updates impacted the war against the pandemic across the country. Data for analysis and interpretation will be obtained from purposively sampled televised daily updates from March 2020 to May 2020. To

augment the data, social media postings and internet memes by Kenyans during this period will be sampled and analysed. The paper demonstrates that the nature of language used during the televised updates prejudiced the fight against Covid-19 in the country, invariably impelled the public to shun Covid-19 recoveries, stimulated the victimization of families and relatives of the recoveries, and bred the public reluctance to voluntarily participate in mass testing and later, inoculation against Covid-19. The paper recommends that during pandemics, it is incumbent upon authorities, and necessarily so, to judiciously use gracious language for effective public health communication.

Key words: Transgressing, combat, contestation, maxims, and health communication

**SUB-THEME 6: ENHANCING HEALTH AND QUALITY OF LIFE FOR SUSTAINABLE
LIVELIHOODS THROUGH SCIENCE AND TECHNOLOGY**



A Review of Dietary Intake and Nutritional Status of Children with Cerebral Palsy in Nairobi County

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Abstract

Cerebral palsy (CP) is a group of neurologic disorders typically caused by a non-progressive lesion or abnormality of the developing brain that appears in infancy or early childhood and permanently affects body movement, muscle coordination, and balance. It is the most common cause of physical disability in childhood and is a significant health problem with major effects over the lifespan. The global prevalence of CP ranges between 2 – 10 per 1000 children in community-based samples with prevalence varying widely from country to country. Children are vulnerable to protein energy malnutrition (PEM) as well as micronutrient deficiencies because of their continuing growth that hikes their bodies' demand for nutrients. This risk of malnutrition is increased in neurologically impaired (NI) children e.g. CP, due to a number of nutritional and non-nutritional factors. Among the nutritional factors is insufficient dietary intake due to feeding difficulties resulting from impaired chewing and swallowing. Cerebral palsy may be associated with a host of comorbidities such as undernutrition (46% to 90% of the patients), Studies have reported increased prevalence of morbidity and mortality secondary to compromised nutritional status among children with CP compared to their normal counterparts in the same age group. This review is aimed at assessing the effect of dietary intake on nutrition status of children with cerebral palsy. A systematic review of various publications was conducted using the key words, Cerebral Palsy and feeding difficulties. The review shows that feeding difficulties due to motor dysfunction is common in children with CP and may reduce their dietary intake resulting to poor health and nutritional status. It is recommended that effective interventions aimed at improving the dietary intake of children with CP be developed. Such interventions could help mitigate poor nutritional status as well as improve their quality of life.

Key Words: Cerebral Palsy, dietary intake, nutrition status, feeding difficulties

Cooking During the Covid-19 Pandemic in Africa: a Reverse Design Thinking Assessment

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During the peak of the Covid-19 pandemic, household sizes increased leading to the altering of cooking fuels or energies to meet the economic constraints of households in Africa. Thus, different homes resorted to different energy or fuel sources for cooking, which were hazardous to human health and the environment. This conceptual paper is a result of a reverse design thinking approach that assessed different fuels and energies for cooking and modified them creatively for low-income homes in Africa within a pandemic and sustainability context. Fifty materials - social innovation articles and reports on clean or sustainable energy for cooking were

selected and assessed from the constrained trajectories possessed by the Covid-19 pandemic and sustainability. The outcome of the assessment shows that both the fuel and the stove for cooking contribute to sustainable energy. LPG, biomass stove with forced ventilation, wood fuel and kerosene showed a high level of health risk, high climate impact and high cost and therefore are not ideal for cooking in a pandemic when people are on lockdown. Charcoal, however, proved to be sustainable when produced under strict conditions from tree farms with less health risk but may have a less or high environmental impact from pollution depending on the production processes. Charcoal dust from the charcoal could also be turned into briquette with cassava starch to reduce the usage of wood due to restrained movement during a pandemic. The usage of less charcoal could be achieved with a highly improved technological biomass stove for heat efficiency. It concludes with a self-designed biomass stove that needs little charcoal that could hold heat for a long time during cooking, serving as dependable energy during a pandemic such as the Covid-19.

Keywords: LPG, Biomass, reverse design thinking, Covid-19

Digital Media Strategies and Promotion of Domestic Tourism Post Covid-19: A Case of Western Circuit

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Abstract

Tourism sector has contributed much to the world's economy. In 2019, before the massive onset of Covid-19 pandemic, the world recorded 1.5 billion international tourist arrivals, an increase of 4 per cent on the previous year. In Africa alone, this sector, in 2018, contributed 8.5 per cent of the continent's Gross Domestic Product (GDP). By this time, tourism sector in Kenya was estimated to be contributing 11 per cent of the GDP to the nation's economy. However, Covid-19 pandemic dealt a blow to the industry. Statistics by the World Tourism Organization (UNWTO) indicates that international arrivals dropped by 74 per cent in 2020 representing an estimated loss of USD 1.3 trillion in export revenues with approximately 120 million direct tourism jobs at risk. Kenya's tourism industry was also hit by the pandemic as a result of international travel bans and local lockdowns imposed by Kenya itself and other nations worldwide. But in July, Kenya opened its space for international flights and lifted the lockdowns. This was to boost the economy of the country through different ways including promoting tourism. The purpose of this study was to assess the role media played in promoting domestic tourism in Kenya after Covid-19 pandemic. The study used mixed research design where quantitative method of data collection was used for frequencies of the media contents. Analyses of these media contents and interview schedules were used for qualitative data collection. Through purposive sampling, the study analysed contents of the electronic media and administered 20 interview schedules to tourism stakeholders in western circuit. Qualitative data was analysed using descriptive statistics while quantitative data was analysed using the Statistical Package for Social Sciences. Presentations were done using texts and tables. The study found out that media played a role in promoting tourism in Kenya's western circuit after covid-19

pandemic. The study recommended clear policies, guidelines and their implementations in efforts to further promote tourism in the western Kenya. The research findings are significant as they will promote both social and economic pillars of Vision 2030 and promote the goal eight of the Sustainable Development Goals that appeals for decent work and economic growth.

Key Words: Tourism, Media, Covid-19, Economy, Pandemic, Tourist arrivals

Strategies to Overcome Damages Caused by Covid-19 in the Hotel Industry

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Abstract

The year 2019 saw the emergence and spread of the coronavirus disease or covid-19 pandemic. The pandemic has moreover led to service interference, low customer demand, loss of traditional markets, reduced revenue, job losses, destroyed assets, reputation risks, higher operating costs and business closures in the hotel industry. Studies nonetheless indicate that the hospitality industry is not committed to crisis management and hotels tend to be reactive to crises. This means that the hotels do not plan ahead for the management of crises and resultant losses. However, the tourism industry has always recovered from crises like fires, terrorism attacks, political disturbances and natural disasters including tsunamis and floods. This review paper consequently facilitates proactive planning by exploring strategies that hotels can adopt to overcome the damages caused by covid-19. The recommended strategies include cost reduction, revenue management, insurance, internal marketing, product development, market re-strategizing, staff re-training, embracing the crises management approaches especially proactive planning, business continuity planning and crisis communication, seeking government assistance and applying for tourism relief funds. The paper concludes that the covid-19 crisis has created challenges and opportunities for the hotel industry. For example, by losing one market segment, the hotels get the opportunities to re-strategize and develop new products and markets. The pandemic has also stimulated technological innovations and advancements in the industry including robotic temperature scanners, disinfectants and sanitizers, keyless technologies and mobile applications. The paper therefore adds to existing strategies, policies and body of knowledge on the management of covid-19 in the hotel industry.

Keywords: Covid-19, damages, strategies, hotels

Covid-19 Recovery Strategies in the Hospitality & Tourism Sector

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Abstract

The global communities wake up in December 2019 to an outbreak of a disease named novel Coronavirus disease 2019 (Abbreviated as Covid-19. The disease has greatly slowed down

economic activities across the world, with many countries coming under partial or total lockdown. The hospitality and tourism industry are one of the sectors that is greatly affected by Covid-19 pandemic. As countries of the world continue to place travel restrictions and closure of their borders, cruise companies, hotels and hospitality industries are facing declining demand and patronage. The pandemic is placing up to eight million jobs in the leisure and hospitality sector at risk, with travel crashes and cancellations expected to continue. The World Travel and Tourism Council (WTTC), estimates that more than 50 million jobs in the travel and tourism sector could be at risk globally. To enhance recovery after Covid-19, countries need to improve, develop, diversify, re-package and promote other tourism products in addition to the Africa safari and beach destinations. Tourism Product improvement and diversification may consider various aspects like strengthening meetings, incentives, conferences and exhibitions (MICE) tourism, birding, cultural tourism, agro-tourism, adventure tourism, sports tourism products and many others, in relation to the market demand and the resource base. This review presents Post Covid-19 recovery strategies in hospitality and tourism Sector with the aim of suggesting areas that will require critical intervention as the countries struggle with strategies of revitalizing economies and mitigating the impact of Covid-19.

Key terms: Covid-19, interventions, incentives, travel restrictions, social distancing, diversification

Effect of Mission Culture on Performance of Selected 5-Star Chain Affiliated Hotels in Kenya

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Abstract

Stakeholders in the hotel industry continue to face challenges of aligning people with different cultures towards a common set of goals due to the dynamic nature of the industry. It is widely recognized, particularly in the contemporary discussions of performance that managers and other hotel practitioners have to develop a healthy and a common organizational culture. This paper sought to establish the effect of mission culture on performance of selected 5-star Chain affiliated hotels in Kenya. The study employed explanatory and correlation research designs. The target population of this study comprised of employees in 5-star rated chain hotels. The study employed purposive, stratified and simple random sampling techniques. Data was analyzed using descriptive statistics; frequencies and percentages, while correlation and regression analysis was used to assess the effect of mission culture on performance. The study established a significant relationship between mission culture and performance ($r = 0.532$, $p = 0.000$). The regression results established that mission culture also significantly predict performance ($\beta = 0.298$, $p = 0.000$). The organizations should therefore lay emphasis on strengthening mission culture in order to improve performance. Therefore, Mission culture was found to be strong predictor of performance. The management sense of direction and their ability to marshal the resources towards attainment of the set targets significantly affects performance. The management should ensure that the employees are aware of the short term and long-term goals of the organizations and encourage teamwork among employees towards achievements of these

goals. Furthermore, managers should inculcate the entire organization sense of direction so that all the employees strive towards a common agenda, in light of the social threats and distractions that impede the performance of the industry.

Key words: Mission Culture, Performance, Social disruptions

Effectiveness of NHIF in addressing Students' Healthcare in Public Secondary Schools in Meru County, Kenya

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Abstract

Health insurance helps to cushion people from healthcare costs and facilitate equity in access to health facilities and services. The Government of Kenya has invested in a special NHIF program, namely EduAfya, for public secondary schools. Although EduAfya is relatively new, it has been facing implementation challenges attributed to the weak structures and mechanism for supporting its operationalization. This study aimed to assess the NHIF as a health service provision model in public secondary schools in Meru County, Kenya. The specific objective was to examine the efficacy of NHIF as an approach for addressing healthcare in public secondary schools in Meru County. The study was guided by Andersen's model of health service utilization and adopted a descriptive survey design. Public secondary schools were stratified into four categories; hence, a proportionate systematic sampling technique was applied to sample 191 principals and the Students' Council's chairperson, while the County Director of Education was sampled purposively. Data was collected using a self-administered questionnaire and interview guide. Quantitative data were analyzed using SPSS, where factor analysis, means and standard deviations were computed, while linear regression analysis was used to test the hypothesis. Qualitative data were analyzed using the thematic technique. The study noted that students were underutilizing the NHIF program (EduAfya) despite its significance in addressing their healthcare. This was attributed to the low awareness, challenges in obtaining NEMIS number, and lack of awareness. Therefore, NHIF staff should conduct training and sensitization in public secondary schools targeting students, principals, and parents. In addition, the Ministry of Education and NHIF should collaboratively liaise with stakeholders in accrediting more local health facilities, including private health centres, to enhance the proximity of access to healthcare. The government should also develop a clear policy on handling emergencies and transportation costs; streamline the issuance of NEMIS number & biometric cards, and clarify the role of principals in enhancing the effectiveness of the EduAfya.

Keywords: NHIF, EduAfya, school health service provision model, students' healthcare

The Influence of Behaviour Centred Design Approaches on The Flame-Based Cookstove-Related Health and Wellbeing of Indigent South African Households

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Abstract

The adoption of energy-efficient, clean and safe cookstoves can significantly enhance the health and quality of life of poverty-stricken sub-Saharan households, reducing mortality and poverty and positively impacting the protection of biodiversity and the climate identified in the United Nations Sustainable Development Goals. The harmful emissions from inefficient flame-based cookstoves are the leading global cause of disease and death, after only inadequate water, poor sanitation and malnutrition. Multiple stakeholders are implementing programmes to promote access to improved stoves and clean fuels, with the Global Alliance for Clean Cookstoves (GACC) being prominent in dissemination efforts. However, few interventions have borne fruit on a significant scale over time, despite ample support in finding workable solutions. A sustainable transformation in household cookstove-related practices across diverse conditions requires innovative transdisciplinary approaches. The behavioural sciences suggest possible approaches for addressing the complex, interrelated, social, economic and environmental challenges facing communities in sub-Saharan Africa (SSA). Behaviour-focussed design interventions exhibit the possibility of transcending disciplinary boundaries. This paper explores the ability of a Behaviour Centred Design (BCD) approach to change cookstove-related behavioural motivations in a South African context. A behaviour centred intervention campaign strategy is developed and tested in two representative South African sample areas on a pilot scale. The preliminary results suggest that a BCD approach can significantly change the behavioural motivations related to flame-based cookstoves, responding to a vital evidence gap in efforts to shift inefficient cookstove-related behaviour in a South African low-income context.



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SCHOOL OF ENGINEERING AND TECHNOLOGY

PROGRAMMES	MINIMUM REQUIREMENTS
<ul style="list-style-type: none">Bachelor of Science (Electrical and Electronic Engineering)Bachelor of Science (Civil Engineering Bachelor of Science (Mechanical Engineering)	<p>(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</p> <p>(ii) OR Mean Grade of C (Plain) at KCSE or equivalent with a Diploma of Credit pass in relevant field of study from a recognized institution.</p>
<ul style="list-style-type: none">Bachelor of Science (Information Technology)Bachelor of Science (Telecommunication & Information Technology)	<p>(i) KCSE Mean Grade C+(Plus) with C+(Plus) in English and C+(Plus) in Mathematics, or</p> <p>(ii) Mean Grade C (Plain) at KCSE and a Diploma in IT with Credit Pass</p>
<ul style="list-style-type: none">Bachelor of Science (Cloud Computing and Information Security)	<p>K.C.S.E. with mean grade of at least C+, with the following minimum grades to be considered:</p> <ul style="list-style-type: none">Mathematics C+English C+ <p>OR</p> <p>A Levels (with at least TWO principal, one which includes mathematics, and a subsidiary pass in General paper) or equivalent examination can also apply.</p> <p>OR</p>

	<p>Diploma with a pass and above in Computer science, IT or equivalent from institutions recognized by Machakos University Senate. Students admitted with Diploma may transfer credits according to the University regulations.</p> <p style="text-align: center;">OR</p> <p>Equivalent of any of the above</p>
<ul style="list-style-type: none"> • Bachelor of Science (Computer Science) 	<p>(i) KCSE Mean Grade C+ (Plus) with B+ (Plus) in Mathematics, B+ in Physics and C+ in English,</p> <p style="text-align: center;">OR</p> <p>(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.</p>
SCHOOL OF BUSINESS AND ECONOMICS	
<p>Doctor of Philosophy (PhD) in Business</p> <ul style="list-style-type: none"> ❖ Human Resource Management ❖ Finance ❖ Strategic Management ❖ Marketing 	<p>A holder of a Master of Business Administration (MBA) degree or its equivalent in business from university or other institution recognized by University Senate</p> <p style="text-align: center;">OR</p> <p>A holder of a Master degree from a recognized University in areas of specialization relevant to disciplines in the school of Business & Economic</p>
<p>Master of Business Administration (MBA)</p> <ul style="list-style-type: none"> ❖ Marketing, ❖ Strategic Management, ❖ Human Resource Management, ❖ Accounting & Finance <ul style="list-style-type: none"> • Master of Science (Human Resource Management) • Master of Science (Finance) • Master of Economics • Master of Economics (Finance) • Master of Economics (Econometrics) • Master of Economics (Policy & Management) 	<p>Holders of Bachelor's Degree with 2nd Class Honour's (Upper Division) from a recognized institution. Those with Second Class (Lower Division) and at least two years' relevant work experience may be considered</p>

<ul style="list-style-type: none"> • Bachelor of Commerce • Bachelor of Economics and Finance • Bachelor of Economics and Statistics • Bachelor of Economics • Bachelor of Science (Banking & Credit Management) 	KCSE Minimum Mean Grade C+ (Plus) with C (plain) in Mathematics and English
SCHOOL OF EDUCATION	
<p>Doctor of Philosophy (PhD) in</p> <ul style="list-style-type: none"> ❖ Educational Administration ❖ Educational Planning ❖ Curriculum Development ❖ Educational Communication & Technology ❖ Educational Psychology <p>(Offered through part-time, evening and weekend modes)</p>	<ul style="list-style-type: none"> • A holder of a Master of Education degree from a recognized University in areas of specialization relevant to disciplines in the school of Education • Must have covered at-least five (5) Units at M.Ed level in area of specialization with B and above or equivalent grade <p>Must show ability to undertake academic research in the areas of specialization.</p>
<p>Master of Education (M.Ed):-</p> <ul style="list-style-type: none"> ❖ Educational Administration ❖ Educational Planning ❖ Curriculum Development ❖ Educational Communication & Technology. ❖ Early Childhood Education ❖ Educational Psychology <p>(Offered through part-time, evening and weekend modes)</p>	<p>Holders of Bachelor's Degree with 2nd Class Honour's (Upper Division) from a recognized institution.</p> <p>Those with Second Class (Lower Division) with at least two-year work experience may be considered</p>
<ul style="list-style-type: none"> • Bachelor of Education (Arts) 	Minimum of C+ (plus) in KCSE OR equivalent with at least C + (plus) in two teaching subjects OR minimum of C (plain) in KCSE OR equivalent with a Diploma in Education and at least C + (plus) in two teaching subjects
<ul style="list-style-type: none"> • Bachelor of Education (Science) 	Minimum of C+ (plus) in KCSE or equivalent with at least C + (plus) in two teaching subjects and C+ (plus) in Mathematics OR minimum of C (plain) in KCSE or equivalent with a Diploma in Education and at least C + (plus) in two teaching subjects.

<ul style="list-style-type: none"> • Bachelor of Education in Early Childhood Education 	Minimum of C+ (plus) in KCSE or equivalent OR minimum of C (plain) in KCSE or equivalent with a Diploma in ECDE or its equivalent with an overall pass of credit or distinction.
<ul style="list-style-type: none"> • Bachelor of Education in Special Needs Education 	Minimum of C+ (plus) in KCSE or equivalent with at least C + (plus) in two teaching subjects OR minimum of C (plain) in KCSE or equivalent with a Diploma in Education OR Special Education and at least C + (plus) in two teaching subjects.
<ul style="list-style-type: none"> • Bachelor of Library & Information Science 	Minimum of C+ (plus) in KCSE or equivalent with at least C + (plus) in two teaching subjects and C+ (plus) in Mathematics OR minimum of C (plain) in KCSE or equivalent with a Diploma in Education and at least C + (plus) in two teaching subjects.
<ul style="list-style-type: none"> • Postgraduate Diploma in Education 	Bachelor Degree or its equivalent from recognized institution
<ul style="list-style-type: none"> • Diploma in Education (Science) 	KCSE Mean Grade of C+ with at least C+ in two teaching Subject And at least C- (Minus) in Mathematics
<ul style="list-style-type: none"> • Diploma in Early Childhood Development Education 	KCSE Mean Grade of C (Plain) OR Division III at KCE OR Mean Grade C- (Minus) or an Early Childhood Studies Certificate from a recognized Institution.
<ul style="list-style-type: none"> • Diploma in Education (Arts) 	KCSE Mean Grade of C+ with at least C+ in two teaching Subject And at least D+ (Plus) in Mathematics
SCHOOL OF HOSPITALITY & TOURISM MANAGEMENT	
<ul style="list-style-type: none"> • Bachelor of Science (Hospitality and Tourism Management) 	KCSE Mean Grade C+ (Plus) or equivalent with at least C+(plus) or equivalent in any three (3) of the following subjects: English/Kiswahili/Foreign Languages; Biology/Biological Sciences;

	Chemistry/Physical Sciences/Physics; Mathematics; OR C (Plain) at KCSE or equivalent with a Diploma in Hospitality Management from a recognized institution.
SCHOOL OF AGRICULTURAL SCIENCES	
<ul style="list-style-type: none"> Master of Science in Agricultural Economics and Development 	<p>Bachelor's degree with at least a Second-Class Honours –Upper Division or equivalent in Agribusiness Management, Agricultural Economics, Development Economics, Economics, Food security, Agricultural Education and Extension or any Agricultural Sciences degree from a university recognized by Machakos University Senate;</p> <p>OR</p> <p>Second-Class Honours – Lower Division degree in the same discipline as in (1) above from a University recognized by the senate, but must show proof of academic advancement either through research and publication or postgraduate training in the same fields or at least two year of relevant field experience.</p>
Master of Science in Agribusiness Management	<ul style="list-style-type: none"> Bachelor's degree with at least a Second Class Honours –Upper Division or equivalent in Agribusiness Management, Agricultural Economics or any Agricultural Sciences degree(with a strong background in economics or business) from a university recognized by Machakos University Senate; Second Class Honours – Lower Division degree in the same discipline as in (1) above from a University recognized by the senate, but must show proof of academic advancement either through research and publication or postgraduate training in the same fields or at least two year of relevant field experience

<ul style="list-style-type: none"> • Bachelor of Science (Agricultural Education and Extension) 	<p>KCSE Minimum Mean Grade C+ (Plus) or equivalent with at least C+ (Plus) in Biology, Chemistry or Physical Sciences, Agriculture, Geography and Mathematics or Physics, and C(plain) in English or Kiswahili.</p> <p>OR</p> <p>Diploma in Agricultural Education or related Agricultural Course</p>
<ul style="list-style-type: none"> • Bachelor of Science (Agribusiness Management and Trade) 	<p>KCSE Minimum Mean Graded C+ (Plus) with atleast C+ (plus) in Mathematics and any two of the following subjects, Biology, Chemistry, Agriculture or Geography, Economics or Business Studies & Physical Sciences</p> <p>OR</p> <p>Diploma with a credit in Agricultural related field or Commerce or accounting</p>
SCHOOL OF ENVIRONMENT & NATURAL RESOURCE MANAGEMENT	
Master of Environment and Sustainable Community Development	<p>Second-Class Honours (Upper Division) Degree in Environmental Studies and related disciplines such as Geography, Natural Resources Management, Agriculture, Biological Sciences, Urban & Regional Planning, Developmental Studies from Machakos University or any other recognized university.</p> <p>OR</p> <p>Second Class (Lower Second) Degree in the above disciplines with at least two years of relevant experience after the first degree in areas related to Environment and Development.</p>
<ul style="list-style-type: none"> • Master of Environmental Science 	<p>Second-Class Honours (Upper Division) degree in Environmental Science or related disciplines such as Natural Resource Management, Forestry, Geology, Meteorology, Wildlife Management, Aquatic Sciences and Environmental Studies from Machakos University or any other recognized University.</p> <p>OR</p>

	Second-Class Honours (Lower Division) Degree in the above disciplines with at least two years of relevant experience after the first degree in areas related to Environmental Science
<ul style="list-style-type: none"> • Bachelors of Environmental Studies (Resources Conservation) • Bachelor of Environmental Science 	KCSE Minimum Mean Grade C+ (Plus) or equivalent with at least C+ (Plus) in Biology, Chemistry, Agriculture, Geography and Mathematics or Physics or Physical Sciences OR Mean Grade C (Plain) at KCSE or equivalent with at least credit pass in an environmental related course from a recognized/accredited institution. OR Mean grade of C- (Minus) at KCSE and progressed from certificate to Diploma from a recognized/accredited
<ul style="list-style-type: none"> • Bachelor of Environmental Studies (Community Development) 	KCSE Minimum Mean Grade C+ (Plus) or equivalent with at least C+ (Plus) in Biology, Chemistry, Agriculture, Geography and Mathematics or Physics or Physical Sciences OR Mean Grade C (Plain) at KCSE or equivalent with at least credit pass in an environmental related course from a recognized/accredited institution. OR Minimum of 2 Principles passes at A-level OR Mean grade of C- (Minus) at KCSE and progressed from certificate to Diploma from a recognized/accredited
SCHOOL OF PURE AND APPLIED SCIENCES	
<ul style="list-style-type: none"> • Masters of Science (Chemistry) 	Bachelor of Science degree (BSc.) with at least an upper second class honours OR Bachelor of Education degree (BEd.) with at least an upper 2nd class honours degree and who have studied Chemistry either as a major or as regular subject OR

	Bachelor of Science (BSc.) or Bachelor of Education degree (Bed.) with a lower second class honours degree and studied Chemistry as major or regular with at least two years relevant working experience.
<ul style="list-style-type: none"> Masters of Science (Mathematical Modelling and Computations) 	<p>Honors, Bachelor's degree in Mathematics or Bachelor's degree in Mathematics and Computer Science of Machakos University (Second Class -Upper Division) or equivalent from another university recognized by the Senate and Commission for University Education (CUE).</p> <p>OR</p> <p>Honors degree in Bachelor's degree in Mathematics or Bachelor's degree in Mathematics and Computer Science of Machakos University (Second Class -Lower Division) or equivalent from another university recognized by the Senate and Commission for University Education (CUE) and must have at least two years of relevant work experience.</p> <p>OR</p> <p>other degree e.g. Bachelor of Education (Science), Bachelor of Education (Arts) from Machakos University or from a recognized university, AND with at least 16 units in Mathematics in their undergraduate studies. And have a minimum average of at least a 60% mark in these Mathematical units at undergraduate level. If the degree classification is a Second Class (Lower Division) Honors in any of the specified disciplines of Bachelor of Education, then the applicant must have at least two years of relevant work experience.</p>
<ul style="list-style-type: none"> Bachelor of Science (Statistics and Programming) 	<p>KCSE C+ (plus) with at least B plain in Mathematics and English C+ (plus)</p> <p>OR</p> <p>Must have passed with 2 principal passes, one of which must be Mathematics at KACE or equivalent</p> <p>OR</p>

	<p>Must have a minimum of C Plain at KCSE and a Diploma in Statistics with at least a credit from an institution recognized by the University senate</p> <p>OR</p> <p>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.</p>
<ul style="list-style-type: none"> Bachelor of Science (Mathematics and Computer Science) 	<p>KCSE C+ (plus) with at least B (plain) in Mathematics, English C+ (plus) and Physics C (plain)</p> <p>OR</p> <p>Must have passed with at least 2 principal passes, one of which must be Mathematics at KACE or equivalent plus a subsidiary pass in General paper</p> <p>OR</p> <p>Must have passed with a credit at Diploma level in Computer Science, Computer Engineering, Electrical Engineering or any other relevant Diploma to be determine by the department of Mathematics, Statistics and Acturial Science at Machakos University and must have at least C+ (plus) at KCSE or equivalent</p> <p>OR</p> <p>Mean Grade of C- (minus) at KCSE and progressed from certificate to Diploma at Machakos University or any other recognized/accredited institutions.</p>
<ul style="list-style-type: none"> Bachelor Sciences (Mathematics) 	<p>KCSE Mean Grade C+ (plus) with at least B- (minus) in Mathematics or equivalent</p> <p>OR</p> <p>KCSE Mean Grade C- (minus) and progressed from certificate to Diploma at Machakos University of any other recognized/accredited institutions.</p>
<ul style="list-style-type: none"> Bachelor of Science (Actuarial Science) 	<p>KCSE C+ (plus) with at least B (plain) in Mathematics, and B- (minus) in English</p> <p>OR</p> <p>Must have passed with 2 principal passes, one which must be Mathematics at KACE or equivalent plus a subsidiary pass in General paper</p> <p>OR</p>

	<p>Diploma holders in Actuarial Science with at least credit pass from an accredited institution and a C+ in Mathematics at KCSE</p> <p>OR</p> <p>Mean Grade of C- (minus) at KCSE and progressed from certificate to Diploma at Machakos University or any other recognized/accredited institutions</p>
<ul style="list-style-type: none"> • Bachelor of Science (Actuarial Science) 	<p>KCSE Mean Grade C+ (Plus) with at least B(Plain) in Mathematics and B-(Minus) in English</p> <p>OR</p> <p>Diploma holder in Actuarial Science with atleast credit pass from accredited institution and a C+ in Mathematics at KCSE</p> <p>OR</p> <p>Mean grade of C- (Minus) at KCSE and progressed from certificate to Diploma at Machakos University or any other recognized/accredited institution.</p>
<ul style="list-style-type: none"> • Bachelor of Science (Biology) 	<p>KCSE C+ (plus) with at least B- (minus) in Biology or Biological Sciences. In addition the student must satisfy any of the following minimum requirements:-</p> <p>(i) Either: Must have passed any two subjects from the following alternatives at the grades shown:</p> <p>Alternative A: Chemistry C+, Physics C, Mathematics C, Geography B-, English C+</p> <p>Alternative B: Physical Science B-, Mathematics C, Geography B-, English C+, Agriculture B-</p> <p>OR</p> <p>Have a minimum of 2 principle passes, one of which must be Biology in the KACE or equivalent</p> <p>OR</p> <p>Have a minimum of C plain at KCSE and a Diploma in Forestry, Education (Biology, Agriculture), Applied Biology, Wildlife or Wetlands and with at least a credit pass from</p>

	<p>an institution recognized by the University Senate</p> <p>OR</p> <p>KCSE Mean Grade C- (minus), and progressed from certificate to Diploma at Machakos University or any other recognized/accredited institutions</p> <p>OR</p> <p>Have any other qualification accepted by the University Senate</p>
<ul style="list-style-type: none"> • Bachelor of Science (Analytical Chemistry) 	<p>KCSE mean Grade C+ (plus) with at least C+ in Chemistry and Mathematics or its equivalent, have passed Physics or Biology with a minimum grade of C+</p> <p>OR</p> <p>KCSE mean Grade C (plain) or equivalent with a Diploma of at least pass in the relevant field of study from a recognized institution</p>
<ul style="list-style-type: none"> • Bachelor of Science (Applied Physics and Technology) 	<p>KCSE Mean Grade C+ (plus) and in addition, the student must satisfy any of the following minimum requirements.</p> <p>OR</p> <p>(a) Must have passed in Physics or Physical Science in the KCSE with a minimum grade of C+. In addition, a student must have passed with at least a C+ in Mathematics and C+ in the following subjects from any of the two alternatives:</p> <p><u>Alternative A</u></p> <p>Chemistry</p> <p>Biology or Geography</p> <p><u>Alternative B</u></p> <p>Biological Science</p> <p>Geography</p> <p>OR</p>

	<p>(b) Have a principal pass in Physics and Mathematics plus a subsidiary in the Kenya Advanced Certificate of Education (KACE), and at least a credit in Chemistry and Biology or Geography in the Kenya Certificate of Education (KCE), OR</p> <p>(c) Have a Diploma in Physics or Applied Physics or relevant field from an Institution recognized by the University Senate, OR</p> <p>(d) Have a Diploma in Applied Sciences or Science Education (Mathematics and Physics) from an institution recognized by the University Senate, OR</p> <p>(e) Have a Higher National Diploma in Applied Physics or relevant field from an institution recognized by the University Senate, OR</p> <p>(f) Have any other qualifications acceptable by the University Senate as equivalent to sections (a) to (e).</p> <p>Those falling under sections (c) to (e) and had passed with credit or distinction may join the programme at second or third year respectively</p>
SCHOOL OF HEALTH SCIENCES	
<ul style="list-style-type: none"> • Bachelor of Science (Public Health) • 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
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES	
DEGREE	MINIMUM REQUIREMENTS
<ul style="list-style-type: none"> • PhD in Applied Linguistics 	Holder of a Master of Arts (MA) degree in applied linguistics, English and Linguistics or its equivalent from a University or other institution recognized by University Senate

Master of Arts in <ul style="list-style-type: none"> ❖ Religious Studies (Christianity, Islam and African Traditional Religion) ❖ English and Linguistics ❖ Applied Linguistics ❖ Kiswahili ❖ Literature 	Bachelor of Arts or Bachelor of Education (Arts) Degree of at least Second-Class Honours (Upper Division) or its Equivalent in related disciplines from a recognized University. Those with Second Class (Lower Division) may be considered on condition that they have an average of Grade B in units relevant to their areas of specialization.
Bachelor of Arts in: <ul style="list-style-type: none"> (a) Counselling Psychology; (b) Psychology; (c) Sociology, (d) Gender and Development Studies; (e) Public Administration Bachelor of Arts (Philosophy and Religious Studies; Kiswahili; English and Linguistics; Literature; Geography; History, Archeology and Political Studies)	(a) C+ for Kenya Certificate of Secondary Education (KCSE) holders or its equivalent as determined by the Kenya National Examination Council (KNEC) (b) KNEC Diploma or its equivalent
<ul style="list-style-type: none"> • Bachelor of Science in Fashion, Design and Marketing 	KCSE Minimum Mean Grade C+ (Plus) with at least C+ (Plus) in Art and Design or Home Science or any one science Subject OR 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 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

<ul style="list-style-type: none"> • Bachelor of Science in Community Resource Management 	<p>(a) C+ for Kenya Certificate of Secondary Education (KCSE) holders or its equivalent as determined by the Kenya National Examination Council (KNEC)</p> <p>(b) KNEC Diploma or its equivalent</p>
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TVET PROGRAMS

NAME OF PROGRAM AND LEVEL
CRAFT CERTIFICATE
Certificate in Automotive Engineering
Certificate in Building Technology
Certificate in Business Management
Certificate in Electrical and Electronic Engineering
Certificate in Fashion Design and Garment Making
Certificate in Food, Beverage Production and Service
Certificate in Information Technology and Communication
Certificate in Mechanical Engineering (Production Option)
Certificate in Procurement & Supply Chain Management
DIPLOMA
Diploma in Automotive Engineering
Diploma in Building Technology
Diploma in Business Management
Diploma in Civil Engineering
Diploma in Building Construction Technology
Diploma in Electrical and Electronic Engineering
Diploma in Fashion Design and Garment Making
Diploma in Food and Beverage Production and Service
Diploma in Communication and Information Technology
Diploma in Procurement & Supply Chain Management
Diploma Mechanical Engineering (Plant and Production Option)

INTAKES FOR TVET AVAILABLE ANNUALLY AS FOLLOWS;

- ❖ **SEPTEMBER** – Early intake for July Examinations.
- ❖ **JANUARY**– Late intake for July Examinations and Early intake for November Examinations.
- ❖ *For Diploma courses C- (Minus), Certificate courses D (Plain) and all Artisan courses D- (Minus)*
- ❖ *Requirements for Diploma & Certificate in Early childhood education are C - (Minus) and D+ (Plus) respectively.*
- ❖ Examining Bodies: KNEC, NITA and MksU for Education Courses.

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 emailed to : admissions@mksu.ac.ke 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)

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