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## **FORWARD**

On behalf of the editorial board it is with great pleasure that I present the first issue of Machakos University Journal of Science and Technology to the academic, scholarly, professional and research community globally. This Journal provides a reputable academic platform and opportunities to researchers and academicians to share and publish quality research papers.

The manuscripts have undergone through a rigorous peer-review process. The quality of the Journal is further enhanced by a rich editorial board, which comprises of highly qualified scholars drawn from various disciplines. The Journal focuses on multidisciplinary themes and areas of research and is published in both print and online forms.

Despite the global expansion of postgraduate programmes and scientific research, research findings are not fully disseminated to people and other stakeholders due to rigid and bureaucratic publication procedures. In addition, there are also a lot of problems that demoralize researchers; exorbitant fees and delays on publication dates. Machakos University Journal of Science and Technology provides unique opportunities to the researchers, academicians and professionals by minimizing such publication bottle necks.

The efforts, commitment and dedication by members of the editorial board towards the publication of this first issue of the Machakos University Journal of Science and Technology journal is acknowledged.

Prof. Peter N. Mwita  
The Chief Editor

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## Do Pastoral ICCAs exist in Contemporary East Africa? A case study among the Daasanach Community in Kenya

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### Abstract

*Territories and areas conserved by Indigenous Peoples and local communities (hereafter: 'ICCAs') are commons systems containing significant biodiversity, ecosystem services and cultural values and has raised a strong interest among scientists. Despite the increasing acknowledgment of ICCAs by scientists at the global level, there is an existing knowledge gap of ICCAs in East-African yet literature review suggested the existence of such systems in this region. Thus, our main objective in this paper is to challenge the assumption that ICCAs are non-existent in East-Africa and contribute to put them in the center of the research arena of environmental conservation. We explored the existence of ICCAs focusing on Daasanach community from northern Kenya- through ethnographic inclines participant observation and semi-structured interviews (n=75) and data verification was conducted through 8 focus groups. We organised data in themes/domains as described by IUCN/CEESP Briefing Note no 10 examined whether the identified pastoral commons fit the criteria of ICCAs. Our findings evidence the important existence of Daasanach pastoral commons that corresponds to criteria of ICCAs. This challenges assumption in the scientific literature stating that traditional pastoral commons are rather irrelevant in today's East African context. Such commons have played a central role not only for the local livelihoods, but also for the provision of ecosystem services which is aligned with the current definition of ICCAs. In concluding, we appeal for more research that would seek to stimulate a process of reclaiming a greater recognition to pastoral ICCAs in East Africa.*

Key words: ICCAs, customary management, biodiversity, ecosystem services, Socio-cultural, ecological outputs.

### Introduction

In the last two decades, a specific form of customary-based resource management *de facto* and/or *de jure* collectively governed by indigenous peoples and local communities has emerged, widely referred to as Indigenous Peoples and Community Conserved Territories and Areas (hereinafter; ICCAs



(Borrini-Feyerabend & Hill, 2015). ICCAs are natural and/or modified ecosystems, voluntarily conserved by indigenous peoples, mostly through customary law (Dudley 2008). They represent a vast array of institutional mechanisms of governance (Borrini-Feyerabend & Hill 2015) for the collective and sustainable management of common-pool resources. ICCAs are nowadays recognized as a key management regime vis-à-vis local communities' well-being, the conservation of the environment and global sustainability by major international policies and programs (e.g., United Nations Development Program, Convention on Biological Diversity and International Union for the Conservation of Nature<sup>1</sup>; Domínguez and Benessaiah, 2015; Kothari et al. 2012).

Awareness and recognition of the concept of ICCAs has been exponentially growing since its emergence as a result of decades of “fortress conservation” approaches drawing a strict line between human activities and nature conservation. It is often estimated that ICCAs currently cover up to 12% of the world's land surface (Kothari et al. 2013). Indeed, ICCAs can probably be counted by millions worldwide, in terrestrial and marine environments, providing ecosystem services as well as livelihoods to millions of local farmers whilst contributing to the conservation of thousands of species and habitats (Borrini-Feyerabend & Hill, 2015). Yet, most ICCAs are not recognized for their conservation values (Kothari et al. 2013, 2015). This lack of recognition undermines their effectiveness to deliver sound conservation outcomes (Berkes 2009). There is a great deal of research showing that ICCAs are being threatened worldwide by many pressures, such as global market expansion or colonization, as well as the establishment of strict protected areas upon these territories under customary management that weaken their traditional institutions (Haller et al., 2013; Stevens 2013; Domínguez and Benessaiah, 2015).

ICCAs have been less recognized in East Africa given the strength of colonial approaches to conservation and the often negative interpretations of pastoralism the most practiced livelihood in the region. This attention gap to East African ICCAs is striking, considering the accelerated rise of scientific interest on the ICCAs worldwide or even in comparison of the knowledge about other type of ICCAs in the region, such as forest or water ones. However some early ethnographic works suggest the existence of pastoral ICCAs in some Kenyan and Tanzanian groups (e.g. Maasai case: Bernardi, 1955; Sukuma case: Tanner, 1955; Datoga case: Wilson, 1952).

Despite the examples synthesized above, the perception that there are no pastoral ICCAs in East Africa persists, is at least not with enough strength or "quality", because they are too affected by historical transformations, to be worthy considered relevant for understanding of local society or

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<sup>1</sup> <http://www.undp.org/content/undp/en/home/presscenter/articles/2014/10/16/global-fund-supports-conservation-by-indigenous-peoples-and-local-communities.html> ; <https://www.iucn.org/content/indigenous-and-community-conserved-areas-bold-new-frontier-conservation> ; <https://www.cbd.int/doc/publications/cbd-ts-64-en.pdf> ; <http://sdg.iisd.org/news/undp-unesp-toolkit-showcases-community-approaches-to-iccas/>

ecological equilibrium. These assumptions may be mainly due to the characteristics of many pastoralist groups of this region, with absence of well-defined territories and with certain traditional management ways which made the common managed lands superficially seem to be open access lands. Also, due the significant historical disruptions which have suffered, with lands fragmentation and customary institutions undermined by the imposition of new structures of authority, among others.

It is in this context where the *raison d'être* of this work is based on, whose main objective is to confirm, through a case study, that beyond the clear indications previously exposed from the literature, in which you can only find references to the presence of pastoral ICCAs if you grasp tenaciously the anyway very scarce bibliography, the data obtained by field work supports the existence of pastoral ICCAs in East Africa. Therefore, our research had two specific objectives: (1) to explore the existence of pastoral ICCAs within the Daasanach Community (2) to describe the Daasanach management regime of pastoral commons as currently practiced; and

Thus, our starting hypothesis asserts that, considering the literature data and despite the various historical disruptions that they have had to cope, in East Africa there exists persist customary Community Conserved Pastoral Territories and Areas (pastoral ICCAs). The main questions on which we want to shed light and which guide the present text are: 1) Do ICCAs exist among the Daasanach, a community chosen by hazard among hundreds of others in East Africa, for the study of the presence of ICCAs? And, if they exist: 2) How are they managed, how important are they for local society and what is the state of its institutions in terms of legitimacy perception among the Daasanach? In fact, the answers to these questions could be a good first indicator of the relevance of pastoral ICCAs in other regions of East Africa.

With the aim to give answer to these questions, we briefly describe the case study and we provide an in-depth description of the applied methodology in this research. In order to provide a tidy ethnographic data, the results are organized under two subsections: 1) Community internal structure: the knowledge of the group's internal organization is a fundamental aspect for understanding the complex scheme of cultural institutions on which the customary regime of resources management is based on; 2) Community's livestock and grazing management: it is where we provide more specific descriptions on the Daasanach's traditional pastoral resources management, their conserved areas and the customary institutions that takes part in this management. Lastly, we discuss about the data and we provide preliminary conclusions.

## **Context**

The Daasanach are Cushites of the Omo-Tana branch (Tosco 2011 in *Cushitic Language Studies Volume 17*). They occupying the northern shores of the lake Turkana, the lower stretch of the Omo river Valley and its delta, their traditional territory spread between a narrow strip of South

Sudan, Southern Ethiopia and northern Kenya (figure 1). There are about 13,000 Daasanach living in Kenya and about 48,000 living north of the border with Ethiopia (IHSN, 2007; KNBS, 2013). The Daasanach territory is under a bimodal annual rain cycle, with a longest wet season from March to May and a shorter one from October to December. Nevertheless, the annual rain average of the region is very dry, usually under 200mm (Liebmann et al. 2014). Thus, it is an arid and semi-arid area with less than 5% of vegetal ground cover (Pkalya et al., 2004: 14).

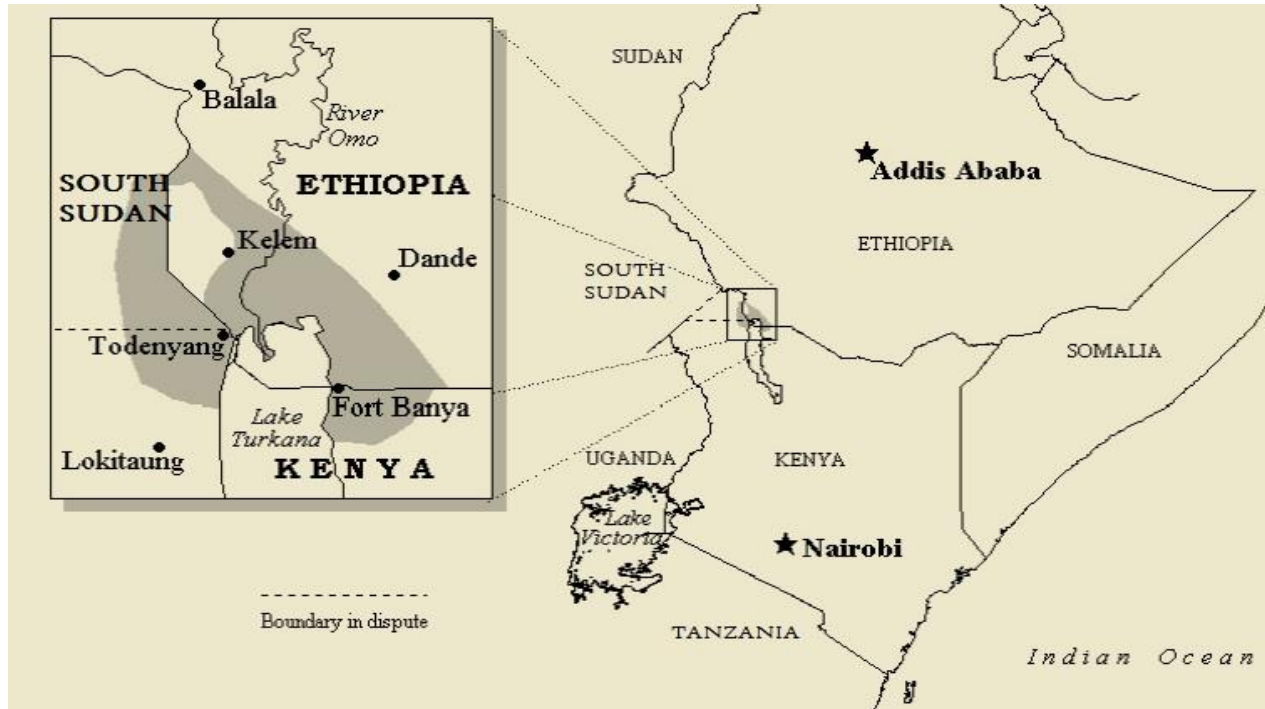


Figure 1: Map indicating the Daasanach land (Source: Joshua Project.com)

They are primarily nomadic pastoralists, but they also perform fishing and flood-plain cultivation along the seasonally flooded river banks (Hathaway, 2009). Out of the Omo river delta area, their livelihoods depend foremost on pastoral resources (livestock) and somewhat subsistence fishing at lake Turkana. Historically they have maintained hostility with their neighbours Turkana, Gabra and at least Rendille and Borana (Fratkin and Roth, 2004). These conflicts have been increasing due to the historical disruptions which they have had to cope (i.e. territory fragmentation, colonial and post-colonial impositions, forced migrations, droughts increase, etc.) (Sagawa, 2010).

Present-day Daasanach community is grouped into eight tribal sections made of patriarchal clans (*tur*) related by marriage. The central defining principle of the Daasanach social organisation is age-set (generation-set) called (*hari*) which is defined by age (Almagor 1978 in *Manchester University Press*). Young men of the warrior (*warani*) class (from 14 to 35 years of age) provide

labor for distant herding and also help in reinforcement of norms. Power on the age-set system is vested on an elite group of about thirty elders (*ara*). Elders are responsible to teach norms and taboos regulating the local management of natural resources and also assign directives to *warani* to reinforce natural resource utilisation values within Daasanach land.

### Methodology

We conducted fieldwork between November and December, 2016 in 4 villages located in Ileret ward. We first obtained Free, Prior and Informed Consent from each village and individual participating in this study. We collected qualitative ethnographic information on the norms and practices related to the management of pastoral resources through field visits to different grasslands/pastoral commons, accompanying Daasanach herders during the dry season at the peripheries of National park. In each visit, we asked informants to explain the rules, norms and institutions in place to manage these resources. These *in situ* open-ended interviews helped us to inform the research design and contextualise the results from our semi-structured interviews.

We administered these semi-structured interviews to 75 respondents targeting herders, elders seeking to: identify and examine community's pastoral landscapes which are communally owned and governed by customary regulations; assess whether natural resources are communally utilised for the benefits of all with the community land; 4) asses whether customary management rules of the community land are viewed by locals as effective, and If violated, what are the consequences to the perpetrators and 5) examined qualitative outputs of ecosystem services of these identified commons. Data collected was verified through eight-sessions of 5-10 respondents' focus group discussions of ages between 18-72 years (table 2).

Table 1: Semi-structured interviews in four settlements (n=75)

Age (Years)	Settlements				Total
	Ilgimir	Allia Bay	Koobi Fora	Karare	
<20	1	0	0	1	2
21-30	7	2	2	5	16
31-40	12	2	2	5	21
41-50	8	2	3	4	17
51-60	3	2	0	1	6
60-70	5	2	1	1	9
Over 70	4	0	0	0	4
Subtotal	40	10	8	17	75
<b>Grand Total (n)</b>					<b>n=75</b>

Table 2: Focus group discussions sessions in four villages.

Settlements	No. of Focus Group Discussion sessions	Total Number of Respondents	Male Respondents	Female Respondents
<b>Ilgimir</b>	4	29	26	3
<b>Allia Bay</b>	1	5	4	1
<b>Koobi Fora</b>	1	8	8	0
<b>Karare</b>	2	14	12	2
<b>Total</b>	<b>8</b>	<b>56</b>	<b>50</b>	<b>6</b>

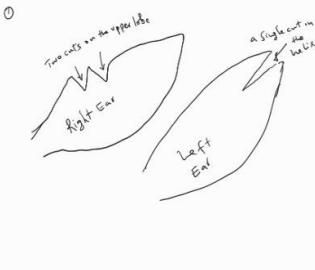

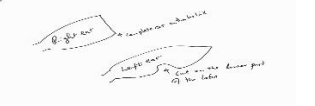
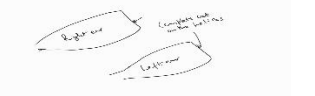
## Results

Data was analyzed qualitatively by organizing it in themes and domains as described by **IUCN/CEESP Briefing Note No. 10 and Aichi Biodiversity Target 11**. We used ICCAs' elements as a yardstick in identifying potential ICCA/Commons in Daasanach land. In this section, we first present our finding which describes the Daasanach community's internal structure and how governance/management of pastoral and natural resources is conducted. Secondly, we present the findings of the identified Daasanach pastoral commons that fit the description of ICCAs in terms of their qualitative ecosystem services outputs, communal utilization, customary-based management and governance of natural resources within these commons.

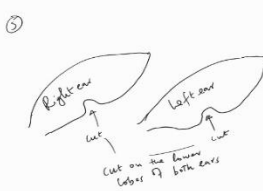



### *Daasanach Community Internal Governance Structure*

According to Elders, the Daasanach community has eight major clans of which, each one of the clan has a key role in ensuring stability and proper community functioning (table 3). These roles are distinctive of each clan, are based on the traditional knowledge and special spiritual skills rooted in their belief system and deeply attached to their indigenous landscape as well as pastoral and natural resource management. Also, these roles place them in a kind of supremacy ranking, though some clan may deputize some roles of other clan especially if none of the anointed member of the respective clan may be available (Table 3). All clan members graze their livestock together and, according to the report by the Ileret Ward's Veterinary Officer, the number of livestock in the entire Daasanach community is around 31,000 cows, while goat and sheep counted collectively are 50,000, donkeys 3,000 and camel 400.

**Table 3:** Clans of the Daasanach and their collective functional roles in overall community synchronization

Clan	Illustration of clan's Livestock ear markings	Clan's collective role in Daasanach community
Turnyerim		<p>This is the superior clan in terms of spiritual powers that are recognized to them amongst the clans. They are responsible for ‘protecting’ and ‘blessing’ the entire community’s pastoral and natural resources as well as foretelling dangers/calamities such as floods, cattle rustling. Anointed Elders from this clan are exclusively in-charge of lighting up fire called <i>Lago</i> whenever they migrate to any new area with their livestock as a sign of ‘wellness’. They can curse all other seven clans in case of norms perversion such as misuse of pastoral/natural resources. Turnyerim and Fargaaro clans are the custodians of herbal medicine treatments for humans and livestock. They can be deputized Turat in herbal treatment and conservation of indigenous medicinal trees.</p>
Fargaaro		<p>They are rain makers and <i>Warranis</i> (Warriors) from this clan are solely in-charge of searching water and pasture on behalf of the entire community. This role can be deputized by Illi clan in case none of this clan’s members may be available to conduct this exercise. They are also custodian of snake bite antidotes and they treat victims by spitting on them. This clan has community’s mandate to deputize the Turnyerim clan’s roles.</p>
Turat		<p>They are in-charge of conducting <i>Dimi</i> and <i>Guol</i> ceremonies and other community cultural celebrations. They are also healers of burns resulting from fire or hot water.</p>
Eedhe		<p>They are custodians of cultural magic to safeguard the community from external aggressors, also have ability to curse rogue’s community members.</p>



Galbur		They are in-charge of safeguarding the entire Daasanach community and their livestock against crocodile carnages. Thus, play significant role during the dry spell, when livestock grazing is at the shores of waters of Lake Turkana also at the Island of Lokwaria near Sesilicho also at the Crocodile-infested River Omo Delta (on the Ethiopia-Kenya border) in which cattle have to swim with herders for over 2 kilometers to access pasture at the Island (Lokwaria). Elders believes that whoever is killed by a crocodile must be serving a curse.
Murle		They are in charge conducting of rites of passage such as male circumcision, and all community clan members' circumcised boys (regardless of their clans) must spend at Murle clan's <i>Manyattas</i> during the time of circumcision until they attain healing.
Illi		They have a crucial role of treating community members of scorpion bites. They can also deputize Fargaaro clan during the search of water and pasture, in case the Fargaaro clan's member is unavailable.
Tieme		This clan's role is to treat the locals from spider bites, and they are also in-charge of protecting the community members and their livestock against deaths caused by flooding <i>Lagas</i> and drowning at the lake.

### *Pastoral Commons of Daasanach as potential ICCAs*

According to our results obtained from interviews and FGD and observation, the Daasanach community have seven pastoral commons, four of which are: a) communally owned resources such as pasture, water, and biodiversity; b) utilized and managed by all members with equal rights collective governance and are the first beneficiaries of these ICCAs ecosystem services and c) protected and conserved through the their eight-clan governance system (table 3). The other three commons are overlapped by the Sibiloi national park, and thus according to Elders, they do not have direct management or utilization of resources inside the park and thus community's customary management norms do not apply in day-to-day management of these areas.

According to elders, all Daasanach community members are pastoralist and they majorly depend on pastoral resources for their livelihoods. Pasture is very essential resource among the Daasanach land and the community has customary methodical mechanisms of managing this finite resources which involve distribution of livestock evenly across their indigenous community landscape which according to elders it: a) ensures full utilization and protection of

scarce pasture and minimizes degradation of landscape. A forty four years old herder said *“We are not allowed to graze in a single area for one month, because this may damage the ability of pasture to regenerate again. Some areas such as Kambi Turkana- Near Moite (at the southern border of Ileret Ward) have been left bare with no pasture and vegetation because other communities who graze in those areas do not care about tomorrow-they can graze in one place for over three or four months, but Daasanach are conscious about sustaining our livestock for many years to come”*. b) Minimizes loss of the entire herd due to sporadic cattle rustling.

Another strategy employed by Daasanach in pasture management is through systematic migration to grazing areas, According to elders, herder migrate near the shores of the lake during the dry seasons in late September to February, while they migrate to highland on the Eastern sides of the Ileret during the wet seasons from March to July (figure 2). A forty-seven years old herder said *“It is mandatory that the first week after the onset of wet season in March or April, all herders must move with their livestock up to the border of Daasanach and Gabra, Amarkoke and Turkana communities so as to utilize scarce resources such as pasture and water in this arid zone as well as ‘blocking’ our rival community from gaining access to the pasture inside our land. This has to be done from extremely north near the Kenya-Ethiopia border, to the Southern boundary bordering Turkana Community. It is mandatory for all herders to abide by this order which is given by our elders. Penalties and fines are attached to those who fail or delay to go with other herders during migration. Only older people are left behind with some few lactating goats and sheep for provision of milk for them”*.



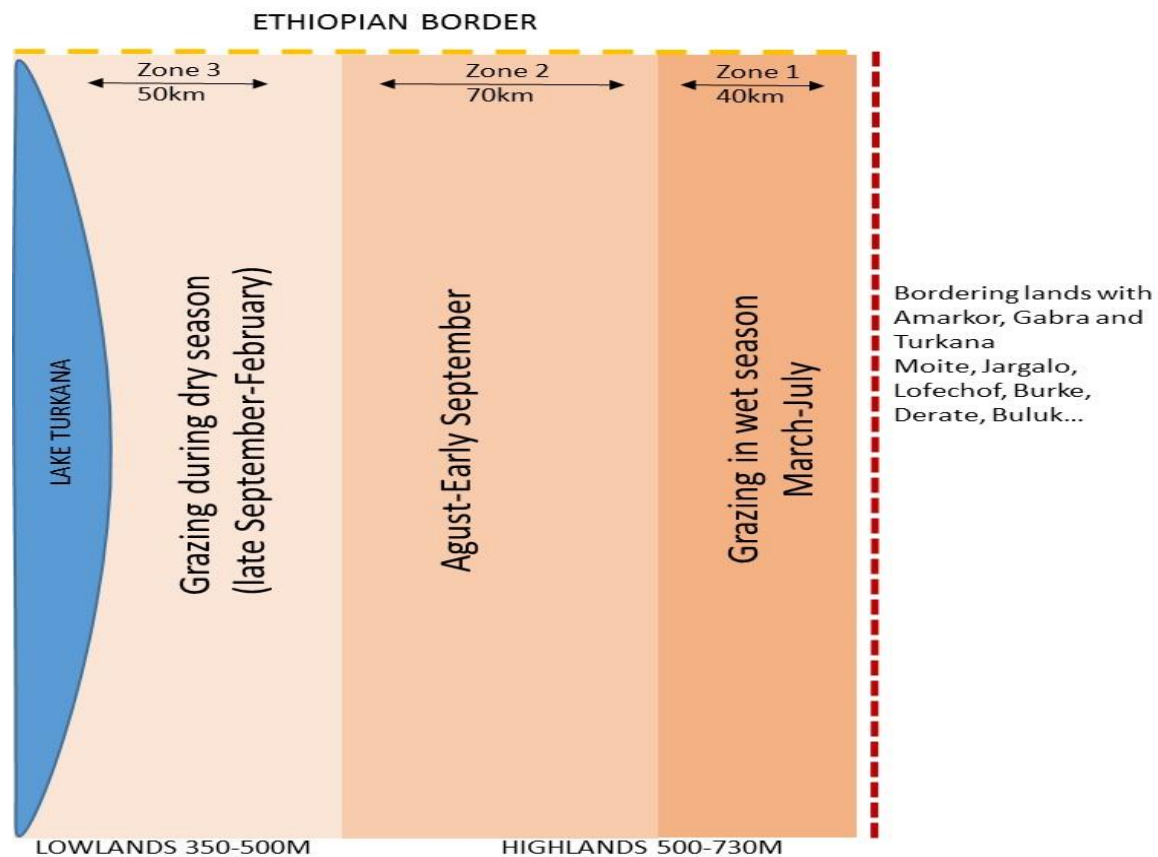


Figure 2: Longitudinal cross-section depicting the movement of herders from the lake to highlands during the dry to wet seasons respectively.

### Qualitative ecosystem services from Daasanach pastoral Commons

The seasonal *laga* Ileret's watershed spans from Buluk and Surge hills, and also on the Southern Ethiopian side and drains to Lake Turkana. Elders reported that this seasonal river provides year-round underground water resources and is very essential during the dry seasons as it supports riverine ecosystem which is essential for survival of wildlife, livestock and the community (figure 3). A fifty eight years old elder said *"Many of wild animals and bird species also depends on riverine forests as their habitat. Some animals come from Ethiopia to lick salt and eat some medicinal plants along the laga Ileret. This laga has the highest numbers of guinea fowls and baboons that any other laga in Dasaanach land and also has diverse habitats for highly treasured leopards which we utilized its skin for celebration of the first born daughter in the family ceremony called Dimi. Other animal species found in these lagas are edible wild animals such as Oryx, Antelopes and Gazelles which we utilized as game meats only during the food scarcity and thus important for our livelihoods"* But we only kill very few when there is

*inadequate food in Daasanach land- but that is a poor man's diet... most of us who have plenty of livestock, we detest such a thing".*

Laga Ileret, yield culturally treasured red and ochre clay which is used for decoration among the Daasanach girls and warriors during the Dimi and Guol cultural ceremonies. A 34 years old herder said *"We cherished ochre, and we conserve and protect it by all means, no one is allowed to mine it except during the seasons of dimi or gual"*.



Figure 3: Aerial photograph of a *laga* in Daasanach land. These riverine ecosystems provides numerous shallow water wells for the community and livestock as well as other many ecosystem services (Photo: Daniel Mwamidi; captured at 7,000 feet above the ground).

At the deltas of *lagas* there are papyrus reeds which are used by the locals for thatching houses and as well as provision of pasture to livestock during the dry seasons. Elders reported that these areas are highly treasured because they harbor fish, crocodiles that they utilized as food and thus supplementing sources from livestock which are dwindling because of prolonged drought in this region.

Pastoral commons especially those around the lake are habitats to countless species of birds- some which are believed to have powers of having 'skills' of weather forecasting. A forty-two years old herder said *"We highly depend on the calls from Bodidhe bird (Nightjar), Kireck (Yellow barbet), Nabus (Abyssinian roller), Dakal (Eagle) and when we see Kimidiriet (Marabou stork) sagging its wings like an umbrella's shape, then it signifies the onset of a rainy season, and thus we normally start the preparation to be ready for migration. These birds' behaviors are very accurate and all Daasanach rely on them for weather forecasting"*.

According to elders and herders, all community riverine ecosystems are conserved, governed and

managed by the community eldership who transfer some authority and mandate to *warranis* (ages 18-35 years) for reinforcement of the norms. A thirty years old Herder said “*We are not allowed to graze large animals such as cattle, donkey or camel within riverine because they may degrade these areas quite fast, and thus we only graze young/small sized livestock such as calves, goats and sheep may graze in these areas as they may not pose dangers of degrading the area. Moreover, the amount of pasture they consume is less as compared to full-grown cattle, donkey or camel. We are also not allowed to cut any tree because many of such indigenous trees are our ‘pharmacy’- we utilize them as plants as medicine because there are no hospitals within, and the nearest one is hundreds of kilometers away. We also treat our livestock using these trees and thus we are obliged to conserve and protect these trees because without them we will all die with our livestock!*” Elders reported that tough penalties are attached to anyone who is caught destroying riverine forests. A fine of a full grown bull is a tag to those who contravenes these norms.

Elders reported that indigenous trees are considered as treasure among the Daasanach and thus they protect them by all possible means. A fifty nine years old elder said “*We do not allow anyone to destroy trees in our land, in fact, we do not destroy manyattas when migrating to new areas, This protects trees as no new manyattas are built in subsequent migration. We always rotate in a same pattern and camp on same areas around Daasanach land, and nobody owns manyattas- they all belongs to one family-Daasanach community*”.

#### *Indigenous medicinal tree species within pastoral commons*

Daasanach Pastoral commons have numerous indigenous tree species that are utilized as herbal medicines by and elders reported that Daasanach community depends majorly on indigenous medical tree species because of unavailability of conventional treatments within Ileret Ward. Elders mentioned various indigenous trees species that are exploited as herbal medicines which are conserved and protected through strict customary restrictions. A sixty-eight years old village elder said “*Curse will be upon anyone who destroys tree that is used to cure diseases among our people. Cutting a tree is like killing a person directly because the medicine saves life of sick person*”.

Some indigenous medicinal trees species which Elders and herders mentioned include:

- i. *Dermech (Grewia tenax)* tree species is used as a detox to cleanse the body from impurities. It is also eaten by goats/sheep and camel as pasture.
- ii. *Lomadang tree species* is used to treat major reproductive afflictions such as infertility, vaginal discharge, menstruation disorders and relieves lumbar pains in women, and also used to treat infertility in livestock.
- iii. *Gieliech tree species*- Used for promoting fertility among women and men.
- iv. *Nanguda (Rubus steudnes)* tree species- Used for treating fevers in humans and livestock.

- v. *Nyabangitang (Rhus vulgaris) tree species*- Use for deworming internal parasites of the liver and intestines, ringworms for both humans and livestock.
- vi. *Gorguriech (Euphorbia heterochrona) tree species* is used as a broad-spectrum herbal medicine (for all infections) for both humans and livestock.
- vii. *Miede tree species*- Locals consider this tree as the most 'sacred' tree in Daasanach land. According to Elders and herders, Miede tree is used to make *Lago*- which is the first fire made immediately upon herders' migrating in a new area which has to be conducted by an anointed member of the Turnyerim clan.

Elders reported that Daasanach depends entirely for natural environment to provide important food elements such as vitamins, medicines, proteins, minerals among other important elements required by human body. For instance, locals depends on riverine ecosystems for wild vegetables such as *amaranthus*, and edible wild mushrooms for food, and are in plenty during the rainy seasons and reduced in dry seasons. Some of the wild vegetables that elders mentioned are: *Nyelim/gilieny (Cordia africana)*, *Mier*, *Kada (Harpephyllum cuffrum)*, *Gaba (Ziziphus mucronata)*, *Damich*, *Barbar (Senna didymobotrya)*.

#### *Water resources within pastoral Commons*

According to elders, Daasanach have a well-organized system of protecting water wells found along the river-beds of *lagas* (figure 4). These shallow wells are protected and elders reported that whenever herders migrate to new areas, they are require by customary norms to refill them with sand so as to avoid excessive evaporation and thus minimize this scarce resource in this arid region.



Figure 4: The riverbed of a seasonal river in Ileret which provides myriad of shallow water wells for community and livestock as well as pasture for goats, sheep (Photo Daniel Mwamidi).

Water is managed by the Daasanach Warriors (*warani*) through three methods:

- a) They fence around the shallow well using thorn twigs of *Acacia drepanolobium* and *Acacia reficiens* so that livestock would access water in smaller portion bit by bit rather than letting them inside defecating and urinating on the entire water well and reducing its quality. By so

doing, herders will ensure that water would not be degraded faster than pasture. A sixty years old elder said *“pasture without water is useless, and it is better to have more water and less pasture than having more pasture without water”* and thus water is regarded as paramount pastoral resource de facto, in these areas. He continued saying *“Whenever we migrate to a new place and there is plenty of pasture, there may be dangers that the grass may remain, while water is depleted or spoilt faster, and thus being forced to migrate to other areas and leaving a lot of pasture behind- which is a very hurting thing to us!, so we always ensure that there is balance between water and pasture. It is better to finish pasture and retain water, because water is life”*;

b) Whenever there are deeper water wells that are difficult for the livestock to drink from, the warriors/herders would fence around and put narrow entry-ways that is guarded by thorns and thus they would organize themselves in relaying pattern or one would fetch and pour water in a water trough for livestock to drink. One will fetch the water from the well/borehole and relay it to the next person who would relays it to subsequent person up to the point where animals are to drink at *kadich* (water trough) with over 20 cows drinking simultaneously. This is done so as to prevent livestock from getting access to water directly and thus filling it up with sand. Contraveners of these practices are beaten severely by *warani* and fined a full-grown bull and forced to slaughter it for herders and elders to feast.

c) Elders and herders reported that it is a requirement to refill the water wells with sand while migrating to a new are and thus former water wells are protected from excessive evaporation and loss of water. A seventy year old elder said *“We normally protect water wells because if you leave them open there many dangers that may occur, such as excess evaporation because herders may stay for over five months before going back to the same area. Also, if our enemies come and find an open well, they may camp there or even do bad things like poisoning water for us and livestock! Also, it may be dangerous for wildlife to fall inside the uncovered wells”*

## Discussion

Since a general understanding of a local institution as *“(...) a set of rules put into practice in particular contexts; constructed rules, agreed upon and modified by the users of the resources in specific communities.”* (translation from spanish: Merino, 2004: 128)<sup>2</sup>, and under the light of the above data, it can be stated that the Dasaanach of Ileret Ward have a decades old if not centuries old management system for their pastoral resources and grazing regimes governed by customary institutions embedded in the structures of the social organization, within segments of belongings to different levels (kinship, clan, age group, etc.), also deeply linked to the beliefs system and to the local ecological knowledge, adjusted to deal with the local environmental conditions of aridity with random variations in the droughts and rains regimes, shaping a real biocultural system. Within this system, the main decisions fall on the elderly hierachy and passed to higher ranking age sets to the lower age sets of *warranis*.

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<sup>2</sup> «(...) un conjunto de reglas puestas en práctica en contextos particulares; reglas construidas, consensuadas y modificadas por los propios usuarios de los recursos en comunidades determinadas.» (Merino, 2004: 128).



It should also be noted that, based on their territory management, it is evident that their knowledge and practices do not only respond to logics focused on livestock needs, as suggested by Bollig and Schulte (1999) for the Pokot case, it also implies the knowledge of the cycles and ecological needs of the graze lands, of the vegetation in general, of the fauna and even of the water, in order not to exhaust them. This logic of resource protection and conservation in the management strategies of the Dasaanach is made clear, for example, in the establishment of special protection and conservation areas or in their customary norms of movement, trying to minimize their impact on the environment by a maximum dispersion on the territory so as not to overgraze an area. In this sense, for example, McPeak (2005) points out that degradation of certain grazing areas among the Gabra is usually associated mainly with a maldistribution of herds on the territory (2005: 194).

Thus, as is shown by the data obtained, for the Dasaanach the dispersion on all the territory is obligated, under risk of sanction. At the beginning of the wet season they must begin grazing from the borders of their territory, not being able to remain more than one month in the same grazing area, especially in those under special protection regimes. They also have rules that prevent the overspend and depletion of resources, such as not being allowed to destroy the temporary settlement huts (*Manyattas*), to avoid the increasing of deforestation as well as refilling water wells with sand while migrating so as to minimize excessive evaporation and protecting wildlife from falling into them.

Something that has been much discussed in the literature on pastoralist groups and which would seem to contravene this statement is the traditionally large Dasaanach herds, despite occupying an arid territory. However, several authors have shown that such cattle accumulation is not only a strategy related to the prestige or to an individual advantage interest on the common resources. The non-limiting size of the herd can also make a lot of sense as an adjusted strategy to the particular conditions of an environment such as the East African one (Homewood and Rodgers, 1987; Leeuw and Tothill, 1990; McCabe and Ellis 1987).

Such is the Dasaanach case, whose groups live in contexts characterized by frequent robberies of cattle, strong hostility between groups, limited access to water points, limited availability of labor in each family group and the existence of strong periodic cycles of droughts and epidemic livestock diseases. Thus, as McCabe (1990) shows for the Ngisonyoka Turkana pastoralists, a group that lives in such an ecological environment, the environmental characteristics and the relationship with neighboring groups also play a strong role in regulating and limiting the herds size, as well as in their mobility and access to the different grazing areas.

Therefore, it becomes evident that the pastoral resources of the Dasaanach of Ileret Ward are not

open access and comply with the principles that Kothari et al. (2012) indicate as characteristics of the ICCAs. They have communities that manage the natural resources of their territory by a communitarian way, through customary institutions of governance and sanction to the contravenors, which are the result of collective arrangements and decisions and are aimed at protecting and conserving the environment and the natural resources from which are benefiting the whole community.

Also, as mentioned, within these territories there are many areas with special protection (*Lagas*) — very importantly riverbank forests — which are partially excluded from grazing — with the exception of calves and small cattle — and where the resources use is strictly regulated. These are areas that, without intent of establishing a comparison, allude to other customary pastoralist institutions, such as the *Ngitili* Sukuma, the *Alalili* Maasai or the *Milaga* Gogo, and in turn evoke other community management systems such as the *Agdal* of the high Moroccan atlas described by Domínguez (2010).

The fact that, because of the expulsion and exclusion of the Dasaanach from their traditional territories, currently encompassed within the Sibiloi National Park, these communities have ceased to see this territory and its resources as something of its own to protect under their customary norms, shows that, beyond the cultural values that the territories and areas of community pastoral management means, and beyond their historical, social and economic value, these traditional forms of community management of the territory can also be of great environmental value. Not only because of their importance as configurators of the landscape (Little, 1996), but above all as possible practical and effective ways of protection and conservation of natural resources. Well adjusted ways, deeply rooted in the local logics, values, beliefs and representations of the communities granting them a local legitimacy and strength that rarely attained and as effective as any other top-bottom imposed approach of protecting and conserving the ecosystems.

## Conclusions

This research among the Daasanach of Illeret Ward is a first approach to our fieldwork on the customary communal management of the pastoral resources in East Africa, which has proofed to be an evocation to the wealth and difficulties of the East Africa pastoral ICCAs. We are aware of the needed to go deeper in this matter, with a wider time field work that could allow to contribute with a more in-depth ethnographic analysis. Nevertheless, already from the obtained data, we can state that the Daasanach are an East Africa pastorilist group that has pastoral ICCAs deeply embedded in its social and cultural structures and make a fundamental key of their governance of local ecosystems and natural resources, greatly enrooted on their traditional ecological knowledge.

Also, although they are institutions that are in a delicate situation, facing important challenges and transformations, specially from state agents, such as the biodiversity loss in all their territory or the land loss due to the Sibiloi National Park interventions, apart from the economical impact that this must have had for the Daasanach, in the opinions of the local people regarding such loss of territorial control, it becomes evident that these institutions still have a great legitimacy and key importance, as they are perceived by the Daasanach as useful for their welfare and necessary for avoiding resources depletion. We suspect that this is the situation for thousands of similar systems throughout all East Africa and hence, this work should be only a spearhead seeking to awaken a process reclaiming a greater recognition to pastoral ICCAs in the region, which we presume (research in the next years will confirm it or reject it) are a key managerial regime in favour of social peace and environmental conservation for East Africa.

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## **Kiswahili na Familia za Mitaani: Nafasi yake katika Maendeleo ya Taifa la Kenya**

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### ***IKISIRI***

*Lugha na utamaduni ni vitu visivyotenganishika. Dhana ya utamaduni hurejelea hali ya maisha ya kila siku ya kikundi fulani katika jamii. Katika jamii za nchi ya Kenya, kunayo jamii ijulikanayo kama ya familia za mitaani au barabarani. Kutokana na majina yanayotumiwa kurejelea jamii hii, inaweza kuamuliwa moja kwa moja kuwa jamii hii ambayo vile vile inaunda jamii lugha haina chochote cha mno iwezayo kuchangia kwa jamii kubwa ya Kenya kwenye mahusiko ya maendeleo. Makala hii inachunguza jinsi familia za mitaani Kenya zinavyotumia Kiswahili katika ujenzi wa taifa hili. Lengo la makala hii ni kudhihirisha mikakati ya kimawasiliano iliyojengeka katika lugha ya Kiswahili katika kuwasiliana na umma mkubwa wa Wakenya kwa ajili ya maendeleo yake. Mbinu kuu ya ukusanyaji data itakuwa ni ya uchunguzi shiriki japo kutakuwa na mahojiano yatakayotumia sampuli ya kimaksudi. Nadharia ya Giles ya Maafikiano ya Mazungumzo itatumika katika uchanganuzi wa data. Utafiti huu utajikita katika jiji la Nairobi na tasnifu yake ni kuwa familia za mitaani zachangia maendeleo ya taifa la Kenya kupitia kwa lugha ya Kiswahili inayotumiwa nazo kiufundi.*

### **Utangulizi**

Kiswahili ni lugha ya taifa na lugha rasmi nchini Kenya (Katiba, 2010). Lugha ya Kiswahili hutumiwa katika mawasiliano mapana hasa katika miji ya nchi ya Kenya. Mjini Nairobi, Kiswahili ni lugha sambazi (Githiora, 2002). Pia, Kiswahili ni somo la lazima katika shule za msingi na za upili za nchi ya Kenya. Haya yanadhihirisha kuwa lugha ya Kiswahili ni muhimu katika ujenzi wa taifa la Kenya. Matumizi ya lugha ya Kiswahili huchangia katika kukuza na kuendeleza umoja na utangamano wa taifa la Kenya. Familia za mitaani hujipata katika hali mbalimbali. Wakati fulani fulani wao huwasiliana na umma mpana. Mahusiano miongoni mwa familia za mitaani na pia baina yao na watu wengine hudhihirisha uteuzi wa lugha watakayoitumia. Familia za mitaani ni kikundi cha kijamii cha kipekee kwa namna wanavyoteua lugha ya kuwasiliana kwayo kutegemea wanazungumza na nani, wako wapi na azma yao ni ipi. Lugha ambayo itatumika katika muktadha fulani hukusudiwa kuwezesha watu kutekeleza nia zao za wakati husika. Familia za mitaani huwasiliana wao kwa wao, huwasiliana na wafanyibiashara na wapita njia. Mazungumzo baina ya familia za mitaani hudhihirisha upekee wa kikundi cha kijamii. Familia za mitaani huwa na lugha yao ya kuwasiliana ambayo hutenga makundi mengine ya kijamii. Mawasiliano baina yao na umma mpana wa Wakenya hudhihirisha matumizi ya lugha ya Kiswahili. Watu wa taifa la Kenya huwasiliana kwa mitindo mbalimbali

wanapotumia lugha ya Kiswahili kutegemea tajriba zao. Kwa mujibu wa wayasemayo Short na Leech (1981), matumizi ya lugha ya mtu hutegemea tajriba yake ya maisha. Familia za mitaani za jiji la Nairobi zina namna zake za kuzungumza. Uteuzi wao wa elementi za kimuundo kama vile misamiati hutegemea muktadha wa matumizi pamoja na masiala mengine ya kijamii na kitamaduni.

Lugha ni suala la kijamii na haiwezi kutenganishwa na jamii husika (Leech, 1969). Makundi tofauti tofauti hutumia lugha kwa njia inayoyatambulisha kama makundi ya kipekee. Familia za mitaani huweza kutambuliwa kutokana na tabia zingine kukiwemo lugha yao. Familia za mitaani hulazimika kuteua lugha watakayoitumia kwa mujibu wa muktadha wa mazungumzo na nia zao za wakati husika. Lugha watakayoiteua ni ile itakayowawezesha kutimiza malengo yao kutegemea wanazungumza na nani, lini, wakati gani na wanataka nini. Lugha inayoelekea kutumiwa na makundi mbalimbali ya kijamii nchini Kenya ni Kiswahili. Habwe (1999), akiunga mkono hoja hii anasema kuwa Kiswahili sanifu ni lugha ya taifa la Kenya. Anaendelea kusema kwamba Kiswahili ndio lugha inayotumiwa katika mawasiliano ya kawaida na watu kutoka matabaka mbalimbali. Fishman (1968) naye anasema kuwa muktadha wa mahusiano baina au miongoni mwa washiriki mawasiliano huchochea matumizi ya aina fulani ya lugha. Anaonyesha kuwa muktadha huwafanya watu kutumia lugha ile ile kwa njia tofauti tofauti. Kwa misingi hii, makala haya yananiua kuonyesha namna familia za mitaani hutumia lugha ya Kiswahili kwa mujibu wa muktadha wa matumizi katika suala zima la maendeleo ya taifa la Kenya. Lengo hili la makala haya linahusiana na namna familia za mitaani jijini Nairobi hutumia Kiswahili katika maendeleo na ujenzi wa taifa la Kenya katika ujumla wake.

### *Jiji la Nairobi na Hali ya Kilugha*

Nairobi ndio mji mkuu nchini Kenya. Ni mji ulio na watu zaidi ya milioni 2.5. Idadi hii inaendelea kuongezeka kila uchao kutokana na uhamiaji wa mijini kutoka mashambani. Kwa sababu hii, huu ni mji ulio na watu kutoka jamiilugha mbalimbali. Nairobi ni mji ulio na idadi kubwa ya familia za mitaani ikilinganishwa na miji mingine hapa nchini Kenya. Pia, familia hizi za mitaani huwa za jinsia zote - jinsia ya kike na ya kiume. Hali ya kutoka kwa jamiilugha mbalimbali huwafanya watu kuzuka na mbinu za mbalimbali za kuwasiliana ili kukidhi mahitaji ya wakati husika. Familia za mitaani huwa na namna yao ya kuwasiliana ambayo hudhihirisha upekee wa kikundi. Familia za mitaani mjini Nairobi hutumia lugha yao ya mitaani ili kutenga makundi mengine ya kijamii na pia hutumia Kiswahili wanapowasiliana na umma mpana. Watafiti mbalimbali wamekuwa na machukulio ambayo yameonyesha kuwa familia za mitaani za jiji la Nairobi hutumia Sheng' kuwasiliana (Abdulaziz na Osinde, 1997, Spyropoulos, 1987 na Githiora, 2002). Hata hivyo, familia za mitaani za jiji la Nairobi huwasiliana kwa kutumia lugha ya Kiswahili hasa wanapowasiliana na umma mpana mbali na ukweli kuwa wanazo lugha zingine wanazozitumia katika mawasiliano yasiyokuwa mapana au ya kitaifa.

Katika mji wa Nairobi, familia za mitaani hupatikana katika maeneo mbalimbali ila wao hujumuika katika sehemu mahsusi. Sehemu hizi ni kama vile Bus Station, Afya Centre, Muthurwa, Railways, Country Bus, Gekomba, River Road, Kirinyaga Road na Ngara. Hizi ni sehemu za biashara mbalimbali, ikiwemo uuzaji wa matunda, mboga na nguo. Sehemu hizi hutembelewa na watu mbalimbali hasa ikizingatiwa kuwa ndipo magari hubebea abiria. Katika sehemu hizi, familia za mitaani huwasiliana na watu kutoka makundi mbalimbali ya kijamii. Ili kufaulisha shughuli hii ya kimawasiliano, lugha itakayoteuliwa kutumika ni muhimu kwa kutekeleza nia za wakati husika za familia za mitaani. Lugha hii inatokea kuwa ni Kiswahili. Nairobi ni mji ulio na ukwasi wa data kwa ajili ya makala haya.

### **Suala la Utafiti**

Uwepo wa jamiilugha mbalimbali jijini Nairobi huchochea matumizi ya lugha itakayoeleweka na watu wa makundi mbalimbali ya kijamii. Mukadha wa mazungumzo huzua uteuzi wa lugha fulani fulani na wala si zingine. Uteuzi wa lugha itakayotumiwa na mtu fulani au/ na kikundi fulani cha kijamii huchochewa na masuala kama unazungumza na nani, wapi na kwa nia ipi. Utambulisho wa kijamii pia ni kichocheo cha matumizi ya lugha kwa njia fulani. Kama ilivyokwisha kutajwa, familia za mitaani huhusishwa na matumizi ya Sheng' kwa nia ya kutenga watu wengine. Hata hivyo, kikundi hiki cha kijamii huwasiliana na watu wengine wasioelewa Sheng' ya familia za mitaani. Mathalani, familia za mitaani huwasiliana na wafanyibiashara wakati wa kuwabebea mizigo, wenye magari na wapita njia. Kutokana na kuwasiliana na washiriki wa mazungumzo kutoka makundi tofautitofauti ya kijamii, lugha ya Kiswahili hutumika kwa kuwa ndiyo lingua franca ya taifa la Kenya kwenye ngazi ya kitaifa.

Familia za mitaani huishi maisha duni kama asemavyo Suda, (1997). Hali hii ya maisha duni huwafanya kutafuta mbinu mbalimbali za kujizoazoa na kuishi. Mbinu mojawapo ni uteuzi wa lugha itakayowawezesha aidha kupata msaada kutoka kwa wapiti njia au kazi ya kufanya. Lugha inayoelekea kutumiwa na watu mbalimbali jijini Nairobi na nchini Kenya kwa jumla ni Kiswahili. Namna familia za mitaani hutumia lugha ya Kiswahili hudhihirisha upekee wa kikundi hiki cha kijamii. Hili litatuwezesha kujibu maswali yafuatayo:

- i) Je, uamilifu wa lugha ya Kiswahili ni upi miongoni mwa familia za mitaani za jiji la Nairobi?
- ii) Je, ni hali zipi za kimawasiliano ambazo huchochea matumizi ya lugha ya Kiswahili?
- iii) Je, matumizi ya lugha ya Kiswahili yanaweza kutumiwa kudhihirisha upekee wa kikundi cha kijamii kwa kuwafanya kuwa ama kama kundi-ndani au kundi-nje kwa wenye kukitumia?

- iv) Je, familia za mitaani huzingatia Kiswahili sanifu au la? Je, wao hutumia misamiati ya kubuni au iliopo katika Kiswahili sanifu na kwa nini?

### **Msingi wa Kinadharia**

Makala haya yamejikita katika nadharia ambayo imetuwezesha kuchunguza namna familia za mitaani huwasiliana kwa kutumia lugha ya Kiswahili. Nadharia hii imeweza kushughulikiwa katika vipindi mbalimbali kiwakati. Hata hivyo, makala haya yamefuata mkabala wa 1991. Nadharia ya maafikiano ya mazungumzo imetufaa katika kuchanganua data.

Nadharia ya maafikiano ya mazungumzo iliasisiwa na Giles mwaka wa 1973 na akaishughulikia tenamwaka wa 1975. Hata hivyo, nadharia ya maafikiano ya mazungumzo imeweza kukua na kuendelea kiwakati. Nadharia hii imeweza kushughulikiwa na wasomi mbalimbali na kuipa sura mbalimbali. Giles na Coupland, J. na Coupland, N. (1991) wanasema kuwa nadharia hii imeacha mtindo wa kuzingatia masuala mahsusi ya kiisimu wakati wa kuchunguza kikundi cha kijamii. Kulingana na wasomi hawa, msisitizo sasa ni kuchunguza masuala yote yanayohusiana na maafikiano baina ya wanakikundi ikiwemo viziada lugha kama vile ishara za mwili. Hii ina maana kwamba mtafiti anapaswa kuzingatia namna kikundi cha kijamii kinavyozungumza na ishara zingine za mwili ambazo hujitokeza wakati wa mazungumzo.

Katika mwaka wa 1973, Giles alishughulikia kile kisemwacho tu na wanakikundi. Anaona maafikiano kama mchakato wa ubadilishaji lugha baina ya wanakikundi. Mchakato huu hutumika kuwili: mwingiano na ulahajishaji. Katika hali ya mwingiano, mzungumzaji hutumia lugha ambayo huashiria maafikiano ya kikundi husika. Maafikiano husaidia katika kudumisha umoja wa kikundi. Katika mwingiano wa lugha, washiriki hufanana sana katika lugha wanayoitumia. Nadharia ya maafikiano ya mazungummo inachukulia mwingiano kama ubadilishaji wa kijamii pale ambapo washiriki hugharamika ili kupata faida fulani ambayo yaweza kuwa ni kifaa muhimu cha kukubalika kijamii. Aina ya pili ya maaafikiano ni ulahajishaji. Hapa mzungumzaji hujitofautisha kilugha na washiriki wengine kwa kutumia lugha kwa njia tofauti ili asijitambulishe na kundi hilo.

Giles alijikita katika vipera vitatu ambavyo ni: mvuto wa mfanano, ubadilishaji wa kijamii na utambulisho wa kijamii. Anasema kuwa katika mvuto wa mfanano, mtu hujaribu kumbadilisha mwingine ili kuingiliana naye kwa kupunguza tofauti baina yao. Hapa wazungumzaji huafikiana kilugha. Mvuto huu wa mfanano husababisha ubadilishaji lugha kwa jamii ili mtu aweze kuzungumza kama wenzake na hivyo kutambuliwa kama mmoja wao. Maoni ya Giles yanaonyesha kuwa mtu huzungumza kamawenzake katika kikundi husika kama mbinu ya kukubalika katika kikundi hicho.



Coupland, N. na Coupland, J. walishirikiana na Giles, H. na kuiangazia nadharia ya maafikiano ya mazungumzo katika mwaka wa 1991. Wasomi hawa walijikita zaidi katika suala la muktadha wa mahusiano ya washiriki wa mazungumzo. Wanasema kuwa muktadha wa mazungumzo huchochea mabadiliko katika lugha itakayotumiwa, misimbo, mtindo wa kuzungumza na uteuzi wa mbinu mwafaka ya kuishi. Hii inaonyesha kuwa, mbinu za kuishi huchochea wazungumzaji kuteua lugha faafu kwa mujibu wa muktadha.

Wasomi hawa wanasema kuwa maafikiano huweza kujitokeza katika viwango viwili. Viwango hivi nimpangilio na uchangamano wa muktadha na maafikiano ya kikundi. Uchangamano wa muktadha huwafanya wazungumzaji wa ana kwa ana kutafuta njia mbadala ya kuwasiliana. Hii hudhihirisha umoja wa kikundi cha kijamii. Katika kiwango cha pili wanasema kuwa mbinu ya kuafikiana hudhihirisha mabadiliko ya misimbo, au uteuzi wa lugha. Wanasema kuwa uteuzi wa lugha itakayotumiwa katika mazungumzo unahusiana na imani za wanakikundi, mitazamo yao na hali zinazowakumba. Kwamba, wanakikundi wa wingi-lugha huamua lugha ipi itumike katika muktadha upi. Hii inaonyesha kuwa watu kikundi cha kijamii hutumia lugha mahsusi kwa nia mahsusi.

Wasomi hawa wanaelezea pia masuala ya mwingiano na ulahajishaji baina ya wanakikundi. Hata hivyo, wanaonyesha maoni tofauti kuhusu mwingiano na ulahajishaji. Katika mwingiano, Giles, (1973) alijikita katika mvuto wa mfanano, ubadilishaji wa kijamii na utambulisho wa kijamii ila katika mwaka wa 1991, Giles na wenzake wanauchukulia mwingiano kama njia ya utangamano wa kijamii au utambulisho. Katika mwaka wa 1973, Giles anaona mwingiano kama mchakato wa kubadilisha lugha na kisha watu wengine katika kundi hilo hufuata mtindo uo huo. Katika mwaka wa 1991, Giles na wenzake wanasema kuwa watu huafikiana kimazungumzo na kitabia kwa sababu ya: chukulizi kuhusu kikundi hicho cha kijamii, namna wanavyotaka kueleweka na umma mpana, faida watakayopata, mazoea ya jamii, nia zao na viwango vya mazungumzo. Maoni haya yanatofautiana na aliyoyazungumzia Giles mwaka wa 1973. Namna wanavyotaka kueleweka na faida watakayopata kutokana na kuafikiana huwafanya wanakikundi kuteua lugha itakayofaa katika mazungumzo hayo. Mazoea ya jamii na nia za wazungumzaji huwafanya kuteua lugha na misamiati inayoeleweka na washiriki wa mazungumzo hayo. Chukulizi kuhusu kikundi husika huwafanya wanakikundi kuteua lugha mbadala ili kupunguza chukulizi hasi. Maoni ya wasomi hawa yanadhihirisha kuwa uteuzi wa lugha itakayotumika katika mazungumzo fulani huchochewa na muktadha wa mazungumzo.

Giles na Coupland wanasema kuwa ulahajishaji huwa mbinu ya kukabiliana na hali ya wakati husika kinyume na Giles, (1973) ambaye alidai kuwa ulahajishaji hutokana na kutotaka kuhusishwa na kundi husika. Giles, H. na Coupland, J. na Coupland, N. (1991) wanaonyesha kuwa ulahajishaji huweza kutokea hapa na pale kwa mtu wa kikundi fulani kutegemea nia yake ya mazungumzo. Kwamba, yule anayejitenga na wanakikundi wengine hufanya hivyo ili kuchukuliwa kwa njia chanya na watu wa makundi mengine. Kwao, ulahajishaji hauwezi



kuepukika katika hali fulanifulani. Kwamba, muktadha huweza kuwafanya watu wa kikundi fulani cha kijamii kujitenga na namna walivyozoeleka. Wanakikundi hubadilisha lugha kwa nia ya kubadilisha mitazamo ya watu wa makundi mengine kuwahusu.

Mazungumzo baina ya watu kutoka kwa makundi mbalimbali ya kijamii huzua haja ya kuteua lugha itakayoeleweka na washiriki wa mazungumzo hayo. Familia za mitaani hujipata katika miktadha mbalimbali. Miktadha mingine huwafanya kutumia lugha inayowatambulisha wao ilikutenga makundi mengine ya kijamii. Giles, Coupland, N. na Coupland, J. (ibid) wanazungumzia aina za miktadha. Wanadai kuwa miktadha changamano huwafanya watu kutumia lugha itakayowawezesha kupata suluhu. Wakati mwingine, familia za mitaani hulazimika kuomba msaada. Watahitajika kutumia lugha itakayoeleweka na washiriki wa mazungumzo hayo. Familia za mitaani pia huzungumza wao kwa wao. Inaelekea kuwa, mazungumzo baina yao yatahusisha lugha yao ya 'mtaa' ilhali wanapozungumza na watu kutoka makundi mengine watatumia lugha ya Kiswahili. Nadharia hii ya maafikiano imetufaa katika kuchunguza namna ambavyo familia za mitaani huwasiliana kwa kutumia lugha ya Kiswahili kwa mujibu wa muktadha. Tumejikita katika maoni ya Giles, H, Coupland, J. na Coupland, N. ya mwaka wa 1991.

Mbinu Za Utafiti

Tasnifu hii itatumia mbinu mbili katika kukusanya data. Mbinu hizi ni uchunguzi shiriki na mahojiano. Tutakwenda nyanjani ambapo tutajenga uhusiano mzuri baina yetu na familia za mitaani ili washirikiane nasi. Katika mahojiano, tutatumia maswali yasiyoratibishwa ili kuruhusu mazungumzo yatakayotuwzesha kupata data tosha. Tutapanga wakati wa kukutana nao kwa kuzingatia wakati wao mwafaka. Saldana, (2011) anasema kuwa wakati wa utafiti, mtafiti azingatia wakati mwafaka wa watafitiwa na wala sio wakati mwafaka wa mtafiti. Familia za mitaani huhamahama kutoka sehemu moja hadi nyingine na kwa sababu hii, tutalazimika kuwatafuta wanapopatikana. Tutagawa sehemu ambazo hukisiwa kuwa familia za mitaani hupenda kukutana katika makundi sita ifuatavyo:

- i) Sehemu ya Bus Station na Afya Centre
- ii) Muthurwa na Railways
- iii) Country Bus na Gekomba
- iv) River Road na Kirinyaga Road
- v) Ngara
- vi) Globe Cinema na Jeevanjee

## **Matokeo na Mjadala**

Matokeo ya utafiti huu yanaonyesha kuwa familia za mitaani jijini Nairobi hutumia lugha ya Kiswahili katika takribani shughuli zao zote. Hali hii inatokana na hali ya Kiswahili kuwa lugha ya taifa na vile vile hali ya wanafamilia za mitaani kuwa wanatokea jamiilugha zote za nchini Kenya. Hata hivyo, utafiti huu umeweza kubaini kuwa nyingi katika familia hizi za mitaani zatokana na jamii lugha ya Kikuyu. Kwa mujibu wa shirika la Consortium of Street Children (CSC), familia za mitaani za jiji la Nairobi zinahusisha asilimia 46 ya jamiilugha ya wakikuyu na asilimia 54 ni kutoka jamiilugha nyingine za nchi ya Kenya. Sababu mojawapo ya hali kuwa hivi ni ukaribu wa Wakikuyu kwa jiji la Nairobi. Japo hivi ndivyo hali halisi ilivyo, inapokuja kwa kuwasiliana lugha inayotawala mawasiliano ni Kiswahili. Haikosi hali hii ya kudumisha matumizi ya lugha ya Kiswahili katika mawasiliano yao yatokana na kule kutaka kujibainisha kama kundi ndani lisilojua ukabila. Uvunjaji wa ukabila ni moja katika nguzo kuu zipelekeazo kupatikana kwa maendeleo ulimwenguni kote kama inavyodhihirishwa na mataifa yaliyo na hali ya umoja lugha kama vile Korea, Uchina na Marekani.

Familia za mitaani Kenya, na hasa jijini Nairobi, hazitumii Kiswahili cha aina moja kwa mawasiliano. Hali ya Kiswahili kipi kitumike wapi, lini, kwa nani na kwa athari gani huendana na masiala mbali mbali ya kijamii na kiuchumi. Kwa mfano, wanafamilia za mitaani wanapokuwa wanawasiliana wenyewe kwa wenyewe wanatumia aina ya Kiswahili wanachokitaja wenyewe kuwa ni Kiswahili Kinairobi. Kwa mfano;

Mtu 1: Sasa, umepotea!

Mtu 2: Ni wewe ndio umepotea, huonekani bwana!

Mtu 1: Sisi tuko, ni *maubao* tu saa ii na sijapata kakitu.

Mtu 2: Hauna hata ya *mandanyo*?

Mtu 1: Niko na *mbao* na nimekosa *mbao* ingine ndio *nibuy* chai na mandazi.

Mtu 2: Twende *nikuokolee*.

Katika mazungumzo haya, familia za mitaani wametumia lugha ya Kiswahili-kinairobi. Wametumia maneno kama vile *maubao* kwa maana ya njaa, *mandanyo* ni mandazi, *mbao* ni shilingi ishirini na *nikuokolee* kwa maana ya kusaidiwa. Mazungumzo baina ya familia za mitaani yanadhihirisha upekee wa kikundi hiki cha kijamii. Upekee huu unawafanya kuwa kundi-ndani kama tulivyoonyesha kwenye mazungumzo yao. Familia za mitaani huzungumza kwa namna tulivyoonyesha katika miktadha fulani fulani. Utafiti huu ulibaini kuwa familia za mitaani huwasiliana kwa kutumia Kiswahili-kinairobi wanapowasiliana na watu waliozoeana nao. Mazungumzo ya aina hii huwa ya kawaida wala si rasmi na hutofautiana na mazungumzo baina yao na maafisa wa kaunti au maafisa wa polisi. Hali hii pia huwa tofauti pale ambapo wanaomba usaidizi kutoka kwa watu wenye magari barabarani. Familia za mitaani

wanapozungumza na wenye magari hujibidiisha kutumia Kiswahili kinachokubalika na wote katika jamii ya Kenya na kiwezacho kusahilisha mawasiliano kwa wote. Hali hii pia hutokea pale ambapo wanafamilia za mitaani wanaomba vibarua kutoka kwa wafanya biashara. Mazungumzo yafuatayo ni baina ya mmoja wa familia za mitaani na mfanyabiashara (MB) katika eneo la Muthurwa.

MB: Nyinyi, ninataka kuwatuma.

Mtu 3: Wapi mama?

MB: Kwa stoo yangu.

Mtu 4: Hapo sawa, lakini mara hii utulipe vizuri kidogo.

Mtu 3: Ile stoo yako unajua iko mbali halafu watu wanasongamana sana kwa hiyo njia.

MB: Endeni haraka kastoma wasipate sina vitu za kuwauzia.

Mtu 3: Ule jamaa atatutolea kweli au atakataa tena?

MB: Ninampigia simu saa ii ii.

Mazungumzo baina ya mfanya biashara na vijana hawa wa familia za mitaani yanaonyesha matumizi ya Kiswahili ambacho kinaelekea kuwa sanifu. Vijana hawa wa familia za mitaani hawajatumia lugha yao ya mitaani. Hii ni kwa sababu wanawasiliana na mtu kutoka kikundi kingine cha kijamii. Katika mawasiliano haya, familia za mitaani wametumia msimbo pana ili kueleweka na washiriki wote wa mazungumzo haya. Ilifahamika kuwa wafanya biashara huwasiliana na familia za mitaani kwa kutumia lugha ya Kiswahili ili kusahilisha mawasiliano. Mazungumzo baina ya familia za mitaani na mfanya biashara yanadhihirisha tofauti katika matumizi ya lugha ya Kiswahili. Mazungumzo haya yanaonyesha kuwa familia za mitaani wanazingatia sarufi na wanaendeleza maneno ipasavyo. Familia za mitaani wametumia maneno kama vile 'hii' ilhali mfanya biashara analitamka 'ii'. Hii ni ithibati tosha kuwa familia za mitaani wanaweza kuwasiliana kwa kutumia Kiswahili kwa ufasaha. Mfano mwingine wa matumizi ya lugha kwa ufasaha ni mazungumzo yafuatayo baina ya familia za mitaani na afisa wa kaunti. Afisa wa kaunti alikuwa na jukumu la kuondoa familia za mitaani katika eneo la mkahawa mtaani Ngara. Familia za mitaani hawakuwa radhi kuondoka maana ilikuwa usiku. Mazungumzo yao ni kama ifuatavyo;

Afisa wa kaunti: (akichukuwa gunia la kutoka kwa mmoja wa familia za mitaani)  
tokeni hapa, mnaharibia watu biashara zao. Nenda mahali mmezoea.

Mtu 5: Siendi, siendi na siendi. Kwani wewe hauna huruma?

Afisa wa kaunti: Wee, wee, nitakuumiza vibaya. Mtaenda cell saa ii.

Mtu 6: Sasa sisi hatuna kazi, kazi ni kushinda tumeshikwashikwa tu kiuvinga tu.  
Ujinga tu.

Mtu 7: (mwanamke) Wewe, kama hauna mahali pa kulala, sema nikusongee.  
Nita.....

Afisa wa kaunti: Tokeni hapa, tokeni, toka, mahali pa kulala nini?

Mtu 7: Enda huko, kwanza leta tandiko yangu, (akijaribu kumnyanganya afisa wa kaunti gunia). Au kuja nikusongee tulale. Kuja, kuja kama unataka nikusongee.

Afisa wa kaunti: Ninakuanga na kitanda na mattress kubwa na poa kuliko hii uchafu yako.

Mtu 7: Na unafanya nini hapa saa hii? Unataka nitoe nguo, nitoe zote? (Afisa wa kaunti anarusha gunia chini na kuondoka kwa haraka)

Mazungumzo haya yalihusisha familia za mitaani za jinsia ya kike na kiume na afisa wa kaunti ya Nairobi. Imedhihirika wazi kuwa familia za mitaani wanarudiarudia baadhi ya vitenzi kwa nia ya kusesitiza. Hii ni sifa mojawapo inayowatambulisha kama kikundi cha kijamii chenye upekee katika matumizi yao ya lugha. Kwa mfano Mtu 5 anarudia neno ‘siendi’ kuonyesha msisitizo kuwa hatatoka mahali hapo. Pia, familia za mitaani wametumia neno ‘wewe’ ipasavyo kinyume na afisa wa kaunti anayetumia neno ‘wee’. Kwa hali hii, ni wazi kuwa familia za mitaani wanakitumia Kiswahili kwa ufasaha hasa wanapozungumza na watu kutoka makundi mengine ya kijamii. Sababu kuu ya kutumia Kiswahili kwa ufasaha wanapowasiliana na baadhi ya watu ni kutaka kujitenga na namna watu walivyowazoea kuwa wao hawajui Kiswahili sanifu. Mbinu hii ya kutumia Kiswahili kwa ufasaha huwafanya kuwa kundi-nje kwa muda mfupi. Huu ni mkakati mojawapo wa kuishi mitaani. Kwamba, familia za mitaani huweza kutumia Kiswahili sanifu hasa kutegemea wanazungumza na nani. Wakati mwingine familia za mitaani hulazimika kujitenga na lugha yao ya mitaani ili kusahilisha mawasiliano au pia kwa nia ya kujibainisha na kundi lao kutokana na mtazamo hasi kuwahusu. Ingawa hivyo, kujibainisha huku ni kwa muda mfupi tu na hutegemea muktadha wa mazungumzo.

Halafu, ifahamike kuwa wapo wanafamilia za mitaani ambao japo wanaishi mitaani wamekwenda skuli na wanavyo vyeti. Watu kama hawa walionekana kama ambao Kiswahili chao kilielekea kuwa sanifu hasa kisintaksia na kifonolojia maana ndivyo viambajengo vya muundo wa lugha tulivyovishughulikia sana katika utafiti huu. Usanifu wa matumizi ya Kiswahili ulijibainisha zaidi wanafamilia hizi za mitaani walipowasiliana na polisi pamoja na maaskari wa jiji la Nairobi. Hali hii ilijitokeza kama mbinu ya kujinusuru na kujitofautisha na

umma mkubwa wa wanafamilia za barabarani ambao huwa wasumbufu, waharibifu, wanyang'anyi na watenda maovu katika ujumla wake. Kimsingi, kama walivyodokeza watafitiwa wenyewe, hali hizi zote za matumizi ya lugha ya Kiswahili katika aina zake zote hupania kuleta maafikiano ya kimazungumzo na ni umoja huu wa kilugha uwezao kuchochea maendeleo ya taifa lolote lile likiwemo hili la Kenya. Mfano wa mmoja wa familia za mitaani aliyesoma ni Mtu 8 katika utafiti huu. Mazungumzo baina yake na afisa wa polisi ni kama ifuatavyo;

Afisa wa polisi: Kijana, utapelekwa kwenye rehab coz huko maisha ni poa kuliko hapa kwa street.

Mtu 8: Afande, hapa mitaani ni afadhali. Tunapata chakula na tuna uhuru wa kutosha.

Afisa wa polisi: Wewe ni ng'ombe ya wapi! Hujui shida iko mingi kwa street? Endelea kucheza, utapigwa risasi.

Mtu 8: Mimi si jambazi wala sijawahi kuiba. Nyinyi mna maonevu tu kwa chokoraa. Sio kupenda kwetu tunaishi hivi.

Mtu 9: Lakini Afande, si mnajua tu sisi si watu wabaya. Ni.....

Afisa wa polisi: Nyinyi ndio hamjisikii kusaidiwa. Hata mkipewa job, haya, tuseme niwapeleke kwangu mkanichungie ng'ombe si mtakaa siku moja mbili halafu mpoote. Kwani hii street inawafurahisha na nini? Kwenda huko.

Mazungumzo haya yanatofautiana na yale ya familia za mitaani na afisa wa kaunti. Afisa wa kaunti anazungumza nao kwa ukali. Familia za mitaani nao pia wanatumia ukali huo huo huku wakitumia Kiswahili kwa ufasaha. Mazungumzo baina ya afisa wa polisi na mtu 8 na mtu 9 yanadhihirisha matumizi ya Kiswahili sanifu kwa upande wa familia za mitaani. Mtu 8 ni mmoja wa familia za mitaani ambaye aliwaeleza watafiti kuwa alikuwa amesoma hadi kidato cha tatu. Kwamba alikuwa na mamake na waliishi na baba wa kambo. Wazazi walipokosana, mama akaondoka na kuwaacha watoto. Baba akamfukuza mtu 8 maana mamake alimzaa nje ya ndoa. Utengano huu ulimfanya mtu 8 kuacha masomo akiwa kidato cha tatu. Kijana huyu alizungumza Kiswahili kwa ufasaha. Inadhihirika kuwa hakuchanganya ndimi katika mazungumzo yake na afisa wa polisi. Anatumia neno 'mtaani' ilhali afisa wa polisi anatumia neno 'street'. Afisa wa polisi anachanganya ndimi na hata kutaja baadhi ya maneno kwa ufupi kama vile 'rehab' kwa maana ya 'Rehabilitation' ilhali mtu 8 anatumia Kiswahili sanifu katika kurejelea sehemu na dhana mbalimbali. Mazungumzo haya yanaonyesha wazi kwamba familia za mitaani hutumia Kiswahili sanifu hasa wanapozungumza na maafisa wa polisi. Familia za mitaani huzungumza

Kiswahili kwa ufasaha wanapozungumza na maafisa wa polisi kama mkakati wa kujitenga na kundi hili kwa muda mfupi. Inadaiwa kwamba maafisa wa polisi hawapendi kuzungumziwa kwa lugha ya mtaa ya familia za mitaani. Maafisa hawa huichukulia Sheng' inayotumiwa na familia za mitaani kama lugha ya wakora. Ili kuepuka chukulizi hizi, familia za mitaani hutumia Kiswahili kwa ufasaha ili waweze kuelewana na maafisa wa polisi. Kwamba, matumizi ya lugha kwa ufasaha huwawezesha kutazamwa kwa njia chanya.

Mazungumzo baina ya familia za mitaani na maafisa wa polisi yanaonyesha kuwa uhusiano baina ya wazungumzaji ni kichocheo cha matumizi ya lugha kwa njia fulani. Familia za mitaani wanatumia Kiswahili kwa ufasaha wanapozungumza na maafisa wa polisi kinyume na wanapozungumza na maafisa wa kaunti. Mazungumzo baina ya familia za mitaani na maafisa wa kaunti (kama tulivyoonyesha) yanadhihirisha matumizi ya lugha isiyo na heshima. Mtu 7 anamwambia afisa wa kaunti kwa ukali kuwa iwapo hana mahali pa kulala atamsongea. Mazungumzo hayo pia yanadhihirisha kuwa familia za mitaani hutumia ukali wanapowasiliana na maafisa wa kaunti. Pia, ni wazi kuwa familia za mitaani hurudiarudia vitenzi katika mazungumzo yao. Hali hii inatokea kuwa kinyume katika mazungumzo baina ya maafisa wa polisi na familia za mitaani. Imedhihirika kuwa familia za mitaani za mitaani hutumia lugha ya upole wanapozungumza na maafisa wa polisi. Mtu 8 anatumia lugha fasaha na anazungumza kwa unyenyekevu katika mazungumzo baina yake na afisa wa polisi. Haya yote ni kutokana na uhusiano uliopo baina ya familia za mitaani na maafisa wa polisi kwa upande mmoja na familia za mitaani na maafisa wa kaunti kwa upande mwingine.

Utafiti huu umebainisha wazi kuwa zipo tofauti za matumizi ya lugha ya Kiswahili yanayoendana na masiala ya kijamii kukiwemo lile la umri na jinsia. Kwa jumla, wanafamilia za mitaani walio na umri wa miaka baina ya 18 na 40 hawatumii tasfida nyingi katika kutaja mambo ya aibu na usimbeko. Wao walionekana kuvitaja vitu jinsi vilivyo bila kuvivalisha nguo. Kwa upande mwingine, watoto na watu wa umri mkubwa walionyesha matumizi ya lugha ya Kiswahili yaliyo ya tahadhari kuu ili wasije wakaudhi wasikilizaji wao. Mhojiwa mmoja mzee alipoulizwa kuhusu hali hii ya matumizi ya lugha, alisema kuwa vijana wanatumia lugha kwa jinsi wanavyofanya kwa sababu ni limbukeni walio na nguvu nyingi na pupa za maisha. Hata hivyo, ikumbukwe kuwa hali hii tunayoishuhudia kwa matumizi ya lugha ya Kiswahili miongoni mwa familia za mitaani ndiyo inayozipitikia familia zote ulimwenguni hapa (Davy, C 1978). Kwa hali hii, familia za mitaani jijini Nairobi ni kama familia nyingine yo yote ile inapokuja kwa suala la tasfida na matumizi ya lugha. Vile vile, utafiti huu umeonyesha kuwa kina dada walijitokeza kama ambao walitumia lugha yao kwa tahadhari kuu wakilinganishwa na wanaume. Mbali na kutumia lugha iliyojaa upole, kwingineko kina dada walionekana wakitumia lugha ishara badala ya lugha zungumzwa. Hapa tuna maana kuwa lau kama kina dada wangekuwa na maguvu kama walio nayo kina baba, wangesaidia sana katika ujenzi wa taifa ambao ungeleta maendeleo katika taifa hili la Kenya. Kule kunyamaza au kutumia ishara kwa kina dada katika

kuwasiliana ni mkakati mwema wa kimawasiliano ambao humwepushia mhusika hali ya kuropokwa na kujisaliti kimawasiliano kwa kusema mambo yasiyohitajika.

Data kwa ajili ya utafiti huu ilipatikana kutoka maeneo mbalimbali ya jiji la Nairobi. Kutegemea wanakopatikana wanafamilia za mitaani, matumizi yao ya lugha ya Kiswahili yalijipambanua mbali na mikakati yao ya kimawasiliano pia kujitokeza wazi. Japo masafa yaliyopo baina ya Ngara na River Road pamoja na Kirinyaga Road sio ya mbali mno, ilijitokeza kuwa lugha ya Kiswahili iliyotumika Ngara ilikuwa ya upole ikilinganishwa na ile ya River Road na Kirinyaga Road. Kinachosisitizwa hapa ni kuwa maeneo ya kijiografia na kitabaka wanakoishi watu siku zote huwa na athari fulani kwa lugha na tabia za lugha husika. Hali hii hii ndiyo inayotupa matokeo ya matumizi ya lugha ya Kiswahili ya familia za mitaani za Afya Centre na Bus Station yakitofautiana kwa ukali wa kimsamiati na wa toni. Kwa jumla, ilibainika kuwa hakuna familia za mitaani za eneo moja jijini Nairobi zilizokubalika kuhamia sehemu nyingine bila idhini na sababu maalumu. Kwa hiyo, familia hizi za mitaani huishi mahali fulani maalumu panapoonekana kuwa panafaa kwa ajili ya chakula kwa familia husika na pia kwa vibarua na ajira. Hali hii inawaepushia wanafamilia hizi hali ya kuwa ombaomba na badala yake kujitegemea kwa ajili ya maendeleo yao na ya taifa la Kenya kwa jumla.

### **Hitimisho**

Fikira kwamba familia za mitaani ni kupe na za watu wanaolaza damu zimepitwa na wakati. Wanafamilia za mitaani ni watu walio na uwezo wa kushiriki kikamilifu katika ujenzi wa taifa la Kenya kama walivyo Wakenya wengine. Moja katika njia ambazo kwazo maendeleo hayo ya taifa la Kenya yanaweza kuafikiwa ni kupitia kwa Kiswahili ambayo ni lugha ya taifa la Kenya na vile vile hufundishwa na kutahiniwa katika mfumo wa elimu Kenya. Wanafamilia za mitaani jijini Nairobi huutumia ujuzi wao wa lugha ya Kiswahili ili kuendeleza shughuli zao za maisha ya kila siku na kama mkakati wa kuishi jijini. Kwa sababu hii, itakuwa vyema kama familia kama hizi zitaweza kuigwa na sekta zingine za umma wa Wakenya kwa ajili ya maendeleo ya taifa hili la Kenya.

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## **Uimarishwaji wa Umaizi Mseto Kupitia Mikakati Shirikishi ya Ufundishaji wa Kiswahili Nchini Kenya**

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### **Ikisiri**

*Upataji wa elimu na maarifa ni shughuli isiyo na kikomo katika maisha ya mwanadamu. Ili kuimarisha shughuli hii, lengo la nne la Maendeleo Endelevu linamhitaji kila mwanafunzi kutoachwa nyuma kwenye ujifunzaji na upataji wa maarifa. Lugha ni chombo muhimu katika ufundishaji na ujifunzaji wa somo lolote lile. Hivyo basi, ipo haja ya kumwelekeza mwanafunzi kufikia viwango toshelevu vya umilisi wa lugha, kama chombo cha kujipatia elimu na maarifa ya kudumu maishani. Nadharia ya umaizi mseto, iliyoasisiwa na Howard Gardner inatambua kuwepo kwa aina tofautitofauti za vipawa katika kikundi cha wanafunzi. Vipawa hivi vinastahili kupaliliwa na kukuzwa kwa kutumia mikakati tofautitofauti inayomshirikisha kila mwanafunzi. Naye Lev Vygotsky anapendekeza kutumika kwa mfululizo wa mikakati ya kumwimarisha kila mwanafunzi ili afikie kilele cha matamanio yake kielimu. Ili kuchochea ukuaji wa vipawa na kumshirikisha kila mwanafunzi kwenye somo, mwalimu analazimika kuteuwa na kutumia mikakati kadha anapofundisha. Makala haya yanatathmini mbinu, mikakati na nyenzo shirikishi zinazofaa kutumika katika ufundishwaji wa Kiswahili kwa lengo la kukuza kipawa cha kila mwanafunzi darasani. Mikakati yenyewe inajadiliwa kwa kuangazia utekelezwaji wa mtaala mpya wa elimu nchini Kenya, unaopendekezwa kutumika kuanzia mwaka 2019. Mjadala kwenye makala haya unalenga kujenga uhusiano kati ya nadharia na utekelezwaji wake kwenye shughuli za ufundishaji na ujifunzaji wa lugha ya Kiswahili kama wenzu wa kutimiza malengo ya kitaifa na ya kimataifa kuhusu elimu.*

**Maneno muhimu:** *ufundishaji, mikakati shirikishi, umaizi mseto.*

### **Utangulizi**

Kaulimbiu ya Malengo Endelevu ni ‘**Kutomwacha mtu yeyote nyuma**’. Hii ina maana kuwa mikakati yoyote ya kuleta maendeleo ya kijamii, kisiasa na kiuchumi sharti iwashirikishe washika dau wote ili kuwepo ufanisi unaoaminika na wa kudhihirika. Mataifa mengi ulimwenguni yametambua umuhimu wa kuwashughulikia raia wake kwa pamoja, licha ya tofauti zao za kimaumbile, kimazingira, kidini na za kiuchumi. Kushirikishwa huku kunalenga kupunguza umaskini, makali ya njaa, kuimarisha viwango vya afya, elimu, ajira na kuhifadhi mazingira kwa manufaa ya sasa na ya vizazi vijavyo (United Nations, 2016). Elimu inatambuliwa kuwa chombo muhimu cha kuzingatisha maarifa, kubadili mitazamo hasi, kukuza tafakari na kuleta uvumbuzi wa kuboresha maisha ya binadamu. Kati ya Malengo Endelevu, lengo la nne ni kuwezesha upataji wa stadi za kimsingi na za kiwango cha juu cha maarifa, yakiwemo ya kiufundi na ya kitaaluma. Upataji wa maarifa haya unapaswa kendelezwa katika maisha ya mwanadamu bila kikomo.

Mbali na maarifa, elimu inatarajiwa kumzingatisha mwanadamu stadi na amali maalum ili kumwezesha kuishi vema na kuchangia utatuzi wa mambo ndipo maendeleo yapatikane. Mchakato wa utatuzi wa mambo unashirikisha utumiaji wa umaizi na tafakari ili kuhamisha maarifa na stadi alizo nazo mtu, kwa kufanya maamuzi au vitendo vinavyoweza kusuluhisha matatizo katika jamii. Lugha, kama chombo cha mawasiliano, humwezesha mtu kupata maarifa mapya, stadi na mbinu za kumwezesha kuishi na kutagusana na mazingira yake. Hivyo basi pana umuhimu wa kujifunza lugha kwa njia zinazoimarisha mawasiliano, utangamano, umakinifu, udadisi na utendaji katika maisha ya mwanafunzi.

Kiswahili ni Lingua Franca barani Afrika. Katika Ukanda wa Afrika Mashariki, Kiswahili ndiyo lugha inayotambulishwa zaidi na utamaduni, amali na siasa za kijamii. Kwenye mitaala ya elimu, Kiswahili ni somo la kumzingatisha mwanafunzi stadi na kaida za mawasiliano katika miktadha mbalimbali ya maisha ya jamii kama vile biashara, michezo, kwenye viwanda vya Jua Kali, maabadini, kwenye ulingo wa kisiasa na katika hafla za kitamaduni. Jumuiya ya Afrika Mashariki imependekeza kuwa mitaala ya elimu kwa mataifa wanachama inapaswa:

- a) Kutelekezwa kwa mwelekeo unaomlenga zaidi mwanafunzi kwa kuseta hali, matamano, ilhamu na uwezo wake, mbali na kuhimiza haki za kibanadamu.
- b) Kuweka wazi aina za uwezo unaolengwa kuimarishwa kwa mwanafunzi na kutaja namna ya kutathmini kutimizwa kwa uwezo huo.
- c) Kuimarisha ufundishaji kwa mwelekeo mseto ili kujenga uhusiano kati ya masomo tofautitofauti, kuhusisha maarifa na mazingira, kukuza mchango wa mwanafunzi kwa ujifunzaji na kuwezesha upokezi wa maarifa kwa umoja wake.
- d) Kuimarisha vipawa vya kila mwanafunzi, kuvitumia vipawa hivyo kwa upataji wa maarifa na kuvikuza ili kukidhi matamano na mahitaji ya kila mwanafunzi.

(East African Community, 2014)

Kwa ufupi, mitaala ya elimu katika mataifa wanachama wa Jumuiya ya Afrika Mashariki inalenga kumshirikisha mwanafunzi kwa kuchakata, kupata na kutumia maarifa ili kutatua

migogoro, majanga na umaskini kwenye jamii ndipo maendeleo yanawiri. Ufundishaji wa Kiswahili kama somo la lazima unafaa kumwezesha mwanafunzi kutimiza ndoto alizo nazo kuhusu vipawa vyake na kumtimizia matarajio yake maishani ili aishi kwa amani.

Kwa wanafunzi wengi nchini Kenya, Kiswahili ni lugha yao ya pili kutokana na urasmi wa kufundiswa shuleni kama somo la lazima. Aghalabu, mwanafunzi huja shuleni akiwa tayari na maarifa kuhusu lugha ya kwanza ambayo ndiyo lugha-mama. Kwa maoni ya Vygotsky, ujifunzaji wa mtoto huanzia nyumbani. Yale ajifunzayo shuleni humkuta akiwa tayari na maarifa ya awali kama vile kuhesabu, kugawa, kuongeza, kuitika, kusalimu na kujieleza (Vygotsky, 1978). Ni jukumu la mwalimu wa Kiswahili kubaini kiwango cha ukuaji wa mwanafunzi ili aratibu mafunzo ya mtaala yanayoweza kupokelewa na kufasiriwa na mwanafunzi wa kiwango hicho. Hata hivyo, kiwango cha ukuaji wa akili ya mtoto si kizingiti kwa uwezo wa kujifunza maarifa yaliyozidi kiwango hicho. Pana uwezekano wa mtoto wa kiwango fulani cha ukuaji kujifunza na kutekeleza maarifa zaidi ya kiwango chake kwa kusaidiwa, kuchangiwa na kuimarishwa na mwalimu au wanafunzi wenza. Vygotsky (keshatajwa) anakiita kiwango hiki cha juu cha maarifa kuwa ‘Eneo la Kilele cha Ukuaji’.

Makala haya yanatathmini mikakati ya kufunza Kiswahili kwa mtaala mpya wa shule za upili nchini Kenya kwa kuzingatia nadharia ya umaizi mseto ili kumshirikisha mwanafunzi na kupalilia vipawa vyake (Kenya Institute of Curriculum Development, 2017). Ufundishaji unaohimizwa ni ule unaomwezesha mwanafunzi kufikia matamano yake na hasa eneo la kilele cha ukuaji. Sehemu ya kwanza ya makala haya inafafanua nadharia ya umaizi mseto kwa mujibu wa Howard Gardner (1993). Uhusiano wa nadharia hii na ufundishaji wa Kiswahili kwa lengo la kutimiza Malengo Endelevu unabainishwa pia. Katika sehemu ya pili, vipengele vya mtaala mpya unaosistiza uimarishwaji wa vipawa, vinajadiliwa. Mielekeo inayochangia utekelezwaji wa mtaala mpya wa Kiswahili inatathminiwa. Hii ni pamoja na ufundishaji kwa mwelekeo wa kimawasiliano, mwelekeo wa kimajukumu na mwelekeo mseto. Mielekeo hii ina mchango mkubwa kwa kuimarisha utendaji, ubunifu, kujiamini na utumiaji wa maarifa aliyo nayo mwanafunzi kwa utatuzi wa mambo.

Kiini cha makala haya ni kubaini mikakati shirikishi inayochangia ukuaji wa vipawa vya wanafunzi. Sehemu ya tatu inapambanua mikakati ya kumfikisha mwanafunzi kwenye eneo la kilele cha ukuaji. Mikakati hii ni pamoja na ufundishaji wa vitendo, ufundishaji wa kuongozwa, kazi mradi, utatuzi wa mambo na vikundi kama njia ya kuwezesha kutimizwa kwa Malengo Endelevu.

### **Nadharia ya Umaizi Mseto kwa Ufundishaji wa Kiswahili**

Dhana ya umaizi inafafanuliwa kwa njia mbalimbali kutegemea wasomi. *Kamusi Kuu ya Kiswahili* inafafanua umaizi kuwa ni “Uwezo wa kubaini au kufahamu jambo fulani”(Baraza la Kiswahili la Taifa, 2015). Katika ujifunzaji, umaizi ni uwezo alio nao mwanafunzi wa kutambua, kutumia na kufasiri maana ya maneno katika lugha. Umaizi pia unaweza kuchukuliwa kuwa uwezo alio nao mtu, wa kufahamu jambo au maarifa kuhusu taaluma fulani (Koenig, 2009).

Lakini, umaizi ni zaidi ya utambuzi au ufahamu wa dhana na maarifa. Gardner (keshatajwa) anaongeza kuwa umaizi ni uwezo wa kuunda na kusuluhisha matatizo, kuunda vitu au kutoa huduma zinazothaminiwa katika utamaduni fulani au jamii (Zhou, 2014). Kutokana na vijelezi hivi, umaizi mseto ni dhana inayorejelea kuwepo kwa zaidi ya aina moja ya uwezo. Uwezo huu ni wa kuzaliwa nao na humwezesha mwanafunzi kupata maarifa mapya, kuyafasiri akilini, kuyahusisha na maarifa ya awali, kuyahifadhi na kuyatumia katika utatuzi wa mambo. Baadhi ya matatizo yanayohitaji kusuluhishwa katika ujifunzaji wa lugha ni kudumisha mawasiliano kama vile kujuliana hali, kutoa maoni kuhusu masuala ibuka, kuandaa ilani kwa madereva kuhusu kuporomoka kwa barabara kutokana na mafuriko, kuendeleza mjadala kuhusu uhasama wa kisiasa, kutoa mafunzo kuhusu jinsi ya kuzuia mkurupuko wa maradhi; miongoni mwa masuala mengine mengi. Utatuzi wa mambo haya unamhitaji mwanafunzi kuwa na ufahamu wa kina kuhusu lugha kama vile sarufi, msamiati, kaida za matumizi, sajili maalum na dhima zinazotekelezwa na lugha. Dhima hizi ni kama vile: kuwasiliana, kukuza uhusiano mwema, kuonya, kutambulisha jamii, kuhifadhi historia na utamaduni wa jamii; miongoni mwa nyingine. Nadharia ya umaizi mseto inajumuisha aina nane za umaizi. Kabla ya kutaja aina nane za umaizi ni muhimu kuweka wazi machu kulio ya Gardner katika nadharia hii. Kulingana na Zhou (2014) kuna mihimili ifuatayo ya umaizi mseto:

- a) Kila binadamu anamiliki aina zote za umaizi, japo kwa viwango tafauti.
- b) Kila binadamu ana aina moja kuu ya umaizi inayomtambulisha na kumfanya apendelee kutumia zaidi katika upataji wa maarifa kuliko aina nyingine.
- c) Ujifunzaji wa maarifa yoyote unaweza kuboreshwa ikiwa mwalimu atakadiria umaizi unaomtambulisha kila mwanafunzi katika darasa lake; na kupanga mikakati inayomlenga ya kufundishia.
- d) Kila aina ya umaizi imetengewa sehemu maalum katika ubongo wa binadamu.
- e) Aina zote nane za umaizi zinaweza kuchangiana na kuimarishana kwa pamoja au kila aina ya umaizi itumike pekee yake wakati wa kujifunza.
- f) Pana uwezekano wa kuwaainisha wanadamu kwa kutumia mitindo wanayopendelea katika kujifunza maarifa na stadi.

Machukulio ya Gardner ni kuwa kila binadamu huzaliwa akiwa na uwezo wa kujifunza maarifa ikiwemo lugha. Mitindo ya kujifunza ndiyo inayotofautisha watu na kuamua kasi ya ujifunzaji. Hata hivyo, ujifunzaji unaathiriwa na mambo mengi, mbali na umaizi na mitindo ya kujifunzia. Katika makala haya, ninasistiza ujifunzaji wa lugha unaolenga kuboresha stadi za mawasiliano, ambazo aghalabu mtoto hujifunza bila hiari, hasa anapozibwia kutoka kwa mazingira yake. Kawaida ya binadamu ya kutaka kuwasiliana na mwenzake humchochea kubwia lugha ya kwanza kwa kusikiliza, kuiga na kutenda; bila mafunzo rasmi. Mtoto anapofika shuleni na kufundishwa Kiswahili kama lugha ya pili, anatarajiwa kutumia aina zifuatazo za umaizi kulingana na Gardner (1993):

- a) Umaizi wa kimatamshi au wa kiisimu.

Huu ni uwezo wa kuelewa na kutumia lugha kupitia kwa stadi za kusikiliza, kuongea, kusoma na kuandika. Umaizi huu humpa utambuzi na utumiaji wa lugha-matamshi na lugha-andishi. Ingawa umaizi wa kimatamshi huchukuliwa kuwa uwezo wa kimsingi kwa mtoto yeyote asiye na ulemavu wa kimaumbile, baadhi ya wanafunzi hupendelea kujifunza kwa kumsikiliza mwalimu, kujieleza kwa maneno, kuandika na kuwasilisha tungo mbalimbali. Wanafunzi wenye umaizi wa kimatamshi wanaweza kupangiwa shughuli za ujifunzaji kama vile kuandaa na kutumia shajara, kucheza michezo ya kujenga maneno, vitanza ndimi, kushiriki kwa mijadala na kutunga na kuhakiki kazi za kifasihi.

b) Umaizi wa kihisabati

Mwanafunzi mwenye umaizi wa kihisabati huchukuliwa kuwa mwenye uwezo wa kukusanya, kupanga, kuchanganua na kufasiri data ili kupata maana fiche na kuitumia kufikia maamuzi au kauli fulani. Umaizi huu humwezesha mwanafunzi kuona uhusiano baina ya matukio au hali tofauti kwenye mazingira na kuunda ruwaza ya kuelezea uhusiano huo. Shughuli za ujifunzaji zinazomvutia mwanafunzi anayeegemea umaizi wa kihisabati ni kama: majedwali yenye data za kumfikirisha; ruwaza za kidhahania kuhusu dhana za kisayansi na kutumia data za kinumerali kusuluhisha mambo. Mwalimu anashauriwa kutumia data za tarakilishi, chemsha bongo na shughuli zinazohitaji umakinifu wa fikra ili kumshirikisha mwanafunzi anayetambulishwa kwa umaizi wa kihisabati.

c) Aina ya nne ni umaizi wa kimisuli. Kulingana na Koenig (2009) mwanafunzi aliye na umaizi wa kimisuli hupendelea kupokea maarifa kwa kutumia viungo vya mwili wake kugusa, kuigiza, kujiundia vifaa au kufanya ujarabati wa dhana kwenye maabara. Aliye na umaizi wa kimisuli pia hupendelea kushiriki kwa shughuli za michezo au kuzungumza kwa kushirikisha miondoko ya kimwili (Gardner, 1993). Katika ufundishaji wa Kiswahili, ni muhimu mwalimu ampe mwanafunzi fursa ya kujieleza akitumia viziada lugha kwenye maigizo au uigizaji bubu.

d) Umaizi wa kimuziki huelekeza fikra za mwanafunzi kubaini mapigo ya sauti yanayojirudia na kuunda mkarara. Wanafunzi waliokoleza umaizi wa kimuziki hupendelea kuimba, kupiga mluzi, kucheza ala za muziki na kujitungia nyimbo na mashairi. Aghalabu, umaizi huu hutambulika mapema utotoni kwa sababu watoto wengi hupendelea kuimba, isipokuwa wale wenye ulemavu wa masikizi. Mwalimu wa Kiswahili anashauriwa kutumia nyimbo, maghani na mashairi andishi kutanguliza, kuendeleza au kuhitimisha somo. Ni vizuri ikiwa wanafunzi walio na vipawa hivi watahirikishwa kutunga, kukariri, kufoka au kuimba nyimbo zao darasani wakati wa somo la Kiswahili.

e) Baadhi ya wanafunzi hudhihirisha mno umaizi wa mazingira halisi. Ujifunzaji wao huboreshwa zaidi wanapotoka nje ya darasa na kuzuru eneo lenye mazingira halisi kama

vile mlima, mto, mbuga ya wanyama, chimbo la mawe au msitu. Wanapotambulisha wanyama na mimea katika mandhari yao, wao huona mazingira kuwa eneo la kuzalisha maarifa kwa umoja wake. Ili kushirikisha umaizi wa kimazingira, mwalimu anaweza kutumia mbinu ya ziara nyanjani, kazi mradi au kutumia nyenzo halisi kama vile video za maeneo maalum, mimea, matunda au wanyama kufunza mada kuhusu sarufi ya Kiswahili.

- f) Umaizi wa kimtagusano ni uwezo wa mwanafunzi kufasiri na kupokea hisia, himizo, hali na matendo ya watu wengine. Kwa mujibu wa Ellis (2003) mwalimu anahitajika kuwapa wanafunzi majukumu yanayohimiza kusaidiana na kuchangiana maarifa. Katika ufundishaji wa Kiswahili, majukumu ya kimakundi yanaweza kutumika kwenye utafiti wa maktabani, kazi mradi au mahojiano ya kupata maoni ya watu tofauti kuhusu sera mpya za elimu. Koenig (2009) anaongeza kuwa wanafunzi walio na kiwango kikubwa cha umaizi wa kimtagusano hupendelea kuwasikiliza wengine wakitoa maoni, kushauriana na kupanga shughuli zinazoweza ushirikiano katika mazingira ya ujifunzaji. Aghalabu wanafunzi hao huwa na vipawa vya uongozi.
- g) Wanafunzi wengine hupendelea kujifunza maarifa wenyewe. Wao hujielewa kihisia, wanafahamu ubora na udhaifu wao. Wanajua wanachokitamani kutelekeza masomoni na hupenda kutafakari, kuchanganua dhana na kujitathmini wenyewe. Huu ni umaizi nafsi, unaomwezeha mwanafunzi kujipangia utaratibu wake wa kujisomea, kufatiti, kufanya mijarabu na kujipima weledi wake wa dhana. Aghalabu, wanafunzi wenye umaizi wa nafsi hawapendi kushirikishwa kwa vikundi. Aina hii ya umaizi hujumuisha aina nyinginezo ili kumwezesha mwanafunzi kuwa na msukumo wa kibinafsi wa kuchakata maarifa.
- h) Umaizi wa kiutamaji ni uwezo wa kujiundia maarifa kwa kujichorea picha au maumbo ya dhana akilini (Richards na Schmidt, 2010). Wanafunzi wenye umaizi wa kiutamaji hujipatia maarifa kwa kutazama nyenzo kama vile picha, michoro, filamu, video, michongo ya kisanaa na mbinu ya maonyesho. Wanafunzi hawa hujieleza vema zaidi kupitia kwa sanaa kama vile uchoraji, ufinyanzi, uchongaji wa sanamu na uundaji wa maumbo. Wanapendelea kufikiri kwa kuunda picha akilini, kubuni na kuigiza, kusoma ramani na kufumbua mafumbo. Sehemu ya ubongo wao inayotumika zaidi ni ya upande wa kulia (Gardner, 1993). Mwalimu wa Kiswahili anashauriwa kutumia nyenzo za kisanii kama michoro, na kuwashirikisha kutumia sanaa zenye nakshi kwenye tarakilishi kuandaa nyenzo za kujifunzia.

#### *Nafasi ya Nadharia ya Umaizi Mseto kwenye Mtaala Mpya wa Elimu*

Tathmini iliyofanywa mwaka wa 2009 kuhusu mtaala wa mfumo wa elimu wa 8-4-4 ilibaini kuwa mfumo huo haukuruhusu kwa urahisi, mabadiliko ya kutambua na kukuza vipawa vya mwanafunzi mapema, ili kumwandaa kwa utekelezaji wa ajira kulingana na ilhamu zake (Republic of Kenya, 2010). Kwa mujibu wa ripoti ya kamati hiyo, mfumo wa elimu ulisistiza

zaidi mwanafunzi kupita mitihani ya kitaifa ili aweze kuendelea na masomo. Matokeo bora ya mitihani yalichukuliwa kuwa kipimo cha kipekee cha kukadiria ufanisi na upataji wa ajira. Ushindani wa alama za juu kwenye mitihani ulihusishwa na kudorora kwa maadili ya kiusomi na kuchangia uozo wa maadili ya kitaifa. Kamati ikateuliwa ili kuratibu upya sekta ya elimu kulingana na ruwaza ya *Kenya Vision 2030* na katiba ya Kenya 2010. Serikali ilitoa tamko rasmi kuhusu mabadiliko ya elimu na mafunzo kwa kusema kuwa:

- a) Mfumo wa elimu uelekezwe na falsafa ya kitaifa.
- b) Mabadiliko yafanyiwe sekta ya elimu na mafunzo ili kukuza uwezo wa kila mwanafunzi.
- c) Mwanafunzi akuzwe kwa mwelekeo mseto ili kumuimarisha kiusomi, kihisia, na kimaumbile ndipo akuwe kikamilifu.
- d) Mtaala mpya uangazie ukuzaji wa vipawa na kushirikishwa kwa aina tofauti za umaizi.
- e) Kuanzishwe mfumo wa kitaifa wa kutathmini ujifunzaji.
- f) Mfumo wa elimu uhimize utambuzi na ukuzaji wa vipawa vya mwanafunzi mapema.
- g) Kuingizwa kwa maadili na mshikamano wa kitaifa kwenye mtaala.
- h) Kuanzishwa kwa mikondo mitatu ya ujifunzaji katika kiwango cha juu cha elimu ya shule za upili.

(Republic of Kenya, 2012)

Ruwaza hii iliwaelekeza washika dau kuteuwa nadharia bunilizi za ufundishaji na ujifunzaji, ikiwemo nadharia ya umaizi mseto. Masomo ya Lugha na Fasihi ya Kiswahili yanapaswa kufunzwa kwa mwelekeo mseto ili kumpa mwanafunzi nafasi ya kutagusana na mazingira yake na kujitambulisha nayo. Mikakati inayoruhusu utendaji wa mwanafunzi inapendekezwa itumike ili kuchangia utekelezaji wa nadharia ya umaizi mseto. Katika awamu ya pili ya elimu ya sekondari, Kiswahili kitafunzwa kama masomo mawili- Lugha na Fasihi. Lugha ya Kiswahili itamhitaji mwanafunzi kujifunza aina na miktadha mbalimbali ya mawasiliano; aina tofauti za uandishi; aina za usomaji na uhakiki wa makala ya ufahamu. Pia mwanafunzi atajifunza sarufi pamoja na misingi ya tafsiri. Mafunzo haya yanalenga kumwandaa mwanafunzi kujiunga na taaluma kama vile: burudani, uanahabari, uandishi, ukalimani, ualimu na siasa (Kenya Institute of Curriculum Development, 2017).

Somo la Fasihi ya Kiswahili nalo litampa mwanafunzi fursa ya kujifunza fasihi simulizi; fasihi andishi; uhakiki wa tanzu mbalimbali za fasihi andishi; kutazama maigizo ya kazi za fasihi; kutazama mijadala ya uhakiki wa fasihi; kushiriki kwenye tamasha za uigizaji; kufanya utafiti na kazi mradi kuhusu fasihi simulizi; kushiriki kwa mijadala inayoshirikisha shule mbalimbali kuhusu uhakiki wa vitabu teule vya fasihi. Lengo la kufunza Kiswahili kwa mtaala mpya ni kuimarisha uwezo wa kuwasiliana; kuthamini maadili ya kijamii, na kukuza uwezo wa mwanafunzi wa kutumia lugha kwa manufaa ya kibinafsi na ya kijamii. Ili kutimiza lengo hili, nadharia ya umaizi mseto inafaa zaidi kutumiwa katika ufundishaji unaomlenga na kumshirikisha mwanafunzi.

Mbali na masomo ya lugha, umaizi mseto unaweza kutumiwa kujifunza maarifa na stadi



maalum katika masomo ya Sayansi, Teknolojia na Mawasiliano; Huduma kwa Jamii; Sheria na masuala ya kimaadili; Sanaa za maonyesho; Sayansi za michezo na ufundi. Masomo ya aina mbalimbali yameteuliwa na kuingizwa kwenye mtaala mpya ili kushirikisha kila aina ya uwezo na ilhamu ya mwanafunzi katika kutimiza Malengo Endelevu yanayohusu umaskini, njaa, mazingira na afya, ajira pamoja na elimu. Ili kuteuwa mikakati shirikishi ya kufunzia Kiswahili, mwalimu anastahili kuwa na ufahamu kuhusu mielekeo bunilizi ya kutekeleza mtaala mpya.

### *Mielekeo ya Kufundishia Mtaala Mpya wa Kiswahili*

Hakuna mwelekeo mmoja unaoweza kutumika kwa kukuza umaizi mseto katika ufundishaji na ujifunzaji wa Kiswahili. Katika kuteuwa mwelekeo wa kufundishia, mwalimu anapaswa kuzingatia shughuli zinazoweza kutekelezwa na mwanafunzi ili kuchangia umilisi na ustawishaji wa mawasiliano kwenye miktadha mbalimbali. Ni muhimu pia kuteuwa mwelekeo unaomzingatisha mwanafunzi mbinu za kutagusana na mazingira yake katika: kuwasiliana; ukusanyaji wa data za kifasihi; uchanganuzi na uhakiki wa masuala ibuka na yale ya fasihi; kuigiza na kutafsiri matini mbalimbali yakiwemo yale ya fasihi za lugha nyingine. Ili kutimiza malengo haya, ninapendekeza Kiswahili kifunzwe kwa kuzingatia mielekeo mitatu- mwelekeo wa kimawasiliano; mwelekeo wa kimajukumu na mwelekeo mseto.

#### *a) Mwelekeo wa Kimawasiliano*

Unajumuisha mapendekezo ya nadharia kutoka kwa taaluma mbalimbali kama vile: Isimu, Saikolojia, Anthropoljia, Pragmatiki na Uchanganuzi wa usemi (Kumaravadivelu, 2006). Mtazamo huu ulichangiwa zaidi na wanaisimu kama vile: Noam Chomsky, Michael Halliday, Dell Hymes na Austin. Chomsky anachukulia lugha kuwa mfumo wa mageuzi, unaoruhusu ubunifu na upekee wa mtu kimatumizi. Halliday naye anaongeza kuwa ujifunzaji wa lugha hujumuisha uamilifu wa matini. Kwamba, kujua lugha kunahitaji kuwa na ufahamu wa kanuni za kijamii zinazotawala matumizi yake kama vile kanuni za kifonolojia, kisintaksia na za kisemantiki zinazomruhusu mtumiaji kuwasilisha mawazo au ujumbe wake (Kumaravadivelu, 2006). Kwa vile mawasiliano yanahusu mzungumzaji na hadhira, uamilifu wa lugha utawezeshwa vema kwa kuzingatia sifa za kiisimujamii zinazosababisha kuwepo kwa uhusiano na majukumu ya kutekelezwa kupitia kwa lugha. Sifa hizi za kiisimujamii huchangia kupatikana kwa maana iliyokusudiwa na mzungumzaji.

Austin naye anachukulia lugha kuwa uzungumzaji unaoshirikisha vitendo. Lugha ni mfululizo wa vitendo vinavyoambatana na maneno na wala sio mkusanyo wa istilahi na msamiati. Baadhi ya vitendo vinavyotimizwa na lugha ni kuamkuana, kuamuru, kufafanua, kukubali, kufahamisha, kuonya na kushangaa. Hata hivyo, maana ya kitendo husika itafahamika tu wakati kitendo hicho kinapotiwa kwenye muktadha wa kimawasiliano. Mtaala mpya wa Kiswahili umesistiza ufundishaji lugha kwa njia ya kuimarisha mawasiliano ya mwanafunzi ndani na nje ya darasa. Ili

kumwezesha mwanafunzi kushiriki kwenye mazungumzo, mijadala, usomaji na uhakiki wa kazi za fasihi, mwelekeo wa kimawasiliano unafaa zaidi kutumika kwa ujifunzaji. Mwanafunzi asifunzwe tu vipengele vilivyojitenga kama vile sarufi, msamiati, masuala ibuka na fasihi, bali kila kipengele kichangie mazoezi ya kuwasiliana kikamilifu. Mawasiliano haya yafanywe kwa vitendo kama vile mwanafunzi mmoja kuomba msamaha kwa mwenzake, kumpa mwenzake ushauri, kuandaa na kuwasilisha hotuba darasani au kuwatangazia watu kuhusu bidhaa mpya. Muhimu kwa mwanafunzi ni kupata nafasi ya kutagusana na kuchangiana maarifa wakati wa ujifunzaji (Omondi, Barasa, na Omulando, 2012).

Katika mwelekeo wa kimawasiliano, mwalimu wa Kiswahili anashauriwa kuzingatia yafuatayo:

- a) Matumizi ya Kiswahili katika mazingira halisi kama vile: mazungumzo mitaani, matangazo redioni, au mijadala bungeni. Mikadha ya kijamii huyapa mawasiliano maana kamilifu.
- b) Hadhira iweze kubaini waziwazi dhamira ya msemaji au mwandishi wa ujumbe unaowasilishwa.
- c) Dhana, hali au tukio moja linaweza kuelezwa kwa njia tofautitofauti au mitindo mbalimbali ya lugha. Vilevile, ujumbe mmoja unaweza kuwasilishwa kwa njia tofauti . Kwa mfano, mada ya uhakiki wa fasihi inaweza kuwasilishwa kupitia kwa insha, tangazo, wimbo au mchoro wa kisanii.
- d) Wanafunzi wahimizwe kupangua mfululizo wa sentensi katika matini, kuzitathmini na kuzipanga upya kwa kuzingatia mbinu ya mwambatano na mshikamano. Lengo ni kumwezesha mwanafunzi kueleza ujumbe wa matini kwa maneno yake mwenyewe. Himizo na msaada wa mwalimu na wanafunzi wenza vinahitajika ili kumwezesha mwanafunzi kufikia upeo wa utendaji katika ujifunzaji wake wa lugha.
- e) Michezo ya lugha inaweza kutumika ili kunoa umaizi wa kimatamshi, wa kimisuli na wa kimazingira. Jukumu kubwa la mwalimu ni kuteua na kuwapa wanafunzi shughuli zinazochoea mawasiliano, huku akiwapa usaidizi uliokadiriwa.
- f) Wakati wanafunzi wanapowasiliana, makosa ya kisarufi yasitajwe moja kwa moja bali mwalimu ayanakili daftarini na kuyashughulikia baadaye.

(Larsen- Freeman, na Anderson, 2011)

Mwelekeo wa kimawasiliano unalenga kumshirikisha mwanafunzi katika ujifunzaji wa Kiswahili kwa kutumia shughuli zinazokuza aina tofauti za umaizi. Shughuli hizi humpa mwanafunzi nafasi ya kujieleza na kuthamini mawazo ya wengine katika mazingira anamoishi. Hata hivyo, mwelekeo huu utafana tu ikiwa tathmini na utahini wa stadi kama vile uandishi wa kiuamilifu, utunzi wa insha na uandishi wa kisanii utalenga zaidi uwezo wa mwanafunzi wa kujieleza kikamilifu.

*b) Mwelekeo wa Kimajukumu*

Lengo la mwelekeo wa kimajukumu ni kumshirikisha mwanafunzi katika kutimiza majukumu yaliyo na matokeo yaliyotarajiwa. Jukumu la mwalimu ni kuandaa shughuli za ujifunzaji kutegemea mahitaji ya mwalimu. Mwanafunzi pia anahitaji kuandaliwa awali kabla ya kujaribu kutimiza majukumu ya kutumia lugha yaliyopangwa na mwalimu. Wakati wa utendaji mwalimu anahitajika kufanya tathmini ya mara kwa mara kwa kuchunguza na kuhimiza au kumrekebisha mwanafunzi, hatua kwa hatua hadi afikie kilele chake cha utendaji. Mwanafunzi hujifunza kutekeleza jukumu alilopewa kwa kushirikiana na wenzake, kupata usaidizi wa mwalimu na kupewa himizo hadi afikie kiwango kilicho bora cha matumizi ya lugha (Kumaravadivelu, 2006). Katika ufundishaji wa Kiswahili, jukumu teule lihusishwe na mojawapo ya masuala ibuka ili lishugulikiwe kama tatizo la kijamii.

Mtaala mpya unaainisha masuala ibuka katika vitengo vikuu vitano: uraia na uzalendo; afya na maradhi; stadi zamaisha na elimu ya kimaadili; elimu ya kukuza maendeleo endelevu na ushauri nasaha (Kenya Institute of Curriculum Development, 2017:110). Mwanafunzi anaweza kushirikishwa kutafuta suhuhisho kuhusu masuala kama vile jinsi ya kutunza na kulinda maslahi ya watoto; namna ya kukabliana na maradhi yanayotokana na mikondo ya maisha ya watu; au jinsi ya kukuza jamii yenye ufahamu kuhusu mbinu za uzalishaji mali. Masuala haya yanafaa kumshughulisha kila mshika dau kwenye mfumo wa elimu ili kupata suluhisho la kudumu.

Kwa mujibu wa Ellis (Ellis, 2007) kuna aina tano za majukumu yanayoweza kupangiwa wanafunzi katika somo la lugha. Nayo ni:

- a) Jukumu linalohitaji ubadilishanaji wa maarifa ili kujaza pengo. Kwa mfano, katika somo la insha, mwanafunzi mmoja asimulie kuhusu tukio fulani kama vile uwindaji haramu huku mwenzake akichora picha kulisawiri tukio hilo daftari. Kisha waandike insha kuhusu jinsi ya kukomesha visa vya uwindaji haramu wa wanyama pori.
- b) Masuala ibuka mengi hutokea kama tatizo kwa jamii. Wanafunzi wanaweza kupewa jukumu la kutoa maoni yao kuhusu suala nyeti kama vile jinsi ya kuzuia vijana wasijiunge na makundi yanayotekeleza ugaidi wa kimatifa. Baada ya kujadili na kutoa maoni yao wanafunzi wanaweza kuandika barua ya kumpa mwenzao mawaidha kuhusu athari za kushirikiana na ugaidi wa kimataifa na kupendekeza jinsi ya kudumisha uzalendo na mlahaka mwema katika jamii.
- c) Wakati mwingine, mwalimu anaweza kuwapa wanafunzi hali na taarifa fulani itakayowahitaji kutafakari ili kupata suluhisho. Jukumu la mwanafunzi litakuwa ni kufikiri kwa kwa makini ili kutafuta ututuzi. Kwa mfano, mwanafunzi atafakari jinsi atakavyomsaidia mgeni aliyetua kwa uwanja wa ndege, na asiyeifahamu lugha yake, namna atakavyofikia kituo cha mabasi ili kusafiri hadi hotelini jijini. Huenda mwanafunzi huyo akamchorea ramani, au akatumia lugha ishara au akatumia picha kuwasiliana na mgeni yule au akaamua kuandamana naye mwenyewe hadi hotelini.

- d) Mwalimu pia anaweza kuteuwa majukumu yasiyobainika waziwazi. Haya ni najukumu ya kubuni yanayomhitaji mwanafunzi kufikiri na kujifaragua. Kwa mfano, mwalimu wa Kiswahili anaweza kuwapa wanafunzi kupanga ziara ya kubuni ya kuzuru pwani mwa Kenya kwa kutumia gari moshi. Jukumu hili litawahitaji wanafunzi kujadiliana, kuandaa mipangilio ya safari, kuigiza baadhi ya hatua za ziara, kuandaa vitambulisho vya mikoba, kusakura mitandao ili kubaini maeneo bora ya kuzuru pamoja na gharama za malazi, huduma za mabasi ya umma na mengine mengi. Kisha kila kikundi kipewe nafasi kuwasilisha majibu yao ili yachangiwe na kuimarishwa.
- e) Pia majukumu maalum yanayolenga wanafunzi kuwasiliana kwa sajili fulani yanaweza kutumika kufunza Kiswahili. Tatizo linaweza kuwahitaji wanafunzi kuonyesha jinsi ya kuwaokoa waathiriwa wa mkasa wa mafuriko. Wanafunzi watahitajika kuwa na ufahamu wa kutoa huduma ya kwanza, mbinu za kuwasiliana kwa dharura na waokoaji, lugha ya hospitali na jinsi ya kutoa taarifa kwa vyombo vya habari. Jukumu hili litahitaji utendaji wa dharura lakini ulio na mpangilio maalum. Pia, wanafunzi watahitajika kutekeleza majukumu madogomadogo chini ya uongozi wa kinara wa shughuli hiyo. Jukumu hili huwezesha wanafunzi kusaidiana, kutegemeana na kujitahidi kwa pamoja ili kulitekeleza.

Kwa maoni ya Vygotsky (1978) mwanafunzi anaweza kufikia eneo la upeo wa ukuaji wake kwa kupewa majukumu yanayochochea tafakari ili kumpa motisha ya kutenda zaidi ya umri wake wa ukuaji. Mwalimu anahitajika kumudu mchakato mzima wa utelekezaji wa majukumu kwa kutoa uelekezi na himizo chanya kwa hatua za kusuluhisha tatizo lenyewe. Dhima ya himizo chanya na usaidizi kutoka kwa mwalimu au wanafunzi wenza ni: kumfanya mwanafunzi ajiamini; kumpa matumani kuwa anaweza kutimiza jukumu; kumpa kuridhika anapotekeleza jukumu kwa ufanisi na kuchochea mashindano ya utendaji miongoni mwa wanafunzi (Dweck, 2000). Mwanafunzi anapohimizwa anaweza kutekeleza majukumu makubwa hata kuliko umri wake wa ukuaji. Mtaala mpya wa elimu unalenga kumpa mwanafunzi matumizi ya lugha ili kumwezesha kukuza: tafakari za umakinifu, ubunifu, ufaraguzi, kujiamini na kutumia nyenzo za kidijitali kupata maarifa. Mwelekeo unaoweza kuchangia zaidi utekelezaji wa malengo haya pamoja na kuhimiza ujifunzaji usio na kikomo ni mwelekeo mseto, unaojumuisha mielekeo ya kimawasiliano na kimajukumu.

### *c. Mwelekeo Mseto*

Huu ni mwelekeo unaohimiza ujifunzaji wa stadi, vipengele vya lugha na tanzu za fasihi kwa pamoja ili kuimarishana na kumwezesha mwanafunzi kufahamu Kiswahili kama somo moja lisilo na vitengo. Chan (2005) anautaja mtaala unaozingatia mwelekeo mseto kuwa wenye vipengele vifautavyo:

- i. Uhusisho wa dhana mpya na maarifa ya awali aliyo nayo mwanafunzi kwa lengo la kukuza mshikamano wa maarifa hayo akilini.

- ii. Maarifa anayojifunza mwanafunzi yawe ya kumfaa katika hali halisi ya maisha. Mifano ya kuelezea dhana za lugha itoke kwenye mandhari ya mwanafunzi.
- iii. Mtaala ulenge kuimarisha mbinu za utatuzi wa mambo ili kupunguza hali ya kuwepo kwa wanafunzi waliopita mitihani vema lakini wasioweza kuhamisha maarifa yao kutatua matatizo katika jamii.
- iv. Msisitizo uwe kwenye matumizi ya sayansi na teknolojia ili kuwezesha ujifunzaji wa kidijitali unaomwezesha mwanafunzi kuelewa upeo na ufinyu wa sayansi katika kusuluhisha matatizo ya kijamii.

Katika ujifunzaji wa Kiswahili, mwelekeo mseto unapendekeza kutumia matini kutoka kwa masomo na taaluma tofautitofauti kuzua tatizo la kushughulikiwa na wanafunzi. Kwa mfano, kutumia makala ya haki za watoto kutoka kwa somo la Historia ili kujadili namna ya kukomesha unnyanyapaa unaofanyiwa mayatima. Mwelekeo mseto unawezeshwa kupitia kwa nadharia ya ujifunzaji wa vitendo, mitagusano ya kijamii, umaizi mseto na ujifunzaji unaaonekana. Nabors (2012)anapendekeza walimu kutumia mikakati shirikishi kama: vile utatuzi wa mambo, uhusisho wa dhana akilini, dayolojia na vikundi. Mikakati hii humhitaji mwanafunzi kushiriki ujifunzaji kupitia hisia, utendaji, tafakari na kushirikiana na wenzake ili kujijengea maarifa ya kumsaidia kuishi katika jamii.

### **Mikakati Shirikishi ya Kufunzia Kiswahili**

#### *a) Ujifunzaji wa Kuongozwa*

Huu ni mfululizo wa mafunzo yanayotolewa katika vikundi vidogo vya wanafunzi wakati wa kipindi cha kawaida cha somo. Mkakati huu huwezesha mwalimu kufunza darasa zima huku akihimiza shughuli za kibinafsi kwa kila mwanafunzi kwa wakati mmoja (Department for Education and Skills, 2004). Katika ufundishaji wa kuongozwa, mwalimu hufunza moja kwa moja ili kumpa kila mwanafunzi fursa ya kubwia na kujiundia dhana au stadi maalum katika somo. Aghalabu, vipindi vya ufundishaji wa kuongozwa huchukuwa muda kati ya dakika 10-30, kutegemea ugumu wa shughuli au stadi inayofunzwa. Jambo muhimu kwa ujifunzaji wa kuongozwa ni kuwa mwanafunzi hutawala shughuli ya ujifunzaji kwa kuelekezwa kupitia kwa kikundi.

Mwalimu huteuwa shughuli za ujifunzaji na kuziratibu kwa makini ili zimpe mwanafunzi kichocheo cha kutafuta suluhisho. Kikundi huwezesha ushirikiano na kuchangiana maarifa. Mkakati wa mwalimu ni kumuimarisha mwanafunzi kupitia kwa msaada ulioratibiwa ili aweze kujitegemea binafsi katika kushughulikia jukumu alilopangiwa. Uimarisho huu, kwa mujibu wa Vygotsky, unaweza kufanywa kwa hatua kama vile: anapoandika, anaposoma, anapozungumza, anapopanga hoja za utungaji wa insha, au anapofanya zoezi. Shughuli za ujifunzaji hupangwa kwa kuzingatia mahitaji na udhaifu wa wanafunzi kwenye kikundi. Mwalimu huwapa usaidizi ili kuwahimiza kwa viwango hadi watakapoweza kutekeleza jukumu lao wenyewe. Pia,

kujitegemea kwa wanafunzi katika utendaji kunaweza kutokana na msaada wa wanafunzi wenza, utafiti, mitagusano na ushirikiano katika shughuli za ujifunzaji.

Kwa mujibu wa Roehler na Cantlon (1997) mwalimu anaweza kuwaimarisha wanafunzi kwa mikakati ifuatayo:

- a) Kuwapa ufafanuzi wa dhana kama vile kufafanua dhana ya utandawazi kisha kuwauliza wanafunzi kutaja nyenzo zinazowezesha usambazwaji wa habari, matukio na maarifa ulimwenguni. Mwalimu anaweza kutumia majibu ya mwanafunzi kufafanua dhana zaidi ili kuifanya ieleweke vizuri. Baada ya kufafanua dhana kuu ya somo, wanafunzi huachiwa dhana nyingine ili wajifafanulie wenyewe kwenye kikundi.
- b) Kuwaalika wanafunzi kutoa maoni yao kuhusu somo. Kwa mfano, katika somo linalohusu athari za utandawazi kwa maadili ya vijana, mwalimu anaweza kuwaalika wanafunzi kutoa maoni yao kuhusu vyombo vya habari hasa magazeti, kanda za video, mitandao na rununu. Mwanafunzi asimulie tajiriba yake na vyombo vya mawasiliano. Baada ya wanafunzi watatu kuchangia maelezo yao, mwalimu aondoe mkakati huu na kuwapa majukumu ya vikundi ili wajadili athari chanya na hasi za chombo kimoja cha mawasiliano kwa kila kikundi.
- c) Mwalimu akadirie majibu na weledi wa mwanafunzi kuhusu hoja anazozitoa kwenye vikundi. Majibu yaliyo sahihi na yenye kutolewa ithibati na wanakikundi yahimizwe na kutuzwa na mwalimu. Majibu yasiyo sahihi yarekebishwe na mwalimu huku akisistiza kutolewa kwa ithibati. Kisha wanafunzi wapewe fursa ya kujitafutia hoja zenye ithibati wenyewe wakiwa vikundini.
- d) Mwalimu aongoze wanafunzi kufikiri kwa kutamka kile wanachokifikiri kuhusu jukumu walilopangiwa kutimiza. Maswali ya kuchochea fikra za mwanafunzi yanaweza kutumiwa na mwalimu. Kwa mfano, katika kushughulikia jukumu linalohitaji wanafunzi kupendekeza namna ya kumaliza uuzwaji na unywaji wa pombe haramu, mwalimu atamke fikra zake kwanza, kisha awahimize wanafunzi kuzichangia. Mawazo yao yanukuliwe ubaoni na kutathminiwa na wenzao kwenye kikundi.

Katika kutoa himizo kwa kikundi, mwalimu atuze juhudi zinazoelekea zaidi kutoa suluhisho kwa tatizo. Mwalimu anaweza kuwapa wanafunzi zoezi la kutathmini utendaji wao katika kikundi. Zoezi lilenge uhamishaji wa maarifa kutoka kwa muktadha mmoja hadi mwingine. Kwa mfano, somo la mjadala kuhusu namna ya kumaliza pombe haramu linaweza kutathminiwa kwa wanafunzi kuandika barua ya mapendekezo kwa Gavana wa Kaunti au kutunga mchezo wa kuigiza wa kuhamasisha umma. Katika ujifunzaji wa Kiswahili, mwalimu anashauriwa kuwa mwelekezi tu, bali wanafunzi wenyewe wahimizwe kufikia suluhisho la tatizo au jukumu walilopewa.

*b) Kazi Mradi*

Ni mbinu inayoweza ujifunzaji kwa njia ya kuchunguza maumbile, kutagusana kijamii, kushiriki kwa vikundi na kuchangiana maarifa yanayotokana na aina tofauti ya umaizi wa wanafunzi. Njia hii ilipendekezwa na Montessori (1870-1952), Pestalozzi (1746-1827) na Vygotsky (1896-1934); miongoni mwa wanasaikolojia wengine. Mikakati inayotumika katika mbinu hii ni michezo na kutangamana baina ya wanafunzi ili kupanua tajiriba. Kulingana na Vygotsky (1978) mbinu ya kazi mradi hutambua maarifa ya awali ya mwanafunzi kama wenzu mkuu wa ujifunzaji wa maarifa mapya. Katika ujifunzaji wa Kiswahili, maarifa ya awali yanaweza kuwa ni umilisi wa lugha ya kwanza ya mtoto, ambao unaweza kutumika kumwelekeza kujifunza Kiswahili kama lugha ya pili.

Kazi mradi hushirikisha upataji wa maarifa na stadi mseto kwa pamoja kama vile: Hisabati, kusoma, kujadiliana, kuandika, mafunzo ya kijamii, Sayansi na udadisi. Katika Kiswahili, wanafunzi wanaweza kupewa kazi mradi ya kutafitia majina ya mimea iliyomo kwenye mazingira ya shule, ili kujifunza kuhusu nomino za pekee. Ili kutimiza shughuli hii, watajigawa kwenye vikundi kushughulikia: miti ya matunda; mimea ya nafaka; nyasi; mboga za kienyeji; mimea ya kurembesha mazingira; na mimea inayoliwa na binadamu. Shughuli za ujifunzaji zitawahitaji wanakikundi:

- i. Kuzuru eneo la shule kama vile vitalu, ua, shamba au vichaka.
- ii. Kuchora ramani ya shule yao.
- iii. Kupiga picha za baadhi ya mimea na kuzibandika kwenye ripoti yao.
- iv. Kujadiliana kuhusu muundo wa ripoti ya kikundi.
- v. Kutafsiri majina ya mimea kwa Kiswahili sanifu.
- vi. Kutunga shairi kuhusu umuhimu wa mimea waliyotafitia.
- vii. Kuwasilisha ripoti yao.
- viii. Kuandaa makala maalum kuhusu majina ya mimea kwa Kiswahili ili yachapishwe kwenye gazeti la shule au yaangikwe kwenye ubao wa matangazo wa shule.

Mradi huu utawahitaji wanafunzi kutafuta utaalumu wa tafsiri, uchoraji wa ramani, upigaji picha, na ufahamu wa masomo ya Kilimo na Bayolojia. Uimarisho wa mwalimu ni muhimu katika kuwahimiza na kuwasaidia wanafunzi kufafanua dhana. Kazi mradi huwapa wanafunzi fursa ya kubadilishana maarifa, kushirikiana na kupanua tajiriba zao. Shughuli za vikundi kwenye kazi mradi zinafaa kushirikisha wanafunzi wenye aina tofauti za umaizi ili washirikiane kupanga mikakati ya utekelezwaji, ugavi wa majukumu, ukusanyaji wa data, kupanga matokeo na kuyawasilisha darasani. Kikundi kinachowasilisha kazi bora zaidi kinastahili kutuzwa na mwalimu ili kuhimiza ushindani baina ya wanafunzi.

#### *Udhaifu wa Nadharia ya Umaizi Mseto katika Ufundishaji wa Kiswahili*

Ingawa lengo kuu la mtaala mpya ni kutimiza Malengo Endelevu kwa kugegemeza ufundishaji kwenye nadharia ya bunilizi, utekezwaji wa ruwaza ya mabadiliko ya kielimu nchini Kenya



unatarajiwa kukumbwa na changamoto. Ufundishaji wa masomo ya Lugha na Fasihi ya Kiswahili utakumbwa na changamoto zifuatazo:

- a) Uhaba wa walimu walio na ufahamu na tajiriba ya kutosha kutelekeza nadharia ya umaizi mseto. Tajiriba waliyo nayo walimu wengi wa Kiswahili ni kufunza somo kwa kuwapa wanafunzi mazoezi ya kuwakaririsha dhana ili wapite mitihani ya kitaifa. Ili kufaulisha uimarishwaji wa vipawa katika somo la Kiswahili, ipo haja ya kuunda upya mikakati ya kutathmini utendaji wa mwanafunzi.
- b) Muda wa kufunza masomo kwa kunawirisha aina tofauti za umaizi huenda ukawa kikwazo. Mada zilizo rodheshwa kwenye mtaala wa Kiswahili zinahusu mbinu za mawasiliano, sarufi, kusoma, kuhakiki, kuigiza na kutafitia tanzu za fasihi. Mwanafunzi anatakiwa pia ashiriki kwenye mijadala kuhusu masuala ibuka, kushiriki kwenye tamasha za sanaa za maigizo na kuchangia midahalo kuhusu tahakiki za vitabu teule. Mtaala hauonyeshi mfululizo wa mada wala mpangilio wa shughuli za ujifunzaji.
- c) Sera ya serikali ya kutoa elimu ya bure kwa shule za upili imechangia kuongezeka kwa idadi ya wanafunzi kwenye madarasa ilhali idadi ya walimu haiongezeki. Mwalimu anayedhamiria kufunza kwa umaizi mseto anahitaji muda mwingi wa kubaini vipawa vya kila mwanafunzi na mtindo wake wa ujifunzaji. Kuna uwezekano kuwa baadhi ya wanafunzi, hasa wale wanyamavu huenda wasipate nafasi ya kushughulikiwa na mwalimu katika mchakato wa ufundishaji.
- d) Gharama ya kumudu utekelezaji wa umaizi mseto ni ghali. Ipo haja ya kutenga pesa za kununua nyenzo kama vile tarakilishi, kujenga maabara, vifaa vya michezo, nyenzo za uigizaji, ala za muziki pamoja na kuwaajiri wataalamu wa kutoa mafunzo hayo. Walimu waliopo hawajaandaliwa kufunza kwa mazingira yanayoruhusu ukuzaji wa vipawa.
- e) Lugha ya Kiswahili imepokelewa kwa mtazamo hasi kwa jamii ya Wakenya. Imani kwamba lugha za kigeni ni bora zaidi kutokana na uwezekano wa kupatikana kwa ajira za ujira mzuri huenda ikachangia wanafunzi wengi kutolichangamkia somo la Kiswahili. Pia desturi ya vijana wengi kupendelea kutumia lugha ya Sheng' huenda ikaathiri idadi ya wanafunzi watakaoteua kujiendeleza kwa somo la Kiswahili. Wazazi wengi huenda wakawahimiza watoto wao kuegemea zaidi masomo ya Sayansi ya michezo kuliko sanaa.

## **Hitimisho**

Katika makala hii, ufundishaji na ujifunzaji wa kwa misingi ya nadharia ya umaizi mseto umejadiliwa. Nadharia hii imependekezwa kwenye mtaala mpya wa elimu kama dira ya kulifikisha taifa kwa utekelezaji wa Malengo Endelevu. Mkataba wa Jumuiya ya Afrika Mashariki unapendekeza kuwa elimu ichangie kutatua matatizo kama vile majanga ya njaa, ugonjwa na umaskini. Nadharia ya umaizi mseto inalenga kumshirikisha kila mwanafunzi kwa kukuza umaizi na vipawa vyake kwa kutambua na kutumia mikakati inayolenga mitindo mbalimbali ya ujifunzaji. Mitindo hii ya ujifunzaji imesukwa kwenye aina nane za umaizi,

zinazonuia kukuza vipawa kama vile: ulumbi, muziki, michezo, uhandisi, falsafa, ujarabati, uhifadhi wa mazingira, sanaa na vingine vingi, ili kujenga jamii inayowatambua na kuwashirikisha watu wote katika maendeleo.

Nadharia ya umaizi mseto imefafanuliwa kwa misingi ya nadharia bunilizi zinazopendekezwa kuelekeza upataji wa maarifa. Baadhi ya nadharia hizi ni: mitagusano ya kijamii, ujifunzaji wa vitendo, ujifunzaji unaonekana, na nadharia ya ufundishaji wa lugha kimawasiliano. Msistizo ni kwa mwalimu kufunza Kiswahili kwa kutumia mbinu za umajukumu, vitendo, mawasiliano, utatuzi wa mambo na vikundi. Himizo chanya pamoja na usaidizi kwa mwanafunzi ili aweze kutekeleza majukumu aliyopangiwa kwa ukamilifu ni ngazi ya kumfikisha kwenye eneo la kilele ch ukuaji wake kielimu.

Mwalimu anashauriwa kumtambua kila mwanafunzi wake kuwa aliye na uwezo wa kuchakata maarifa, kujifunza kwa kuelekezwa vilivyo, na kuyahamisha maarifa aliyoyapata ili kutatua matatizo katika mazingira anamoishi. Ujifunzaji wa Kiswahili kwa mikakati shirikishi umwezeshe mwanafunzi kutafakari, kuunda uhusisho wa dhana na maarifa aliyo nayo, kukuza na kunawirisha vipawa vyake ili kumwandaa kwa ulimwengu wa kazi inayomfaa.

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## **Effect of Culture on Language used in Communication Technology by University Students**

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### **Abstract**

*Communication technology exists to connect, inform, entertain and marketing. Developments in communication technology force people to think differently about how they disclose information. A telephone call or a few clicks make any kind of message worldwide news. These results from the fact that with cell phones, tablets and laptops, communication has become extremely portable and even intrusive into people's daily lives since everybody can communicate at almost any time*

*and from anywhere. The most commonly used type of communication technology is radio, television and the internet. This offers both positive developments and downsides. A people's culture impacts greatly on the language used in communication technology. Males and females differ in the way they speak, reason, feel and act. This is also notable in the topics they share, what they wish to achieve by making posts and how they communicate. This study focuses on how culture affects the language used in communication technology. Identify the most commonly used forms of communication technology. The study used both qualitative and quantitative approach. The objectives of this study were designed to answer the questions of whether culture changes language used in communication technology, how different cultures affect the language used in communication technology. The different cultures and their varied effects on the language used in communication technology by the university students. Purposive sampling will be used to get the respondents. Qualitative and quantitative methods were used to analyze the data. The Uses and Gratification Theory by Blumler and Katz was used to inform this study. The findings of the study will be used to create awareness and encourage society to embrace the dynamism in language and be able to communicate adequately in varied situations.*

**Key words:** culture, communication, language, social media, effect, technology.

## **Introduction**

A people's culture impacts greatly on the language used in communication technology. Communication technology, including traditional and digital means like mobile phones or the Web, need specialists for their appropriate working in a world that depends on remaining connected for commercial, academic and social purposes. Communication technology impacts society by making the interchange of ideas and information more effective. Communication technologies include the Internet, multimedia, e-mail, telephone and other sound-based and video-based communication means. Communication is the process of sharing information/ideas among two or more people through a certain sign, symbol or behaviour. The communication process involves a message moving from the initiation stage to the feedback stage; thus, initiator of the message encodes only what is relevant and meaningful to the target audience. The receiver on the other hand knows what the sender wants him to know effectively.

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Culture is, basically, a set of shared values that a group of people holds. Such values affect how you think and act and, more importantly, the kind of criteria by which you judge others. Every culture has rules that its members take for granted. While some of culture's knowledge, rules,

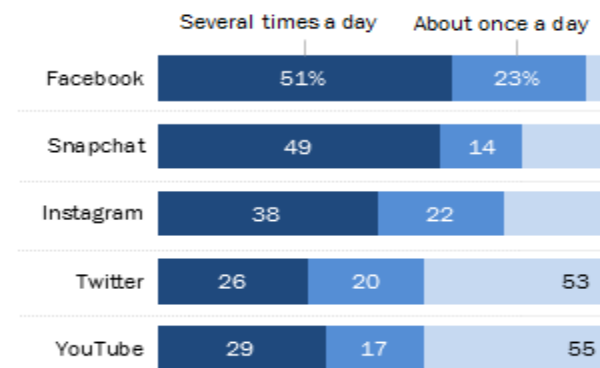
beliefs, values and anxieties are taught explicitly, most is absorbed subconsciously. However, generalizations are valid to the extent that they provide clues on what you will *most likely* encounter – and how those differences impact communication. Every aspect of communication among university students is influenced by cultural differences. Even the choice of medium used to communicate may have cultural overtones.

## Literature Review

A survey conducted by Pew Research Center ([Smith A. & Anderson M., 2018](#)) of U.S.A. adults on usage of social media landscape in early 2018 noted that there are long-standing trends and emerging narratives among social media consumers. The summary of their findings was shown as below:

### A majority of Facebook, Snapchat and visit these platforms on a daily basis

Among U.S. adults who say they use \_\_\_\_, the % who use

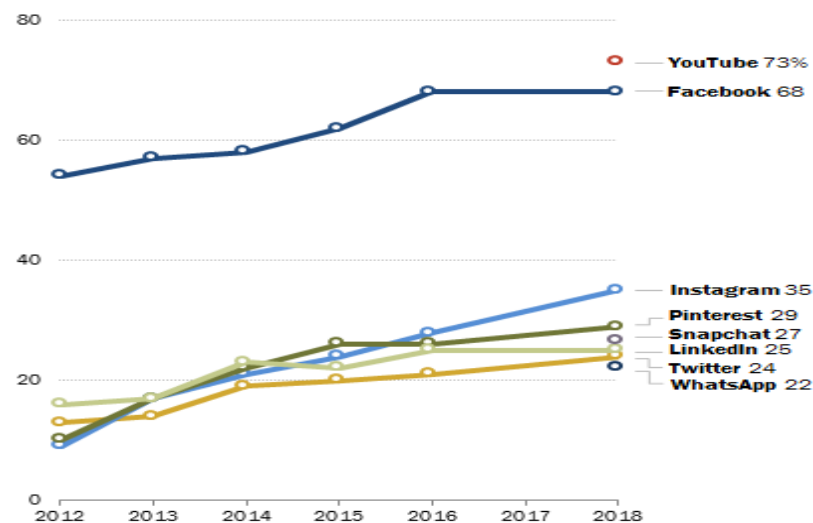


Note: Respondents who did not give answer are not shown. "Less than once a day" includes users who visit these sites a few times a week, every few weeks or less often.  
Source: Survey conducted Jan. 3-10, 2018.  
"Social Media Use in 2018"

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### Majority of Americans now use Facebook, YouTube

% of U.S. adults who say they use the following social media sites online or on their cellphone



Note: Pre-2018 telephone poll data is not available for YouTube, Snapchat or WhatsApp.  
Source: Survey conducted Jan. 3-10, 2018. Trend data from previous Pew Research Center surveys.  
"Social Media Use in 2018"

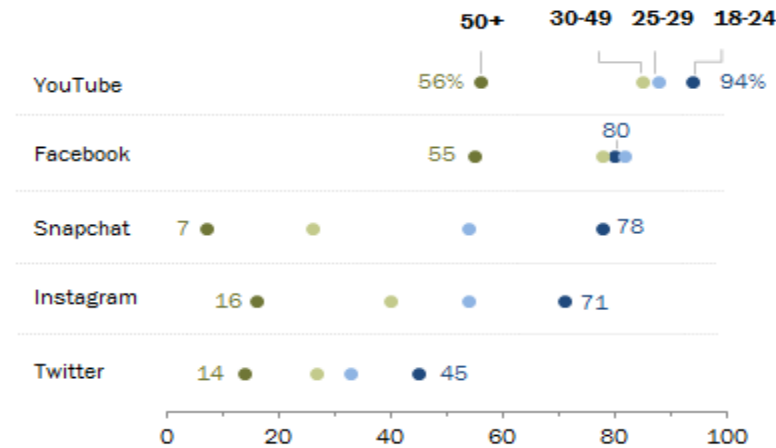
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Table 1 Adapted from Pew Research Center

Table 2 Adapted from Pew Research Center

### Social platforms like Snapchat and Instagram are especially popular among those ages 18 to 24

% of U.S. adults in each age group who say they use ...



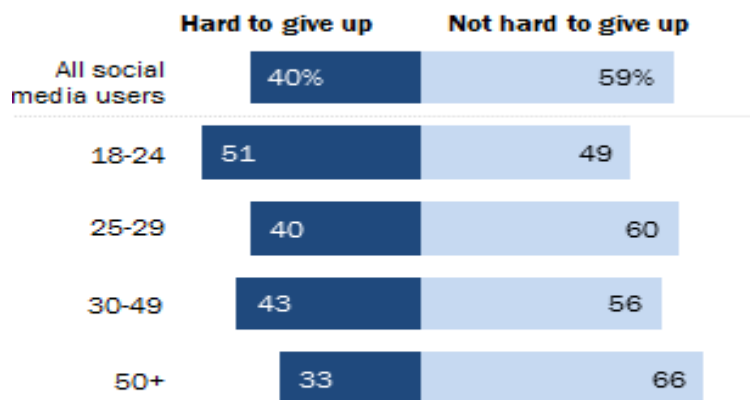
Source: Survey conducted Jan. 3-10, 2018.  
"Social Media Use in 2018"

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Table 3 Adapted from Pew Research Center

### Majority of users say it would not be hard to give up social media

Among U.S. social media users, the % of who say it would be \_\_\_ to give up social media



Note: Respondents who did not give answer are not shown. "Hard to give up" include those saying it would be very or somewhat hard. "Not hard to give up" include those saying it would be not too hard or not hard at all.

Source: Survey conducted Jan. 3-10, 2018.  
"Social Media Use in 2018"

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Table 4 Adapted from Pew Research Center

### Substantial 'reciprocity' across major social media platforms

% of \_\_\_ users who also ...

	Use Twitter	Use Instagram	Use Facebook	Use Snapchat	Use YouTube	Use WhatsApp	Use Pinterest	Use LinkedIn
Twitter	–	73%	90%	54%	95%	35%	49%	50%
Instagram	50	–	91	60	95	35	47	41
Facebook	32	47	–	35	87	27	37	33
Snapchat	48	77	89	–	95	33	44	37
YouTube	31	45	81	35	–	28	36	32
WhatsApp	38	55	85	40	92	–	33	40
Pinterest	41	56	89	41	92	25	–	42
LinkedIn	47	57	90	40	94	35	49	–

Source: Survey conducted Jan. 3-10, 2018.  
"Social Media Use in 2018"

PEW RESEARCH CENTER

90% of LinkedIn users  
also use Facebook

Table 5 Adapted from Pew Research Center

The communication technology has transformed all aspects of human life since it became globally available to the society. This transformation is evidenced by the rising number of digital users globally. According to the Computer Industry Almanac (2009), the total number of internet users exceeded one billion in 2005. Communication technology has been accepted by academic institutions as a powerful means of information transmission and to strengthen research and academic work. Luambano and Nawe (2004:16– 19) noted that the communication technology has become a vital component of academic institutions as it plays a pivotal role in meeting the information needs of these institutions. They sum up the importance and benefits of the communication technology as:

- It increases access to information all over the world.
- It provides scholars and academic institutions with an avenue to disseminate information to a wider audience worldwide.
- It enables scholars and students at different locations on the globe to exchange ideas on various fields of study.
- It has enabled the growth of distant learning, both within nations and across international borders.
- It provides students and lecturers with a communication system that they can use to communicate with each other irrespective of distance.

Several other scholars have looked at the advancement of communication technology but very

little has been done on language has been affected by culture in these communication technologies, which has necessitated this study.

### **Research Objectives**

The objectives of this study were:

- To establish whether culture changed the language used in communication technology by university students.
- Identify the most commonly used forms of communication technology by university students.
- How different cultures affect the language used in communication technology by university students.
- The different cultures and their varied effects on the language used in communication technology by the university students.

### **Methodology**

The study was carried out amongst University students from Machakos University and Moi University who were recruited using a non-probability sample via Telegram, WhatsApp and email. The research instrument targeted the respondents' use of technology, their habits, their perceptions of face-to-face communication in the presence of technology, engagement both face to face and screen to screen, language used, which would help better answer the question of whether culture had an effect on language used in communication technology.

Field observations were conducted at three highly populated areas on both campuses, including dining hall, around lecture halls, and recreation areas.

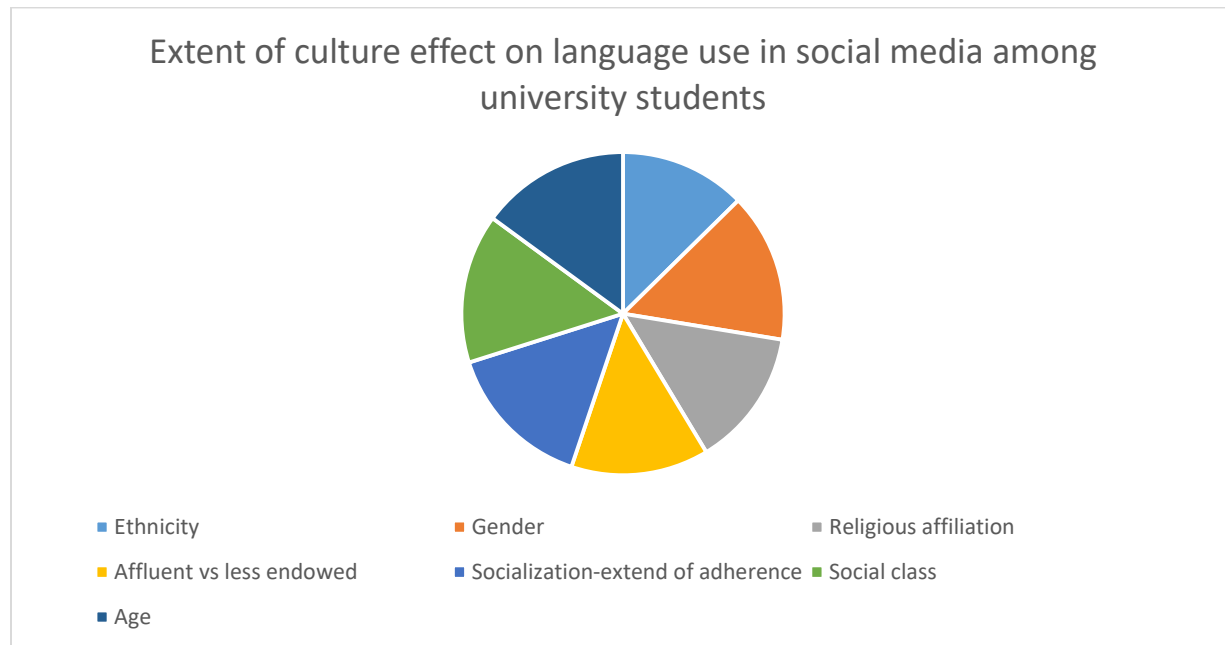
These observations were conducted during heavy foot-traffic times, including in-between lectures and during meal times, when students would most likely be present and interacting with others.

A variety of different interactions between other students and technology were recorded, including those texting, chatting or talking on the phone, those browsing or googling on their tablets/laptops, those interacting with others, and those who did not have contact with devices.

### **Results and Discussions**

95% Of the respondents felt that the invention of new gadgets such as mobile phones, laptops and tablets has made communication easier and attractive while 87% noted that the culture and language used in the gadgets has easily been adopted by the students. This includes the adoption of the vocabulary therein and modelling a lot of the behaviour commonly depicted. 76% of the respondents reported that an embrace of traditional formal language was looked at as being backward, primitive and archaic. 93% of the respondents were of the opinion that the communication technology had evidently robbed the respondents of etiquette, pleasant and respectful language in their communication since they greatly embraced the culture portrayed in

the technology commonly used. Examples given included use of disrespectful language among themselves and when talking to elders which is borrowed from the language commonly used in social media, movies and other forms of communication technology. 78% of the respondents argued that the different cultural backgrounds of the university students had made it impossible for them to collectively espouse the norms of each of the different cultures in as far as language was concerned. This left them with the option of embracing the language commonly used in the technology. They therefore were more comfortable using the non-standard language and vocabulary commonly used in communication technology. Social media for instance propagated the great use of Sheng, English, slang and even coined vocabulary among the students both in social and academic interactions. This has influenced their communication to a great extent. 58% of the respondents felt that the liberal culture of the youths has systematically eroded the respect that the youths once had as they talked to the elders. The short forms of language used in communication technology rob it of the necessary polite and respectful words and sentences. Formal language has tended to be pushed back and in its place the jargon used in communication technology which does not adhere to grammatical rules has taken its place. However, 48% of the respondents felt that individuals from cultures that had sound morals used civil language when using communication technology.



## Finding

## Percentage

Invention of new gadgets such as mobile phones, laptops and tablets has made communication easier and attractive 95%

The culture and language used in the gadgets has easily been adopted by the students 87%

An embrace of traditional formal language was looked at as being backward, primitive and archaic 76%

The communication technology had evidently robbed the respondents of etiquette, pleasant and respectful language in their communication since they greatly embraced the culture portrayed in the technology commonly used. 93%

The different cultural backgrounds of the university students had made it impossible for them to collectively espouse the norms of each of the different cultures in as far as language was concerned 78%

Respondents felt that individuals from cultures that had sound morals used civil language when using communication technology. 48%

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The most commonly used forms of communication technology included:

- Cellular systems such as mobile phones, tablets , laptops,
- Wireless networks such as internet, Skype , YouTube
- Most students used mobile phones on which they engaged on WhatsApp, Short-Message-Service (SMS), Twitter, Facebook, Telegram, Instagram, making phone calls, Skype, YouTube, LinkedIn, Pinterest, SnapChat, e-Mail.

#### **Social media**

#### **Percentage**

WhatsApp

97%

Short-term age-old Ice (SMS)	86%
Twitter	41%
Facebook	93%
Telegram	52%
Instagram	68%
Phone calls	95%
Skype	8%
SnapChat	35%
YouTube	84%
LinkedIn	17%
Pinterest	23%
Email	93%

- They also used Laptops and tablets to access internet.
- Notable cultures included : (Ethnicity, Affluent vs less endowed and Socialization-extend of adherence to social class, age, gender and religious affiliation)
- Over 76% of the students identified with a given religion. The participants from religious background used more religious vocabulary like God, bless. The non-religious use curse words.
- Students from the urban cultures relied heavily on electronic technology and emphasized written messages over oral or face-to-face communication.
- The different cultures had varied effects on the language used in communication technology by the university students. There was radical shortening of words and increasing use of symbol and shortcuts, with little or no adherence to traditional grammatical rules in the language used.
- Standard English and Kiswahili language was no longer adhered to.
- Sheng was widely used since it was common among university students.
- Spelling mistakes were no longer a hindrance in communication language used.

- The language used was specific for the different cultures i.e. rural vs. urban depicted various forms of sheng depending on their towns and regions. This can be summarized in the table below:

<b>Standard language</b>	<b>Social media language</b>
By the way	btw
Family	fam
Love	luv
Come	kam
Facebook	fb
Direct message	DM
Oh my God	OMG
Laughing out loudly	lol
I don't know	idk
Police	po po
Shaking my head	SMH
Awesome/ cool	lit

### **Conclusion and Recommendations**

From the study it was evident that culture had a great effect on the language used in communication technology by university students. The varied cultures dictated the type of language used in the communication technology. Some cultures impacted negatively on the language used in the technology. There is need to create awareness on the dynamism of language due to culture influence for adequate communication among individuals in varied situations. The most commonly used forms of communication technology were internet, multimedia, e-mail, telephone and other sound-based and video-based communication technology. Social media was noted to be widely used in both social and academic circles. Therefore, policies that govern language used in these communication technologies should be put in place to avoid miscommunication.

The different cultures impacted on the type of vocabulary used, sentence structures, contracted forms and the peer clusters among the students. It is therefore necessary to have rules in place to ensure acceptable formation of the new vocabulary and sentence structures. The study revealed that the evident cultures included: ethnicity, affluent vs less endowed and socialization-extend of adherence to social class, age, gender and religious affiliation. These cultures had specific language used among them especially in terms of register. There should be a standard pool of vocabulary from the various cultures to create effective communication among the university students.

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## **After Negative Ethnicity: The Future of Voting in Kenya**

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### **Abstract**

*More than any other demographic, the question of negative ethnicity has been a scourge on the African continent. In Kenya, the ethnicisation of politics has plagued the nation since it gained its independence from the British. Ethno-politics persisted and reached its zenith in the 2007 post-election violence which left more than 1000 people dead. This paper interrogates ethnicity's ties to geography; the power inhering in its situatedness. Using Appadurai's concept of 'deterritorialization' and Appiah's 'cosmopolitanism' the paper problematizes the idea that the space within ethnic boundaries is home in a bid to illustrate how the more open, transferable concept "good place that is no place" of Utopianism can help Kenyans detach from a localization. The adoption of this concept as a frame of reference would then disrupt the ethnic voting patterns of ethno-politics and finally usher in the age of voting based on issues and ideas.*

**Keywords:** *Utopianism, Negative Ethnicity, Cosmopolitanism, Kenya Elections, Thomas More, Deterritorialization*

### **Introduction**

The identity of Kenyans is fundamentally ethnic. It manifests itself every 5 years during elections and has remained static despite our changing world. The shared space available where the different ethnic groups can interact and establish social relationships is scarce. Instead, they are content to live within their own individual ethnic boundaries. Though this retreat to our homelands conveys well-meaning solidarity with our ethnicity, it inevitably leads to negative ethnicity. Kenyans are happy to be associated with their ethnicities before anything else and the powerful social processes have proved feeble to maintain, modify or even reshape it as they are wont (Searle 1995). A state mired in negative ethnicity, with little room for modification or reshaping of identity, will ever be divided; it cannot work toward a common objective that benefits all, and has as its fate turbulent election seasons.

The purpose of this paper is to interrogate ethnicity's ties to geography in the Kenyan context and how this leads to negative ethnicity as evidenced particularly by the 2007 post-election

violence. It is in five parts. The first part offers an overview of the 2007 election violence paying attention to the function of ethnic boundaries. The second explores the origins of negative ethnicity; it bases it in ethnicity's penchant for attachment, more so its attachment to specific geographic boundaries. In the second it problematizes these ethnic boundaries through the lens of contemporary theories of movement: deterritorialization and cosmopolitanism. The third part brings in utopianism in a bid to offer an alternative to geographical attachment. In the literary genre established by Thomas More (1516/2003), Utopia is a 'good place that is no place', in other words, it is a detached and preserving space. The final part contains brief concluding remarks about utopianism and its prospects for the future of voting in Kenya.

#### *An Overview of the 2007 Post-Election Violence*

Over the years, Kenya's ethno-politics have included the strategy of multi-party coalitions. Two or more political parties, also largely based on ethnicity, merge toward a shared goal. During the 2007 elections the two main competitors were the Orange Democratic Movement (ODM) and the Party of National Unity (PNU). The latter was a coalition of KANU, Ford-Kenya, Ford-People, Democratic Party and others, and its stronghold was among the Kikuyu Central region of Kenya. Whereas ODM's support was focused in Luo Nyanza and also in the Rift Valley owing to the presence of the Kalenjin politician, William Ruto.

Consequently, when the violence erupted it pitted, primarily, the Kikuyu against the Kalenjin and Luos. The two latter groups, including the Luhya who had supported ODM, attacked suspected PNU supporters who inhabited the ethnic boundaries of the ODM supporters, such as Eldoret—a significant city in what is now Uasin Ngishu County, both politically and economically. In the rift valley, the pieces of land owned by the 'foreign' Kikuyu were expropriated by the 'local'. There was also mass vandalism of their property, and burning of crops in the field. One cannot forget the mass death by burning inflicted on the 35 women, children and the disabled who had sought refuge in the Kenya Assemblies of God (KAG) church in Kiambaa, Eldoret (Kigumba 2011). In Central Kenya, the land of the Gikuyu, "ethnic militias threatened to bum down the Tigoni holding centre, one of the many centers hosting an estimated total of 8,889 non-Kikuyu IDPs across central Kenya and Nairobi" (Kigumba 2011:78) as the Gikuyu sought to expunge Luo and kalenjin from their ethnic boundaries.

Foucault (1967/1984:4) referred to these types of places: the church, the police station, among others where people sought refuge as "crisis heterotopias" because they were "reserved for individuals who are, in relation to society and to the human environment in which they live, in a state of crisis." It is worth noting that, according to Foucault, crisis heterotopias are exclusive to primitive societies (Foucault 1967/1984). Regardless, ethnic conflict affect neighboring states, poses a threat to both regional and global security and stability, and emerges as a key concern for policymakers. Indeed, ethnic conflict has been elevated to the domain of high politics, a realm

previously occupied by international crisis, ideological conflict, and interstate war. (Kigumba 2011: 6).

In any case, it would be erroneous to claim that the violence was clearly delineated in terms of who was fighting against whom. This is because political associations were not as rigid as the ethnic associations. The individual ethnic groups put their needs before those of the political parties. As Kigumba states, “There were also reports of attacks on the Luo and Kisii settlers by the Kalenjin taking advantage of the collapse of law and order to rustle animals and take land from their neighbours irrespective of political loyalties (2011: 78).

Following the promulgation of a new constitution the elections held in March, 2013 demonstrated that political coalitions based in inter-ethnic affiliations are temporary owing to the power of shared ethnicity. In said elections, 5 years after the post-election violence, political associations had altered drastically. Ruto, formerly of Orange Democratic Movement had joined with The National Alliance’s Uhuru Kenyatta and others to form the Jubilee Party. Ford-Kenya under the leadership of Moses Wetangula switched allegiances from PNU to form Coalition for Reforms and Democracy (CORD) with ODM and others. Also, Kalonzo Musyoka, formerly presidential candidate of ODM-Kenya was now Raila Odinga’s running mate, representing the Wiper Democratic Movement. The states of affairs remained constant, more or less, in the 2017 elections but will change inevitably in 2022.

#### *The Roots of Kenya’s Negative Ethnicity*

In her study of the role of ethnicity in Kenya’s post-election violence, Kigumba (2011) writes: Ethnicity is the essential bond that unites kinship weaves through the social fabric, in the sense that, ethnic group identities flow from an extended kinship bond, sharing common behaviors and transmitting across generations. In Kenya these bonds date back to even pre-colonial times but were made more evident by the British colonial masters (84). These bonds are apparent during presidential elections; none more telling than the disputed one of 2007 that ended in ethnic violence. However, it is not only in Kenya that we find issues of ethnicity. As Wolff (2006:64) states, “ethnicity is a fact of life almost everywhere”. In addition, the prevalence of multiple ethnic groups in a particular geographical area does not automatically lead to ethnic conflict. Despite ethnic identities being thought to be fluid across time and social contexts, even leading to the transfer of the feature of one ethnic group to another (Alba, 1990; Nagel 1995), the longstanding bonds of ethnic kinship among Kenyans are far from being broken. If anything, the bonds among members of a similar ethnic group lead to a perpetual ethnic isolationism. This, in turn, devolves into negative ethnicity.

There is glaring scarcity of inter-ethnic interaction in Kenya, more so within the purported ‘ethnic boundaries’. These types of boundaries are, according to Sanders (2002) “patterns of

social interaction that give rise to, and subsequently reinforce, in-group members' self-identification and outsiders' confirmation of group distinctions" (327). Sanders' study was on plural societies and his definition of 'ethnic boundaries' attests to this. The definition used in this paper will refer to territorial demarcations—products of British colonialism. The case of Gikuyu land ownership outlined in Facing Mount Kenya reflects the contemporary problem of ethnic boundaries. Celarent (2010) writes: "The Gikuyu follow a trusteeship model: the current tenant manages the property for past and future generations of his family but is nonetheless the undisputed "owner" of the land in the present" (724).

This generational management of land doubtless reinforces the idea of ethnic boundaries. However, Kenyatta doesn't tell us that the Gikuyu often practiced agriculture in one area until it became infertile or that there was a good deal of tribal movement (Celarent 2010). The fact is there were rampant migrations within Kenya, and settlements were not constant before colonialism. Sometimes there were fewer ethnicities than there are today, sometimes there were more. As Ndege (2009) quoted in Kigumba (2011) intimates, we owe the current stability of ethnic boundaries to colonialism. But we cannot blame them for remaining within and carving our identities out of them. Each ethnic group lives within their ethnic boundaries; which is not to say that there are no geographical locations where inter-ethnic interaction occurs; Nairobi is perhaps the archetype of such a location.

Aside from the capital city and very few others, the majority of spaces all over the country are populated overwhelmingly by a single ethnic group. From the Kaya Kinondo forest at the coast, through the Mount Kenya forest in Central Africa, all the way to the Kakamega forest, physical features have been used as ethnic identifiers since before the colonialists. From the above three one can learn about the Mijikenda, Kikuyu, and Luhya, respectively. It is not only forests which act as geographic boundaries. Lakes Turkana and Victoria are also some of the many physical markers of Kenya's many ethnic groups.

Each group considers the above-mentioned areas to be their home; it is where they have their metaphorical roots, their literal "good place". In December it is a commonplace to overhear in random conversations across the capital city such keywords as "upcountry", *ushago* and *nyumbani* all which denote home or homeland. During this period the Luo will travel to Lake Victoria, the Maasai will go back to the Mara, the Kalenjin will go to Sergoit, and the Kamba to Tsavo East. Each person seeks solace from its own within its delineated geographic boundaries. Granted, these are only some of the more known physical features and the ethnic groups are in no way clustered either on or within them.

This essay suggests that this self-imposed exile; the exclusionary identification with space is, finally, responsible for the scourge of negative ethnicity. Attachment to space betrays a lacking

openness among the ethnic communities in Kenya which cuts across. This leads to the desire to go “home” of Kenyans which implies an inability to “feel at home” anywhere beyond the limits of our ethnic boundaries. Put another way, it is as though we hold our breath all year long, to breathe at last when we are in the proximities of our roots. As this analogy implies, attachment to a particular space is an injurious and at the same time arrogant, act. This paper will offer as a counter viewpoint the unconstrained freedom to wander of utopianism. But for now let us find out how the attachment philosophy of ethnic boundaries fares when viewed through contemporary theories of mobility in an increasingly globalized world.

### *Ethnic Boundaries in a World Without Borders*

Late last year, the president of Kenya, Uhuru Kenyatta in a speech at a national holiday addressed the issue of the restrictions of borders to movement among East Africans and Africans in general. It was a bold idea, and he shares it with the AU chairman, Paul Kagame and reflects what is going on in the rest of the world with Europe as the archetype. Some Kenyan citizens lauded the effort while others who were concerned about the ramifications of this to the security of the country were not sure if it was a good idea. This section deals with the problem of boundaries within Kenya, specifically ethnic boundaries. Increasingly, the global cultural economy is tending toward a borderless future. This section therefore assumes that Kenya is a participant in the global cultural economy and uses two global trends to examine whether or not this participation has impacted the people’s views of these boundaries. The two trends are deterritorialization and cosmopolitanism. Let us now turn to the first.

From the proliferation of international trade and human rights activism to the adoption of the Western ideas of democracy and capitalism, globalization is visible in the mechanisms of Kenya. The movement of people and capital is also at an unprecedented level. The former is most perceptible. And where movement of people is not obvious, the apparent immobility ‘is everywhere shot through with the woof of human motion, as more persons and groups deal with the realities of having to move, or with the fantasies of wanting to move’ (Appadurai, 1990: 297).

Appadurai includes the movement of people or ‘ethnoscapes’ among the five dimensions of global cultural flow. The others comprise: mediascapes, technoscapes, finanscapes, and ideoscapes. The multifaceted flow among these five landscapes or “imagined worlds” is what Appadurai refers to as “deterritorialization” and it varies from state to state. This paper will use the term when referencing movement of a particular individual or ethnic group outside their ethnic boundaries to a territory where they are no longer the majority.

This is not to say that there is no movement of the other four dimensions; it is simply to state that

in the Kenyan context the movement of people is most prominent than any other. For instance, there can be movement of Gikuyu from Gikuyu land to Kalenjin land for one reason or other. In this new land the Gikuyu, stereotyped as ‘money lovers’, set up entrepreneurial endeavors in Eldoret or establish their own exclusively Gikuyu church. Similarly the Luo stereotyped to love fish, may leave Luo land to work in the Bata shoe factory in Limuru, Kikuyu land, and set up fish markets. The reasons for movement may also be religious: the leadership of a certain denomination may decide to shuffle its clergy thus requiring that a Kisii move to Luhya land. In all this, the ethnicity of the mover remains unchanged.

Deleuze and Guattari (1991/1994) offer a conceptualization of deterritorialization that would prove radical if appropriated in the Kenyan context because of how it imagines the change in form of that which has deterritorialized. For them deterritorialization is always followed by reterritorialization and the thing or feature which undergoes this movement is unrecognizable. They write that from birth the hominid:

*Deterritorializes its front paw, wrests it from the earth to turn it into a hand, and reterritorializes it on branches and tools. A stick is, in turn, a deterritorialized branch. We need to see how everyone, at every age, in the smallest things as in the greatest challenges, seeks a territory, tolerates or carries out deterritorializations, and is reterritorialized on almost anything-memory, fetish, or dream (67-68).*

Essentially, under this view, the Kikuyu who deterritorializes from Gikuyuland to reterritorialize in Luo land would not be the same person. She or he would not have the same biases and would therefore be free from the plight of negative ethnicity associated with ethnic boundaries.

The reality of deterritorialization in Kenya, however, is that the group which departs from its ethnic boundaries to a different one keeps their original homeland with them. As Wa Wamwere (2010) writes:

*When Africans travel to and settle in Europe and America, despite their small numbers, they bring with them the baggage of negative ethnicity. Abroad, ethnic hate continues to weaken Africans by separating them into ethnic enclaves as it has back in Africa. Observing Kenyans abroad, I have noticed that despite their common passports, they travel and settle out of Kenya not as nationals of one country, as Kenyans, but as members of their forty-two respective ethnic communities (27).*

In Kenya, where you come from is more useful than where you are going, or where you are currently. Put another way, the past is more revered than both the present and the future, a fact which frustrates the benefits of deterritorialization. When the future is discussed it is in reference to the past: people are buried in the same space where they were born. Increasingly, more and more children are being born in hospitals situated in urban heterogeneous areas but still this has not altered the longstanding trends in voting. Having been socialized by their immediate



influences— family and community—they carry on the baton of negative ethnicity.

Though a global phenomenon, deterritorialization has had a difficult time reaching its full potential because it disrupts the concept of “home” which many Kenyans ascribe to; that of home as a space within specific boundaries. Canclini (1990) writes: “*Deterritorialization speaks of the loss of the “natural” relation between culture and the social and geographic territories*” (quoted in Hernandez 2002: 93). It is just not powerful enough to put an end to ethnic boundaries. The Kenyan voter may leave his boundaries but he keeps his metaphorical roots intact. Such a person will be hard-pressed to change her voting habit in the new context owing to his or her socialization early in life. This implies that the deterritorialized voter will have first to unlearn the socialization of family before she can open her mind to the socialization of college. The former is invariably more rooted than the latter.

Our homes in *ushago* are fixed in much the same way that the roots of a tree are fixed deep in the ground and deterritorialization endangers that. As Hernandez (2006) explains:

*The ambiguous or ambivalent character of deterritorialization must not be forgotten, as, while it generates benefits, it also produces evident costs such as feelings of existential vulnerability or of cultural rootlessness, especially if you consider that individuals have ties to a locality, and this locality remains important for them (94).*

One way to grapple with this state of affairs has to do with understanding the psychology of the ethno-political voter. How does one explain how a politician can go for long without visiting his or her homeland without compromising his or her votes? Moreover, how is it that politicians can underperform, get involved in scandals, or do absolutely nothing by way of developing their homeland and still get voted in? It is to these questions that we now turn in light of cosmopolitanism.

From the cosmopolitan rights of dissident writers and political activists as illustrated in Derrida (2001) to a study of Barack Obama as a cosmopolitan Werbner (2012 ), the reaches of cosmopolitanism have expanded so that it no longer necessitates investigation in the limited sense of international boundaries. In the Kenyan context the most evident form of cosmopolitanism concerns the concentration of multiple ethnic communities in a particular space so that a city like Nakuru acquires the qualifier. But as Keguro (2008) writes, this form of cosmopolitanism proved a weakness during post-election violence.

Presently, with ethnic divisions and the concomitant talks of cessation, a cosmopolitanism that focuses on ‘the other’ is relevant or as Papastephanou (2009) states: ‘Cosmopolitanism is more than just free circulation; it is not just about the encounter or agreement with the other, it is about the treatment of the other’ (19). It is for that reason that this paper employs the cosmopolitan ideas of the ethicist, Kwame Appiah (2007). In this section the paper examines the problem of ethnic boundaries within the definitions of Appiah’s cosmopolitanism.



Kenya's ethnic divisions are often blamed on a lack of sincere dialogue among different ethnic groups which an engagement with cosmopolitanism should be able to remedy. Cosmopolitanism believes that through the avenue of conversation "you can learn from people with different, even incompatible, ideas from your own" (Appiah 2007:2378). Cosmopolitanism requires openness to ideas and people. In this it is similar to deterritorialization. It does not seek shelter within ethnic boundaries or ethnic narratives; it is not about, as Fine and Boon (2007) in Krossa (2012) write: "cosiness or the warmth of intimate community but rather about the risks involved in disclosing oneself publicly in the world...Cosmopolitanism is a demanding and difficult way of life" (9). This difficult way of life would in turn prove a demanding philosophy because of the regrettable state of the ethno-political voter

As in a mob, the person whose identity is fundamentally ethnic is overrun by this collective of people so that in the end she loses her individuality and becomes an uncritical voter. However, cosmopolitanism acknowledges difference, and one would add, differentiation, even as it recognizes universality of people. According to this concept, "each human individual is charged with ultimate responsibility for his or her own life" and in the end, "the standard that determines whether I am doing well, whether I am flourishing, is, in part, set by aims that I define for myself" (Appiah 2007:2380). Within ethnic boundaries, oppressive unity abounds: the struggling grocer agrees with the wealthy doctor about whom to vote for. The jobless youth pledge allegiance to the same politician as do the well-to-do businessmen. In a sense, ethnic identification requires self-abnegation and even to a more extreme extent, self-erasure.

In addition to liberating the individual from the group, through its respect for diversity of culture, cosmopolitanism helps us get out of our ethnic cocoons. In Kenya, the post-election violence and other recurrent violence such as that in Laikipia County and the Mt. Elgon area reveal a certain hierarchy among the priorities of an ethnic group. It is that: local cultures matter primarily, next, people of shared culture matter, and finally cultures and people of other ethnicities matter the least. However, cosmopolitanism believes that "cultures do not matter in themselves, but because people matter and culture matters to people" (2379). As a result, the harmful aspects of ethnicity such as the propensity to negative ethnicity and wholesale disregard for life are disturbed even as the beneficial actions such as transculturation are encouraged.

All the above mentioned positive outcomes of cosmopolitanism remain unrealizable and negative ethnicity persists because while at the core of cosmopolitanism is the "recognition that we may be mistaken even when we have looked carefully at the evidence and applied our highest mental capacities" (Appiah 2007) those individuals steeped in ethnic biases do not consider themselves fallible. They are first ensnared and blinded by their ethnic loyalties so that they are

convinced that no truth can come out of a rival ethnic group. In a globalized world, where interaction among people of all ethnic groups and religions dominate, “the recognition of the shortcomings our human capacity to grasp the truth” (Appiah 2007) is an invaluable one which the tribal individuals flout. For them winning the contest is more important than the truth.

Another explanation for why negative ethnicity trounces the good will of cosmopolitanism is found in the power inhering in ethnicity’s situatedness in a particular geography. As was stated of deterritorialization, this is also of the things cosmopolitanism would have to contend with if it is to replace the deep-seated idea of ethnic boundaries. Both cosmopolitanism’s regard for ‘the other’ and its affinity for movement have to be seen to be more beneficial to the individual than his or her ethnicity and homeland because it is out of these that negative ethnicity emanates. And when ethnicity degenerates thus it subjugates all other associations cosmopolitanism pays obeisance. As Kamaara (2010) writes:

During the period preceding the 2007 national elections which culminated in violence, the Roman Catholic Church in Luo Nyanza was on one end of the political divide while the Roman Catholic church in Gikuyu land was on the extreme side...Thus political polarization became synonymous with Christian polarization (136). So far ethnic boundaries are still very influential in Kenya and ethnicity remains the fundamental identity. It would seem, therefore, that either the project of cosmopolitanism has failed or it has yet to reach a point where it can challenge Kenya’s ethnic boundaries effectively. Otherwise, perhaps one need not replace the other; there could be a way to reconcile the program of cosmopolitanism with Kenyans’ concerns for ethnic boundaries. It is with this in mind that we turn to our discussion on utopianism.

The term “utopia” was coined by Thomas More (1516/2003) but the concept appears as early as 380 BC in Plato’s Republic. The concept has been theorized for centuries and may be theorized for centuries more. Among realists and anti-utopians, all this appears a waste of time, resources and faculties. For them utopia is merely wishful thinking, an unrealizable dream. As Papastephanou (2009) astutely points out:

*For most lay people, the utopian is equated with the unrealizable, the impossible in principle, or the impossible for most human beings over whom one should not waste time or energy. Apart from being presented as futile, the utopian has been accused of having pernicious political implications (3).*

The aim of this section is not to start a polemic against the critics of utopianism; rather it is to illustrate how the concept may be the solution to the problem of ethnic boundaries which remains challenging in the face of globalization. We begin with some pertinent views of utopia.

For Mannheim (1936), it was necessary for utopia to take on a revolutionary function and effect change in the present Social conditions and Bloch (1954/1986) wrote voluminous and

convincingly of the pervasive nature of the utopian. Such conceptualizations of utopia present a challenge to common conceptions of it as not only forever unrealizable but also as limited to the imagination. Utopianism challenges the status quo; it is subversive. And this is what is needed in Kenya currently with the problem of negative ethnicity and ethno-politics. There is need to think beyond the present state of affairs, to outline a better future. Only then can we, in the words of Geoghegan (2008), “undermine the complacency and overcome the inertia of [the current society] by showing that it is neither eternal nor archetypal but merely one form amongst many” (16). But what exactly are these concerns that necessitate the need for utopianism as alternative?

As the paper has described in the previous sections, there is among the Kenyan ethnicities a tendency to consider a specific geographical space as home which leads to a feeling of homelessness in all other spaces. We have seen how this manner of thinking leads to negative ethnicity. For instance a Maasai may feel at home in Narok but homeless in Isiolo. While in Isiolo, he longs for Narok or in other words, feels homesick for Narok. If he stays outside Narok long enough he may become nostalgic for it. According to Coleman (2005):

The Swiss-German ‘heimweh’ or homesickness is the original meaning of nostalgia. Taken together, these terms denote an intense longing for (a) home. Constructed homes can be as much the locus of nostalgia as is the land of their location. Home and land are idealized through the longing for them (26).

Within Kenya’s different ethnic boundaries, constructed homes or houses of various forms are in plenty but this is not the provision for one to refer to such spaces as home. For instance, children who still live under their parents’ roofs are encouraged to consider these as their homes. Another common occurrence is that of parents proffering to their children pieces of land on which to build their own houses. In such an instance the piece of land is metonymic for a house and of course, a home. This concern of attachment to space though it begins harmlessly as ethnic identification leads to negative ethnicity and therefore requires an alternative.

More’s (1516/2003) term ‘utopia’ was a result of a play on two Greek words so that utopia is the good place ‘eutopos’ that is no place ‘outopos’. In utopianism, location is immaterial; what is important is the quality of the place. The idea of a home in a particular space acts as the sole good place for many Kenyans but utopianism seeks to expand this view. It assumes that a good place can be found anywhere and encourages the search for such a place. Kenyans’ reverence for the past plays a part in the attachment to physical space. Rather than promote fluid concept of the ‘no place’ among ethnic groups, it keeps the groups bound within the same boundaries. This in turn stifles thoughts of the future, thoughts about what society is capable of becoming. As Quarta (1996) explains, “to exist in no place, in truth, belongs to the projective, since this latter, if it did have a place, if it were already realized, would no longer be projective” (155).

The concept of the ‘no place’ may convince people to migrate freely out of their ethnic cocoons but can it settle the recursive problem of roots? This paper has already addressed the cases of the deterritorialized voters who seem to figuratively carry their roots with them to their new spaces. These people, when they are of voting age, retain their ethnic biases; it is difficult to change their minds. In utopianism, the ‘outopia’ goes hand in hand with the ‘eutopia’, the ‘no place’ and the ‘good place’ follows each other necessarily. The individual who moves from his homeland is keen to find a place just as good if not better than where he comes. We have already established the reasons why the movers are disinclined to change their old habits: mob mentality, credulity and socialization; all which are related to negative ethnicity.

Unlike negative ethnicity, utopianism is concerned with the individual, first and foremost. Thus, the good place ought to be where the individual feels liberated from the mob; anywhere he or she can exert him or herself free from exteriorities. The individual is free to think for herself and is improved “ethically in accordance with his or her both recognizable and malleable human nature and the pursuit of political ideals, such as freedom, justice, and the absence of social conflict” (Cojoracu 2012:47).

Ideological discourse finds audience in utopianism so that a poor voter and a rich voter cannot share a political candidate on superficial terms as ethnic identity, no matter how fundamental it may be. Utopianism ensures that the voter is critical and knowledgeable, considering everything about the candidate: values, morals, beliefs, before voting them in. The effects of socialization are also counteracted because the utopian anthropological assumptions recognize “the priority of egoism over altruism” (Papastephanou 2009: 7). The voter is no longer there for sale to the highest bidder; nor is her vote to a member of her clan assured.

Once the age of elections based on ideas on issues is initiated through utopianism, conflicts which accompany elections will likely come to an end because, at least in Kenya, they are ethnically instigated. Even as it keeps the individual at its centre, utopianism recognizes the dignity of the other. In More (1516/2003), “the utopians think...that no one should be considered an enemy who has done no harm, that the kinship of nature is as good as a treaty, and that men are united more firmly by good will than by pacts, by their hearts than by their words” (84-85). The only harm most of the victims of the 2007 post-election violence had done was being born of a different ethnicity. Slashing a neighbor with a machete is no way to treat the other. We should emulate the inhabitants of *Utopia* and be open-minded in our relations with the other. Further, as Navaud (2016) reminds us of utopians, we should be curious and humble enough to learn whatever we can from our neighbors even as they learn from us.

## Conclusion

Kenya was a multi-ethnic country long before the European set foot on the continent of Africa.

Interaction among them by way of trade, wars, and marriage influenced the material of individual cultures and continues to do so albeit in a minimal capacity. When the British drew borders throughout the country, families, clans and tribes were separated; but the larger body of ethnicity was not affected much. In fact, ethnicity became a primary means of identification and it was situated in a specific geographical spaces. These spaces were home and they were metonymies of ethnicity. Eventually, this attachment to space leads to negative ethnicity and was responsible for the 2007 post-election violence. Though largely absent year round in social and economic interactions, the power of ethnicity is paraded in Kenya during the election season and this has brought about the current ethno-politics.

Violence over the outcome of an election is completely unacceptable and should be prevented through encouragement of intermingling among the different ethnicities in Kenya. Already the country has experienced considerable deterritorialization or the movement of individual or group out of their ethnic boundaries to a place where they are no longer the majority but this has been futile in eradicating negative ethnicity because the people are unwilling to change their outlook in the new land. The voters who migrate from their homes to other territories maintain their biases of ethno-politics which frustrates the aim of deterritorialization.

Kenya has also experienced cosmopolitanism in various forms and we have seen that the type advocated for in this article, the type that is concerned about the other, is still unable to free Kenyans from the captivation they have with ethnic boundaries. Even when they are born in cities where the different ethnic groups interact, the individual acts in accordance with the behavior of the people most responsible for her socialization. The metaphoric roots of ethnicity transcend ethnic boundaries and the fear of rootlessness ensures that people maintain some level of connection even in their spatial disconnection.

The perspective of utopianism offers an alternative to the tendency of Kenyans to base their identity on ethnicity in an effort to end negative ethnicity. Negative ethnicity is more concerned about the group whereas utopianism caters for the desires of the individual. The goal of utopianism is to enable the individual to be free to wander, free to uproot and replant elsewhere. It encourages the voter to think about his own interests before casting a vote for a politician and preserves him when he leaves the comfort of solidarity with fellow ethnic affiliates.

In More (1516/2003) we read of the utopian spirit that compelled the young Hythloday to give his possessions to his relatives and travel the world (50-51). If it were not for his selflessness we would have never heard of this commonwealth. Utopia teaches one to be comfortable anywhere, not to let any one place stand out among others. It demystifies the attachment to homelands and thus pre-empts a future of negative ethnicity.

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## **Assessment and Relevance of English Communication Skills Syllabus to Diploma in Law Programme in Tanzania: Does it Bring Competency Based Education and Training as Expected?**

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### **Abstract**

*Appropriate and well-designed Curriculum is one of the variables that may contribute to sustainable development in any given society. The syllabus can reflect the type of end product of graduates that any education system ought to produce. This paper assesses the Communication skills curriculum in the institutions offering diploma in law programme in Tanzania. Looking on English communication skills curriculum, one may raise a concern whether that the current syllabus will create diploma graduates who are well equipped with competence based education and training, instead of knowledge based, thus contributing to sustainable development. The content of English communication skills for these institutions not only not harmonized but also does not reflect on English communication skills for lawyers, instead one finds loaded with*



*English grammar as if the programme is intended to humanities programme, thus reflecting knowledge based education. The paper suggest the need for harmonizing the English communication skills for diploma in law programme and conducting several workshop organised by the appropriate organs such as National council for technical education on the methodology of implementing the competency based teaching. The paper concludes that unless the knowledge based education and training contents are changed, the expectations of producing graduates with competence based education and training is far from reality.*

**Keywords:** *communication skills, Competency based,, education, knowledge based and syllabus*

## **Introduction**

This study is intended to assess the relevance of English communication skills syllabus to Diploma in Law programme in Tanzania. Specifically, the study is intended to analyse the English communication skills syllabus to Diploma in Law programme in Tanzania and evaluate the reflection of the curriculum in attaining the required competencies to a diploma in law graduates. The findings of this study will therefore be used to revisit and reshape English communication skills for diploma in law programme in order to come with competence based curriculum, thus to facilitate competencies in the job market, be it formal or informal employment.

Before proceeding with the details of the study, it is important briefly explain what constitutes curriculum and competency based education. Curriculum is an essential requirement in any education or training system as it guides planning, conducting and assessing learning processes (Deißinger & Hellwig, 2011). In the context of a school or college, it is the formal and informal contents and processes by which learners acquire knowledge and understanding, develop skills, and alter attitudes, appreciations, and values with the help and support of a given school or any other educational institution (Doll, 1978). A curriculum can either be content or competent based; a content based curriculum focuses on the rote memorization of factual knowledge while competence based curriculum is centred on competence based learning which focuses on understanding the concepts, skills and competencies which requires teaching, learning and assessment approaches (Posner, 1995).

On the other hand, Competence based education emerged for the first time in the United States of America in the early 1970s (Richard & Rogers, 2001). These kind of educational goals are stated in terms of precise measurable descriptions of knowledge, skills, and attitudes which had to be acquired by students at the end of the course of study (Adeshina, 2016). Thereafter, it spread into European countries such as the United Kingdom and Germany in the 1980s (Wolf, 2001). In Sub-Saharan Africa, the adoption of Competency Based Curriculum (CBC) stressed two major purposes namely: the need of changing curriculum contents to make them more relevant both in

local and global contexts in terms of desirable competences for the work situation and for everyday life; and changing the teaching-learning process into more learner-centred approaches, Nikolov et al.(2014).

Studies on Assessment and relevance of English communication Skills syllabus in a given programme requires the general understanding the characteristics of the curriculum that is based on competency based and knowledge based framework. A curriculum, course or program of training to become a competency-based requires studying various teaching and learning theories that focus on learning outcomes with specific, measurable definitions of knowledge, skill and learner behavior (Tambwe, (2017). Competency based curriculum (CBC) measures what participants have learned as opposed to what instructors think they have taught, Nzima, (2016).

Learning outcomes in a CBC are written for the students and they state what are expected to have learned the targeted students; the outcomes are specific, observable, and measurable and they should be linked with occupational or professional requirements. CBC planners are required to analyze job profiles using incumbent workers of a given industry or an experienced Human Resources Manager of a relevant professional organization rather than the disciplinary 'body of knowledge' (NACTE, 2015). In an effective CBC, contents are organized in a logical order from simple to complex should be organized in a logical order from simple to complex (Kirschner et al., 1997). Another characteristic of a CBC is modularizing the curriculum contents through which the learning outcomes that form a coherent compatibility for specific competence are clustered to form modules to be assessed independently. The modules have to be organized in a logical sequence for the realization of the intended competencies and allocating them into semesters because some modules need to be covered before others (NACTE, 2015; Kouwenhoven, 2003).

Other characteristics of CBC include: it is based on the future occupational practice of the graduate (Boyatzis et al., 1996); it is learner-centered and the learning process is central, it uses individualized materials, flexible learning time and a continuous feedback to the learner (Field & Drysdale, 1991). CBE is based on the constructivist approach the main goal of constructivism is competence, not knowledge as in cognitivism, or achievement as in behaviorism (Kouwenhoven, 2003).

In terms of assessment, a CBC focuses on the ability of a learner to know, to learn as well as learning how to learn, to do things, and working with other people (Mosha, 2012). It requires a pedagogical shift from assessing a set of learning contents to assessing each learning outcome (Rutayuga, 2010). Another aspect that need to be attended in this review is the issue of competency based training and the expectation of the graduands in law programme in Tanzania. Diploma in Law students in Tanzania after graduation are expected to be admitted to degree

programme, to engage in self-employment and other to be employed in the judiciary as a court clerk and other related law firm, Decorte (1994). Also they can perform other clerical work in several government ministries and district council. Our review the will focus on this category that the judiciary of Tanzania make use of them as a clerical officers. Therefore, they are expected to competent oriented graduands. Now let us push our discussion by reviewing the literatures that relate to law graduates with job market.

**Jobs of Law Graduates and Duties of Law Clerks.** The legal system affects nearly every aspect of our society and lawyers links between the legal system and the community (Vidyasagar, 2008). Due to that fact, graduates of a Diploma of Law can be employed in a number of occupations, in most cases they are hired as clerks; according to the Black's Law Dictionary, the word clerk means a public official whose duties include keeping records or accounts, in this case, the duties to be provided under this section focuses on law clerks.

The current duties of law clerks are diverse and dependent on the judges to whom they are appointed (Holvast, 2016; Sobel, 2007). Law clerks prepare clear, concise and professionally written communication such as briefs, affidavits, statements of claim using correct spelling, grammar, punctuation, and syntax (MTCU, 2012; Holvast, 2016). They are responsible for conducting legal research, editing and proofreading the judge's orders and opinions, and verifying citation (Sobel, 2007).

Moreover, the duties of the clerk do not only begin and end in the courtroom. Apart from preparing documents, the clerks in any court may well see defendants, prosecutors, local solicitors, witnesses outside the courtroom when such people come looking for help and guidance (Astor, 1984). Furthermore, judges discuss pending cases with their law clerks and confer with them about decisions; and district court law clerks often attend conferences in chambers with attorneys as well as send their law clerks to the chambers of other judges to speak with their law clerks to discuss less significant issues that would occur between the judges directly (Sobel, 2007; Holvast, 2016).

**Communication Skills and the Outcomes Required for the Diploma in Law Graduates to Attain their Duties.** Learning outcomes are about acquiring skills and knowledge, but a CBC requires students to process learning in a way that enables them to apply that skill and knowledge in a variety of situations and to a variety of tasks. Competencies require law schools to develop curricula and assessments where students can demonstrate learning and mastery of practical legal skills and abilities progressively (Mottershead & Maglioni, 2016).

Legal issues usually consist of a series of communications, both oral and written. One of the language requirements for law clerks is to demonstrate the ability to support the needs of clients and legal professionals through professional communication strategies, in reading, writing, speaking, listening, and presenting (MTCU, 2012; The Judiciary of Ghana, 2011). This is

determined by the use of appropriate verbal and non-verbal communication skills within the context of the legal environment, displaying active listening skills in all interactions, and adapting communication strategies according to the needs of the client and/or the legal professional (MTCU, 2012).

Therefore, individuals who wish to prepare adequately for career in law, or for any professional service that involve the use of legal skills, should seek/provided with educational, extracurricular and life experiences that will assist them in developing analytical and problem solving skills, critical reading abilities, oral communication and listening abilities, task organization and management skills, as well as writing skills (Vidyasagar, 2008). The curriculum for Diploma in Law should also enable students to demonstrate the ability to interview, negotiating, counselling, and planning (Pye, 1987).

The experiences in African countries show that it is possible to develop and implement competency-based curricula in a higher education context (Kouwenhoven, 2003). However, more researchers are required to evaluate the effectiveness of CBC and particularly whether such innovations are sustainable when external project funding comes to an end (ibid). In fact, most of the graduates of Diploma in Law in many colleges in Tanzania cannot write effectively, communicate orally, gather facts, manage interviews, counsel, negotiate, and plan innovative solutions to clients' problems. This necessitated the need to conduct an analytical study to assess the relevance of English communication skills syllabus to Diploma in Law programme in Tanzania to evaluate if it reflects competency-based education and training as expected.

In Tanzania, different reforms have been made since 1995 when the Education and Training Policy was issued (Ryan, 2011). The reviews were basically intended to make a shift from the traditional knowledge based curriculum to competence based curriculum as the old ones were ineffective as the graduates failed to demonstrate the skills and competences that fully addressed local, national and global market demands (Komba and Kira, 2013). In other words, curriculum developers attempt to improve the quality of education by enabling learners to develop the required competences which are relevant in different spheres of life (Ryan, 2011).

As stated by NACTE (2015), the shift from knowledge-based education and training to competency based education system is influenced by the Development Vision 2025, which advocates Tanzania to be a nation with high level of education at all levels and which produces the quantity and quality of people sufficiently equipped with the required knowledge and skills to underpin sustainable development (NACTE, 2015). Due to this need, Tanzanian government has been emphasizing the achievements of the objectives in tertiary education to have an impact on the employability of graduates of various professions and on their competency to enter the private and other sectors of the economy (NACTE, 2015). English communication skills are

among of the core skills expected to every graduate in every profession.

The curriculum issued by Ministry of constitutional in Tanzania under umbrella of Legal sector reform programme developed the national legal training curriculum (2010) which presupposes to offer knowledge and skills of legal professionals. In response to developments and challenges that have taken place in the country and elsewhere for the past few years the Government, through the legal Sector Reform Program, resolved to design this national curriculum to provide minimum standards to guide the provision of legal education at all levels in Tanzania. The standards were agreed by stakeholders as best practices in the provision of legal education and are informed by developments taking place at the East African Community level with regard to education generally and legal education in particular. This is a training programme at an intermediary-pre degree level intended for primary court magistrates, paralegals and other person needing such intermediary legal education. The diploma programme was also meant to provide a bridge between those who have gone through the certificate in law programme and wish to pursue further studies in law. At the end of the programme candidates were expected to have an intermediary knowledge of the law and its application in various settings and circumstances. They must have knowledge and understanding of the general legal principles and to be able to apply them to work situations; ability to develop an appreciation of the development of the law through legislation, judicial decisions and practice.

However, many higher education institutions experience a growing gap between their curricula and the demands from society, business and industry for a more flexible workforce with competencies in problem solving, team work and project management (Kouwenhoven, 2003). Particularly institutions offering diploma in Law Program produce lawyers who only master English grammar rather than other communication skills which are essential to their profession; most of them cannot write effectively, communicate orally, gather facts, manage interview, counsel, negotiate, and plan innovative solutions to clients' problems. It is due to this challenge, the study wanted to assess relevance of English communication skills syllabus to Diploma in Law programme in Tanzania if it brings competency based education and training as expected. In terms of focus, the study is limited to one public institution: the Institute of Judicial Administration Lushoto, the choice is based to the fact that this institute is only that offers and expected to offer diploma in law programme and expected that the graduands must have the necessary skills for performing judicial clerical duties and other related function in Tanzania. Thus the other thought this institution can be a best for investigation.

### **Methodology**

The study used documentary review to collect data and the data were analyzed using descriptive design. Various documents including English Communication Skills syllabus for a Diploma in Law, others include research thesis, articles and books related to the study. The data obtained

were presented, interpreted and analyzed regarding the objectives of the study.

Documentary review: The author reviewed the English communication skills for diploma in law which has the following course contents: Describe elements of communication process, Apply different techniques of communication, Describe communication channels, Describe barriers of communication and the ways to overcome them, Identify Statutory Sentences in Statutes, Demonstrate skills in analyzing Structural Statutory Clauses in Statutes, Demonstrate Paraphrasing Techniques in Statutory Sentences, Describe steps used in writing bibliographical information, Apply footnotes skills in writing texts, Apply Latin abbreviations used in writing footnotes, Explain the major parts of report.

## **Results and Discussion**

The study assessed the relevance of English communication skills syllabus to a diploma in law programme in Tanzania if it brings competency-based education and training as expected. The study was based on two objectives, namely, to analyze the English communication skills syllabus to Diploma in Law programme in Tanzania, and to evaluate its reflection in attaining the required competencies to a diploma in law graduates. The study covered one English communication skills syllabus for Diploma in Law Programme, and the following are the findings obtained.

### *An Analysis of the English Communication Skills Syllabus to a Diploma in Law Programme*

The syllabus contains thirteen outcomes. The first outcome is to describe elements of a communication process. The outcome comprises three related tasks such as to explain communication process, to explain elements of the communication process, and to outline the importance of communication process. The second outcome is to apply different techniques of communication. The outcome has three related tasks such as explaining techniques of communication, using communication techniques (sign, body language, oral, and written); and outlining the techniques of communication. The third outcome is to describe communication channels. It has three related tasks: explaining the general concept of the communication channel, explaining aspects of communication channel, and outlining the communication channels.

The fourth outcome is to describe barriers of communication and ways to overcome them; the outcome contains three related tasks such as explaining the meaning of communication barriers, describing communication barriers and outlining the barriers of a communication process. The fifth outcome is to identify statutory sentences in statutes; it comprises three related tasks: defining statutory sentences, identifying core, statement, qualifications, and conditions in statutory sentences, and outlining the techniques used in analyzing statutory sentences.

The sixth outcome is to demonstrate skills in analyzing structural statutory clauses in statutes; identifying binominal expressions in statutory sentences; analyzing structural statutory clauses,



and explaining the importance of analyzing statutory clauses. The seventh outcome is to demonstrate paraphrasing techniques in statutory sentences; it involves three related tasks: explaining paraphrasing the techniques, identifying major terms shorten the statutory sentences, and outlining the techniques used in paraphrasing statutory sentences.

The eighth outcome is to describe steps used in writing bibliographical information. It involves four related tasks: explaining steps for writing bibliographical information for textbooks, journals, manuals, newspapers; outlining the steps for writing proper textbooks and journal bibliographical list, outlining the steps for writing manual and newspaper bibliographical list, and describing the advantages and disadvantages of acknowledgment in academic writing. The ninth outcome is to apply footnotes skills in writing texts. It comprises three related tasks such as describing footnotes writing procedures, differentiates between American Method style from footnotes style, and explaining the importance of using footnotes style to a law student footnotes skills are correctly described and explained.

The tenth outcome is to apply Latin abbreviations used in writing footnotes. It involves four related tasks, namely, describing Latin abbreviations used in writing footnotes, differentiating the term Ibid from Op.cit., as frequently used in footnotes writing, outlining the major Latin abbreviations frequently used in footnotes, and explaining the importance of Latin abbreviations in footnotes. The eleventh outcome is to explain the major parts of a report. It comprises four related tasks: describing major parts of the report, describe the front matter, explain the main body, and differentiating between the front matter and main body. The twelfth outcome is to describe the elements of the report. It has four related tasks: explaining the elements of reports (front matter, main body, and back matter); describing the elements of the front matter, describing the elements of the main body, as well as comparing and contrasting between front matter and the main body.

The thirteenth and last outcome is to describe the back matter of the reports. It includes four related tasks: explaining the components of the back matter, comparing between the front matter and the back matter, outlining the main elements of the back matter, explaining the importance of the back matter in reports, and components of the back matter are correctly explained.

All of the thirteen learning outcomes and their related tasks will be assessed using written test, assignments, and oral questing methods.

#### *Discussions and Evaluation of the Reflection of the English Communication Skills Syllabus in attaining the required Competencies to a Diploma in Law Graduates*

From the Analysis of the English Communication Skills Syllabus to Diploma in Law Programme, the study evaluated if the syllabus is based on competencies enough attain the



required competencies to a Diploma in Law Graduates observed strengths and weaknesses as follows.

*Strengths of the English Communication skills syllabus in attaining the required competencies to a diploma in law graduates*

The syllabus focuses on enabling the diploma in law students to acquire writing communication skills. On one hand, the syllabus intends to equip learners with writing skills related to legal profession such as footnotes skills in writing texts, steps used in writing bibliographical information, Latin abbreviations used in writing footnotes, paraphrasing techniques in statutory sentences, and knowledge on the major parts, elements and the back matter of the reports. This concurs with the claim by Holvast (2016) that Law clerks prepare clear, concise and professionally written communication such as briefs, affidavits, statements of claim using correct spelling, grammar, punctuation, and syntax.

The syllabus intends to equip the learners with knowledge on different issues related to oral communications skills such as the elements and importance of communication process, techniques of communication, using communication techniques and channels, and barriers of communication and ways to overcome them. This is relevant to the claim that a CBC should assist them in developing analytical and problem-solving skills, critical reading abilities, oral communication and listening abilities, task organization, and management skills, as well as writing skills (Vidyasagar, 2008).

Moreover, the contents of the syllabus are logically arranged from simple to complex. It begins with elements of communication process, techniques of communication, communication channels, barriers of communication and ways to overcome them, statutory sentences in statutes, skills in analyzing structural statutory clauses in statutes, paraphrasing techniques in statutory sentences, steps used in writing bibliographical information, footnotes skills in writing texts, Latin abbreviations used in writing footnotes, major parts of report, elements of the report, back matter of the reports. This is relevant to Kirschner et al (1997) that contents in an effective CBC are organized in a logical order from simple to complex should be organized in a logical order from simple to complex.

*Weaknesses of the English Communication Skills Syllabus in Attaining the Required Competencies to Diploma in Law Graduates*

Despite the strengths, the reviewed syllabus has some weaknesses that make it irrelevant to a Competency-Based Curriculum. It not explicitly aligned with expected competencies; it does not provide detailed information about the intended interpretations and how the suggested

assessments will be used. This does not concur with McClarty & Gaertner (2015) that competencies must be clearly defined, measurable, and related to the knowledge or skills needed for future endeavors, specific to a particular course or program.

The contents of the syllabus are not well modularized; the contents are not clustered in modules to form a coherent compatibility for specific competencies to be learned independently. This is contrary to NACTE (2015) that the curriculum contents through which the learning outcomes that form a coherent compatibility for specific competence should be organized in a logical sequence for the realization of the intended competencies and allocating them into semesters because some modules need to be covered before others.

The syllabus does not suggest appropriate instructional materials; a CBC is supposed to suggest instructional materials to make course instructors aware of the appropriate materials to competency-based learning. The syllabus is contrary to Tambwe (2017) that to ensure that curriculum and assessment are implemented properly, educators must consider developing appropriate instructional materials to support learning activities. In addition, teachers will need to be trained on how to use the new materials since the methodology of CBET system requires shifting from teacher to student-centered approach.

It does indicate professional communication strategies to enable graduates to meet the needs of their profession. The syllabus contains general communication skills like communication channels and barriers to communication without specifying the legal communication skills. This is contrary to the Judiciary of Ghana (2011) which stresses that one of the language requirements for law clerks is to demonstrate the ability to support the needs of clients and legal professionals through professional communication strategies, in reading, writing, speaking, listening, and presenting.

The syllabus does not suggest different tasks on different occasions to enable graduates to apply the acquired knowledge in different circumstances. It is clear that CBC requires students to process learning in a way that enables them to apply the acquired skills and knowledge in a variety of situations and to a variety of tasks. Karameta (n.d) suggests that neglecting situations and actions of the person in the situation, to notify promptly, generalized competence lists (out of context) is nonsense because any competency by nature is a function of the action of a person in the situation. Action and situation are essential to a competency-based approach; however, new programs lack both these elements.

The syllabus does not suggest appropriate assessment methods; uses the same methods, which is, written test, assignment, and oral questing methods in each outcome. In this sense, the

assessment methods suggested can imply that the curriculum will be implemented without learning practices. This does not concur with the claim by Kouwenhoven (2003) that knowledge in CBE supports the development of competencies and that the acquisition of knowledge takes place in the context of (professional) application which includes learning assignments and learning practices.

The syllabus only recognizes skills rather than competencies; it starts with the outline of the so-called “sub-outcome” but no any competencies that are mentioned. This is a challenge because course instructors will focus on contents to meet the outcomes without focusing to enable learners to apply the acquired skills and knowledge. According to Kouwenhoven (2003), a CBC is based on the elaboration of profiles and identification of competencies. Domain-specific knowledge and skills are determined by the competencies that are needed by a competent professional and not by the disciplinary ‘body of knowledge’.

The syllabus does not suggest field assessment; In Non-formal education program not only writing, reading and accounting is taught, but also the learners achieve the ability to solve personal and social problems. Assessment of achievement concerning these areas will never be possible in classrooms. It is only possible if we can assess our learners in their real situation. Concerned persons or co-learners may properly assess each other’s progress. So nowadays in assessing the progress of the learners, much importance is given to the participatory assessment system. EDIT

The syllabus is too inappropriate to enable learners to be confident to attain their expected duties; since the whole syllabus focuses on knowledge and skills acquisition only within the classroom, some learners will not be able to be confident enough to fulfill their duties like guidance and counseling skills. Astor (1984) asserts that apart from preparing documents, the clerks in any court may well see defendants, prosecutors, local solicitors, witnesses outside the courtroom when such people come looking for help and guidance. Also, Pye (1987) adds that the curriculum for Diploma in Law should also enable students to demonstrate the ability to interview, negotiating, counseling, and planning.

## **Conclusions**

The paper dealt with the assessment of the relevance of English communication skills syllabus to Diploma in Law programme in Tanzania if it brings competency-based education and training as expected. The findings reveal that the syllabus that was evaluated is not relevant to a Competency-Based Curriculum as it lacks essential characteristics of the CBC, hence it does not reflect the ability to attain the required competencies to a diploma in law graduates. An effective competency-based English communication skills curriculum for a Diploma in Law program should comprise relevant contents, in this case, legal communication strategies such as strategies, in reading, writing, speaking, listening, and presenting skills in legal context, it should be clearly

stated, the contents should be clustered in modules to form a coherent compatibility for specific competencies to be learned independently, should consider functions of competencies in different legal situations. It should be suggesting appropriate assessment methods like collaborative tasks which will enable learners to perform in a participatory way, and appropriate instructional materials should be suggested to support learning activities.

Also the paper has presented an assessment of the relevance of English communication skills syllabus to Diploma in Law program in Tanzania. The paper concludes that the Diploma in Law curriculum is designed to focus knowledge and skills rather than demonstrating the ability to apply them. In fact, the curriculum is unrealistic and it is contrary to the expectations of producing graduates with competency-based education and training, and it will continue to be far from reality unless the contents, instructional methods, assessment methods, and training focus is changed and linked to the professional profiles.

### **Recommendations**

For effectiveness, the paper recommends that the responsible organs such as the National Council for Technical Education (NACTE) should organize improvement and harmonize the English communication skills for a diploma in law programme by conducting several workshops on the methodology of implementing the competency-based teaching, appropriate instructional materials, assessment methods as well as qualities of a good competency-based curriculum.

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## **Development of Emblems for Longevity for County Governments in Kenya**

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### **Abstract**

*The emergence of county governments in Kenya has seen the development of emblems for each county. These emblems exhibit the spirit of the counties, however they cannot be said to be successful because they are not well executed, do not adhere to the principles of heraldry and are not registered. A coat of arms, logo or emblem, can fail in its object if its spirit is not shared, when the design elements are not well executed and do not communicate. Heraldry, is a symbolic language used by institutions as an embodiment of their heritage, achievements and aspirations. The design typically has a shield, helmet and crest and may include other things. Once registered, the herald has authority. Countries without heraldic authorities to grant arms, usually invoke copyright laws to protect and coat of arms, emblems and logos that serve similar purpose. In Africa, the Egyptian pharaohs and Adinkra community for example, were identified by symbols that are heraldic. In Kenya, some of the common symbols or imagery that have been applied include animals, vegetation and people. Using a sample of 5 counties this paper analyses the emblem and the extent to which they serve their heraldic and design functions. The paper is mainly qualitative and the findings are presented under specific headings . It is proposed that guidelines or policy be developed to align the county emblems.*

**Key words:** *Design, Coat of arms, emblems, heraldry, county governments.*

### **Introduction**

An emblem is a visual identity that expresses certain elements of communication between persons and communities in a specific manner. It is a graphic representation of elements held together in a specific style that is fashioned around the principles of heraldry. The elements include drawings, colour, texture, artefacts, and environmental aspects such as mountains, water or vegetation. Emblems, once developed are registered within their jurisdictions for protection and also to guard against duplication and misuse. Related to emblems are coat of arms and logos. The Coat of arms bears more authority while logos carry much less authority.

There are several legal provisions in the Laws of Kenya that provide guidelines for the use, development and design of Coat of Arms. These include the College of Arms act of 1968, the Act No. 2 of 2002 and the Emblems and Names Act (CAP 99) of 2012. The 2012 Act is, "An Act of Parliament to prevent the improper use of the National Flag and of certain emblems, names, words and likenesses for professional and commercial purposes, and to prohibit the display of certain flags." All the counties adopted this Act as part of recognition of their new status as



government with authority.

In South Africa, a provincial Coat of arms is the highest visual symbol of a province that operates very much like the Kenya county governments except that there are 9 provinces unlike the 47 counties in Kenya. The design and development of their coat of arms, badges, emblems and other accessories followed a process that involved several institutions and stakeholders after which the designs were registered and protected under the Heraldry (Act No. 18 of 1962). The act defines 'Coat of Arms' as '...any object or figure being a symbolic representation displayed in colours on a shield in conformity with the principles and rules of Heraldry, with or without a crown, helmet, crest, mantling supporters, motto or other accessories.' In the absence of a Coat of Arms, then there is reference of emblems, that include 'pennant, gonfalon, decoration, medal, seal, insignia of rank, any official rank...or kindred symbolic representation,' (National and Provincial Symbols, South Africa). Details of the Coat of arms are registered. 'Damages and misuse of registered heraldic representations, names, special names for uniforms' and penalties that arise from misuse are spelt out in the Act.

The design process for example, in Gauteng Province in South Africa involved the Department of Arts, Culture, Science and Technology requesting for ideas from the general public. With additional input from the Cabinet, a brief was drafted and sent to a few agencies identified through the Design South Africa. The ideas were presented to the Cabinet who settled on one. The final Coat of Arms that was registered is full of meaning from the blue shield, to the gold colour and cornet. Two lions support the shield, and on the banner below is the motto, 'Unity in Diversity.' It may be noted that the name of the province is not part of the Coat of arms as can be seen in Figure 1.



Figure 1: Gauteng Province Coat of arms

Institutions involved in the design process for Guateng Province, for example, included the

Department of Arts, Culture, Science and Technology, the Cabinet, the Government Communication and Information System (GCIS) and the Design South Africa and professional designers.

The research questions

For the development of county emblems in Kenya, several approaches may have been used, however, the emblems are not serving their purpose effectively; do not adhere to design principles and heraldic principles. Research has not been undertaken to establish the most appropriate development process that guarantees acceptable Coat of arms. This paper attempts to answer the questions below:

What was considered in the design and development of the emblems?

Were there any policy guidelines provided for the design and development of the emblems?

Were design professionals or institutions involved in the design and development of the emblems?

Are the Coats of arms registered and grant issued by the College of arms?

## **Methodology**

This paper is an exploratory exposition that attempts to highlight the process of design and development of Coat of arms that can serve multiple purposes. The author is informed by several years of professional design practice, research and training. The paper responds to voices of dissent that are rising against some of the emblems that have been developed for the counties. data was collected mainly using secondary sources. However, discussions with professional designers drawn from alumni of the universities in Kenya was held. They are also members of Design Kenya Society that is one of the professional design associations in Kenya that aims to promote professional practice and lobbies for more recognition of design as a key driver for economic growth.

## **Discussions**

### *The Kenya Government Coat of arms*

With the promulgation of the new constitution in 2010 and the creation of 47 county governments, many of them sought to hurriedly develop visual identities that used the National coat of arms or emblem (Figure 2) as a reference point with the two lions, flag in the middle and a *motto* at the base. Up to that time, the Government Printers were the only authorised printers for all government documents. The use of one appointed printer ensured the reproduction and

adherence to certain guidelines on use of Coat of arms. However, this monopoly was revoked to allow other business entities benefit from government printing tenders. As a result, it was noted that, "What has suffered badly since, is the misapplication of usage guidelines. Perhaps the worst thing that design can bring to an official document, is to make it unofficial," (ARK, <http://arkafrica.com>). To illustrate the misapplication, the ARK agency put the two representations side by side (see Figure 2).



Figure 2: Two presentations of the coat of arms.

The Coat of arms on the right side uses the heraldic lion representation with flamed tails. On the left is the "African" lion version with black manes and clawed feet. The colour hues is also markedly different whereas on the right, the lions are more golden in colour and the green is "richer" and the background at the base is more red, on the left, there is a more pronounced yellow, a paler green and the background at the base is brown. These flaws in design amount to misrepresentation. Pantone Colour chart, a global colour reference library, provides a coded guide for the over 5,000 colours for standardized colour reproduction. Each colour has a code for example PANTONE 18-3838 Ultra Violet ([www.pantone-colours.com](http://www.pantone-colours.com)) that has been declared the colour of the year 2018. It may be noted that the county emblems have little consideration for colours and colour combinations. Those that have registered Coat of arms, have not registered the colours according to the pantone range. The registration in this case is important because it guides designers and printers during reproduction and representation.

The ARK, a branding company, proceeded to provide an accurate copy of the Kenya Coat of arms for public use that "allows the rich and meaningful detail of the elements of the Coat of arms" for use in print and digital applications. One major element that ARK corrected was the two lions from the heraldic lions to the African lions. The misapplication of the National Coat of arms is one of the signs of derision of design principles. ARK decried that, "the misrepresentation of the Coat of arms - the state's logo, so to speak – reflects badly on us. It results in diluting the authority of the agency or office involved, and risks ending up as comic fodder in the annals of social media. We feel that it is our patriotic duty to provide a high quality

vector format for both applications of the Coat of arms." Although the ARK has provided the accurate Coat of arms as seen in Figure 3 free in various versions for reproduction, mistakes and misrepresentations are common.

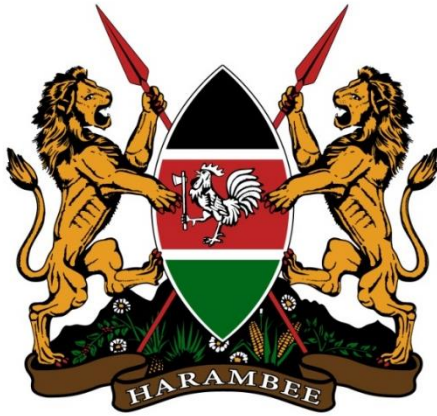


Figure 3: The Kenya Government coat of arms

This paper takes the view that the Kenya counties find themselves caught in this weak design foundation for the development of their Coats of arms and as a result most of them do not meet the good design threshold.

Coat of arms are designed and fashioned around heraldry principles of design that can be traced back to the 15th Century Europe. Heraldry, is a symbolic language used by institutions as an embodiment of their heritage, achievements and aspirations. Heraldry, "is a broad term, encompassing the design, display, and study of armorial bearings" (Wikipedia, Coat of arms). Armorial is an illustration of heraldic achievement, also referred to as the "Coat of arms" or symbol of sovereignty as more commonly used today. The design typically would feature "a shield, helmet and crest, together with any accompanying devices, such as supporters, badges, heraldic banners and mottoes" (Wikipedia, Coat of arms).

### *Armoial Bearings*

The armorial bearings on the Kenya Coat of arms include an African shield that has two sharp ends (top and bottom) accompanied by two crossing spears. It also borrowed heavily from tribal symbols by introducing a cockerel. The motto of the independent Kenya "*Harambee*" was introduced to symbolize the unity of purpose that was needed to develop the newly independent Kenya. The coat of arms adhered to the heraldic principles and was duly registered. The Coat of arms may be used by Government ministries and agencies, statutory and non-statutory

authorities, the parliament, law courts and tribunals. However, ARK agency notes that, few of these agencies pay attention to the identity symbol, and there is no provision to designers of tangible stuff to work with in the form of guidelines. As a result there is misuse and abuse of the instruments. The ARK gave an example of misspelling and slanted orientation of the Coat of arms. Visual elements and legal instruments of the country such as the map have been represented slanted in orientation by government agencies, in some instances the map is split (see Figure 5).



Figure 4: Coast Water Services Board

*Consultation with specific agencies or stakeholders such as design institutions or professionals*

This can be seen in the case of Gauteng province of South Africa. They contacted ten design agencies for expert input and advice before completion and registration of their Coat of arms.



Figure 5: National Irrigation Board logo

The National Irrigation Board use a logo that depicts the country split into two with a water drop in the middle (see Figure 5). It is a depiction of the irrigation process. Although it has achieved a strong graphic representation, it also portrays an equally strong communication of a "divided" country (dysfunctional). Chapter 99 of the laws of Kenya articulates the use of national Flag, Emblems and Names Act. The act is silent or assuming on the image of the map of Kenya and boundaries. For this reason, logos like that of Coast Water that depict the country Kenya in this form may be contravening a law or if not, then there is a need for a law to prevent this form of visualization that misrepresents the country.

### *Design principles applied*

Graphic elements include the use of or combination of form, texture, layout, colour, symbols and lines. the resulting emblem or Coat of arms should exhibit design principles and these include aesthetics, harmony and balance. In the process, it is expected that the outcome will be communicating. To illustrate this point we can reference the Nike logo' designed in 1971, by Carolyn Davidson, a graphic design student by then. It is a "simple" tick is full of meaning. In Greek mythology, Nike is the Winged Goddess of Victory. The mythology associations for the brand Nike are flight, victory and speed." ([www.magneticstate.com](http://www.magneticstate.com)). The second example is the Rio Olympic logo that was designed in 2016 by Tatil Design de Ideias and Dalton Maag focused on the people of Brazil, the host country, Gelli, the creative director said, "the logo was not designed for designers, but for everybody in the world, it represents Brazil's energy and how we receive people," (McCue, 2016). Gelli explained that the curves in the logo were from the mountains in Rio de Janeiro, the infit design is iconic and has good meaning in all the cultures, and with an intended 3-D essence. On the colour, Gelli explained that Rio is a very colourful city and culture, the colours connected with their nature, green for the nearby forest (Tijuca Forest), blue for the ocean that inspires them, and yellow/orange from the warm temperature. The design explored 3-dimensional form in a 2-dimensional object and results in an animated logo that is "alive".





Figure 6: The Rio 2016 Olympic logo created by Tatil Design

Source: 99u.com

#### *Abstraction*

Abstraction is used in design when manipulating images and obscuring realistic representation as a means of graphic communication. Abstraction typically starts with a 'known' realism and progresses into abstract representation. This popular art form can be traced to the Cubist period with famous artists such as Picasso. In the Nike logo in Figure 6, visual elements are reduced to basic non-representational non-realistic images through abstraction. The angle of the stroke, the thinning of the stroke and the thickness of the stroke converge to create the Nike logo. The known reality in the Rio logo of mountains, and ocean is abstracted into three 'simpler' forms floating in bliss. Distorted proportion is also closely associated with abstraction. An example of this is where, insects are illustrated as larger than human beings or human beings are made to be larger than buildings.

#### *Aesthetics*

Aesthetics is important to design communication because it can define style and identity. It is diverse and each culture has rules and traditions that define the material, style, and scale of application. In application, one aesthetic may be considered different from another aesthetic by another person. This is because judgement and appeal is subjective and maybe influenced by exposure, culture and environments. However, several products, arts and environments have been able to achieve broad acceptance across cultures as aesthetic. It can also be said that increased exposure and cultural interaction has expanded the scope of acceptance of aesthetic. The more typical African aesthetic may refer to enchanting land and seascapes, environments, wilderness, green and floral kaleidoscope of colours, irregular and sinuous lines and sculpted forms for example, the clawed lion or bird feet on furniture. Community chiefs and leaders had their own sets of symbols understood by the clan and community. Heraldic inference between the



western heraldry and African heraldry can be seen in Egyptian pharaohs such as King Tutankhamen (1341 BC - 1323 BC), fondly referred to as King Tut, whose artefacts influenced the Art Deco movement and continues to influence global design trends. The young pharaoh wore a royal cobra headdress (URAEUS) and held a shepherd's crook and flail (symbols of royalty). These were symbols of supreme power in Egypt. On the golden adornment in which the mummified body of King Tut was found, were Egyptian hieroglyphic writings. The discovery of King Tut's tomb shed a lot of light on African symbolism.

Another graphic example of African symbolism can be seen in the Adinkra symbols of Ghana. Each of the symbols, origin, meaning, use and method of production or reproduction were embedded in the traditions of the Ashanti. The symbols have been broadly applied to jewellery, architecture, fashion, interiors and furniture.

#### *The Coat of arms development by counties in Kenya*

For the development of county Coat of arms in Kenya, some counties opted to run competitions to identify appropriate emblems; others looked inwards to inherent local talent. Donna Pido, a design professional in Kenya, gives examples of Kilifi and Tana River counties Coat of arms as more successful (Pido, 2017). The two are fashioned around the European heraldic principles (see Figure 7).

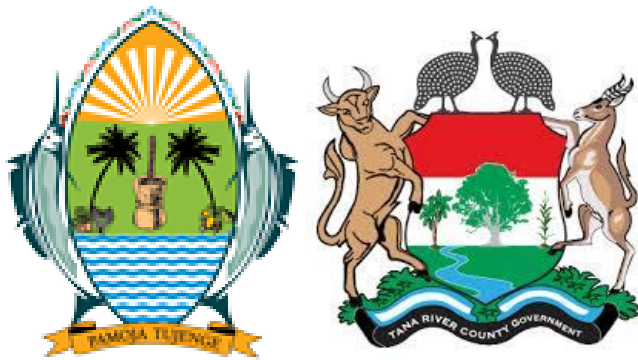


Figure 7 Kilifi county and Tana River county Coat of arms

Some counties advertised for design proposals in the media. The advertisements however did not provide enough guidance for effective design and development. Some advertisements excluded individuals and groups who may have made better contribution to the design. For example, Kakamega county advert specified that the designer must be a resident of Kakamega and they could only submit one design each. The advertisements sometimes restricted the designs to come from specific interest groups within the counties (such as youth) and they excluded some institutions such as universities and they did not provide enough guidance on the armorial

bearings. It is also thought that many of the counties were rushed to develop the Coat of arms. In 2011 (a few months after the creation of the counties), the then Attorney general, urged the counties to urgently develop their Coats of arms as, "The use of Coat of Arms, especially in the disciplined forces and churches, serves as a sense of recognition, pride, belonging and an encouragement of a lifestyle based on honour and recognition of the responsibility and service to others," (Wako, 2011).



Figure 8: Nandi County Coat of arms

Nandi County referenced the National Coat of arms in their design. The armorial bearings are similar for example the symmetrical balance, shield and lion, except that one lion is replaced with a Nandi warrior. The Nandi warrior is historically significant in the history of the Nandi people. The other visual elements in the design are the milk gourd, cow and maize and tea that symbolize farming. Green is a dominant colour probably because farming is the major economic activity. The lion is rendered in two dimensions while the warrior has a more realistic rendering. The warrior is holding a shield that is barely visible and a spear. In a departure from the National Coat of arms design, the 'Nandi County' is clearly written in bold on a banner as the header in the emblem. At the base is 'Nandi gaa Kaburwo' which serves as the motto in the heraldic principles. The warrior is the weakest aspect of the emblem because of the grey colour and the detail that the designer tried to capture such as the facial expressions. The black outline on the bigger shield also 'over power' the thinner lines on the warrior in visual weight.

Many counties have depicted farming activities and livestock because, in general Kenya is an agricultural country. Other animals that have been depicted include camels, chickens, goats and sheep. Tea and coffee are found in some parts of the county and they are also depicted in their emblems.



Figure 9: Trans Nzoia county Coat of arms

Trans Nzoia county Coat of arms (Figure 9) has a visually symmetrical arrangement and can be said to have referenced heraldic principles. Two antelopes anchor the shield very much like the lions anchor the shield in the National Coat of arms. Within the shield, the armorial bearings that represent the economic activities of the county are placed. The Nandi county Coat of arms is a stronger and more calculated visual representation because they have kept fewer images or elements, a cow, "*mursik*" (sour milk), grain and an indigenous musical instrument. The choice and contrast in colours in the Trans Nzoia Coat of arms is more appealing than the Nandi Coat of arms colours that are very strong. The Trans Nzoia county with the text reversed out of a soft tan colour, makes it less visually strong but more restful and stable and contemporary. When reduced further, the words may not be legible. Like the Nandi emblem, the name of the county is on the top banner and motto at the base. The Coat of arms is contained within a black border line.

West Pokot county have all the economic and livelihood activities represented in their Coat of arms. The *motto* is in the form of a pronounced word, "government" followed by a whole sentence, "Transforming lives through sustainable development." ideally, that sentence should not be part of the Coat of arms (See Figure 10).



Figure 10: West Pokot coat of arms

When you give design considerations for reducibility and legibility then the Coat of arms will lose clarity and become a blur. There is an acceptable level of clarity of elements or armorial bearings and the sentence cannot serve the purpose well in that regard.



Figure 11: Baringo County Coat of arms

Baringo county armorial bearings include two revered animals namely the ostrich and rare kudu antelope anchoring a shield. At their feet is a Turkana stool/headrest and a milk gourd. It does not have too many elements or features, however, the proportions are disturbing (Figure 11). The ostrich and antelope are much larger than in proportion to the shield and the other elements. The representation of the ostrich and antelope are good, however the same cannot be said of the headrest and gourd that are placed against the green backdrop. The map of the county is placed in the middle of the shield. Unlike Nandi and Trans Nzoia, Baringo County Government is on the base banner, where the *motto* would have been.



Figure 12: Turkana county emblem

The Turkana county emblem has taken the form of a work of art, depicting a man and woman, the 'cradle of mankind' imagery, mountain, camel among other things (Figure 12). Replacing the shield is a cloak that is typically worn by women. The motto at the base of the banner, 'pamoja tujjenge', is hand written. Unlike the other counties, Turkana county is not written on the

emblem. So, whereas, detail is good, a graphic representation is more desirable for purpose of the emblem. The tip of the walking stick held by the woman is surprisingly close to the face a situation that could be sorted by graphic representation. This also includes abstract representation and block colours that are easily distinguishable away from the grey scale drawing. The images in the middle section below the camel are too small and crowded thus they cannot serve their purpose well. At this stage of devolution, maybe it is important to have the name of the county as part of the emblem.

Machakos county, boasts an urban populace partly because of its closeness to Nairobi County that is the economic hub of the country. Much like the Turkana County emblem, "Machakos County" is not stated on the Coat of arms or emblem. It has an assortment of armorial bearings that includes a cow, ostrich feathers, Akamba traditional bows and arrows, a *moran* knife, a cow horn among other things (Figure 13). An attempt was made at maintaining symmetrical balance although the bearings appear too busy in their visual rendering. The *motto* banner is written in Kamba dialect, 'Kyaa kimwe kiyuaa ndaa.'



Figure 13: Machakos county Coat of arms

The text is not well executed, it looks handwritten. The border also is not well executed. The base of the Coat of arms has several technical flaws apart from the border line. The spear heads sticking out at the two ends do not fit well into the Coat of arms. The cow atop the shield is not appropriate. It would be expected that an animal such as the cow would have its feet on the ground. Pido commented that, "Machakos County has digitally distorted the image of a European shield, placed too many elements on it and has manipulated images of what look like ostrich feathers in a way that makes them unrecognizable."

### Design observation and recommendations

From this brief presentation of county Coat of arms, it can be seen that several design observations can be made. The inspiration for the design in most of the Coat of arms is good because they draw from indigenous culture, environment and their individual diversity.

Most of the counties did not have *access* to the much needed design expertise that would have assisted in the arrangement of the armorial bearings, consideration of heraldic principles and design principles. It would have ensured the text is well rendered and arranged.

There is need for *consistency* in the basic design principles for the Coat of arms. This should include the inclusion or exclusion of the name of the counties within the Coat of arms. The placement of the name if considered needs to be defined so that the name of the county is not made to look like it are the *motto* or that the vision is part of the Coat of arms.

For purpose of *reduction and reproduction* colours used within the Coat of arms need to be clean, clear and reproducible. Reference to Pantone colour range is necessary for reference and consistency in reproduction.

*Arrangement* of armorial bearings within the Coat of arms, needs professional design input before registration. This may involve manipulation and abstraction of elements so that the Coat of arms is aesthetic and in harmony.

The *advertisements* for the provision of design for Coats of arms were biased and did not favour some groups who may have made better contribution to the design. The advertisements need to be better developed with the focus on the effectiveness of the Coat of arms.

The general *technical execution* of the Coats of arms is not acceptable. There are counties that have pictorial renderings of various features as their armorial bearings. Some of them have elevated paintings into armorial bearings. The typefaces and text used are not well executed.

Poor or inadequate *manipulation* of graphic elements resulted in the Coat of arms looking more like emblems and logos and thus not serving their purpose. The emblems are not ready to be escalated into heraldic symbols that can be registered as Coat of arms.

The *College of arms* and other relevant government institutions need to establish minimum standards for the development of Coat of arms and related visual elements before registration.

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### **An Inquiry into Youth Innovativeness in Radicalization and Extremism: The Case of the Recent Manchester City Bombing and Al-Shabaab Activity in Kenya**

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#### **Abstract**

*The fulcrum of this paper is the May 22, 2017 Manchester City bombing. The paper seeks to highlight how the youth can become indoctrinated into extremism. It inquires into why some people go through the terrorism indoctrination cycle yet not progress to the critical point of carrying out terror acts. Whereas several scholars have challenged the whole radicalization discourse, their basis is on the vulnerability of people to extremism in Western countries, which this paper finds inadequate, as it does not address the root cause of the problem. The results of data analysis on the terror groups al-Shabaab and Mombasa Republican Council (MRC) has shown that the majority of youth joining the two terror groups do so at an early age ranging between 16 to 20 years of age and lack a good education. The Countering the Lone-Actor Terrorism (CLAT) project results has shown a relationship between mental health and terror acts. The point of concern in this paper is therefore, youth without a good education, who have first-hand exposure to violence indoctrination and or with mental health problems would be easier to radicalize to the point of carrying out acts of terrorism and extremism.*

**Key words:** *Terrorism, jihadist, extremism, depression, alienation, bombings.*



## **Introduction**

The Manchester Arena concert bombing in England on 22<sup>nd</sup> May 2017, resulting in the death of 22 people bears the hallmarks of the typical modern terrorist operation. What is known about the bomber, Salman Ramadan Abedi, aged 22, is that he was the son of Libyan parents who fled Libya in 2011 to Britain where the family had resided for over a decade. Abedi's father, Ramadan Abedi, aged 51, is himself a committed jihadist who has been a member of the Libyan Islamic Fighting Group (LIFG) founded in 1995 to overthrow the Gaddafi government. The group, which is said to have links with the Al-Qaeda terror network, attempted an assassination on Gaddafi in the 1990s according to press reports. Following the overthrow of the Gaddafi regime by jihadists backed by NATO forces in 2011, the family moved back to their home country (Roland Oliphant, article in The Telegraph on 24/5/17).

Abedi is believed to have participated in the father's jihad back home in Libya against the Gadhafi government when he was 16 years old (Bennhold et al, New York Times, 27/5/17). According to the BBC News, Abedi had earlier been arrested for what the Manchester Police said were minor offences of theft and assault in 2012. The New York Times report claimed that when he visited Manchester City earlier in 2017, he told people that he believed in dying for a cause and other similar jihadist statements about suicide bombings (BBC News, 30/5/17). Abedi's behavior has similarities with the model of offending described in Brame et al (2004) and Piquero et al, (2014) in their article 'Criminal offending frequency and offense switching', that investigated whether there existed a relationship between frequent offending and offense switching based on literature suggesting such a relationship. This can be described as a situation in which an offender who frequently commits crimes can change to other forms of crime when circumstances are favourable. This is exemplified by the fact of the bomber, Abedi, having been arrested for other offences earlier before he committed the current atrocity.

In a nutshell, the Salman family had been raised amid jihadist activities and extremist violence by the LIFG as it fought against the former regime of Gaddafi. The Salman sons were exposed to radicalization, first by their own father, and later among other extremist networks within the large Manchester Muslim community where they gained further jihadist ideas and beliefs that they evidently internalized to the point of actualizing them (Wikipedia article "Al-Shabaab (militant group)", downloaded on 29/5/17; Katrin Bennhold et al, in their article on 27<sup>th</sup> May 2017). This scenario fits the behavior of Abedi who the press has said was reported by fellow Muslim leaders in Manchester to the authorities no less than on five occasions for extremist activities. Viewed from the perspective of how people get entrapped into crime, Abedi's behavior is no surprise. It is well known in criminology that among the factors that can influence criminal behavior in a youth include peer pressure, the influence of and violent activities of the family members and the social organization surrounding the individual (Livingston et al 2014). The fact

that Abedi grew up surrounded by people who viewed extremist violence as justified and normal greatly shaped his thoughts. His father's involvement in LIFG activities greatly influenced his world view towards aggression and extreme violence. Hence the circumstances around which Abedi grew up shaped his behavior in ways that led him to view the use of extremist violence on what he considered enemies of Islam as being normal and justified.

### **Methodology**

This article used open sources in the media as well as a review of the literature to highlight the differing viewpoints of research. A comparative look at research studies by leading scholars of the subject as well as a review of current credible newspaper articles were utilized as a way of comparing the factors that influence the youth to become radicalized.

### *Factors that Drive Youth into Radicalization and Extremism*

The foregoing background about the environment in which the Ramadan family was brought up appears to be supported by a new research suggesting that terrorist and jihadists' actions of bombing and killing of innocent people could be the result of depression and isolation (Bhui et al, 2014). The study by Queen Mary University professor, Kamaldeep Bhui, released in September 2014, surveyed 600 Moslem men and women living in Britain aged 18-45 about their views on radicalization and extremism. The survey showed that those respondents who sympathized most with terrorist activities were more at risk of being radicalized than those who condemned terrorism who the study found to be less likely to become radicalized. Given these findings, the study postulates that social networks are crucial in helping people to connect and socialize with others thereby steering them away from possible mental breakdown that could lead to radicalization.

Neighbourhoods where one spends his/her formative years in life, literature on aggression and violent behavior suggests, has much influence on behaviours later in life especially if he/she witnesses violence in the family or sees it being practiced in the neighbourhood among or by gang or other group members (Vaughn et al, 2015; Kim and Lo, 2015). Looked at from this explanation, Abedi's family background and history fits the model described above. Another model is where a lone terrorist who does not have any links with a particular terror group but due to propaganda and other recruitment literature and approaches, goes on to carry out a terrorist action (van Zuidewijn and Bakker, 2016).

Besides the theorization of the possible reasons why people become terrorists posited by the Queen Mary University, other scholars see such motivations differently. Some have suggested that the Western governments' shifting of the debate and focus away from the root causes of radicalization among Moslems, seen as being the result of meddling by the Western governments in Moslem countries, had resulted in an inability to properly address the problem of

radicalization. This school of thought postulates that the West had put the discourse and subsequently the research spotlight on Islamist or jihadists attempts at radicalization and recruitment of the youth in Western countries. By placing the emphasis on the ‘vulnerable individual’ and away from the main cause, the enabling environment, that is, meddling, Western governments had missed the point of focus (Schmid, 2016). This, they argue, is evident from the definitions of radicalization coined as a result of this practice, such as the one articulated by the European Union, thus: “Individuals or groups becoming intolerant with regard to basic democratic values like equality and diversity, as well as a rising propensity towards using means of force to reach political goals that negate and/or undermine democracy”. Schmid has argued that this definition articulated by the EU is problematic since if democracy and diversity were the key issues in extremism, there would be much more terrorism in the world today than is the case in reality.

To support this argument, Schmid used two cases of Moslems who fall in the description of holding beliefs that are considered radical to show that predicting terrorist violence on the basis of holding such beliefs may not necessarily prove correct (BBC News, ‘Profile: Antony Garcia’, April 2007: Accessed at [http://news.bbc.co.uk/2/hi/uk\\_news/6149798.stm](http://news.bbc.co.uk/2/hi/uk_news/6149798.stm) on 4/6/17). In the second example, Schmid shows that despite Salafist Islamic teachings being blamed for terrorism in the world, the Brixton Salafi community had created and operationalized some of the most effective anti-terrorist initiatives in Britain that predated the government’s own PREVENT programme. He further argues that the greater number of Moslems in Western countries consider it immoral and counterproductive to engage in terrorist activities. The scholar elaborates that it is only a miniscule fringe group of Moslems that is involved in ‘takfiri’ (which refers to those Moslems who consider it justifiable to kill other people as unbelievers or ‘kafir’ using any means available to them).

### *Conceptualizing Radicalization*

Given the varying definitions of the term radicalization in the terrorism discourse, one is tempted to ask: what is radicalization? And is there anything wrong with an individual becoming radical, a derivative of radicalization? Some scholars have questioned the basis on which Western governments have framed the term radicalization to facilitate securitization of people or communities that these governments define as being vulnerable to radicalization. Looking at the original meaning of a radical, it referred to an individual with radical or different opinions and ideas about some situation. According to the Oxford English Dictionary, being radical is ‘advocating far-reaching political or social reform; representing or supporting an extreme section of the party’ (OED Online 2014a). Based on this argument, Baker-Beall et al (2015), posit that there is nothing really wrong with one being radical given historical examples of people who held radical beliefs on particular issues but were later vindicated by laws passed to support their arguments. The civil rights movement in the United States early in the twentieth century is a

good example of this and others.

The emphasis on the ‘vulnerable individual’ that Western governments have highlighted as the focal point for securitization in efforts to deal with the menace, is further questioned on grounds that it had avoided to pay close attention to the study of Al-Qaeda as an international terrorist organization (Githens-Mazer and Lambert, 2017). To test whether the vulnerable narrative really works in all radicalization cases, the two scholars interviewed three Moslem brothers originally from Algeria who went through what fits the typical radicalization cycle, exposure to jihadist videos and Salafist teachings/indoctrinations and talks by jihadist recruiters on how Moslems were being mistreated by corrupt Moslem governments in Algeria, Egypt, Tunisia, Saudi Arabia and others. Their findings showed that only one of the brothers was in the end actually radicalized to the point of preparing to carry out terrorist bombings. This in itself shows that despite all the three brothers going through circumstances and environments that exposed them to jihadist indoctrination, they did not all become actual terrorists even though they might have sympathized with Islamicist causes because of their indoctrination.

#### *Lone-Actor Terrorists*

This term refers to terrorists who carry out terror attacks seemingly on their own without overt control by any particular terrorist group (van Zuijdewijn and Bakker, 2016). Some scholars have theorized that these types of terrorists could be acting the way they do as a result of radicalization through propaganda and being sympathetic to certain religious or cultural and political convictions as in the case of right-wing terrorists. Research by Countering Lone-Actor Terrorism Project (CLAT) led by Zuijdewijn and Bakker, had shown that about 35% of perpetrators of terror acts suffered from some mental disorder which could be as a result of social isolation suggesting a relationship between mental disorder and social isolation as a trigger for violence. The findings of the CLAT project lend support to the Queen Mary University own findings suggesting a similar relationship. However, the issue of why certain people seemed not to be influenced to the extent of performing terror acts as found by Schmid and others despite their possessing similar traits, is an issue that needs further investigation to clarify why that was the case.

#### *Kenyan Perspective on Terrorist Recruitment*

In the past decade, Kenya has been the target of the Al-Shabaab terror group based in Somalia, which pledged allegiance to Al-Qaeda in 2012. Al-Shabaab is said to cooperate with the older radical group in training in infantry tactics, indoctrination and use of explosives. The group advocates the Wahhabi form of Islam originating from Saudi Arabia which is also the version embraced by Al-Qaeda and ISIS terror groups as opposed to Sufism for the typical Somalis (Blanchard, 2007; Armanios, 2003). As argued above, only fringe groups of those that embrace the Salafist version of Islam demand application of the strict adherence to Sharia laws that

requires among other things, the stoning to death of any woman accused of adultery and the amputating of the hands of alleged thieves. Wahhabism is a form of Sunni Islam practiced in Saudi Arabia and Qatar (Counter Extremism Project, 2004; Blanchard, 2007).

The al-Shabaab terror group has been most active in Somalia where it had gained a strong foothold as the youth wing of the Union of Islamic Courts which controlled Mogadishu in 2006. It had entrenched itself in Somalia to the point where it was engaged in all manner of illicit trade and business including sea piracy and charcoal business. In 2010 and 2013, the group launched spectacular attacks in Kampala, Uganda and Westgate, Nairobi, Kenya, respectively. The Westgate attack and others in various locations in the country, strengthened the Kenya Government's resolve in its decision of deploying military forces codenamed Operation Linda Nchi, (Swahili for Defend the Country) from the Kenya Defence Forces (KDF) to Somalia on 26<sup>th</sup> October 2011. The KDF forces had deployed alongside other forces from four other African Union member countries, Uganda, Rwanda, Djibouti, Sierra Leone and Burundi, aimed at routing out the problem from its source and preventing and averting further attacks.

While the deployment of troops in Somalia by Kenya Government has gone a long way in curtailing and stopping crime and illicit business and brought much of the southern parts of the country to near normalcy, the terrorism threat is still much evident in Kenya as well as in Somalia itself. Al-Shabaab has been carrying out bombings of key government installations in Somalia and has sporadically used road-side bombs, improvised explosives devices (IEDs) and mined roads targeting Kenyan Government official vehicles as they ferried important government personalities to official functions particularly in northern and coastal areas of Kenya. By many accounts, the majority of al-Shabaab operatives are young boys in their early twenties who joined the group at between the ages of 10-24 (Botha, 2014: Radicalisation in Kenya: recruitment to al-Shabaab and the Mombasa Republican Council). In her quite extensive research on the two terrorist groups operating in the coastal and north-eastern parts of Kenya, Botha collected data showing that 57% of al-Shabaab respondents interviewed claimed to have joined the group at ages 10 and 24 compared to MRC recruits at 53% for the same age group. The researcher further considered other factors such as who introduced operatives to al-Shabaab and MRC recruiters and the level of education of the recruits. The analysis of data collected suggests that the majority of al-Shabaab recruits, 66%, were introduced to radicalization by friends while only 38% of MRC recruits were similarly introduced.

Other factors that are utilized in recruitment included a religious figure playing a recruitment role which in respect of al-Shabaab was 34% and MRC at 38%. For the two groups, the level of education of the majority of recruits seems to have played a significant role in their joining terrorism and extremism activities. For al-Shabaab, the great majority, at 67%, had received only primary school education while MRC was at 47%; those who had attained secondary education

for al-Shabaab were 45% and MRC 24%, and lastly, those with tertiary education or better stood at 8% for al-Shabaab and 9% for MRC.

Botha has gone on to suggest, without offering supporting evidence, that the Kenya Government had deliberately denied the north-eastern and coastal people, who are mostly Moslems, development and economic opportunities in favour of up-country Christian citizens. Her findings suggest that those with minimal education were most at risk of recruitment due mostly to economic reasons but also due to their narrow world views. This view is, however, not supported by empirical research carried out by Rink and Sharma (2016) in Eastleigh area of Nairobi. The two researchers suggest instead that al-Shabaab has utilized the historical Christian-Moslem tensions in Kenya in order to entice potential recruits to its ranks and to justify violence.

Lack of a good education, some researchers have argued, is among the factors that can lead to failure or an inability to secure better economic opportunities, which has a relationship with the susceptibility of some youth being at a greater risk of radicalization into extremism. The relationship was due to factors such as poverty, feelings of alienation from the society they currently live in especially in countries like Britain, perception that Western governments treated Moslems unfairly and often targets them for attack and punishment, perceptions that in Kenya, people from the interior parts of the country were favoured by the authorities or government in employment and other opportunities as compared to Moslem-faith people (Nafeez Ahmed, 24<sup>th</sup> May 2017; Kundnani, 2014; Botha, 2014).

### **Conclusion and Recommendations**

For this article the recent Manchester City bombing was used as an opening of the debate to highlight how the youth can become indoctrinated into extremism. The discussion has shown that parents play critical roles in the shaping of their children's worldviews as exemplified by the Ramadan family's involvement into terrorism in Libya to topple the Gaddafi regime. Additionally, it shows that neighbourhoods where a person spent his or her formative years also play a critical role in the shaping of the behaviors of young people. We also saw that being the father figure, Ramadan, Abedi's own father introduced and encouraged his sons to participate in terror activities against the Gaddafi government, a behavior that shaped the sons own future behaviour to view violence and murder against perceived enemies of Islam as normal.

The results of interviews conducted by Githens-Mazer about two Moslem brothers who were exposed to radicalization and extremist teachings/videos, however, showed that only one of the brothers eventually progressed to the point of preparing to carry out bombings and other terrorist acts. This suggests that people can become radicalized through exposure to extremist indoctrination yet not reach a point of carrying out terror acts. What is lacking in this case of the two Algerian brothers who it turned out, only one of them went to involve himself in terror



activities? In the case of Abedi, the father seems to have played the key role of enticing him into terrorism which might be speculated that a father figure is what is lacking in this other case.

Instead of focusing on alleged vulnerability of people, some scholars have proposed that for meaningful debate and subsequent research on terrorism to make headway, there was need to look at the political angle and policies of Western governments with a view of addressing what many Moslems perceive as meddling in Moslem countries.

In the Kenyan context, the results of data analysis by Botha shows that majority of youth joining the terror group do not have secondary education and that there were many non-Somali Kenyans attracted to the terror group. The conclusion, she asserts, is that it is an indication that the group would like to utilize them in internal operations inside Kenya where they can blend unnoticeably to the security forces.

As a way of addressing the al-Shabaab menace and other similar crime gangs and vigilantes in Kenya and other East African countries, governments need to craft opportunities for employment and self-employment that can alleviate the hardships that entice youth to join terror groups. The 'Jua Kali' economic model prevalent in many African countries can form a basis for a wider reaching self-employment scheme that addresses both unemployment while at the same time is a product innovation incubator for the youth that can manufacture products of high quality for the market. We finally briefly looked at the lone actor terrorist and the kinds of influences that were behind their terror acts which were shown by the CLAT project to be partly as a result of mental breakdown.

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## **A Complexity of Kiswahili Pairwise of Verbal Extensions: Algorithmic Approach**

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### **Abstract**

*The paper describes semantics architecture of morph pairwise in Kiswahili verbal extensions. Kiswahili morphology is well documented, though semantic descriptions of these morphs are ignored and the theory for handling them. For instance some verb morphs are silent semantically though morphologically exhibit i.e the verb wa-sh-i-k-a 'burnable' in Swahili language is*

*difficult to explain the sense and its constituents, and most of the speakers and writers generalize such verbalizers senses and ignoring each constituent's sense such behavior needs to be described at length and the way of handling them theoretically. Cognitive Grammar was the theory applied for data analysis. The theory describes that meaning can be figured out basing on not only by word constituencies but context and experiences of the language users. The technique for data collection was documentary reviews of which 5 sources were reviewed to see how such derivations have been generalized semantically against algorithm architecture then depicting the generalized data for more algorithm analysis. It was found that, a step by stem derivations may make us understand the silent semantics of verbal morphs and their implicit senses other than generalizing them. Thus since Kiswahili is becoming a global language and East African in specific its grammar should be well identified.*

**Keywords:** *Kiswahili, verbal extensions, pairwise, algorithm, semantic architecture*

## Introduction

This paper aims at describing of morphological algorithm of Kiswahili pairwise of verbal extensions in the scope of semantics. Kiswahili language has been well documented in term of verbal extensions (Doke, 1943; Ashton, 1944 and Khamis, 2008), though in terms of semantic variability there are areas in research which need to be well clarified in this language, and this is nothing but semantic algorithm of some derivations.

Literatures have been documented in pertinent to Swahili Verbal Extensions as in Khamis (2008, Kihole, 2008, Lothi, 2002, Mdee *eta al*, 2013 have discussed a lot in pertinent to Kiswahili Verbal morphs' pairwise though they did not adhere to semantic step by step algorithm<sup>3</sup>. The data in 1 below illustrates the phenomena<sup>4</sup>:

1.a)	<i>Sumbu-a</i>
Annoy-FV	
'Annoy'	
b)	<i>Sumbu-k-a</i>
Annoy-STAT-FV	
'Annoy able/disturbed'	

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<sup>3</sup>The term **algorithm** is used in this paper unlike the way it is applied computationally, here it is used mechanically being it each morph reflects its own semantics hence morpho-semantics

<sup>4</sup>The following are abbreviations used in this paper:

STAT= Stative

FV = Final Vowel

PASS= Passive

CAUS= Causative

Cf = cross reference

APPL- Applicative

SP =Subject Prefix agreement

P = Preposition

TNS =Tense

c) Sumbu-k-i-a  
Disturb-STAT-APPL-FV  
'Annoy for/to'

d) Sumbu-k-i-an-a  
Disturb-STAT-APPL-REC-FV  
'Annoy for each other' (Khamis, 2008:172)

The data in 1a) has no derivation, whereby in 1b) there is derived stative morph *-k-* which is known as a valence decreasing argument in Bantu. In 1c) we observe the ordering of two morphs: stative *-k-* and applicative *-i-*. In 1d), three morphs are being ordered in a single root, these are stative, applicative and reciprocal. The ordering of the two morphs (cf, 1c) and three morphs (cf, 1d) indicate contextually that, most of Swahili speakers inhibit the semantic content of stative morph, that is why the semantic realm does not exhibit stative logical form (LF) as it is shown above. However, I peal to saying, this area of exhibition morphs in pertinent to their semantic content has not been taken into account despite the claim that Kiswahili has been much documented.

The pairwise of applicative *-li-* and passive *-w-* from the verb *sumbua* 'annoy' brings another tantamount claim in relation to semantic interpretations. This means that the two morphs do not explicitly show their sense and even the native speakers themselves generalize their semantic content. The data in 2 below illustrates the phenomena:

1.a) Sumbu-a  
Annoy-FV  
'Annoy'

b) Sumbu-li-a  
Annoy-APPL-FV  
'Annoy for/with'

c) Sumbu-li-w-a  
Annoy-APPL-PASS-FV  
'Be annoyed (for/with)'

The data in 2b) shows that applicative morph *-li-* is ordered together with passive morph *-w-* but each sub categorization frame's sense does not account its semantic independences. When Swahili speakers are in conversation (consider 2c) the first sense in their schema is passive and not applicative. This can be justified from 3 Swahili structure below:

3. Juma a me sumbu-li-w-a na Mwizi  
Juma-SP-TNS-annoy-APPL-PASS-FV-P.2thief  
Juma has been annoyed (by the thief)

Taking the meaning (cf 2b) of applicative morph when alone, it is confusing the fact that the sense of applicative when ordered together with passive is reduced, it shows as if such morph is

latent or is not activated by speakers of the language. The data in 3 shows applicative sense is reduced or inactivated. However, new approach of Swahili pairwise analysis is required to contributing to linguistics theoretical morphology. The step by step analysis is important in the sense that each morph may be understood it's either morphological or semantic content in any word formation process. This behavior of opacity is displayed to other Bantu languages including Kisukuma, (Chípanda, 2017 and Citumnuka, Chavula, 2016). Kisukuma is the language spoken in North western part in the United Republic of Tanzania and Citumbuka is the language spoken in Northern region of Malawi and also in the Lundazi district of Zambia. The data in Citumbuka illustrates semantic opacity in 4 below:

4. *Timb-an-il-an-a* *pa*  
Hit -REC-APPL-REC-field

‘Hit each other at the farm/crop field.’ (Chavula, 2016:208)

The data in (4) shows that there are three ordered morphs together namely: reciprocal, applicative and reciprocal. The semantics of the sentence does not reflect the sum of its parts as it is in other lexical words. Therefore, a fully description is needed to capture this behavior and that new theoretical paradigm is needed to explain such kind of semantic scope of each morph where applicable other than generalization from the written literature. As Corbin and Strauss (2008:21) who are of the opinion that the problem can be drawn from non & technical literatures.

Therefore, the current study in pertinent to Kiswahili complexity verbal extension pairwise will shed light to understanding explicitly the important of semantic algorithm –which is a step by step technique of analyzing linguistics sub categorization frames.

Mdee *et al*, (2013) have shown the data from Kiswahili dictionary of twenty one century, the derivation of the verb *iga* which means ‘imitate’ ignores the ordering of applicative passive pairwise as if is ungrammatical or absent in its lexicon. The data in 5 below illustrates the phenomenon:

5. *Ig-iw-a*  
Imitate-FV  
‘Be imitated’

The data in (5) shows that the passive morph *-iw-* has been attached to the verb *iga* which means imitate and form *igiwa* imitated. Under the level of analysis most of Swahili speakers and writers have been generalizing the phenomenon. Since the diction has an applicative *-i-* attached to the verb entry *iga* as it is indicated below:

6. *Ig-i-a*  
Imitate-APPL-FV  
‘imitated for/with’ (Mdee *et al*, 2013:150)

Therefore it is not appealing to have the derived verb *Igiwa* (*cf*, 5) and claim to have only one morph which is nothing but other than two morphs as in applicative *-i-* and passive *-w-*, as 7 data

illustrates:

7.	<i>Ig</i>	<i>-i</i>	<i>-w</i>	<i>-a</i>
Imitate-APPL-PASS-FV				
'Be imitated (for/with)'				

The data in (7) shows that two morphs namely: applicative and passive have been ordered together simultaneously in a single verb *Iga*, and each morph has its own semantics despite the generalization of meaning which has been operationalized by Swahili writers and the speakers as it has been shown elsewhere (cf, 5) in this paper.

However, the literatures and the data available (*cf* 1- 7) shows that there is a less/incomplete knowledge in Swahili pairwise of verbal extension other than generalization. As Booth, (2003:59) argues, 'research problem is motivated not by palpable unhappiness but incomplete knowledge or flawed understanding, thus we can solve it not by changing the world but by understanding it'. Therefore, such incompleteness of the knowledge in Swahili data above needs re-analysis.

## Methodology

The technique used in data collection was documentary review, 4 Swahili books including Swahili dictionary of 21<sup>th</sup> century were purposively selected and reviewed. These sources were read one by one basing on the topicalized morphs under discussion to see how Swahili data are being treated Vs their semantic scopes. Content analysis was used during data analysis; the data were analyzed verb morph by verb morph and assigning each morph's semantics basing on the study objective.

## Findings

This sub section discusses the findings on complexity of Kiswahili pairwise of verbal extension. As we stated elsewhere in this paper, the data are from written Swahili literatures and documents in general. In arriving to data, the researchers started by taking one lexical verb which is already derived in literatures, the making morphological passing following the glossing rule. From this base the meaning being obtained from each attached morph was considered literary and non literary to avoid generalizations. The paper found that most of Swahili morphs ordering have been well documented morphologically, though semantically are not well analyzed. Meaning of the ordered morphs has not been glossed provided that such morphologization have been spoken or written by writers or speakers of the language. The data in 8 below illustrates some complexity:

8.	<i>Ach</i>	<i>-i</i>	<i>-an</i>	<i>-i</i>	<i>-a</i>
Stop					-PPL-REC-APPL-FV
'Stop for each other'					(Kihore <i>et al</i> , 2008:60)

In (8), it is observed that the verb *acha* ‘stop/leave’ has been ordered with three morphs namely: applicative, *-i-*, reciprocal, *-an-* and applicative *-i-*. The semantics of each morph ordered morph has not been shown, other than the general meaning of the two morphs —applicative and reciprocal morphs. Kihore *et al* did not provide glossing of these ordered morphs in hand. This kind of generalization is inextricably to understanding the semantics of each allomorph of the language, though such contextual sense is concomitantly virtue in pertinent to the scope of cognitive theory (Taylor, 2002) who is of the opinion that the derived word has both peripheral and core senses. Thus, the current discussion, the generalized sense is nothing but peripheral sense. It must be noted that the gloss given above is from author’s experience to other writer and speakers of the language.

However, following algorithmic approach—a step by step procedure of solving a problem, the structure of the language has morphs which are ordered not accidentally, it is the matter of analysis which would house semantics of step by step morphs as in 9 data below:

9. a) *Ach* *-i-a* Stop-APPLI-FV  
‘Stop for’  
b) *Ach* *-i-an-a*  
Stop-APPL-REC-FV  
‘Stop for each other’  
c) *Ach* *-i* *-an* *-i* *-a*  
Stop-APPL-REC-APPL-FV  
‘Stop for each other for/with’

The data in 9 a), b) and c) shows that each morph has its own semantics, in other words for instance, step three of 19c) shows that there are three individuals following the fact that, the two applicative allomorphs represent two arguments. The sentence in 10 below gives more detail explanations:

10. a) *Juma* *a-me* *mw-ach* *-i-a* *mtoto*  
Juma-SP-TNS-OB-quit-APPL-FV  
‘Juma has quitted for the child’  
b) *Juma na Masanja wa-me ach -i-an-a mtoto* Juma-C-Masanja-SP-TNS-quit-APPL-AREC-FV-child  
‘Juma and Masanja have quitted each other for the child’  
c) *Juma na Masanja wa-me ach -i-an-i-a mtoto*  
Juma-C-Masanja-SP-TNS-quit-APPLA-REC-APPL--FV-child  
‘Juma and Masanja have quitted for each other for the child’

The sentence in 10a) shows that there are two arguments namely: the external argument *Juma* and the internal argument *Mtoto* ‘child’. Semantically, the external argument has done the action



of quitting for the child. The sentence in 10b), there are also two participants following the fact that the addition of reciprocal morph (valence decreasing) reduces one case—the internal argument. Therefore, the meaning shows only the function of the external argument — being the subject and the internal argument being objective case in syntax. As a matter of facts, in 10c) there are three arguments the first two arguments are triggered by the first (applicative) and reciprocal morph while the third is triggered by the second applicative morph. This form of ordering in Bantu languages has been difficult to process as the result of linguistics generalization. The data in the table below shows how step by step derivations accounts for Swahili verbs ordering: *achiania*:

Table 1: The input word: *achiania*

Root	<i>	<ii>	<iii>	Features
Ach-	-i-			<sup>+</sup> v
		-an-		<sup>-</sup> v
			-i-	<sup>+</sup> v

The derivation in the above table shows that each step of derivation accounts both morphology and syntax in pertinent to the meaning of the derived element being it a morph. The sign of <<sup>+</sup>v> implies productive suffix or valence increasing argument and the <<sup>-</sup>v> implies non productive suffix or valence decreasing argument to the predicate structure. The number of arguments depends on the kind of suffixes being ordered to the verb. That is why (cf, <ii>) the derivation of the reciprocal *-an-* has the same number of arguments with the derivation (cf, <i>) of the applicative *-i-*. This is because the reciprocal is the valence decreasing and it reduces one argument in the predicate structure. The second applicative morph (cf, <iii>) has added the number of arguments up to three since it is the valence increasing as it is in the first step. It must be noted that the number of steps depends on the limit of the ordered morphs in the language under discussion, and that in Kiswahili, the maximum number of verbs morph ordering is four (see Kihore, *et al* , 2008) unless otherwise stated.

The other discussion can be drawn from the Swahili verb *waka* ‘burn’ whose stem is *wa-*, that is to say the stem *wa-* in pertinent to verb derivation is often used with stative *-k-* which is inactivated or latent morph, as in *wa-(ka)* ‘burnable/able to burn’. Moreover, as it may, if this is taken as it is (word verb) *waka* —its derivation ends to two steps as it is shown in 11 data below:

11.	a)	<i>Wak-a</i>
Burn		(STAT)-FV
‘Burn/Burnable’		
b)		<i>Wak-i-a</i>
Burn		(STAT)-APPL-FV
‘Burn to/in’		

c)	<i>Wak-ik-a</i>
Burn	(STAT)-STAT-FV
‘Able to burn’	
d)	<i>Wak-iw-a</i>
Burn	(STAT)-PASS-FV
‘Be burnt’	

The data in 11 shows that the Swahili word *waka* ‘burn’ is taken as a full word whose stative morph *-k-* is inactive in use. That is why the meaning being derived shows as if such stative does not work following the fact that the meaning is not the sum of its parts. The blacked indicates that *-k-* is stative. However, when *wa-* is taken as the stem of the word *waka*—its derivation takes other form of ordering morphs e.g. causative morph in which other morphs like stative, passive, reciprocal appears far from the stem. It is from this account, a step by step analysis of the stem *wa-* is re-analyzed in the table below:

Table 2: The input stem: *wa-* (*sh-i-an-/-wa-/-ik-a*)

Root	<i>	<ii>	<iii>	Features
wa-	-sh-			<sup>+</sup> v(valence)
		-i-		<sup>-</sup> v(valence)
			-w-/-k-/-an-	<sup>-</sup> v(valence)

The stem *wa-* as we see in the above table, has been derived up to three morphs maximally. It must be noted that at step three, any of the listed morphs can be ordered from the stem alone and not simultaneously. See in 12 data below:

12.	a)	<i>Wa-sh-i-w-a</i>
Burn-CAUS-APPL-PASS-FV		
‘Be made to burn for’		
b)		<i>Wa-sh-i-an-a</i>
Burn-CAUS-APPL-REC-FV		
‘Cause to burn each other’		
c)		<i>Wa-sh-i-a</i>
Burn-CAUS-APPL-FV		
‘Cause to burn for/in/to/with’		
d)		<i>Wa-sh-i-k-a</i>
Burn-CAUS-APPL-STA-FV		
‘Able to burn (make be able to burn for)’		

The data in 12 evidenced that *wa-* is the stem of the word *waka* ‘burnable’ in Kiswahili language

and its derivation can start soon after the stem. For that matter the morph *-k* from the stem *wa* (*ka*) is the stative morph and its semantic scope would be the ability of something to burn/be burnt. This is a complexity of Swahili pairwise of verb ordering because most of the Swahili speakers and writers do not consider such deepness understanding other than making generalization both morphologically and semantic scopes. This can be seen in 12d) data *washika* where the meaning of the derived verb is complex to process following the fact that stative has proceeded causative as the result causative reduces its conceptual power.

The ordering of causative allomorphs as in *-ez-* and *-esh-* also gives evidence on how Swahili verbs ordering of verbal extensions must be treated carefully. Although it is obvious for the causative being productive, in some contexts its productivity cannot be in all verbs of Kiswahili language. The data in 13 below illustrates the phenomenon of its complexity ordering:

13. *Pend-ez-esh-a*  
Love- CAUS-CAUS-FV  
'Cause to appear good'

The data in 13 shows that the verb *penda* 'love' has been followed by two causative allomorphs, though the semantics of each morph is not derived. This means that, the speakers of Kiswahili language make generalization as it has been stated elsewhere. The causative *-ez-* acts as instrumental morph—it adds material condition which leads to good or something/somebody to appear well/smart and good physically. Consider the sentence in 14 below:

14. *Juma* *hu-pend-ez-a* *Nguo*  
Juma-ASP-love-CAUS-FV-Clothes  
'Juma appears good (because of clothes)'

The structure in 14 data shows that Juma becomes good/smart when he wears clothes. This means that there is no argument being added other than something (material) which triggers his smartness. As a matter of facts, when such structure is ordered together with other causative *-esh-*, only one argument is added as it is shown in 15 data:

15. *Juma* *hu-m-pend-ez-esh-a* *Mke-o*  
Juma-ASP-OM-love-CAUS-CAUS-wife-OM  
'Juma makes your wife appear smart'.

The derivation shows that, the causative *-esh-* morph has explicit argument whose position is covered by prefix object marker *-m-* and the final object marker *-o-* in the word *mkeo* 'your wife'. The causative *-ez-* morph is a logical form (LF) which has objective function in the sense that a person can make himself/herself appear smart. The other phenomena can be drawn from the ordering of applicative *-e-/i-* and *-le-/li-* allomorphs, the ordering of these allomorphs appears in succession, thus, the former is ordered first then the latter. The data in 16-17 below illustrates the process of deriving the verb *piga* 'beat' and *choma* which means hit:

16. *a)pig-i-a*

Beat

-APPL-FV

‘Beat for’

*b) pig-i-li-a*

Beat-APPL-APPL-FV

‘Pass (something) to’

Different explanations can be taken into account between applicative allomorphs *e-/i-* and *-le-/li-*, the data in 14a) shows the action of beating has been done for somebody—hence one argument predicate. The applicative morph *-li-*, has meaning of its own entity, and that it has immersed the meaning of the morph proceeded. This means that such applicative morph is used in the context of playing football. In this contention, it is evident that when applicative *-i-* proceed *-li-* *the neat sense changes to the contextual sense as it is encoded in* (Kövecses and Radden, 1998) who of the opinion that put that the element in a word may metonymically be manifested in the sense that one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target within the same domain e.g. playing for the current context. Therefore, when a person says *<pigilia mpira>* ‘pass the ball’ does not refer to the addition of an argument other than referring to external and internal argument which is nothing but basic sentence structure. More explanations consider the following structure in 16 below:

17. *Kamsoko* *-ka-m-pig-i-li-a* *mpira* *Mavugo*  
 Kamsoko-TNS-OM-pass-APPL-APPL-FV-ball-Mavugo  
 ‘Kamsoko has passed the ball to Mavugo’

The data in 16 above indicate that, the applicative allomorphs do not specify their meaning each: the structure shows as if there is applicative *-ili-* following the semantics and syntax of it. In this data, I appeal to arguing that, since the contextual action sometimes dictates the meaning of allomorphs, *-ili-* applicative morph can be one morph with one argument in the predicate structure. The data in 18 below illustrates how the morph may work alone:

18.a) *Chom-e-a* Pierce, -APPL-FV  
'Pierce for/to/with'

*b)Chom-e-le-a*Pierce,-APPL-APPL-FV  
'Drilling iron?'

The morph *-e-* in 18a) is an applicative with multiple function, it may function to show instrument, location or argument. The data in 18b), shows the two morphs are being ordered together, as it is indicated above (cf, 17) the second applicative (cf, *-le-*) breads the semantic application of the first ordered applicative morph. The meaning has changed after the ordering of the second morph from pierce to another semantic context of shaping/making/drilling iron materials. Therefore, the first morph is a feeding one while the second is the breeding morph.

This is different from the ordering of applicative morphs of the same form (cf. table 1) whereby there is no breaching affix/morph. In other words the ordering of applicative-applicative (after the

intervening of other morph) is allowed in Kiswahili language. The data in 19 illustrates:

19. a) *Pig-i-an-a*  
Beat-APPL-REC-FV  
'Beat for each other'  
b) *Pig-i-an-i-a*  
Beat-APPL-REC-APPL-FV  
'Beat for each other with'

The data in 19) shows the ordering of applicative morph and reciprocal morph and in 19b) data, three morphs are ordered of which the two are applicative and the other is reciprocal. However, the meaning is transparent in the sense that each morph presents its semanticity. The first morph (applicative) is argumentative morph while the second applicative morph represents *reason* for doing such action.

The data from (Khamis, 2008) gives us another complexity of Swahili pairwise of verbal extensions, in the sense that not all morphs are transparent especially, non reproductive morphs in Kiswahili language. The data in 20 below explain the phenomenon:

20. a) *Fung-an-ish-an-a*  
Close- REC-CAUSE-REC-FV  
'Make to close for each other'  
b) *Fung-ish-an-ish-a*  
Close- REC-CAUSE-REC-FV  
'Make to caue to close for each other' (Khamis, 2008:102)

The data in 20a) has three morphs and the meaning reflects the two morphs, this is due to the fact the reciprocal is a valence decreasing argument. Therefore, whoever, the reciprocal morph repeats does not add  $\theta$ -roles. Note that the gloss above is my own and not for the author cited, ever since Khamis did not provide glossing. However, the data in 20b) shows two causative morphs and one reciprocal morph. The gloss shows that each morph has its own figuration semantically. Therefore, the three morphs emanate the three arguments. Unlike the data (cf, 15) that show the ordering of two causative morphs of different form, the data in 20b) has a different conception with which the intervening of reciprocal has created environment for semantic dis opacity.

However, from the above base, the Swahili verb *funga* may be extended up to five morphs ordered together. The table in 3 below shows such form of ordering:

Table 3: The input word *fungishanishiwa* 'Be made to caue to close for each other at'

	<i>	<ii>	<iii>	<iv>	<v>
<i>Fung-</i>					
<i>-ish-</i>					+v(alence)
		<i>-an-</i>			-v(alence)

-ish-		+v(alence)
	-i-	+v(alence)
		-w-
		-v(alence)

The five allomorphs shown above, shows that Kiswahili language verbs can order allomorphs up to five maximally apart from the general claim which shows that only four morphs are possible to be ordered in a single Kiswahili verb. Therefore, the step by step ordering shown in the above table shows that each morph plays its own semantics although it is difficult to process.

## Conclusion

The pairwise of Kiswahili morph ordering of verbal extension play a great role in communication system in pertinent to its logical representations. As Kiswahili now is becoming a global communicative tool and in East African in particular, its grammar should not be generalized where inapplicable — either in written or spoken forms. Let written Kiswahili be differentiated from spoken Kiswahili for avoiding generalizations.

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## **Students' Knowledge of Hiv/Aids and Their Attitude Towards Sexual Behaviour in Coast Region, Kenya**

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### **Abstract**

*The HIV/AIDS and life skill education in Kenyan secondary schools was intended to reduce HIV/AIDS infection and stigmatisation of people living with HIV in the education sector. However, it is not known how implementation of the policy has affected students' knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region of Kenya. The research study therefore investigated the relationship between students' knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in coast region of Kenya. The target population was 108693 respondents in 362 public secondary schools in the Coast Region of Kenya. Purposive and random sampling methods were used to choose the participants. The samples comprised of 388 students of which 193 were Form 1 and 195 were Form 4 students in 13 secondary schools. Questionnaires and test were used to collect the data. The validity of the instruments was checked by other experts in the field of research at Chuka University. The instruments were piloted in three secondary schools in Kilifi County within the Coast Region of Kenya to establish their reliability. Test-retest method was used to compute reliability coefficient from the data collected from the pilot study. Reliability coefficient of the instruments was 0.8 for each instrument. The descriptive statistics used were frequencies and percentage. Chi-square statistics was used to test the hypotheses in the study. The hypotheses testing was done at  $\alpha = 0.05$  level of significance. The data collected in this study was analysed using Statistical Package for Social Sciences (SPSS) computer programme version 20.0. The research findings established that there was a positive relationship between the percentage of Form 1 students' with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region of Kenya. It was therefore recommended that HIV/AIDS and life skill education be enhanced in secondary schools in order to cut down HIV infection among the secondary school students. The study findings also revealed that there was negative relationship between Form 4 students' with high knowledge of HIV/AIDS and their attitudes towards sexual behaviour in secondary schools in Coast Region of Kenya. It was therefore recommended that secondary school education should be geared towards inculcating positive attitude towards sexual behaviour among students in secondary schools in Coast Region of Kenya.*

**Key Words:** *Attitude, Knowledge', Sexual behaviour, Stigmatization, Life skill, education*

### **Introduction**

Agbemenu (2009) reported that sex education that was to address HIV and AIDS was first taught as a subject on its own but this module changed when the concepts were integrated within other teaching subjects in Kenyan secondary schools. The withdrawal of sex education as a subject



was due to the outcry by the society against it in schools. According to AVERT (2010), failure to implement sex education gave rise to integration of sex education in other subjects and also introduction of life skills education in secondary school curriculum.

Life skills education and HIV/AIDS education in many countries has been reported to have succeeded in reducing incidence of risky sexual behaviour among students (Henderson, Wight, Raab, Abraham, Buston & Scott., 2002; Chinsebu, Siziya, Muula & Rudatsikira., 2004). It has also been reported that students' knowledge and perception on HIV/AIDS increased depending on when students were taught about HIV and AIDS (Jahanfar, Lim, Loh, Yeoh & Charles, 2008; Madeline, Felicia, Pierre, Sagina, Sonal, Warren-Jeanpiere, & Sandra, 2011). Selim and El-Shereef (2010) showed that students had satisfactory knowledge about AIDS in a study carried out in Egypt. A statistically significant improvement in students' knowledge of HIV and AIDS was revealed after implementation of HIV/AIDS education in the same study (Selim & El-Shereef, 2010). The success of HIV/AIDS education was determined by successful implementation of the programme in schools among the intervening countries. However, studies by other researchers showed that as students' knowledge of HIV/AIDS increased, their sexual behaviour remained risky or the same.

According to Boyce Doherty Fortin and Mackinnon (2002), students' knowledge of HIV/AIDS and their risky sexual behaviour increased as students moved from one academic level to the next in a study carried out in Canada. Bekeny (2009) in a study carried out in Yaoundé-Cameroon found out that HIV/AIDS interventions in schools impact moderate behaviour changes, and that there was weak correlation between HIV/AIDS education and students' attitudes towards People Living with HIV (PLHIV). A study by Fawole, *et al* (2011) showed that 73.6% of students in Nigerian Universities had high knowledge of HIV/AIDS but majority of them were involved in risky sexual behaviour. Mongkuo, Mushi, and Rollinda (2010) found out that most of the students surveyed in South-Eastern United States were knowledgeable about HIV/AIDS and understood the risky behaviour associated with HIV/AIDS. However, it was willingness to associate with PLHIV which was the predictor of students' willingness to practice safe sex. In a survey carried out in 2005 among students in South Africa, most (82%) of the youth males and 83% of females viewed themselves as being at no/or small risk of HIV infection despite the high HIV infection rate in that country (Kermyt, Beutel & Maughan-Brown, 2007). According to Nath (2009), Youth in India were found to be aware of the HIV and AIDS but a higher percentage of the males reported engaging in premarital sexual activity compared to females. The study also revealed that condom awareness among the youth was fairly high but condom usage was reported to be low.

Adimora, Mitchell and Yotebieng (2009) showed that students did not see themselves as susceptible to HIV and AIDS and believed condom effectiveness in preventing HIV to be low in

a study that was carried out in Nairobi, Kenya. According to Abebe and Mitikie (2009), students in Ethiopia had knowledge on VCT services but very few of them had undergone VCT. World Health Organisation (WHO, 2007) reported that in general adolescents between the age of 10 to 19 years and particularly girls were at high risk of getting infected with HIV. Report by other researcher show that many of the young people do not seek voluntary counselling and testing (VCT) services until they develop symptoms of AIDS in Kenya and that majority of the youth were engaged in risky sexual behaviour more than any other age group in Kenya (Waithaka & Bessinger; 2001; Kiragu, 2001; Onyando & Otieno, 2003). However, these studies were carried out long time ago and there was need to re-evaluate the success of sex education and life skill education in Kenyan secondary schools.

### *Statement of the problem*

Human resource is a major factor in Harnessing Science, Research and Technology for Sustainability development (HSRTSD). This is because educated population is required in achieving the objectives of HSRTSD. However, the information in the media show that HIV and AIDS is threat to students who are looked upon to play important role in achieving HSRTSD objectives and future implementers of HSRTSD objectives. It is not known HIV/AIDS education affect secondary school students' knowledge of HIV/AIDS and their attitude towards sexual behaviour in Coast Region of Kenya. The present study investigated secondary school students' knowledge of HIV/AIDS and their Attitude towards sexual behaviour in Coast Region, Kenya.

### *Objectives of the study*

The study purposed to; investigate the relationship between Form 1 students' knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in coast region, Kenya, investigate the relationship between Form 4 students' knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in coast region, Kenya.

### *Research Hypotheses*

The following null hypotheses were tested at  $\alpha = 0.05$  level of significance;

H<sub>01</sub>: There is no significant relationship between the percentage of Form 1 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in coast region, Kenya.

H<sub>02</sub>: There is no significant relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in coast region, Kenya.

### **Methodology**

The study adopted a descriptive survey research design. The target population was 108693 respondents in 362 public secondary schools in Coast Region, Kenya. The selection of schools

was done using simple random sampling methods while participants were selected using purposive and simple random sampling methods. The sample comprised of 388 students of which 193 were Form 1 and 195 were Form 4 students in 13 secondary schools from Coast Region, Kenya. Data was collected using test to get students' knowledge of HIV/AIDS and questionnaire to get students' attitude towards sexual behaviour. The students who did the test also filled the questionnaire that measured their attitude towards sexual behaviour. The pilot study was carried out in three schools in Kilifi County within the Coast Region, Kenya. The test re-test method was used during the pilot study to obtain data that was used to compute reliability correlation coefficient. The test and questionnaire yielded a reliability coefficient of 0.8 each. The research tools were developed and validated before use with help from other members in the Department of Education. The researcher obtained letter from Chuka University that was used to obtain permission to carry out the study from National Commission for Science, Technology and Innovation (NACOSTI). The data collected from the field was analyzed using frequencies, percentages and Chi-square statistics. The data in the study was analysed using statistical package for social sciences (SPSS) computer programme version 20.0. The results were presented using frequency, percentages, tables and bar graphs.

## **Results and Discussion**

The study was set to investigate the relationship between students' knowledge of HIV/AIDS and their attitudes towards sexual behaviour in secondary schools in the Coast Region of Kenya. Information was collected from 388 respondents and the data analysis generated the following results.

### *Students' Knowledge of HIV/AIDS and Their Attitude towards Sexual Behaviour*

The Null hypothesis one sought to find out whether there was a significant relationship between the percentage of Form 1 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region of Kenya. The researcher used test and questionnaire to collect the data from the same respondents which was analysed using descriptive statistic and Chi-square test. The data used had been collected in the previously published research studies (Thuo, 2016; Thuo *et al.*, 2016a & Thuo *et al.*, 2016b). The results were summarised in Figure 1.

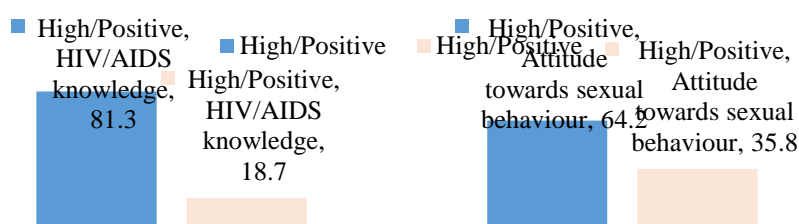


Figure 1: Relationship between Form 1 students' knowledge and their attitude towards sexual behavior

Figure 1 shows that 83.3 % of Form 1 students had high knowledge of HIV/AIDS and 64.2% had positive attitude towards sexual behaviour. However 18.7% of the Form 1 students had low knowledge of HIV/AIDS but 35.8% of them had negative attitude towards sexual behaviour an indication that some of the students with High knowledge of HIV/AIDS had negative attitude towards sexual behaviour. In order to test the stated hypothesis, the data was subjected to Chi-square test and the results were summarised in Table 1.

Table 1: Chi-square Test between Form 1 Students' Knowledge and Their Attitudes

	Students' HIV/AIDS knowledge	Students' towards behaviour	attitude sexual
Chi-square	75.860	15 .674	
df	1	1	
Asymp. Sig.	.000	.000	

The information in Table 1 shows that there is significant relationship between Form 1 students knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region of Kenya ( $\chi^2 = 75.860$ ,  $df = 1$ ,  $p < 0.05$ ;  $\chi^2 = 15.674$ ,  $df = 1$ ,  $p < 0.05$ ). The Null hypothesis that stated that there is no significant relationship between the percentage of Form 1 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region was rejected.

The findings are consistent with that of Henderson *et al* (2002) that showed that education is necessary in reducing the spread of HIV/AIDS among the students in East Scotland. Visser (2005) also found out that learners' knowledge of HIV and AIDS increased and their attitudes were more positive after students were taught HIV/AIDS education in a study carried out in South Africa. Chinsembu *et al* (2004) in a study carried out in Namibia observed that secondary

school students' risky sexual behaviour reduced after they were taught about HIV/AIDS. However it should be noted that Form 1 students in this study had just started secondary school education and that much of the HIV/AIDS and life skill education and sexual behaviour could only be attributed to what they learned in primary school. To shed more light on relationship between Form 1 students' knowledge of HIV/AIDS and their attitude towards sexual behaviour, students were asked to indicate if they would disclose their HIV status if they were HIV positive. The results were presented in Fig 2.

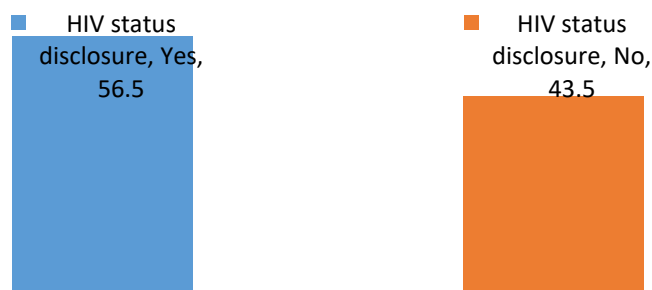


Figure 2: Form 1 status disclosure

The information in Figure 2 shows that 56.5% of Form 1 students would disclose their HIV status if they were HIV positive. Information in Figure 2 also revealed that 43.5% of Form 1 students stated that they can not disclose their HIV status if they were HIV positive. However, information in Figure 1 showed that 64.2% of Form 1 students had positive attitude towards sexual behaviour and 33.8% had negative attitude towards sexual behaviour. Information from Figure 1 and Figure 2 shows that there was significant number of Form 1 students who had positive attitude towards sexual behaviour but could not disclose their HIV status if they were HIV positive. According to Ngotho (2005) stigma associated with being HIV positive prevent students from disclosing their HIV status.

The Null hypothesis two sought to find out whether there was a significant relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region of Kenya. The researcher administered test and then gave the same Form 4 students questionnaire to fill. The test and the questionnaire were similar to those of Form 1 students (Thuo *et al.*, 2016a & Thuo *et al.*, 2016 b). The results were summarised in Figure 2.

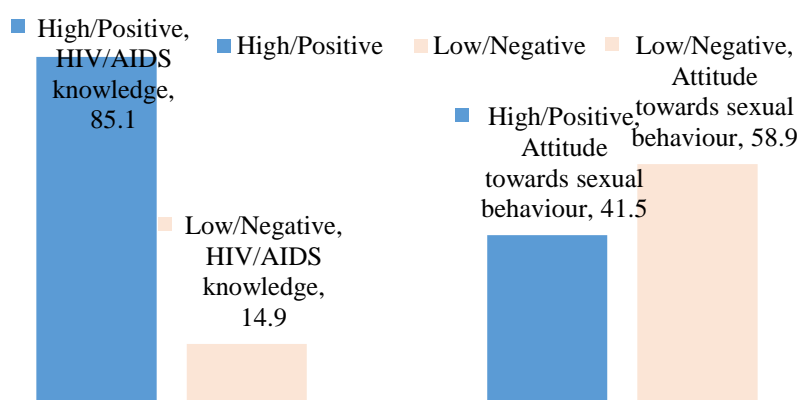


Figure 3: Relationship between Form 4 students' knowledge and their attitude towards sexual behavior

Figure 3 shows that 85.1 % of Form 4 students had high knowledge of HIV/AIDS and 41.5% had positive attitude towards sexual behaviour. However 14.9% of Form 4 students had low knowledge of HIV/AIDS but 58.9% of them had negative attitude towards sexual behaviour an indication that most of Form 4 students with high knowledge of HIV/AIDS had negative attitude towards sexual behaviour. In order to test the hypothesis, the data was subjected to Chi-square test and the results were summarised in Table 2.

Table 2: Chi-square Test between Form 4 Students' knowledge and their Attitudes

	Students' HIV/AIDS knowledge	Students' attitude towards sexual behaviour
Chi-square	96.251	5 .585
Df	1	1
Asymp. Sig.	.000	.018

The information in Table 2 shows that there was significant relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their positive attitude towards sexual behaviour in secondary schools in Coast Region of Kenya ( $\chi^2 = 96.251$ ,  $df = 1$ ,  $p < 0.05$ ;  $\chi^2 = 5.585$ ,  $df = 1$ ,  $p < 0.05$ ). The Null hypothesis that stated that there was no significant relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their attitude towards sexual behaviour in secondary schools in Coast Region was rejected.

The information in Figure 2 and Table 2 showed that there was a negative relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their positive attitude

towards sexual behaviour in secondary schools in Coast Region of Kenya. The result is consistent with that of other researchers. Boyce *et al* (2000) in a study carried out in Canada observed that as students progressed from grade 7 to 11, their HIV/AIDS knowledge and their risky sexual behaviour increased. A study by Fawole *et al* (2011) showed that 73.6% of students in Nigerian Universities had high knowledge on HIV/AIDS but majority of them were involved in risky sexual behaviour. According to Nath (2009), Youth in India were found to be aware of the HIV and AIDS but a higher percentage of the males reported engaging in premarital sexual activity compared to females. The study also revealed that condom awareness among the youth in India was fairly high but condom usage was reported to be low. According to Sharlene, Maren and Gisela (2011), adolescents need correct information about their bodies, about sex and sexuality and about HIV and AIDS. They also need guiding values for their relationships especially with people of the opposite sex. With sound knowledge and good values, they are able to prevent sexually transmitted diseases including HIV. To shed more light on the relationship between Form 4 students' knowledge of HIV/AIDS and their attitude towards sexual behaviour, students were asked if they would disclose their HIV status if found to be HIV positive. The results were summarised in Figure 4



Figure 4: Students HIV status disclosure

The information in Figure 4 shows that 35.1% of Form 4 students would disclose their HIV status if they were HIV positive. Information in Figure 4 also revealed that 64.9% of the Form 4 students stated that they can not disclose their HIV status if they were HIV positive. The high percentage of Form 4 students who could not disclose their HIV status was most likely because majority of them could be sexually active and therefore feared stigmatisation associated with being HIV positive (Ngotho, 2005).

### Conclusion and Recommendation

The findings of the research study showed that there was a positive relationship between the percentage of Form 1 students with high knowledge of HVI/AIDS and their positive attitude towards sexual behaviour in secondary school in Coast Region of Kenya. The researcher therefore recommended that secondary school should implement the HIV/AIDS and life skill education to reduce HIV infection among secondary schools in Coast Region of Kenya. The



study however, revealed that there was a negative relationship between the percentage of Form 4 students with high knowledge of HIV/AIDS and their positive attitude towards sexual behaviour in secondary schools in Coast Region of Kenya. Most of the students had negative attitude towards sexual behaviour despite their high knowledge of HIV/AIDS and the researcher recommended that HIV/AIDS and life skill education should also focus more on improving students' attitude towards sexual behaviour. This can be achieved by teaching students more about good cultural values concerning sex and sexuality and in providing holistic education that takes care of students' academic and moral needs.

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## **Culture, Peace and Development: A Case Study of West Pokot County, Kenya**

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### **Abstract**

*Violent conflict has been experienced in West Pokot County for decades. This county is the home of pastoral communities whose livelihood entirely depended on a cow for centuries. As such, conflicts in this region rotated around a cow. This study interrogated extent to which cultural practices have contributed to peace and development of the region. The study applied case study design situated within the qualitative tradition. Women, men, youth, NGOs officials, and representative from all levels of governments provided information. The study found that cultural practices such as songs encouraged conflict and peace in the one hand. On the other, some aspects of cultural practices have sustained lives and promoted growth of prosperity of people. The study recommended that the government, nongovernmental organizations and the community to initiate regular dialogue meetings, peace tours, cultural events and sports for peace to create more awareness on peace, benefits of peace, and increase levels of interactions among the warring communities in a bid to spur social-economic development of people.*

**Key words:** *Culture, Peace, Development, West Pokot, Kenya*

### **Introduction**

This study focused on how cultural practices such as songs could promote peace, conflicts or spur growth of prosperity. The following sections were covered: the background to the study,

theoretical framework, materials and methods, findings and then conclusion and recommendations.

### *Background to the study*

Culture, taken in a broader sense, is the way of life of a people. It includes socially acquired knowledge, beliefs, art, law, morals, customs, and habits. It influences the people's lives, activities and behavior towards others (Nganga, 2012). The idea of culture introduces the notion of shared meanings and values, and diversity between different peoples of the world. It also creates a space for thinking of peace as the province not just of politicians and soldiers but also of ordinary people (Damirchi, Hazrati and Poushaneh, 2013). War is deeply rooted in people's culture; the spirit of war is embedded within literature, poetry, rewritten history, media, language and widescreen movies; all these tend to offer-glorify wars and as a result inflame the imagination of youth (Zamir, 2005). However, some traditions are undoubtedly time-proven and of lasting value, but others have become obsolete and sometimes also ethically objectionable (Malan, 2005).

Werner (2010) has argued that culture can provide peace workers with a context as well as a resource for potential conflict resolution activities. The context informs about values, meanings, as well as community practices and allows one to see and make sense of the world through the eyes of the locals. As a resource, culture guides certain activities and may provide tools for responding to new situations, as it remains fluid and flexible, rather than static. International peacebuilding practitioners and their local counterparts should primarily learn from each other, proposing concepts that take into account the traditions and lives of the local community so they can avoid imposing alien cultural change, no matter how desirable or seemingly natural. Conflicts particularly among the pastoral communities are embedded in people's culture; even local proponents of peace have unconsciously supported structures that sustain conflicts. This is to say, if at all we have to succeed in achieving peace, we should examine those cultural elements that sustain persistent conflict as we replace them with those that promote peace and inclusive prosperity of people, and reinforce those aspects that have propped up the ideals of peace and social cohesion. It is against this backdrop the study interrogated how songs as a cultural practice have contributed to peace and shared prosperity among the Pokot people.

### *Context and Nature of Conflicts*

West Pokot County is among the counties in the North Rift region of Kenya. The region is a vast arid and semi-arid with experiences of frequent droughts. It is settled by pastoralist nomadic people such as Pokot, Turkana, Samburu, Borana, Rendile, and so on. These people move from one area to another in search of water and pasture for their livestock as away to buffer the impacts of drought such as loss of livestock, malnutrition, rise in the cost of living, high poverty levels and loss of lives. Their movements are not restricted to one area or even country. They

move into and out of the neighboring countries such as Somalia, Ethiopia, Sudan and Uganda. These movements are one of the major sources of misunderstanding and conflict between them and their neighbors (Nganga, 2012). The author adds that the vastness and remoteness of the area, inadequate road networks, hilly terrain, and scarcity of resources goes hand in hand with lapses in security occasioning frequent misunderstanding and violent conflicts among these pastoral people.

## **Theoretical Framework**

### *Lederach Conflict Transformation Model*

In 1997, John Paul Lederach offered his seminal work on conflict transformation theory. The theory views peace as centered and rooted in the quality of relationships. This includes both face-to-face interactions and the ways in which we structure our social, political, economic, and cultural relationships. Lederach stated the key dimensions of peace process as the changes in the personal, structural, relational and cultural aspects of conflict, brought about over different time-periods (short-, mid- and long-term) and affecting different system levels at different times (Miall, 2004, Paffenholz, 2009). We found this theory salient to inform this study.

## **Methodology**

The researcher used the case study design situated within the qualitative research tradition. The choice for this design was appropriate because it enabled the researcher to collect rich and in-depth data on violent conflict and development in Pokot. Focus group discussions, interviews, observation helped to collect data from elders, leaders, men, women and youth from West Pokot County. The data was analyzed applying content analysis technique. This technique, helps researchers to organize material systematically guided by two approaches namely, simple mechanical word counts and broad-gauged interpretations of themes (Druckman, 2005).

## **Findings**

Songs have been very powerful tool of communication in oral literature and in diverse infinite communities of the world. They expressed people's deep emotions and core feelings. People sang when they were happy, in celebrations, while mourning, provoking attention, entertainment, while working or as a source of livelihood. The study revealed that among the Pokot people singing, composing songs and dancing were highly valued cultural activities. Songs were very attractive, enlightening and enhanced people's attention as they received the message. Different songs were sung in different occasions: Songs praising successful warriors; songs ridiculing losers, singing as a way of speaking and songs promoting peace. In other words, one of the women commented that different songs had different content, for example, if it were a raiding song, it gave morale to raid as well as aroused the hearts of men to be aggressive. And so if it were a peace song, it highlighted incalculable benefits of peace or demerits of violent conflict;

and if it were song about lazy people, it gave illustrations of remarkable or extraordinary and hardworking people in the community. Thus, the value of the song depended on who was singing? What was the content of the song? Why one was singing and to whom? As one youth puts it succinctly:

*Songs plays a central role in any activity...when one is ploughing alone s/he needs an accompaniment, when there is pumper harvest there is a song, when appreciating the beauty of nature there is a song...even in the activity of CR they used songs to praise heroes. From the song you will know who the hero is or who lost...it has been the responsibility of women to sing as they ululate. Songs motivated hardworking people, hardworking leaders who had brought development and so forth. Some songs have also mocked those who had done evil in the society. For example, if the community disliked certain set of behaviours in a person, they pointed that in a song to discourage such behaviours.*

An elder made an insightful remark:

*Songs can bring conflict, peace and development. If raiders attempted to take your animals and women sang for the strong men to keep them at bay, they will always do so. If peace songs were sang, they brought peace in people's hearts, mind and soul. In short, if a song had a version of hatred, it promoted hatred. If a version of peace, it promoted peace. If a version of development, it promoted development.*

As outlined above, singing in Pokot is a way of speaking. Elders passed very important or crucial communications in form of a song without demeaning either part. For instance, one of young women whom I interviewed provided an illustration of a young man who was arrested. He was being grilled by security officers with regard to some of the cultural practices alleged to have been offensive. One of an elder in that meeting began a song informing the young man not to disclose any information about their community, instead the elder asked the young man to die like a man. The next levels we are going to present the findings on how songs have promoted peace and protracted conflicts among the Pokot people. We shall also interrogate whether songs were related to growth of prosperity among the people.

### *Songs and Violent Conflict*

The results revealed that in Pokot songs were used to inspire and provoke warriors to launch raids. The findings from the questionnaire revealed that songs that have praised owning of animals have profoundly catalyzed the practice of CR. Such songs were commonly sung by women encouraging men to be more courageous as they kept protecting the community. They reminded men that CR was part of their lives; they should be fearless unlike women. Women also remind men that they were like those other men from other communities. As an elder enthused, when the sun rises, it arose with great hope. Women's songs praised the brave men and created the awareness that the community depended entirely on them, "The strong men and boys



were told you are the security of the community. Your fathers and mothers are growing old. Where are you boys, where are you men? Why are our cows gone? Where were you? Were you sleeping? Are you cowards? Are you still men or you have turned to be the women of the other community?" These songs were usually sung in the presence of men. Then men could reply, "We have heard you." They could regroup thus, to plan for the raid in order to please their women. In that connection, the women were expected to prepare strong meals rich in protein such as boiled beans and maize plus tobacco for those who smoked in preparation for the long journey. The food was ferried by the young boys who were regarded as store men, they were all well guarded. In every raiding group, some of the skilled warriors were always in front and others behind. Those in the middle were expected to drive the animals or newly acquired wealth.

The research found that some of the songs performed by women were praising the courageous men on one hand, and on the other, humiliating failures. This has activated the culture of violence. For example, *Orwantee kotanyenyee wayee* translated as I sleep in a home where there is a cow. The song meant that even if the cow has made men to die, the woman could only sleep a home where there was a cow. Such songs instilled fear in men that without a cow, they would miss to have women. They provoked men to engage in violent raids to acquire more animals. Moreover, the women could sing while ululating and praising their sons and clans. They smeared their successful sons with oil as a strong sense of family security. One of the women could be heard singing:

<i>Keruwecha chepotupon</i>	we drink sour milk
<i>Kemitecha kalya</i>	we live with peace
<i>Ke sala werpo murren</i>	praise the strong men

This song suggests that if it were not the strong men, the warriors the community could not be at peace. They protected the community from its perceived enemies; and brought cows that were the source of milk and meat, basic and salient food for pastoralist communities. The song encouraged CR as the surest strategy to earn livelihood. For those men who had unsuccessful to engage in violent raids were condemned and equated as women. This has equally given them impetus to organize scores of raids in a bid to earn respect and fame.

A successful warrior or hero could compose and perform a song demonstrating the challenges experienced in a raid and how they were overcome. He could mention places where he passed: I went to Karimojong, Sabiny and brought a cow. I crossed such and such a river, navigated such and such a mountain, shot down several men and he could mention the strong men who had rendered him an helping hand. A woman commented: "A warrior could compose a song about the person he had killed. Then he could pose: Who is here? I am a bull." The warrior could then praise the bull and demean the person he had killed or stolen his animals. He equated the person with a fly eaten by maggots, to imply that the person was down or disabled or insignificant. Another warrior could sing a scaring song that, "A cow at a place A in Pokot, during the day is



looked after by my sisters. If you want to come, come during the day. During the night the cow is guarded by the four armed strong men, facing different directions, if you want to come it's for your own peril." The study also found that the goads to compose and sing a hero song motivated strong men to raid and kill. One of the young men reported in a FGD: "One group was going Turkana for a raid, the attack failed. One guy in the group who aimed to go and kill cried: Can I sing my song without mentioning the person I had killed. I can't go home. Because of that five of them were compelled to continue to another location in a bid to launch another attack. They found people in a bore hole and killed them."

A famous man, moreover, Lokoumosor could be heard singing: *Lokoumosor keuyono? Oluwan too nowasha, Kichogh nyobo lokonkona kuchogh lo! Lodua!* Translated as warriors where have you slept? Is it in the bush? Doo, the sound of the gun was heard. The song informed that the sound of Lokoumosor's gun was a tough one. Meaning that men earned more respect when they engaged more raids than the others. These songs accelerated men to launch frequent and tough raids.

Some of the songs sang during *sapana* were said to be emotive as well as encouraged the culture of violence. They challenged warriors to defend their people. They encouraged them to fight their perceived enemies. The warriors were seen with weapons to show their prowess as they connected with the rhythm of the song, "It was an international game...when the song mentioned some words you could hear the sound of the gun," commented one of the elders. The men who were singing were observed to be trembling as they expressed their inner feelings. It showed that songs can penetrate deeper into the core of a person than other channels as the message was delivered as it is. One of the MCAs I interviewed revealed that some of *sapana* songs could interrogate to find how warriors fared on economically. They challenging them to regroup and go for raids or to graze in a neighbour's field, "...regroup and go and get something or go to graze the land which does not belong to you." The songs motivated men to show that they were men through raids. The man with one woman was mocked to add another one. He was asked to go Karimojong and get cows for the dowry. The moment a warrior attempted a raid; women sang ululating as they informed him that he was no longer a puppet. These encouraged others to go for raids as one elder amplified: "Songs motivated a man to show his manhood...the moment he staged successful raid women sang ululating. The message of the song informed him that now you are not a puppet... you were nobody now you are somebody. This encouraged others to go for raids." Other songs praised the initiates informing them how great they had made their family, in particular, and the community at large, they provoked men to keep at bay their enemies as aptly put by a young woman, "songs informed him how he made the family and the community to appear."

As the study had revealed earlier, women were instrumental in raiding process. A Pokot warrior

planning to go for a raid can be heard singing the following song to prompt women to wear *lokotyo*, the belt with magic powers to protect him:

Oh! Chepomoi ooh! Chepomoi	oh! Lady Chepomoi ooh! Lady Chepomoi
Ohoo! Chepomoi <i>kirir</i>	ohoo! Lady Chepomoi crying
Chepomoi <i>amadawa ahaya</i>	Lady chepomoi wear the safety belt
<i>Ahaya! Kirir</i> Chepomoi	Ahaya! Crying lady Chepomoi
<i>Amadawa haya</i> ×2	assure me that I can go ×2

The warrior praised the lady Chepomoi as a way to motivate her wear the *lokotyo*, the belt that had the magical power to protect them while going for violent raids. Other significant findings revealed that before the warriors could go for a raid sometimes some rituals were done. Women could be heard singing:

<i>Chesirani ee! Chesirani</i>	the animal ee! The animal
<i>Ahaa omaneke tikil</i>	aaha eat it all
<i>Chesirani ahaa! Omaneke</i>	the animal ahaa! eat it all

<i>Tukut ahaa!</i> ×2	all now can eat ×2
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The above song was sung during a ceremony to bless warriors in preparation to go for a raid. They are motivated and encouraged to be confident. After the warriors had tested meat, the community members were then allowed to eat and celebrate.

A question was posed in a questionnaire wanting to establish the role of songs to perpetuate the culture of violence. A large majority of respondents revealed that some songs have incited the community against the rival communities. Such songs ridiculed warring communities by portraying them as cowards, uncircumcised, with bad habits as well as encouraged their youth to raid and eliminate such communities. Thus, this has expanded narrowly the gap of trust and cohesion among the belligerents. For instance, a nomadic Pokot song that considered Turkana people as enemies was sang by a woman in presence of her sons as follows:

<i>Nyi weru</i>	You my son
<i>Weghenoye koronu</i>	Can you go away from our land
<i>Taghe okumpo Turkana</i>	Go to Turkana land
<i>Pelee motowoikwa kunyoryo</i>	Burn their heads to pieces

This song has provoked young warriors to pursue and obliterate their perceived enemies. The song reminded warriors that it was their responsibilities to protect and defend their communities by all means and with all their abilities. And it was their responsibility to defend their land and animals the invaluable resources that has promoted their prosperity for centuries.

In Pokot, the song was a library of the past, present and future, thus they kept memories of trauma, hatred and protracted violence from one generation to another. This has largely sustained the traces of animosity among the belligerents for decades. One of the sages I interviewed reflected that a song is a pen to write history, mark an event as well as promote culture. It could

point historical injustices, for instance, one of the songs has on and on reminded Pokot people that a segment of Trans-Nzoia County was their ancestral land or the Sook (Pokot) grazing field. The community was displaced from the region by the white settlers in 1919. The community has marked these social injustices using a song:

Kampombao <i>korenja</i>	Kampombao is our land
Kaphepkoilei <i>korenja</i>	Kaphepkoilei is our land
<i>Iya oleye laleyo</i>	Rejoicing in new found home

This song was composed when Pokot were hounded from Tran-Nzoia by white settlers. It was sung by an elder conveying the message that they were chased from Kampombao and yet it was their land. The contested land was said to be at Soi in Trans-Nzoia as pointed by one elderly woman, “Pokot doesn’t know to grab...our land has been taken at Soi in Trans-Nzoia...we hope to get it someday.” In the song the elder was wondering where to go, even though they finally settled in Makutano. He encouraged Pokot as a nation to reclaim their great-grandfather land. This song was unlikely to promote peace and harmonious coexistence among people, considering it provoked Pokot people to repossess their land. One could say that this was likely to be a time ticking bomb that could explode at any slightest provocation. However, one of the elders in FGDs pointed that Pokot were peace loving people, thus they have never retaliated. The elders lamented that after the white settlers left the country, Africans of colonialist relics conspicuously grabbed their land. He hinted that the community was extremely hopeful that sometime to come they would repossess their ancestral land. This could be the surest strategy to attain peace and reconciliation in Pokot, considering the arable land could produce vast food reserves for the community and Kenyans at large. A similar song has been composed to contest grabbing of Pokot land in Kapedo. Here the song goes: *Korenja kapedo koro Pokot, iripchikey tomoelukuchepokonon*, translated as Kapedo is our land, we urge non Pokot people to quit otherwise they would remain as slaves or refugees in our land. The Pokot people have believed that Kapedo is their land inherited from their great-ancestors. It is evident from the word Kapedo, a Pokot word meaning a hole in a rocky. It needs, however, to be pointed out that according to Kenya’s supreme laws; one was allowed to own a piece of land anywhere, within and without. This was primarily aimed to foster peace and social cohesion among people who are believed to be one in a one nation.

Some songs were found to be satirical, laughing about issues or happenings in the society. They encouraged warriors to be always alert as they defended community interests. For example, the famous Rolika, the guy who was killed and was put in a song explaining how he was killed. The song asked who told him to leave where he were? That was how he got killed. Moreover, one of the DPC chairs I interviewed observed that such songs challenged warriors: How many bulls you own? Where did you raid? How were you faring on in the community in terms of raiding? What titles do you earn? These songs had largely undermined peace in the sense that they have

energized and motivated warriors to regroup and instigate dangerous raids.

The results established that some of the songs have indirectly activated violence. A large majority of respondents in the questionnaire revealed that such songs advised members of the community to be patriotic and not to betray the community at best, thus rendering it vulnerable. A warrior was heard singing: *Kikimuny Apollo kunekegh pikipiki ochech chenyokoria*, translated as beaten Apollo to jump over the motorbike oh! You are a coward man and worth no salt at all. This song was sung to warn Apollo, the chief not to reveal the identity of people thought to have committed heinous crimes in the society to the government security agencies. However, the chief went ahead and uncovered the names of criminals against the norms set by the community, thus betraying the community. Subsequently, the members of the community waylaid the chief and he was thoroughly beaten and compelled to explain why he had betrayed community expanding its vulnerability as well as threatening its resilience against the harsh reality and enemies.

### Songs and Growth

The study found that in away peace has interlinked with growth of people. It was found that songs have been used as a strategy to promote peace and development as well as to appreciate the profound goodness of humanity. They have promoted the security of a region, protection of the community as well as life of people and economy. The elders whom I interviewed for this work emphasized that songs promoted peace and prosperity of people. For example, *chepalelayo* and *chepalale* songs, women and men sang as they danced along in traditional gears. The song encouraged unity and social cohesion of people. It promoted social transformation and healthy society; at peace with itself and all that is. Some other songs have encouraged national building, for instance, praised leaders who were development conscious, encouraged parents to take their children to school, praised people who had excelled in different sectors of economy, praised people with desirable behaviours, deemphasized laziness and so forth. Songs has also habituated certain actions aimed to promote equitable and caring society. A large majority of respondents in the questionnaire revealed that songs condemned laziness in the community, for example, a woman condemning laziness could be heard singing: “You are the lazy, you are lazy, you need to be thrown out of this community.” Moreover harvesting songs have criticized those communities who had harvested sparingly. They disparaged laziness to greediness as well as motivated people who were faring on well in the spheres of life. This kind of songs have increasingly promoted growth and shared prosperity among people. They have motivated people to strive in achieving their potentiality fully as they were destined by God.

It emerged that songs have promoted peace, unity and harmonious coexistence among the Pokot people and among other pastoralist communities. For example, war songs emphasized on unity and courage among people which has translated to unity of purpose as seen in today’s lives of pokot people when undertaking activities such as farming. Another example, Tegla Loroupe

Peace Foundation (TLPF) had used songs to unite Pokot, Turkana people of Kenya, and Karimojong people of Uganda. As one of the women hinted, composing and performing transformative songs that injected the message of peace, love and harmony, as a way of inculcating and nurturing peace among the youngsters, it is likely to be a surest strategy to promote sustainable and lasting peace among the belligerents and growth. For example, the song that was earlier stated encouraging young men to go and burn Turkana people to ashes, could be recomposed replacing the lyrics of peace, love, and underlining the oneness of humanity. Moreover, church related songs were central in promoting peace. They spread the gospel of peace and reconciliation among the warring communities. For instance, in the song below, the singer asks God to grant the community peace, love, joy and happiness.

<i>Yesu ikonech kalya kau</i> ×2	Jesus give us peace in our homes ×2
<i>Omba kau Ketumo nyoman</i> ×2	in our home let us sing joyfully ×2
<i>Omba kau ke tasa nyoman</i> ×2	in our home let us praise Lord ×2
<i>Omba kau ke liliyo nyoman</i> ×2	in our home we praise Lord with joy ×2

<i>Yesu ikonech chomyot omba</i> ×2	Jesus give us love in our homes ×2
<i>Omba kau kesaah nyoman</i> ×2	in our home we worship you ×2
<i>Omba kau keliliyeno nyoman</i> ×2	we praise and glorify you ×2
<i>Omba kau kerapaka</i> ×2	in our home we clap as we praise you ×2

This song is commonly sung in churches and events aiming to promote peace and development. As a Christian, whenever I am in church and the choir sings this song, it awakens the inner feelings of people. Young and old sings as they dance along spiced with beautiful gestures. This implies that the song penetrates to the inner core of a person, touching the soul, body and mind. It delivers the message of peace at home, as it is.

Example of songs that enhanced peace in Pokot were,

<i>Mitoni ngolyon nyole akonga,</i>	there is one word,
<i>Nyo mchinecha keyamtena,</i>	that we should preach,
<i>Akenamcha- Kalya,</i>	and maintain- peace,
<i>Akeghan lo owoy,</i>	and admit fully,
<i>Kuperurecha Tororot.</i>	God may bless us.

<i>Karam Kecham key</i> ×3	it's good to love each other ×3
<i>Kapchetulel</i>	people of Cheptulel
<i>Ka Kanyerus</i>	people of Kanyerus
<i>Ka Alale</i>	people of Alale
<i>Karimojong</i>	people of Karimojong
<i>Werpo Kalenjin</i>	people of Kalenjin
<i>Pich lapoy</i>	all people

The study findings reveal existence of a dichotomy between songs and work. Work was always accompanied with songs. Songs praised hardworking people, praised astute leaders, and encouraged leaders to be accountable as well as encouraged youngsters to emulate successful men and women in the society. This findings were augmented with that of elders FGD that songs encouraged people who were hardworking, praised astute and transformative leaders as well as were sang during various cultural activities and celebrations appreciating the outcomes of hardworking and success in life. One of the elders whom I interviewed noted that other songs have praised good performing people such as teachers, doctors, nurses, leaders, police, and elders appreciating their good work. Another elder reflected that songs have spurred development in the community by praising result oriented leaders. For instance, there were songs dedicated to leaders who had built schools, hospitals and constructed roads. Some of social institutions were named after such leaders to motivate them as they continue serving people diligently.

From my own observations and experience of the researched area, Pokot people were extremely gifted to sing and dance. This talents and abilities can be tapped to create wealth for the community, in particular, and the country at large. For example, in *lalehyo* song women danced with men guided by a soloist. The song informed a wide array of things about the community, namely; condemned theft, praised pumper harvest, and mentioned quire features in people like a man loved by many women. The findings from the questionnaire corroborated that songs were sources of income as they promoted cultural practices that attracted tourism. Moreover, school children have excelled in singing. They have received accolades for emerging winners in musical festivals. This has helped them to form singing groups such as kaywelank which has in turn generated incomes to the members. This resonates well with the findings that Pokot has extremely rich culture that could be tapped to generate income to the community. The indigenous songs, for example, could be recorded in albums and tapes in a bid to earn a living as well as build fame. The community could as well establish cultural centres displaying wide-ranging cultural art or social facts in a view to attract more foreign exchange. One of the women interviewed commented, “We sing so much but we have no means and exposure to record the songs to earn a living. Many of these songs have preached peace and encouraged hardworking.” A youth I interviewed added that, “A few educated people have recorded songs in CDs people that has generated incomes. For example, we have young girl artist who has generated a lot of resources out of it. This has promoted the well-being of people.”

Some of the songs performed during *sapana* were development conscious. The songs motivated women, men and children to work extremely hard as a way to generate vast wealth to grow prosperity of people. An elder could be heard singing: *Eliki nyemuru nyekales yaa, aliki nyemuru lokerei yaa* ×2 (this animal known as ostrich is strong like a rock ×2). This song was sung by elders at the start of *sapana* rite of passage according to singing protocol. They could wear jingles on their legs and ostrich feathers on their heads. The above song informed that Pokot



great-grandfathers used ostrich to generate wealth. It was noted that while elders were in the grazing fields, they could find the eggs of an ostrich which they took home and hatched them in the ash near the fire until they produced young chicks. The chicks were cared for, grew to become the adult ostriches. The feathers of this bird were used in two ways. One, exchanged feathers with goats or sheep. Two, used the feathers for the ceremonies like *sapana* to bring beauty and to make it more colourful. This promoted social and economic growth of the community.

The results further revealed that songs have emphasized the importance of peace and development in the community. They have encouraged people to cooperate while dealing with new challenges of peace in a bid to cultivate harmony and human dignity. The post-conflict period people have composed songs hutching others to concentrate in development initiatives. The songs motivated people to farm or to work using their own hands. The findings resonated with that of the questionnaire that songs have encouraged schooling besides educating people on contemporary emerging issues. In schooling, songs encouraged girls and boys to join school considering it has unprecedented benefits. They deemphasized those cultural practices that have undermined schooling of children such as CR, female genital mutilation (FGM) and earlier marriages. In contemporary issues, songs created public awareness on emerging issues such as HIV/Aids, FGM, adult education, information technology, environment, drugs and substance abuse, and so forth. These findings mirrored that of interviewees that songs motivated parents to take their boys and girls to school in one spectrum, and on the other, the school children encouraged parents to take their peers to school as seen in this example:

*Opono monunge kusoman toketeka korenyo kumermer*

*Ompo kama kayelow kusoman toketeka korenyo kumermer*

Translation,

Bring children to learn so that we build our community

Those of mama *kaedou* (hill) to build our community

In this song, *mama Kaedou* were those young women who had not gone to school. The song encouraged them to join school in order to get empowered such that they could lend hand in community development. The song amplified the premise by gender revolutionists that if we educate a woman, we educate the whole nation. And if we empower a woman, we empower the whole nation.

### **Conclusion and Recommendations**

Cultural practices among the pastoralist communities like Pokots have increasingly fed the vicious cycle of violent conflict that has been experienced in the researched areas. Such practices such as *sapana*, songs, and cattle rustling, if carefully tapped, they are liable to create conditions necessary to foster lasting peace in one eye, and on the other, could be the critical enabler of human growth. That is to say, the culture of violence could be transformed to the culture of peace



and prosperity through the concerted efforts of all peace actors who shall abolish the structures of violence as they develop the resilient structures favouring sustainable peace. This study suggests that: The county government and the community should establish a number of cultural centres considering the area is very rich in terms of culture and attractive sceneries offering a huge potential for tourism industries to be established which is likely to transform the vicious cycle of violent conflict to lasting peace and shared prosperity; and, County government to develop peace perks with statures of prominent people who have contributed to global peace. This will always remind the community never again to engage in violent conflicts that has robbed the community prosperous lives for decades.

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### **The Doomed Future: An Analysis of The Impact of ‘Muguka’ Abuse on University Students’ Academic Performance: A Case of Machakos and Kitui Counties, Kenya**

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#### Abstract

*The problem of miraa (khat) abuse and its derivatives has been an area of concern in Kenya in the last decade. The previous studies carried out in this area revealed that the abuse of muguka, a derivative of miraa has been on the increase at the university level in Kenya. The purpose of*

*the study was to investigate the impact of muguka abuse among university students in Machakos and Kitui Counties. Specifically, the study was set to establish the prevalence of muguka chewing at the university level according to gender and locality of students' residence in Kenyan universities, to establish the relationship between muguka abuse and students' academic performance and to find out the challenges faced by university students abusing muguka. The study used descriptive survey design. Stratified and simple random sampling techniques were used in the study. The sampling matrix comprised of 400 respondents; 344 students, 30 lecturers, 20 Heads of Departments and 6 student counselors. The study used two research instruments; a questionnaire and an interview. The data was analyzed using measures of central tendency. The findings of the study were; the prevalence of muguka abuse according to gender was male students 42.94% and female students 7.07% respectively. The students residing outside the university hostels had a prevalence of 45.17% whereas those staying in the university hostels had a prevalence of 35.50%. The students abusing muguka faced variety of problems; poor academic performance poor class attendance and indiscipline problems. The study recommends that university managements should promote primary prevention of muguka abuse through strengthening the Counseling departments.*

Key words: *abuse, academic performance, challenges, prevalence*

## **Introduction**

The abuse of drugs among university students has been reported to be on the increase since 2000 according statistics at NACADA (NACADA, 2001). This problem was predominant in the developed countries from 1950 upto-date (Johnston, 2015). In a study on causes of drug abuse among teenagers in Canada, Carter & Mason (1997) revealed that majority (79%) of the university student's abused one drug or a combination of drugs such as cocaine, heroin tobacco, alcohol and Marijuana. Studies also carried out in Britain show that the abuse of bhang, alcohol, heroin, cocaine and miraa has been associated with the youth and in particularly university students since 1950 (Elizabeth, Susan, & Suman, 2003).

In most sub-Saharan countries, a similar trend of drug abuse has also been reported in various studies; medical drugs, inhalants, cocaine, heroin tobacco, alcohol and marijuana (Nnaji, 2000) The Kenyan situation about drug abuse reports comparable results (Oketch, 2008). Kombo (2006) noted that abuse of miraa and its derivatives is increasingly becoming a major problem among university students in Kenya.

The university students usually abuse drugs due to a variety of reasons: rebel against authority such as the university administration or parents; inflict physical pain on oneself and for relaxation (Anderson, 1998). According to Muya (2014), students also abuse drugs because of excessive pressure from lectures and parents on academic performance, peer influence and especially when the first year students join wrong and run away from the reality when life seems

to be unbearable. Ndeti (2002) further notes that university students abuse drugs due to lack of proper role models at school and also the lack of effective counselling structures. positive leisure activities.

### ***Research Problem***

Despite the efforts made by the government of Kenya to wipe out the problem of Muguka chewing among university students, recent findings indicate that the chewing of Muguka is still on the increase at the university school level in Kenya (Mueke, 2014). The prevalence of muguka abuse at the national level among university students in 2011 was 37%. In 2012, it was 40.6%, whereas in 2016, it was 41.4%. The prevalence according to the information documented by the Ministry of Education for the years: 2013, 2014 and 2015 was 41.8%, 42.5% and 42.9% respectively (NACADA, 2016). The data presented above shows that the prevalence of muguka abuse at the national level has been going upward.

In Machakos County, information documented at the County Education Office indicates an upward trend on the prevalence of muguka abuse at the university level. The information shows that 41.5% university students abused muguka in 2013, while the prevalence rose to 41.2% and 43.7% in the years 2014 and 2015 respectively (Machakos County Education Registry, 2016). In the same period, the prevalence abuse of muguka abuse among university students in Kitui County was 41.3%, 41.7% and 42.8% respectively (Kitui County Education Registry, 2016). The problem of the study was therefore to investigate the impact of *muguka* abuse among university students in Machakos and Kitui Counties

### ***Limitations of the Study***

This study was limited by the intervening variables related to the characteristics of the universities selected for this study only. These included the status of each university school (provincial or district) and the school's resource base. The study was also limited to lecturer-related variables; experience in university life and personal competency on matters related to drug abuse among the university students. Student's knowledge on muguka abuse could also have influenced their responses in the questionnaire. Another limitation to the study was related to sample size. Specifically the study was affected by the intervening variable of mortality rate where some respondents of the study returned their questionnaires partially filled. The effects of such variables were likely to have affected the results of this study.

### ***Delimitations of the Study***

This study delimited itself to public universities in Machakos and Kitui Counties, Kenya. Preferably, the universities sampled for the study should have been drawn from all counties in Kenya. However, this was not possible due to financial and time restraints. This study also narrowed itself to second and fourth year students and lecturers in public two public universities

in Machakos and Kitui Counties. Thus the current study was confined to the variables that were related to muguka abuse. Once more, this choice was taken due the financial and time constraints.

### **Methodology of Research**

The study used both qualitative and quantitative methodologies; however, quantitative methods were prioritized. The study used descriptive survey design. The design was applied since a large numbers of respondents were targeted to give their opinions and thoughts and even justify their response. The survey adopted a cross-sectional design and used students, lecturers, Heads of Departments and student counsellors simultaneously in the study.

### **Sample of Research**

The target population of this study comprised of approximately, 15200 students, 350 lecturers, 60 Heads of Departments and 10 student counsellors in Machakos and Kitui Counties. The subjects of the study were drawn from two purposively selected public universities. A sample of 400 respondents was selected through stratified and simple random sampling techniques. The sampling matrix comprised of 400 respondents; 344 students, 30 lecturers, 20 Heads of Departments and 6 student counselors.

### **Data Collection Tools**

The study utilized two research instruments: a questionnaires and an interview schedule. The validity and reliability of the research instruments was established by piloting the instruments in two public universities in Nairobi County. The items in the research instruments were improved after the pilot study. The reliability of the research instruments was determined through the test-re-test correlation formula. The reliability coefficient for the instruments was: Students' Questionnaire (0.83), Lecturers' Questionnaire (0.74) and Head of Departments Questionnaire (0.87).

### **Data Analysis**

The data collected was analyzed using frequencies, percentages, mean and mode.

The data analyzed was categorized and presented as follows:

- i. Prevalence of *muguka* abuse at the university level according to gender and locality of students' residence in Kenyan universities.
- ii. Relationship between *muguka* abuse and students' academic performance.
- iii. Challenges faced by university students abusing *muguka*.

### **Results**

#### *Prevalence of Muguka Abuse at University Level According to Gender and Locality of*

*Students' Residence in Kenyan Universities*

*a) Prevalence According to Gender of students.*

The subjects of the study were asked to state the prevalence rate of muguka abuse among university students according to gender parity. The findings from the student respondents showed that the computed prevalence rate for muguka abuse among the male students was 42.94%. On the other hand, the calculated mean for the prevalence rate of muguka among the female students was 7.07%. In terms of group rating, the modal class for the muguka abuse was 41-50% for male students whereas that for the female ones was 1-10%. This means that more male students abused muguka as compared to their female colleagues. A summary of the study findings on prevalence rate for muguka abuse in the universities selected for the study according to gender is shown in the Table 1

Table 1: Prevalence of Muguka Abuse According to Gender of University Students According to Student Respondents

Gender	Class	Frequency(f)	Mid point(x)	fx	Mean
Male	1-10	1	5.5	5.5	<b>42.94</b>
	11-20	5	15.5	77.5	
	21-30	21	25.5	535.5	
	31-40	27	35.5	958.5	
	41-50	290	45.5	13195	
	<b>Σf</b>	<b>344</b>		<b>Σfx=14772</b>	
Female	1-10	323	5.5	1776.5	<b>7.07</b>
	11-20	4	15.5	62	
	21-30	5	25.5	127.5	
	31-40	8	35.5	284	
	41-50	4	45.5	182	
	<b>Σf</b>	<b>344</b>		<b>Σfx2432</b>	

The lecturer respondents reported a similar configuration of the prevalence of muguka abuse. For instance, they stated that 43.2% male students had abused muguka. Five (62.5%) of student counselor interviewees reported that cases of muguka abuse at the university level were increasingly becoming a vice among students. There were only three student counselor interviewees who reported a low prevalence rate of muguka abuse among students in their universities. However, an interview with other lecturers from the same universities revealed that the three student counselor interviewees had only served for a few months at their universities before the study was carried out and hence their opinions were not reliable. The data collected from the Heads of Departments' respondents showed that both male and female students were vulnerable to muguka abuse.

#### *b) Prevalence of Muguka Abuse According to Locality of Students' Residence*

The study also aimed at establishing the prevalence of muguka abuse according to the locality of students' residence. The data collected according 15(75.00%) Heads of Departments sampled for the study showed that most of the university students were non-residents (living outside the university) whereas the rest 5(25.00%) were residential students. The prevalence rate of muguka abuse was higher among the non-residential students at 76.67% compared to that of the residential ones (23.33%) as reported by the student respondents. A summary of the responses by the lecturer respondents is shown in Table 2

Table 2: Locality of University Students' Residence in Machakos and Kitui Counties  
According to the Lecturer Respondents

Locality	Class	Frequency(f)	Mid point(x)	fx	Mean
<b>Residential</b>	1-10	3	5.5	16.5	<b>35.50</b>
	11-20	2	15.5	31	
	21-30	4	25.5	102	
	31-40	4	35.5	142	
	41-50	17	45.5	773.5	<b>45.17</b>
	<b>Σf</b>	<b>30</b>		<b>Σfx=1065</b>	
<b>Non-Residential</b>	1-10	3	5.5	16.5	<b>45.17</b>
	11-20	2	15.5	31	
	21-30	1	25.5	25.5	
	31-40	0	35.5	0	
	41-50	5	45.5	227.5	
	51-60	19	55.5	1054.5	
	<b>Σf</b>	<b>30</b>		<b>Σfx 1355</b>	

Table 2 shows that the computed mean for muguka abuse prevalence rate among the non-residential students was 45.17% whereas that for the residential ones was 35.5%. The modal class for the prevalence rate was 41-50% and 51-60% among residential and non-residential students respectively. This suggests that the students living outside university hostels were more likely to abuse muguka compared to those living within the university hostels. The findings shown in table 2 were supported by those of the student counselors who said that majority cases they handled during guidance and counselling sessions on muguka abuse involved found among the non-residential students. This observation was linked to the fact that the non-residential students could easily access muguka on their way to and fro the university. The strict rules governing students living in the university hostels could also be isolated as deterrent to Muguka abuse among students. Interviews with some of the Heads of Departments confirmed the same trend of Muguka abuse among university students based on their areas of residence. For example, 11(55.00%) of the HOD interviewees suggested that non-residential students abused muguka whereas 9(45.00%) residential ones were also affected.

#### *Relationship between Muguka Abuse and Students' Academic Performance*

The study also sought to establish whether there was a relationship between the abuse of Muguka and students' academic performance. The findings of the study revealed that 35.00% HODs



respondents suggested that the abuse of Muguka does not affect the students' academic a performance. On the other hand 55.00% HODs agreed that abuse of Muguka could negative affected students' academic performance. These results were supported by the lecturer respondents when 66.67% suggested that Muguka abuse affected students' performance in their academic work. Similarly, 69.48% student respondents noted that the abuse of Muguka negatively affected their academic performance.

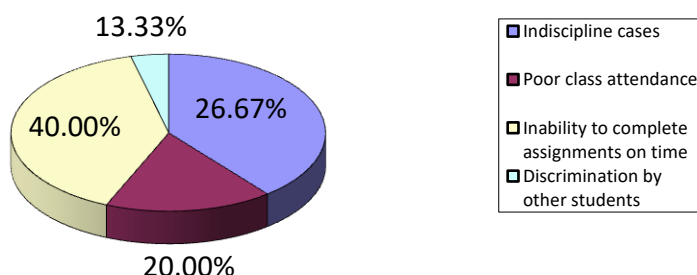
**Table 3: Relationship between *Muguka* Abuse and students' Academic Performance**

Respondent	Strongly Disagree	Disagree	Not Sure%	Agree %	Strongly Agree %	Total
HODs	3(15.00)	4(20.00)	2(10.00)	5(25.00)	6(30.00)	20(100%)
Lecturers	4(13.33)	4(13.33)	2(6.67)	11(36.67)	9(30.00)	30(100)
Students	38(11.04)	47(13.66)	20(5.82)	110(31.98)	129(37.5)	
Student-Counsellors	1(16.67)	1(16.67)	0(0.00)	2(33.33)	2(33.33)	6(100)

In addition, the findings of the study also revealed that 66.66% student counsellors agreed that the abuse of Muguka may negatively influence students' academic performance.

#### *Challenges Faced by University Students Abusing Muguka*

The teacher respondents were also asked to highlight the challenges faced by university students who abuse Muguka. A summary of their responses is given in Figure 1 below.



**Figure 1: Challenges Faced by University Students Abusing *Muguka***

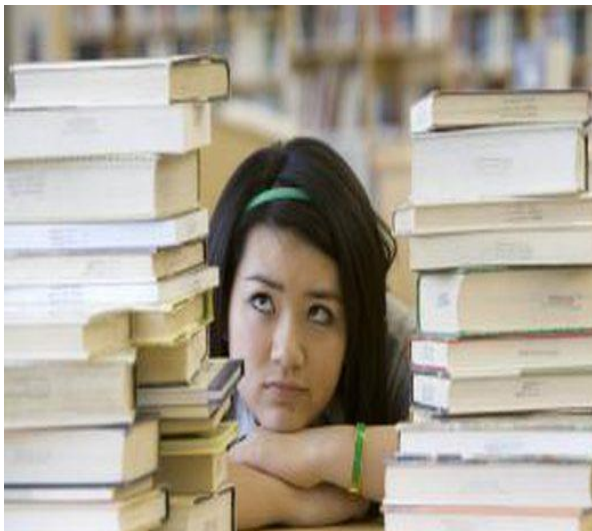
Figure 1 shows that 12 (40.00%) lecturer respondents revealed that students abusing muguka had a problem in completing their class assignments on time. Another 13.33% students abusing muguka were likely to be associated with indiscipline cases. Similarly the students abusing muguka were also discriminated by their classmates. Apart from the above challenges such students missed lectures from time as indicated by 20% of the lecturer respondents. These findings were further supported by the student counsellors who also revealed that 33% of the counselling cases they handled involved students who abused muguka. Another challenge faced by university students who abused muguka as highlighted by Heads of Department was that of missing marks. This was triggered by the students' inability to register the units for every semester. In addition, such students had a myriad of personal problems as shown in the pictorial illustrations in page 10 and 11.



Increased crime rates



Increased crime rates



Poor concentration



Academic stress



of the  
enced  
is n  
n pr  
e wa  
buse  
so fo

were in second year. The female ones were introduced into drugs by their boyfriends towards the end of their studies. This finding proposed that male students were more susceptible to drug abuse as compared to their female colleagues. Similarly studies carried out by Kimiti (2011) and Smith (2001) showed that drug abuse prevalence is strongly influenced by gender due to the different cultural upbringing between male and female children.

Although the findings of this study suggested that muguka abuse was more prevalent among the non-residential students compared to those in living in university hostels, the results seemed to contradict those of a study carried by Nnaji(2000) which reported no significant correlation between drug abuse prevalence and the locality of a student's in a study carried out on college students in Nigeria. According to Siringi & Waihenya (2001), the prevalence rate of muguka abuse among university students in Embu County, was significantly predisposed by the economic activities from the students' home background. The universities with established rules and regulations were found to have a lower prevalence rate compared to those with more liberal rules and regulations. However, research findings of a study carried out in South Africa concurred with the findings of the current study when they reported that the prevalence of drug abuse was influenced by the locality of the residence (UNDP, 1994).

Although the findings of this study suggested that muguka abuse has negative effects on students' academic performance, the results seemed contradict those of Mithamo (2004) when he reported miraa and its derivatives is not an addictive drug and consequently does not affect someone's functions in any way. Similar sentiments were voiced by the former govern of Meru when campaigning against the ban of miraa exports to Britain as illustrated in the photo below;



Former Meru Governor Peter Munya chews miraa in Ntonyiri, Igembe North on June 8. A new study indicates miraa leads to poor academic performance (Mose Sammy, Standard 30<sup>th</sup> June 2017)

However other studies carried out elsewhere tend to concur with the findings of the current study. Similarly research findings of a study carried out in Nigeria further agreed with the results of the current study when they reported that alcohol abuse was associated with academic retardation among university students Nnaji (2000). Thus the findings of the current study point out that muguka abuse have a long lasting impact on students' academic performance.

The challenges associated with drug abuse have been underscored earlier in several studies not only in Kenya but across the globe (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). According to Obot(1993) , Kilonzo (1992)and Chesang (2013), many deaths caused by road accidents among the youth are attributed to drug abuse. The abuse of Muguka is not an exception. The findings of the study carried out by WHO (2012) seemed to be in agreement with the findings of the current study it reported that Muguka abuse among university and college students had robbed Kenya a good number of untapped talents in the last one decade.

### **Conclusions**

The findings of this study as reported and discussed in this section revealed that the prevalence rate of muguka abuse among university students in Machakos and Kitui Counties was higher



among male students school compared female ones. It was also established that non-residential students had higher muguka abuse prevalence rate compared to the residential ones. The following are some of the challenges faced by university students abusing Muguka: inability to complete class assignments on time indiscipline cases, discrimination by their classmates, missing lectures, missing marks, inability to register the units for every semester and a myriad of personal.

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## The Virtue of Academic Integrity: Prevalence, Antecedents and Intervention Measures

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### Abstract

*This paper explores literature on one of the most rampant vices (academic dishonesty) that have existed in institutions of learning for many years. A number of studies have documented and demonstrated alarming cases of academic dishonesty in several countries. Kenya has not been spared and a number of measures have been put in place to deal with the vice in learning institutions and national examinations. Academic dishonesty poses a significant threat to the academic integrity of institutions of learning as well as the proper development of students' academic skills, since it undermines the learning process. Research evidence points at some factors that have contributed to lack of academic integrity among students including: pressure for good performance, heavy academic workload, pressure to please family and guardians, lack of awareness of institutional regulations, poor language skills, limited access to reading materials, peer influence, lack of ethics in a self-centered society, readily available internet information among others. These factors can be categorized as either individual or contextual. Among the interventions measures that have been tested and found to work to some extent include honor codes, detection measures, discontinuation from pursuing studies and cancellation of examination results. Despite the tough measures, the problem has not been completely eliminated. To minimize the problem, there is need to evaluate research undertakings with the aim of putting in place tried and tested methods that have been shown to improve the integrity of the examination process like what has been done in the past years in relation to the Kenyan national end of primary and secondary examinations.*

**Key words:** Academic integrity, prevalence, intervention, academic dishonest

### Introduction

Academic dishonesty manifests itself through several forms of cheating. This behavior poses a serious threat to the academic integrity of the individual and the institutions involved. Certainly, academic dishonesty is an individual, institutional as well as a societal problem. It affects the candidates involved, the institution, faculty, and the administration (Boehm, et al., 2009; Decoo, 2002; Fontana, 2009; Lipka, 2009; Rosamond, 2002; Wilkerson, 2009). Employers are likely to



avoid candidates from institutions associated with academic dishonesty since they are likely to taint the image of the organization.

Dishonesty, both in academic and employment sectors, has been a part of human problem since ancient times. For instance, in ancient China, civil service job applicants were separated during exams to prevent cheating, since the penalty for being caught was death (Jackson, Levine, Furnham & Burr, 2002). According to Jackson et al., theft by employees is responsible for the loss of between 5 and 50 billion dollars per year. Dishonesty and lack of integrity in the work place is likely to be an extension of lack of virtue of character that learners failed to develop while in school.

Academic integrity is a critical benchmark of every profession. In the past, special attention has been dedicated to addressing academic dishonesty (AD) in various levels of education with an aim of preventing the potential transfer of bad practice to the workplace. In order to effectively address AD in institutions of learning, information about prevalence, causes and barriers to effective intervention strategies is needed. This paper is an attempt to bring to light research evidence pertaining to issues surrounding academic integrity that no doubt compromises the ability of professionals to be innovative in their areas of specialization. The question arises as to why teachers and other educators would condone, perpetuate and aid learners to get involved in academic dishonesty in order to achieve high academic grades that will eventually earn them a job and hence transfer the problem of integrity into the job market.

Academic integrity is important because the people you deal with can trust and rely on you to act honestly and fairly in whatever responsibilities are assigned to you in a learning institution and in your future career. When people know that you believe in doing the right thing, and that your behavior is consistent with that belief, they trust you. People of good integrity develop the reputation of being honest, fair, trustworthy, reliable and so on.

The school curriculum covers mainly three domains (cognitive, psychomotor and affective). The affective domain, whose main concern is to ensure the development of good character including good morals, is put to test when learners engage in academic malpractices that are later mirrored in the larger society. Higher levels of education tend to concentrate on the cognitive domain at the expense of the other two.

Maintaining academic integrity is important for an institution because it provides value to the academic qualifications acquired as well as the institution. Employers prefer to hire graduates whom they believe to have high personal integrity in addition to good qualification.

Acting with integrity is beneficial to the individual since it can reduce a lot of unnecessary stress in life, making one happier, healthier, and more productive. A candidate who goes into an examination room with an intention of cheating may suffer unwarranted anxiety that may interfere with the normal thinking process to an extent of performing poorly when the chance to cheat is thwarted or do not arise.

Academic cheating can occur at either the institutional or individual level. At the institutional level, attempts are made to have inflated scores perhaps to ensure that students do well. This might happen at transitional levels where the awarding body is external.

### *The Concept of Virtue of character, Academic Integrity and Dishonesty*

Academic integrity involves upholding ethical standards in all aspects of academic work, including learning, teaching and research. It involves acting with the principles of honesty, fairness, trust and responsibility (University of Wollongong, 2017). Academic integrity is a broad and inclusive term used to identify ethical conduct in educational contexts.

Academic integrity involves honesty in the preparation, completion, and submission of assignments and examinations, as well as the interactions that occur among students and between educators and their students (Bertram Gallant & Drinan in *Can J High Educ.* 38(2):25–44, 2008; Devlin in *J High Educ. Policy Manage* 28(1):45–58, 2006).

On the other hand, Guthrie (2009) defines academic dishonesty (AD) as any academic behaviour that does not comply with stated assessment requirements and other institutional policies; when students behave in ways intended to gain undue benefit in relation to their assessment. A virtue is a trait of character, manifested in habitual actions that are good for a person to have. The term also refers to the quality of doing what is right and avoiding what is wrong.

Adams State University in the United States of America provides a list of academic dishonesty behaviours including, but not limited to the following:

- Copying from another student's examination,
- Purchase of a term paper and turning it in as one's own,
- Feigning illness to avoid an examination,
- Submission of the same term paper to another class without permission,
- Studying of a copy of an examination prior to taking a make-up examination,
- Providing another student answers during an examination,
- Use of notes or book during an examination when prohibited,
- Turning in a "dry lab" without doing the experiment,
- Sabotage of someone else's work (on disk, in lab, etc.),

- Collaboration on homework or take-home examinations when instruction called for independent work,
- Providing test questions to student,
- Sharing of answers during an examination by using a system of signals,
- Plagiarism: appropriating or passing off as one's own work the writings and ideas of another person, i.e., copying without giving credit due, forgery, literary theft, or expropriation of the worker of others,
- Writing assignments for another student,
- Alteration or forging of official university document,
- Violation of copyright(s),
- Cheating on examinations, papers, and assignments,
- Purchasing or requesting the service of completing course requirements from a third party source,
- Utilization of unapproved electronic devices during testing (i.e. cell phones, tablets, media players, etc.),
- Coercing a third party to complete an examination on your behalf,
- Providing or falsifying information on registration, examination request forms, etc.,
- Supplying or using work or answers that are not your own,
- Providing or accepting assistance in completing assignments or examinations,
- Interfering in any way with someone else's work, and
- Stealing an examination or solution from the teacher.

Plagiarism which is a serious form of academic dishonesty occurs when a person represents someone else's words, ideas, phrases, sentences, or data as one's own work (Higbee & Thomas, 2002). When submitting work that includes someone else's words, ideas, phrases, data or organizational patterns, the source of that information must be acknowledged through complete, accurate and specific references. All word for word statements must be acknowledged through quotation marks. This is a more serious violation at postgraduate level.

#### Prevalence of Academic Dishonesty

Academic dishonesty may be more widespread than one can imagine. It may not be possible to get statistical data from all parts of the world. However, available research shows that it is a universal phenomenon to be found in many geographical regions of the world. Empirical studies indicate that cheating by students in post-secondary institutions is prevalent in many countries, including Poland, Germany, Spain, Portugal, the Middle East, Nigeria and Taiwan (Hughes, Butler, Kritsonis & Herrington, 2007; Teixeira & Rocha, 2008; McCabe, Feghali & Abdallah, 2008; Olasehinde-Williams, Abdullahi & Owolabi, 2003; Lin & Wen, 2007).

In their survey of undergraduate students in Western Pennsylvania Lord and Chiodo (1995)

found that 83% of the respondents had cheated in the past or during the current academic year, 80% had admitted to using crib notes or written science terminologies on their shoes, wrists or other parts of their bodies during minor quizzes and over three quarters admitted cheating on major examinations and projects.

A survey of 700,000 students in America, 80% of the respondents admitted as having engaged in academic dishonesty (Clayton, 1999; Morales, 2000). Approximately 80% of high achieving high school students and 75% of college students admitted having cheated (Anderman, 2000). About 88% faculty members as have been reported as having witnessed academically dishonest behaviors in their students (Morales, 2000). According to Kiogotho (2009), nearly 21% of students who say cheating is bad still engage in the behavior. Kenya has not been spared from this vice. According to Siringi (2009), over 60% of students in colleges and universities in Kenya admitted having cheated in examinations. According to Khaemba (2008), 1.5% of students who sat for Kenya Certificate of Secondary Education (KCSE) examination were reported to have cheated. In the year 2008 KCSE examinations Masaba District had 0.56% cases of cheating, second to Migori District which had 0.79%. During the 2017 KCSE examination, results for 1,205 candidates alleged to have been involved cheating were cancelled (Magoha, 2018).

In a study conducted by Lambert et al. (2003), 83% of students admitted to have been involved in some form of cheating. Some students reported being involved in the vice more than once. Research evidence among researchers suggest that plagiarism is on the rise in Western countries (Ashworth, Freewood, & Macdonald, 2003; Hayes & Introna, 2005). The reasons why students plagiarize are varied and include academic pressures, poor planning, poor preparation, excessive workload, and opportunities for cheating, cultural background, and prominent bad examples in society (Thomas, 2004).

Research in high schools show that 75% of students cheat on tests and 90% cheat on homework. Similar findings have been reported in colleges. Moreover, it is evident that the rates of cheating have gone up over the past three decades (Stephens, 2004).

In a study of 291 science students, 50% of them admitted to have cheated using the internet (Szabo & Underwood, 2004). Brandt (2002) found that students plagiarized in various ways including the following:

- i. Stealing material from another source and passing it off as their own;
- ii. Submitting a paper written by someone else and submitting it as one's own;
- iii. Copying sections of material from one or more sources and deleting the full reference; and

- iv. Paraphrasing material from one or more source(s) without providing acknowledgement.

Despite the tough measures taken against examination cheats including cancellation of results and suspension from sitting for the examinations again, examination cheating seems to persist in many parts of Kenya.

### *Antecedents of Academic Dishonesty*

There are number reasons that make students to engage in academic dishonesty practices. Society has always insisted that students must acquire good qualifications for future employment, financial security, and for personal reasons (Choi, 2010; Cohen & Brawer, 2003; McCabe, Butterfield, & Trevino, 2006). Students often believe that they will receive better and well-paying jobs from future employers if they have exceptional grades (Norton, Tilley, Newstead, & Franklyn-Stokes, 2001). Good academic grades are considered as an important measure of success in society. This consideration has an impact on the lives of students, thus putting undue pressure on them (McCabe et al., 2006; Norton et al., 2001) and making them extremely concerned about the grades they receive (Choi, 2010; McCabe et al., 2006; Wilkerson, 2009).

McCabe et al. (1999) identified the factors that have been found to influence cheating, including pressure to get high grades, parental pressures, a desire to excel, pressure to get a job, laziness, lack of responsibility, lack of character, poor self-image, lack of pride in a job well done, and lack of personal integrity.

Higbee and Thomas (2002) categorize causal factors to academic integrity as external and internal. External factors include pressures to achieve good grades, the classroom environment and relatively low risk of detection, institutional policies on academic honesty, and performance and achievement issues. Internal factors include personality characteristics, test anxiety, demographic factors among others. Self-discipline is important for a student to resist the temptation to cheat in examinations.

Students cite a diversity of reasons as to why they cheat. Some have cited ignorance (Jocoy, 2006), poor professors and teaching environments (Sterngold, 2004), inadequate policies and penalties regarding academic dishonesty (Macdonald & Carroll, 2006), peer influence (Brown, 2002), opportunity (DiCarlo, 2007), availability of information from the internet, the need to get a good job; and a cheating culture in our society (Langlais, 2006; Sterngold, 2004).

The availability of information from the internet has aggravated the problem of academic dishonesty. Available literature suggests that the internet and technology play a major role in the increasing number of students who are involved in academic cheating (Harper, 2006). The

prevalence of digital resources provides an environment where academic dishonesty such as cut and paste plagiarism can be extremely easy. Researchers have found that the computer, and/or the Internet, has been the most misused and abused technologies in academia (Boehm, et al., 2009; Hansen, 2003; McCabe, 2009; Park, 2003; Roach, 2001; Szabo & Underwood, 2004; Wood, 2004). This implies that information and communication technologies have made academic dishonesty easier than ever before (Underwood & Szabo, 2003).

Gomez (2001) reported that many students tend to view cheating as a victimless crime, and students are demonstrating the application of the no big deal phenomenon. Students would perhaps argue that it does not cause any harm to a third party. After all it is their lives that will be affected.

Some institutions are also to blame for the vice. Cheating and unethical behaviors are often tolerated by administrators and faculty who are concerned about maintaining their reputations as well as the stress associated with being involved in the university disciplinary processes (Boehm, et al., 2009; Danielsen, et al., 2006).

Lowered risk of punishment (Leming, 1980), peer behavior and peer disapproval are some of the situational factors identified as having a role to play in student cheating (McCabe & Trevino, 1993, 1997).

Reports by students engaging in examination malpractice show that majority (90%) consider it wrong yet about 76% of them report having cheated at least once in high school or college. Detection by teachers and professors was reported to be as low as 1.3%. This seems to suggest that not getting caught could reinforce students to engage in academic dishonesty (Davis, et al. 1992). It could be true that students are aware and share information on fellow colleagues who cheat and are rarely caught and punished, a situation that motivates more to cheat.

### *Dishonesty in the Workplace and Society*

The long term impact of lack of the virtue of academic integrity cannot be overemphasized. Academic dishonesty appears to be a precursor to workplace dishonesty. Students who cheat on tests are more likely to engage in dishonest activities in the workplace than those who do not (Graves, 2008). Worse still, this may cause irreversible damage to their colleagues and more particularly those in high-risk professions such as engineering, medicine, dental hygiene, nursing, police force and so on. The reputation for the organization they work for cannot be spared either. Many employers nowadays demand competent graduates whose integrity is unquestionable and uphold high ethical standards in order “to cope with the pressures and

complexities of working in a rapidly changing, competitive environment” (Zahran, 1997, p. 124). For example, in Kenya it is mandatory in some professions (teaching, police force etc.) to present a certificate of good conduct before one is considered for a job.

Whether we admit it or not, those students who cheat are the same people who will be responsible for civil society and the economy. They are the future employees who will serve our food, clean our buildings, vaccinate our children, provide us with prescription drugs, and report our news and so on. There is little or no doubt that the problem of dishonesty in the academic system will very easily generalize over into the work setting. Academic dishonesty leading to workplace dishonesty has the ability to do harm to members of the society who count on its workers to be innovative, productive and honest.

Nonis and Swift (2001) after reviewing a number of past studies concluded that students who engage in academic dishonesty are more likely to engage in dishonest behavior on the workplace. The many instances of workplace dishonesty supports the argument that the issues of integrity in society have their root cause in the academic lives of learners.

### *Intervention Measures*

Society cannot afford to watch academic dishonesty keep on increasing and destroying the core of our academic institutions which is mainly to bring out the best talent and nature innovation and creativity. Widespread abuses of academic integrity may lead to endemic corruption (Crittenden, Hanna, & Peterson, 2009). At the university level, a reputation for academic dishonesty will dilute degrees and potentially threaten the institution’s accreditation.

To be effective, intervention initiatives require consistency and should emphasize on the norms and core values of the institution and community (Carpenter, Harding, Finelli, & Mayhew, 2005). In case dishonesty prevails over integrity, the notions of independent thinking, intellectual property, the struggle of original thought, and academic freedom will all be at risk.

In a study carried out in Malaysia, Shariffuddin and Richard (2009) reported that even if preventive measures were to be taken, it was not possible to stop academic cheating completely although it could be deterred or minimized to a certain extent. This is because more creative and innovative techniques are used to cheat successfully. It is unfortunate that the students whom we are training to be innovative and come up with new inventions are putting into practice their innovativeness in discovering new methods of cheating.

Communication concerning academic integrity and the desire for more substantive sanctions for violation are perceived as some of the effective preventive measures (Gambill & Todd, 2003).



Sensitizing students has been identified as one of the possible approaches of dealing with academic dishonesty (Duff, Rogers, & Harris, 2006). Students can be provided with copies of the honor codes which may lead to lower levels of academic dishonesty because they clarify expectations and definitions of cheating behavior (McCabe et al., 1999, p. 212).

Sabieh (2002) suggests that students are more likely to avoid engaging in academic dishonesty once they understand why it is important that they comply with examination rules and regulations as well as how to properly express themselves in writing. Organizing workshops on academic integrity topics including partialism is another approach which learning institutions can adapt to minimize the vice. The table below presents a summary of some of the methods used in cheating, detection and proposed preventive measures.

Table 1. Summary of methods used in cheating, detection and prevention

<b>Cheating Method</b>	<b>Detection Method</b>	<b>Method Prevention</b>
Cell – photo: take photo of test question, send to someone at home, get silent text reply	Watch for cell phone usage of any kind	Prohibit cell phones in test environment
Calculator – program: type formulas or cheats into calculator before test begins	Patrol room frequently; watch for frantic clearing of calculator results; watch for “flipping through” calculator readout	Prohibit calculators in test environment; OR ask department to invest in a box of “simple” calculators to share for tests
Calculator – sharing: program cheats ahead of time and let someone else use the calculator during the test	Watch for sharing of calculators	Prohibit calculators in test environment; OR ask department to invest in a box of “simple” calculators to share for tests
iPod – professor: listen to recorded lecture during the test; possible to hide earphone wires behind long hair	Scan for earphone wires; patrol room nonstop	Prohibit iPod usage; require devices to be placed into backpack below desk
iPod – student: prerecord yourself saying formulas and cheats; listen during test	Scan for earphone wires; patrol room nonstop	Prohibit iPod usage; require devices to be placed into backpack below desk

(Kevin Yee & Patricia MacKown, 2010:8)

Other strategies that have been used to minimize academic cheating include the following:

- i. Communication of policies for dealing with academic dishonesty (Michael & Williams, 2013);
- ii. Reminding students that academic dishonesty is injurious to their future life;
- iii. Allowing students to collaborate, particularly for homework assignments, since students will see no need to steal (Stephens, 2004);
- iv. Letting students know that you trust that they can succeed in class without cheating (McBurney, 1996);
- v. In case students are motivated to cheat by fear of failure, consider assessing their learning through a variety of different mechanisms to minimize the temptation to cheat (Gooblar, 2014; Pope, 2014);
- vi. Make assessments fair (Stephens, 2004);
- vii. Try to structure assignments in such a way to make it very hard to plagiarize (McBurney, 1996);
- viii. Take control of the testing environment, and keep your eyes open (McBurney, 1996);

### **Conclusion**

From the literature that has been conducted in the past, it appears that it has not been possible to successfully deal with the problem of academic dishonesty. Despite the stringent measures that have been instituted on students caught cheating, the vice continues to persist. The evidence available seems to point to the fact that academic dishonesty somehow leads to workplace dishonesty. Nevertheless, the studies that have been done on this area have helped to shed some light on the extent and magnitude of the problem. Learning institutions and all stakeholders can be able to borrow some of the preventive measures that have been shown to minimize the problem since it appears that it may be difficult to completely eliminate the problem of academic dishonesty.

### **Recommendations**

Educational institutions and various stakeholders need to increase sensitization efforts towards awareness on regulations regarding academic dishonesty. Stakeholders need to ensure consistency and firmness in the implementation of recommended sanctions against examination malpractices. This way, students will get to know the seriousness of the matter. Parents and managers of institutions should try to minimize the pressure on good grades, high academic workload and other factors that have been identified as some of the leading causes of academic Dishonesty. Clear communication on policies on examination malpractices is critical in order to minimize the problem. Zero tolerance of academic offences can work towards minimizing the vice.

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## **Creative Approaches to Higher Education and Training for Sustainable Quality University Education for Sustainable Development in Kenya**

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### **Abstract**

*Education is a key for better life and effective foundation for smooth operations of person's lifetime. In the recent times university education is becoming irrelevant for hiring the individuals, in organizations and industries both locally, nationally and internationally. This is due to graduates from unfettered proliferation of Satellite University campuses in almost every town in Kenya churning half-baked graduates. The problem is the commercialization and politicization of higher education leading to poor standards and quality education leading churning out unemployable graduates trained courses which are unresponsive to market needs and industrial attraction. The objective is to investigate whether the satellite campuses offer courses with quality and standards. The paper employs a survey method and data collected through questionnaires from students in satellite campuses in Kitale, Eldoret and Nakuru towns through simple random sampling. The research paper target a population of 500 and 30% sample size. The key results shows that there is poor standards in satellite campuses because part time lecturers are not paid on time and wait for three years and lead to de-motivation as a consequence of poor teaching and supervision of students. Some lecturers do not submit the marked scripts and the management manipulate grades for students to graduate. There is insufficient and dilapidated infrastructure, boated enrolment, nepotism, tribalism and poor quality education offered in satellite campuses. It is concluded the emergency of university satellite campuses has led to poor quality and standards in universities leading to half-baked and unemployable graduates though having attractive grades. The research paper recommends*



*innovate approaches should be used for education reforms and restructuring be done in satellite campuses for sustainable education development in line with vision 2030. The satellite campuses should be allowed to operate if they have enough and full time qualified teaching staff and finances, without which standards of higher education will remain poor in Kenya.*

**Key words:** *Commercialization, education, politicization, quality, standards*

## **Introduction**

Tracing the quality and standards of university education in Africa, historical evidence indicates that the quality and standard of education was highly valued in Africa. However, as in other parts of the world, literacy in Africa was connected with religion, so that in Islamic countries, it was a Koranic Education, and in Christian Ethiopia, the education was designed to train priests and monks. In Egypt, there was the Al-Azhar University, in morocco, the University of Fez, and in Mali, the University of Timbuktu-all testimony to standard of education achieved in Africa before the colonial intrusion (Rodney, 2015:223). Quality and standards of education in Kenyan universities is low due to the fact that the lecturers embark only the teaching pillar and forget about other pillars of research and community outreach. The part times have no time in research due to the fact of their deplorable financial state resulting into being unable to research and publish. There is evidence that universities have gone teaching without involving students in research and community outreach. In the early university was of a high quality and standards was maintained because lecturers involved students in doing research and publication. Many of the monographs and articles for Departmental teaching were prepared and published by the lecturers through the research work conducted by their students in Makerere University, University of Nairobi and Dar-es-Salam University. These universities had a balanced standards and quality education in three pillars of the university education that is teaching, research and Community/public outreach, that is why they were outstanding and popular in East Africa, Africa and the whole world and enabling students exchange programmes.

Universities in Kenya in early sixties to late nineties were known as *Ivory towers* in education. Those who received the higher education were known to be “academic community”. The academic community to come down from the *ivory tower* is really a challenge. Has Ki-Zerbo observed “there is very little use to have African academics living like home-grown clones of foreign technical and personnel, the kind of person ordinary people cannot identify with”(Ki-Zerbo,1994:36). Similarly Ochola (2007:101) connotes that it has correctly been observed that “African universities stand as vital organs in the institutional framework of the nation”(Hagan,1994:46). As Hagan (1994) noted,” not to provide support for the development of the university would compromise and deny the one means by which Africa can develop intellectually, socially and materially”. Therefore, in the context of African university development requirements, the university teachers have basically two mandates. The first, for

which they are paid, is to advance the frontiers of knowledge and produce trained personnel, who not only pursue their own individual interests, but also that of the society at large. This requires the academics to devote their time in activities of public education. The second and due to the scarcity of professionals in Africa, is to assist in search for, and the creation of well-founded institutions, sound public policies and scientific management practices that can sustain development (Ochola, 2007:101).

It is quite unfortunate to get the university professors in the management frustrate the part time lecturers by non-payment for three years and yet they know the difficulties of dissemination of knowledge and skills to others. “University” means any institution or centre of learning by whatever name called, or however designated, having as one of its objects the provision of post-secondary education which intends to offer or is in fact offering courses of instruction leading to the grant of certificates, diplomas and degrees, and the expression “university education” shall be construed accordingly (Kenya Education Directory,2012). University: according to Webster’s New Twentieth century Dictionary, a university is an educational institution of the highest level, typically with one or more undergraduate schools or colleges, together with a program of graduate studies and a number of professional schools and authorized to confer various degrees, as the bachelor’s, master’s and doctor’s. University education refers to education provided by universities in qualitative training in relevant fields according to the current market demands. Therefore, University education is associated with better skills, higher productivity and enhanced human capacity to improve the quality of life in societies. University education as an institution is where graduates are being churned to possess not only technical skills but must have the soft skills and other knowledge skills required, referred to as the intellectual battle. University education is delivered in institutions in various modes including face- to- face, distance learning, online learning and open education resources. The face-to-face mode is considered the traditional mode of learning while open and distance education and online education are an effective alternative (Gasevic, Kovanovic, Joksimovic, and Siemens, 2014),catalyzed by the emerging technologies such as internet, social media and mobile technologies (Saadatmand and Kumpulainen,2014).

In Africa a number of factors hinder the offering of quality university education to students. These include: having a few qualified teaching staff, insufficient specialized courses at masters and PhD levels that address technological, financial and cultural challenges, and largely underfunded programmes in institutions which leads to serious capacity issues in the continent (Escher, Noukakis, and Aebischer, 2014).In Kenya university institutions have experienced similar challenges as their counterparts in the global market(Bryant 2013;Chacha,2014).however a key challenge noted is the ability to meet the demand for university education which has increased since its first offering in the 1970s(John et al,2017).The expansion has been characterized by increased student enrollment, structural expansion and diversification of

programmes in addition to the creation of new universities and new campuses (Chacha,2004),leading to multiple challenges including shortage of academic staff, increased cost of education relative to GDP and shortage of funds (Boit & Kipkoech,2012).In addition, government allocation for university education was reduced since 1994 causing institutions to seek alternative for revenue (John et al,2017),leading to emergence of satellite campuses opened by universities anywhere in major towns in Kenya and offering unqualitative and substandard university education. Whereas the university expansion has addressed the progression from high school to university, little has been done to address the challenges affecting the quality of education in the institutions and research has shown that the ratio of student to lecturer is below the recommended ratio by the Commission for Higher Education (Gudo,Olel,&Oanda,2011) and the number of PhD holding lecturers in institutions is also below the expected ratio(John et al,2017).This forces lecturer teaching one student in verandah instead of lecture theatres in satellite campuses.

Education is a key for better life and effective foundation for smooth operations of person's lifetime. But in the recent times university education is becoming irrelevant for hiring the individuals, in organizations and industries both locally, nationally and internationally. This has rendered university degree holders useless and misplaced in the society. This is due to graduates from unfettered proliferation of Satellite University campuses in almost every town in Kenya churning half-baked graduates. In this aspect, a satellite campus refers to an institution located in a town, managed and operations are done by a director and two or three administrators appointed by Mother University and several non-teaching staffs on contract basis and large numbers of part time lecturers. Public universities do not give contract letters to part time lecturers to demand for their rights that is why, they distance themselves and unable to protest, and cannot sue the university management (Okebiro, 2017). Part time lecturers are unable to take the university management to court, because a great number of them do not have letters of contract with their universities. And since part time lecturer's union of Kenya (PTLUK) was not registered and was operating illegally, the officials had no mandate on behalf of the lecturers (Weekly Citizen, February, 2016). In the pre-colonial period, according to Professor Indiatsi Nasibi, in his article "*Management of universities a mockery of devolution*", one campus had thousands of teaching staff with tutorial fellows who assisted professors marking papers and scripts (Daily Nation, May 19<sup>th</sup>, 2013).

Universities in Kenya maintained one campus for example university of Nairobi, Kenyatta, Egerton, Moi, Jomo Kenyatta universities for some period before 1990s.This was an indication of quality lectureship professorship and quality standards in university education as compared to modern Kenya where a university is given a charter within two years begins to open branches without even maintaining the quality of the main campus alone in terms of qualified lecturers and other resources in teaching. Okebiro (2016) observes that "provision of quality education is

dependent on more than teachers/lecturers and classrooms/lecture theatres, but the duration or period on which the content in the curriculum is covered”. The quality of the content taught, the materials used to teach it and the skills that are developed are too of great significance (Okebiro, 2016). Staffing in universities is outstretched because there is the mismatch workforce and personnel to staff the increasing mass of students.

### **Statement of the Problem**

The problem is the commercialization and politicization of higher education leading to poor standards and quality education leading churning out unemployable graduates trained courses which are unresponsive to market needs and industrial attraction. Many scholars have decried the dearth of proper research and deterioration of quality of learning in most public universities. The financial health of most public universities has been questioned with many accused of misappropriating funds or over borrowing to run universities. They also have been accused of fueling negative ethnicity by hiring staff not necessarily based on merit and competence but on tribalism and corruption, which is unacceptable as diversity should help enhance quality and standard of learning in universities. Further, there is duplication of degree programmes across universities and mushrooming of what is termed as “Lollipop degree programmes, which undermine the very essence of university education of offering quality and standard education. A lollipop degree as the name suggests is alluring, trendy, both sexy and sexualized, thin in content and possessing the barest of “nutritive”(intellectual and possibly employment) dividends. Hence the objective of this study was to investigate whether the satellite campuses offer courses with quality and standards.

### **Literature Review**

There was no university education in East Africa until 1949 when Makerere College in Uganda was elevated to the status of the University College of East Africa (Bogonko, 1992). University education up to then was received in overseas or foreign countries. First, this means those who were able financially and favored by the colonial government, their children were allowed to go and receive university education and it was financed by the colonial government. Second, those who received university education in foreign land, either their parents collaborated with the colonial government or were supportive in one way or the other to colonial system. Third, because of few people were qualified to receive such education and the colonial government could not allow, Africans feared to go to school to get primary and intermediate education to qualify for university education.

The period of Makerere College 1949 to 1961, the university education was financed by the colonial government. In 1961 two other colleges, Nairobi and Dar- es- Salaam were established and 1963, the three colleges were amalgamated to form the University of East Africa. The three colleges became independent universities in 1970, as Makerere University in Uganda, Dar es

Salaam in Tanzania and university of Nairobi in Kenya (Bogonko, 1992). University education was not in great demand, because few people could cope with education system in colonial system. Makerere University was the only in East and Central Africa and offered a few courses for the students from the region. When the demand for higher education grew, Makerere had to expand and open branches in Dar-es-salam in Tanzania and Nairobi in Kenya to meet demand goals. Those who had money travelled to overseas to acquire higher education in U.S.A, Canada, U.S.S.R, India, Jamaica, Australia and United Kingdom. This “flight education” was necessary, because the capacity of East African Universities could not cater for high demands of students. Nowadays universities have been located everywhere in Kenya, both public and private. Malcolm Gills, the president of Rice University back in 1999, noted that “Today, more than ever before in human history, the wealth or poverty of nations depends on quality of higher education. Those with larger repertoire of skills and a greater capacity for learning can look forward to lifetimes of unprecedented economic fulfillment. But in the coming decades the poorly educated face little better than the dearly prospects of lives of quiet desperation”.

Educational development refers to skills and knowledge acquired by people without any region being marginalized. Kenya intends to create globally competitive and adaptive resource base to meet the requirement of a rapidly industrializing economy. This will be done through life-long training and Education, (Vision 2030). According to Mutheu (2012), human capital is now estimated to be three times more than important than the physical capital. Where does this human capital come from? It is developed at higher systems and for there to be higher quality education system with tertiary education providing advanced skills, which command a premium in today’s work place. Lifelong learning is being used to assist workers adjust to the quadruple changing economies globally. According to Chambers (2005), participation concerns mutual learning, in which participation is an epistemological and practical issue of understanding where others are coming from and ideally, learning from one another to achieve a better outcome. A university has changed perceptions in the area and simplified dry land for farming through extensive research by the university (The Standard August 16, 2013).

The Universities between 2013 and 2016 tried to fill the gap left by the government funding by opening campuses all over the place in towns in Kenya, sometimes next to pubs, strip club, and doomsday churches without taking care of the quality teaching and learning (Sunday Nation, March 11, 2018). The opening of the campuses by universities gave other universities impetus to open so that to make money. According to Prof. Maloba Wekesa “the competition to open campuses and village shoeshine Universities is never about excellence, most of those colleges are just income-generation projects and degree mill centers especially for politicians” (Sunday Nation, March 11, 2018), and an avenue for the university managers to build estates and a source of employing their family members and relatives. Therefore the universities adopted neoliberal policies that view everything in terms of profits have hit the universities where it hurts, and now

the universities are considered of no significance in terms of employing the graduates churned by such institutions.

It is noted that “Academics have bought into the lie that the way to run universities efficiently is to run them as profit-making business, but education is totally different kind of organization where people invest in people, thus the teaching staffs in universities are accountable for the people they teach and the people of the society. The high standards have been set in primary and secondary school examinations, by the Cabinet Secretary in the Ministry of Education.. Therefore, the university senates are urged to emulate efforts made in elevating credibility of examinations in basic education institutions. It is important to note: how can those students come to universities to get lower examination standards? The senates as custodian of education standards in universities must make the lead role in ensuring examinations are credible and students get marks they deserve (Sunday Standard, November 26<sup>th</sup>, 2017).

According to Prof. Amutabi, “Some universities have established ethno-centralism culture where some people think universities belong to them because they bear their ethnic name or located in their counties” (Sunday Nation, March 11,2018), and continue to compromise the quality and standards of education because they are packed by the regime ruling the country. This is because, intellectuals who claim to be neutral towards each regime, sell themselves cheap to every regime that comes to power and support every status quo. Some were happy to support the status quo for the sake of careers and preivilages that go with those institutional positions (Ochola, 2007:106). As Ochola argues “the African intellectuals themselves must have also bear a great share of the blame and responsibility for the present deteriorating situation” (Ochola,2007:106), because the cohort of part-time lecturers are unpaid for long periods of time at least three years which is dangerous for the quality services offered to the learners in such institutions. Okebiro argues “the excellent In-put from a lecturer reflect excellent out-put of the students through competence in the labour market” (Okebiro, 2014). According to Okebiro (2014), the university management has unfair academic treatment of associate lecturers/part time lecturers as regards to borrowing textbooks from library, payments and other benefits in the university. Part time lecturers are core and key in the teaching pillar in universities and if they cannot be treated well, they would equally offer poor services and as a consequence compromise the standards of education, which is a source of sustainable university education and societal empowerment.

## **Methodology**

The paper employed a survey method and data collected through questionnaires from students in satellite campuses in Kitale, Eldoret and Nakuru towns through simple random sampling. The research paper target a population of 500 and 30% sample size. The study used a survey research design on the satellite campuses in Kitale town. Mugenda and Mugenda (2003) noted that surveys are the excellent vehicles for the measurement of characteristics of large population. The



design was appropriate because it helped the researcher to obtain information that describes phenomenon by asking individual students and lecturers about their perceptions, attitudes, behaviour or values related to the quality and standard of education in the campus. This study used a research method where descriptive statistics were employed in analyzing the data through percentage in tables. Data was collected from 150 students and 422 lecturers both full time and part time. The questionnaires are attached in appendix I and II.

## Results

The study investigated whether the satellite campuses offer courses with quality and standards. The respondents' views on quality and standards of education were investigated using Likert-scaled questionnaires administered to both the students and lecturers. Data was analyzed and interpreted as illustrated in table 1.

Table 1: Descriptive Statistics and Views of students on standard and quality of education in campus

Item	SA	A	U	D	SD	Mean	Std. Dev.
There are enough qualified part time lecturers teaching course units	53 (33.8%)	64 (40.8%)	14 (8.9%)	21 (13.4%)	5 (3.2%)	3.89	1.11
There is enough lecture theatres for teaching or lecturing	53 (33.8%)	79 (50.8%)	13 (8.3%)	10 (6.4%)	2 (1.3%)	4.09	0.88
There are no text books for reference in every course unit	53 (33.8%)	71 (45.2%)	20 (12.7%)	10 (6.4%)	3 (1.9%)	4.03	0.94
Lecturers attend lectures at the appropriate time for lecturing always	30 (19.1%)	61 (38.9%)	38 (24.2%)	21 (13.4%)	7 (4.5%)	3.55	1.08
The lecture theatres are NOT free from noise pollution in the campus	58 (36.9%)	72 (45.9%)	14 (8.9%)	10 (6.4%)	3 (1.9%)	4.10	0.94



The lecturers cover the course content in the course outline in the right time	69 (43.9 )	65 (41.4 )	12 (7.6%)	7 (4.5%)	4 (2.5%)	4.20	0.94
The lecturers DO NOT administer two Continuous Assessment Test(CATs)	96 (61.1 )	47 (29.9 )	7 (4.5%)	6 (3.8%)	1 (0.6%)	4.47	0.80
The campus DOES NOT offer sciences courses because there are no laboratories for practical tests	67 (42.7 )	57 (36.3 )	12 (7.6%)	17 (10.8 )	4 (2.5%)	4.06	1.08
The lecturers mark continuous assessment tests(CATs) and assignments on time and return the	49 (31.2 )	75 (47.8 )	19 (12.1 )	9 (5.7%)	5 (3.2%)	3.98	0.97
Students are less than fifteen in course units	41 (26.1 )	52 (33.1 )	26 (16.6 )	25 (15.9 )	13 (8.3%)	3.54	1.25

Key: SA-Strongly Agree, A-Agree, U-Undecided, D-Disagree, SD-Strongly Disagree and Std. Dev.-Standard Deviation

There are enough qualified part time lecturers teaching course units in this sense the respondents give the following information: 64 (40.8%) of the students agreed, 53 (33.8%) strongly Agree that there are enough qualified part time lecturers. 21 (13.4%) of the respondents disagree and 5 (3.2%) strongly disagree while 14 (8.9%) were Undecided. This means the education is not treated as a “public good” and a profit-making venture, the university management and stakeholders will use different approach where the bigger-size classes taught by part-time lecturers to avoiding spending money on faculty stability and quality education. The cohort of part-time lecturers are unpaid for long periods of time at least three years which is dangerous for the quality services offered to the learners in such institutions. There is enough lecture theatres for teaching or lecturing 79 (50.8%) agree and 79 (50.8%) strongly disagree. 10 (6.4%) disagree and 2 (1.3%) strongly disagree and 13 (8.3%) undecided. A mean of 4.09 and the standard deviation of 0.88. This imply students enjoy the teaching and learning.

There are no text books for reference in every course unit 71 (45.2%) agree and 53 (33.8%) strongly disagree. 10 (6.4%) disagree and 3 (1.9%) strongly disagree and 20 (12.7%) undecided, a mean of 4.03 and standard deviation of 0.94. This indicates that satellite campuses are ill equipped with text books for reference. This makes students to be unable to do research for assignments and writing researched term papers. Lecturers attend lectures at the appropriate time for lecturing always: 61 (38.9%) agree and 38 (24.2%) undecided 30 (19.1%) strongly agree and 21 (13.4%) disagree and 7 (4.5%) strongly disagree and a mean of 3.55 and standard deviation of

1.08.it shows that lecturers work effectively but the management fail to pay their dues in the right time. The lecture theatres are NOT free from noise pollution in the campus: 72 (45.9%) agree and 58 (36.9%) strongly agree whereas 14 (8.9%) are undecided and 10 (6.4%) disagree and 3 (1.9%) strongly disagree, a mean of 4.10 and standard deviation of 0.94.this indicates that the satellite campuses are located where there is noise from the strip clubs, pubs and welding workshops.

The lecturers cover the course content in the course outline in the right time: 69 (43.9%) strongly agree and 65 (41.4%) agree, 12 (7.6%) undecided and 21 (13.4%) disagree and 4(2.5%) strongly disagree, a mean of 4.20 and standard deviation of 0.94. The lecturers DO NOT administer two Continuous Assessment Test (CATs): 96 (61.1%) strongly agree, 47 (29.9%) agree and 7 (4.5%) undecided whereas 6 (3.8%) disagree and 1 (0.6%) strongly disagree, a mean of 4.47 and standard deviation of 0.08.This illustrates the fact that most of the part time lecturers DON'T have time to administer CATs instead they prefer giving assignments and take away cats which are lecturer-student friendly. The campus DOES NOT offer sciences courses because there are no laboratories for practical tests: 67 (42.7%) strongly agree and 57 (36.3%) agree and 17 (10.8%) disagree and 12 (7.6%) undecided and 4 (2.5%) strongly disagree, a mean of 4.06 and standard deviation of 1.08.This indicates that the satellite campuses are for profit marking courses which do not need practical especially physics, chemistry and biology courses. Those undecided and disagree and strongly disagree are the ones who apply and promised that the courses are going to be offered soon.

The lecturers mark continuous assessment tests (CATs) and assignments on time and return the marked scripts to the students: 75 (47.8%) agree, 49 (31.2%) strongly agree, and 19 (12.1%) undecided whereas 9 (5.7%) disagree and 5 (3.2%) strongly disagree, a mean of 3.98 and standard deviation of 0.97.This shows that most lecturers are committed to their work and it is the university management which frustrates them through non payment for a long period of time. Students are less than fifteen in course units: 52 (33.1%) agree and 41 (26.1%) strongly agree and 26 (16.6%) undecided, whereas 25 (15.9%) disagree and 13 (8.3%) strongly disagree, a mean of 3.54 and standard deviation of 1.25.This indicates there poor enrollment of students into satellite campuses and making the management unable the pay the rental pills. The universities across the world are allowed to set the standards regarding the students to be admitted into the university. The Kenyan government requires all universities including private ones to admit only students with a mean score of C+ and above in high school. In this sense only 15 per cent of KSCE candidate attained the cut-off score last year. The number is just enough slot in public universities, leaving private universities and income-generating streams in public universities without prospective students (Sunday Nation, March 11,2018).With dwindling enrolment numbers of students, it is very difficult for these universities to remain afloat.

The key results shows that there is poor standards in satellite campuses because part time lecturers are not paid on time and wait for three years and lead to de-motivation as a consequence of poor teaching and supervision of students. Some lecturers do not submit the marked scripts and the management manipulate grades for students to graduate. There is insufficient and dilapidated infrastructure, boated enrolment, nepotism, tribalism and poor quality education offered in satellite campuses. According to Professor Indiatzi Nasibi,"as an employer of university trained people, the federation doubts out that our academic institutions have devolved with campuses on every street and corridor, whose focus is not accumulation of intellectual capacity, but a search for money and profitability. It is true that universities have become oblivious to the law of diminishing utility. They are oblivious of the volume of scripts the staff who are underpaid, can mark effectively" (Daily Nation, May 19<sup>th</sup>, 2013).

Table 2 gives the analysis of the data and the interpretation as follows; There are NO payments on the right time: 85 (32.1%) strongly agree and 82 (30.9%) Agree and 47 (17.7%) disagree and 26 (9.8%) undecided whereas 25 (9.4%) strongly disagree, a mean of 3.60 and standard deviation of 1.33. which illustrates that the lecturers take a long time to be paid their money and given that universities nowadays use different modes of determining payments, lecturers use their saved money until the universities becomes source of poverty instead of becoming source for unemployed part time lecturers. There is high coverage of the course content in the right time: 127 (47.9%) agree and 79 (29.8%) Strongly agree and 30 (11.3%) disagree, 17 (6.4%) undecided and 12 (4.5%) strongly disagree, a mean of 3.90 and standard deviation of 1.06. This shows that the lecturers are prepared to teach the students in satellite campuses.

You feel de-motivated due to Nonpayment: 120 (45.3%) agree, 84 (31.7%) strongly agree, and 25 (9.4%) Undecided and 21 (7.9%) disagree and 15 (5.7%) strongly disagree, a mean of 3.94 and standard deviation 1.05. This indicates that most of the lecturers are de-motivated when unpaid and cannot give qualitative services because of hunger. There NO text books for reference in some course units: 80 (30.2%) agree and 56 (21.1%) strongly agree, 53 (20.0%) undecided, 46 (17.4%) disagree and 30 (11.3%) strongly disagree, a mean of 3.40 and standard deviation of 1.23. This illustrates that there are no test books in the library and this leads to poor research and students are depressed because unfounded materials and relies on goggling notes from the internet. Lecturers have NO lecturers parlor for preparation: 109 (41.1%) agree, 91 (34.3%) strongly agree, 28 (10.6%) undecided, 22 (8.3%) disagree and 15 (5.7%), a mean of 3.93 and standard deviation of 1.10. This shows that lecturers do not prepare adequately before going to lecturer. some lecturers prepare from corridors in satellite campuses or from the public vehicles before highlighting.

Lecturers DO NOT assess learners in Teaching Practice (TP) and attachment assessments for students in education and social sciences: 139 (52.5%) agree, 98 (37.0%) strongly agree, 11

(4.2%) undecided, 9 (3.4%) disagree and 8 (3.0%) strongly disagree, a mean of 4.20 and standard deviation of 0.84. This illustrates that teaching professionalism is not followed. The assessors who assess students are different, compromising the quality and standard of teaching practice. A teacher trainee is supposed to be assessed three times by the lecturer who taught general methods of teaching and two lecturers taught the major and minor subjects of specialization for the teacher trainee.

Table 2: Descriptive Statistics and Views of lecturers on the quality and standard of education in the campus

Item	SA	A	U	D	SD	Mean	Std. Dev.
There are NO payments on the right time	85 (32.1%)	82 (30.9%)	26 (9.8%)	47 (17.7%)	25 (9.4%)	3.60	1.33
There is high coverage of the course content in the right time	79 (29.8%)	127 (47.9%)	17 (6.4%)	30 (11.3%)	12 (4.5%)	3.90	1.06
You feel de-motivated due to Non payment	84 (31.7%)	120 (45.3%)	25 (9.4%)	21 (7.9%)	15 (5.7%)	3.94	1.05
There NO text books for reference in some course units	56 (21.1%)	80 (30.2%)	53 (20.0%)	46 (17.4%)	30 (11.3%)	3.40	1.23
Lecturers have NO lecturers parlor for preparation	91 (34.3%)	109 (41.1%)	28 (10.6%)	22 (8.3%)	15 (5.7%)	3.93	1.10
Lecturers DO NOT assess learners in Teaching Practice(TP) and attachment assessments for students in education	98 (37.0%)	139 (52.5%)	11 (4.2%)	9 (3.4%)	8 (3.0%)	4.20	0.84
Lecturers mark the examinations and return the scripts with mark sheets	138 (52.1%)	100 (37.7%)	14 (5.3%)	9 (3.4%)	4 (1.5%)	4.37	0.82
There is noise pollution from outside the surrounding environment in the	139 (52.5%)	86 (32.5%)	15 (5.7%)	17 (6.4%)	8 (3.0%)	4.29	0.95
The students have No sports grounds for games	92 (34.7%)	106 (40.0%)	29 (10.9%)	26 (9.8%)	12 (4.5%)	3.92	1.10

Students attend the lectures regularly	62	112	57	14	20		
	(23.4%)	(42.3%)	(21.5%)	(5.3%)	(7.5%)	3.71	1.08

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Key: SA-Strongly Agree, A-Agree, U-Undecided, D-Disagree, SD-Strongly Disagree and Std. Dev.-Standard Deviation

Lecturers mark the examinations and return the scripts with mark sheets: 138 (52.1%) strongly agree, 100 (37.7%) agree, 14 (5.3%) undecided, 9 (3.4%) disagree and 4 (1.5%) strongly disagree, a mean of 4.37 and standard deviation of 0.82. This indicates that the lecturers express professionalism in their work. There is noise pollution from outside the surrounding environment in the campus: 139 (52.5%) strongly agree, 86 (32.5%) agree, 17 (6.4%) disagree, 15 (5.7%) undecided, and 8 (3.0%) strongly disagree, a mean of 4.29 and standard deviation of 0.95. This indicates that the satellite campuses are located in environment not good for learning and teaching as a results compromise quality of education offered to students. The students have No sports grounds for games: 106 (40.0%) agree, 92 (34.7%) strongly agree, 29 (10.9%) undecided, 26 (9.8%) disagree and 12 (4.5%) strongly disagree, a mean of 3.92 and standard deviation of 1.10. This shows that the students cannot train in the affective and psycho-motor domains in the satellite campuses. This true because the campuses are located in storey floor of storey building were sports grounds cannot be constructed except the indoor games.

Students attend the lectures regularly: 112 (42.3%) agree, 62 (23.4%) strongly agree, 57 (21.5%) undecided, 20 (7.5%) strongly disagree and 14 (5.3%) disagree, a mean of 3.71 and standard deviation of 1.08. This illustrates that students are seriously yearning for standard education in universities. There is evidence showing poor quality and sub-standard education in Kenyan universities. Recently the university students testified to the cabinet Secretary in the Ministry of Education that they are half baked. They accuse universities of not assigning competent lecturers to teach and poor training acquired from universities as a consequence lack jobs in the labour market (Standard Digital Monday March 19<sup>Th</sup>, 2018).

## **Conclusion**

Most experts were interviewed noted that the main problem facing Kenyan universities is the mushrooming of substandard campuses. Also the rapid expansion of universities to cater for rising demand for degrees from the seven public universities in 2012 to 33 in 2018, it is concluded the quality of teaching and research has sunk to the lowest ebb and as consequence there a mismatch of the skills acquired and the employment. It is concluded the emergency of university satellite campuses has led to poor quality and standards in universities leading to half-baked and unemployable graduates though having attractive grades. The sites for such satellite

campuses are not welcoming environment which students require for learning. They are located in the midst of the town centers where business is conducted and there is noise pollution. The library in such campuses is not equipped with the necessary books for reference in the courses taught or offered in the schools. Thus it becomes difficult for students to research and write adequate and conclusive term papers.

If the only reason for the existence of a university programme is pegged purely on vagaries of the industry, then it is most likely a lollipop degree. In essence a university education is not reducible to industry, but designed to churned intelligent brains to help solve complex problems occurring in the society. Universities are not designed to be the uncritical conveyor belts of industry trends. As the cooperation or linkage between the two must be encouraged and pursued, as both will be guided by different logics for sustainable development and economic growth in Kenya. Many of the lecturers are not qualified to teach in the university, according to commission for university Education (CHE) requirements and many are part time lecturers who are not paid on time and on the course of handling the units some drop and leave students frustrated. Usually the units are not covered extensively and intensively to cover the content required. Okebiro (2016) argues that “Education should be about producing a complete, well-rounded whole person, not just passing examinations”. It should also inculcate personal skills and skills that will be useful in the job and business world (Kigotho, 2009). According to the chief executive Institute of Certified Public Accountants of Kenya (ICPAK), Connotes “We are now being forced to ask applicants for their secondary education certificates with the university degree coming in second,” because “The degree is no longer a reliable measure of a job-seekers ability as certain universities are churning doubtful graduates,” the faltering quality of learning is forcing employers to reject graduates from some universities (Business Daily, 2015).

The democratization of schools should not be confused with the politicization of education. This is the only way in which our institutions of learning will be able to take the moral high ground, from which to pass the same values to society and insist that our politicians do the same. It is this role that our schools, training institutions and universities should play (Ochola, 2007:106-107). When the governments reduce the funding the public universities which offer higher education, it has the following implications: one, performance contracting, replacing the collaborative nature of work that is collegiality and peer review with competition. Two, the measurement and evaluation of the success of the university, should be done, not by student’s enrolment, education and innovation, but by the balance sheet and real estate. Three, people are no longer interested in research but in donor funding; in some universities, donor funding is considered a major pillar of income generation. Four, generation of profit means use short cuts in education, where there are bigger-size classes taught by adjunct faculty lecturers to avoid spending money on faculty stability and quality education. Five, universities are dealing with the same dysfunctional politics as the rest of the country; promotions of faculty and graduate studies have become about ego and



status rather than quality work.

The report dubbed “Transforming university Education in Africa: Lessons from Kenya” indicates that Kenyan universities require 10,000 PhDs .in some academic programmes, one lecturer teaches an average of up to 200 students against the internationally recommended 30. In most universities one professor handles up to 98 students thus compromising quality in the sense that there is no time for preparation and taking care of individual cases of students efficiently and effectively. Therefore, the resultant capacity deficit means that quality of education is affected (Standard Digital Monday March 19<sup>Th</sup>, 2018).

### **Recommendations**

The research paper recommends innovative approaches should be used for education reforms and restructuring be done in satellite campuses for sustainable education development inline with vision 2030. It recommends two innovative approaches one indirect and two direct approaches. In the indirect approach, it is recommended return to conviction about education as a public good. First, People (stakeholders) need university leadership that believes that education is a public good and insists on it in order to resist corporatization of higher education and the implications for quality of education and research, and the better treatment of teaching staff. Second, It recommended citizenship calling for better management of public resources so that universities can be properly funded and be free for students to study without payments.

Faculty should find themselves voicing and defending education as a public good and the right of students to be offered quality and standard education in universities. The satellite campuses should be allowed to operate if they have enough and full time qualified teaching staff and finances, and enough teaching and not teaching facilities, without which standards of higher education will remain poor in Kenya. Reforms in higher education sector are urgently needed focusing on quality training and quality of education while increasing enrolment for the improvement of national development (Daily Nation, 2010).

In the direct approach, it is recommended that higher quality education should train leadership on good governance practices. “The basic needs approach (BNA)”, which was used became widely agreed that economic growth took place in most developing countries seemed to go together with increase in absolute and relative poverty. In response to, a direct approach was required to deliver the welfare outcomes. The direct approach became to be known as the basic needs approach (BNA) which drew together theorists and practitioners from a range of nations, academic centers and institutions of development (Stohr, 1981). According to Escobar (1995), the influence of BNA had ‘vast array’ of programmes focused on households and covering aspects of health, education, farming and reproduction, practices, designed to create a minimum level of welfare for the weakest groups in society. There is need for a differentiation of institutions with



some is specializing in good teaching, others in excellent research and still others providing education midway between research and teaching.

There should be radical changes in Kenya's higher education institutions of learning, which have been put on the spot over quality education. It is recommended on the direct approach, that it is time for refreshing start in institutions of higher learning to hire best brains for improving quality of learning in Kenyan universities. It is recommended; the impending staff audit should be done and would unearth the nature of the staff teaching in the universities, the stakeholders want to know whether the staff is qualified to teach their students in universities and especially those who teach first years. it is recommended first, to abolish lollipop degree programmes, there must be boldness and intellectual honesty by leaders, because degrees represent and mask peculiar kind of "Kenyan" scholarship well entrenched and addressing the problem might be seen as fighting individual's careers. Second, it is significant to rehabilitate the programmes into former disciplinary statuses-that means there will be a total overhaul of university programmes which started such degree programmes.

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### **Effects of Hypermedia on Learning Achievement in Geography for Hearing Impaired Learners in Mixed Special Secondary Schools in Kenya**

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#### **Abstract**

*The hearing impaired (HI) students often encounter communication problems in classroom. Yet*

*some specific media can facilitate and enhance their learning. This study reports on the development of hypermedia educational instruction that supports HI student's achievement in Geomorphology. The objectives were; find out the achievement of students exposed to hypermedia lesson in Geomorphology, gender disparity, determined changes on the role of both students and teacher. The study was informed by multiple intelligence and cognitive theory of multimedia learning regarding individual differences and strength of the brain to store well and recall images as opposed to text. The study assumed a pragmatic research paradigm adopting mixed methods using quasi experimental approach involving Solomon four nonequivalent control group design. Simple random sampling procedure was used to obtain four schools, two for experiment and two for control group. Data collection instruments were pre-test, post-test and questionnaire. Data were analyzed using descriptive and inferential statistics. The results revealed that use of hypermedia for teaching HI resulted in higher achievement, girls improved more than boys, there are changes in role; students from passive to active, teachers from dispenser of knowledge to facilitator. Hypermedia allows interaction and self-learning. These findings may create awareness and need for integrating hypermedia in pedagogy for improved performance, thus helping learners to focus attention that promotes teachers' instructional technique. The following recommendations were made; review of curriculum and digitize HI content, improve ICT infrastructure and facilities.*

**Key words:** *Hypermedia, Geomorphology, Hearing Impaired, Achievement*

## **Introduction**

The world is moving very fast into a digital multiple periods in an environment characterized by ICT with its tenets that can improve achievement and change roles in teaching and learning process. Disability has largely been invisible in the instructional implementation, and is rarely included in national policies and programmes. This has perpetuated a situation in which environmental barriers are still preventing persons with disabilities from accessing, participating and being fully-included in education activities.

Hearing impairments (HI) present challenges to quality education both pedagogically and logistically. Many of the learning strategies used by teachers tend to be audio based. Many HI learners across Kenya cannot benefit fully from a traditional instruction because of hearing impairment which limits their ability to actively participate in classroom learning activities. Sign is a visually-based, not auditory, code with a grammar different from that of written for example 'processing land instead of land processing'. Deaf students often miss out on secondary learning opportunities that are afforded to hearing peers (Parton, 2006). Fgatabu (2013) found that sign language has a great effect of performance on learners with hearing impairment. One of the main goals of Education in Kenya is a right to provide equal educational opportunities to every child, irrespective of their real or imagined disabilities, (EFA, 2004). Inclusive ICTs can

enable persons with disabilities as agents and beneficiaries to fully access education, skills training, and employment opportunities among others. When information is available in various forms (alternative formats), it reaches everyone who may be interested. Hypermedia also caters to various learning styles and individual learning needs by providing information in a multitude of media formats.

Traxler (2010) asserts that about 50% of a national sample of students with HI at high school produced results that were below basic proficiency level. Bashir et al. (2014) denotes that in a research on the academic achievement of students with HI show that they trail behind their hearing age mates at the same age and grades as regards what is expected of them. Adoyo (2004) affirms that deaf students in Kenya have consistently trailed behind their hearing counterparts in academic performance. As essential factor for effective technology integration is the teacher, since she/he directly indicates the best instructional practices for his/her students (Rehmat, 2014). The teacher should become one of many resources that the student may learn from, engage students in experiences that challenge previous conception of their existing knowledge, allow students responses to drive lesson and seek elaboration. Success hypermedia integration is what makes a difference in reforming a classroom. Therefore Adesina (2009) and Obanyan (2010) come to a conclusion that teachers are the key pointers and determinant of a successive education. They make practical choices of tools and media that will shape the way students learn, express themselves and perform (Drayton, Falk, Hobbs, Hammerman, & Stroud, 2010). Northern Environmental Education Development (2011) presents new opportunities to develop resources such as hypermedia to shape teaching and learning. Debates still exist as to the pedagogical value of many hypermedia applications and, despite multiple experiments, researchers have failed to resolve many of the basic issues concerning the use of this technology for instruction. The objectives were; find out the achievement of students exposed to hypermedia lesson in Geomorphology and gender disparity.

### **Problem Statement**

There is increasing concern with poor academic performance in Kenyan schools for the deaf. Kiboss (2012) found that Kenyan high school student with hearing impairment scored lower in math tasks. Adoyo (2014) indicates that poor performance is attributed to inappropriate teaching methods, like in traditional classroom settings where the teacher will begin class by answering questions from the previous work, then teach the new lesson, give notes and sometimes give assignments. On the other hand special schools are segregated and discriminated against yet classroom achievement is low (Mulambula et al, 2012). Studies reveal lack of instructional materials yet effective teaching contributes to 75% of good academic achievement. It is also evidenced that teachers' use of 85% adapted technology and 25% adapted ICT in pedagogy cannot be realized in a dilapidated instructional environment (EU Report, 2012). Other studies consider KSL as a medium of instruction may also contribute to poor performance because

exams are set in English, switching between KSL to English may cause misunderstanding (Adoyo, 2001, 2004, Ogada, 2012). Based on the constraints of the typical HI student, the teaching strategies and material used in curriculum for HI student cannot effectively teach the required geographic skills. The previous research shows that hypermedia instruction embodies all instructional forms that accommodate the needs and disabilities of different hearing impaired learners (Andrei et al., 2013), therefore can alleviate this issue in physical Geography. Chickering&Gawson (2011) emphasized that active classroom involvement is not just sitting and listening to the teacher sign but by talking about what they learn, write about it, relate it to past experience and apply it to their daily lives. Teachers need to use alternative media with individual work so that the deaf student does not need to concentrate for long time. To rectify this, teachers need to integrate appropriate image- based and iterative strategies necessary for effective instruction of these students (Lang &Pagliaro, 2007).

### **Literature Review**

Technology has changed the way we teach and learn. Many learning theories can be used to apply and integrate this technology more effectively. Shatila (2015), humans are their own agents of change because they are in charge of choosing their action. Hypermedia leads to a cognitive pattern of engagement and motivation of instructional tools, which individualizes the mode of delivery, developing special teacher, fortifying the teaching process and encouraging students to stay on task (Kazan, 2015). But hypermedia allows the teacher to expand his/her methods, tools and strategies beyond that are frequently used in the classrooms. The most important features in the development of hypermedia for HI are video, animation, text and graphics. In relation to this theory, visual cue is the most important element in developing the hypermedia for the HI learners (Faizah&Ariffin, 2010). MI theory has the capacity to solve problems encountered by HI learners as they have different disabilities for example in a class a teacher may be having deaf, loss of hearing, deaf and hard of hearing these may have different degree of profoundness. But hypermedia gives opportunity to choose which way to go.

### **Methodology**

The study assumed a pragmatic research paradigm as data was collected systematically using quasi experimental approach. It adopted a mixed method (MM) of inquiry in a transformative procedure (Creswell, 2013). The study used quasi experimental design involving Solomons' four non-equivalent control group designs. It was conducted in Kenya in East Africa. The target population were twenty hearing impaired mixed special secondary schools in Kenya. There are twenty principals, forty Geography teachers, 835 students and NGOs. The four schools were randomly a signed to experimental and control groups. A total of 79 students and 10 teachers were sampled. The instruments such as questionnaire and Geography achievement test (GAT) were used to collect data. Validity were ascertained by the experts and reliability conducted in two schools through test-retest method. Descriptive analysis was used to summarize data, which

was presented in tables. Inferential statistic involving chi-square and t-test for testing hypothesis were employed.

## Results and Discussion

### *Integration of Hypermedia and Students Academic Achievement*

The experimental group was exposed to hypermedia and control taught by regular method of teaching (RMT). The finding recoded high mean scores gain (47.07%, 42.13%) by the experimental group who achieved statistically significantly higher scores in the GAT than control group as revealed in table 1. This is in line with Parton (2006) who identified five ways that hypermedia application can promote achievement and learning for students who are deaf. These include; improving accessibility, instructional design, promoting development and creating discovery learning. All these put together leads to higher scores than those taught without use of hypermedia.

**Table 1: GAT Pre-test, Post-test Means and Standard Deviation**

Variables		Pre-test		Post-test	
Method	N	Mean	Sd	Mean	Sd
Conventional C <sub>1</sub>	15	48.07	9.1	47.07	8.6
Conventional C <sub>2</sub>	23	—	—	42.13	8.7
Use of hypermedia E <sub>1</sub>	21	43.62	8.0	54.71	8.5
Use of hypermedia E <sub>2</sub>	20	—	—	53.2	9.3

N= 79

To establish whether there is any significant difference in achievement between students exposed to hypermedia and those taught through conventional method. The achievement of the students on concept is attributed to several factors. To minimize on the effect of intervening variable, it was important to establish behavior of two groups and compare the results with the group whose entry behavior were not established. Pre-test was administered to two groups, one from control and the other from experimental. Before the use of any media, the entry behavior must be established. Pretest itself is an intervening variable because it prepares the subjects for what is expected at the end of the exercise. However pre-test did not have significant. As shown in table 1, there is no evidence on the means that the subjects had prior knowledge. Pre- test had a mean of 48.07 and posttest 47.07, and experimental pre-test mean was 43.63 and posttest 54.71. The increase in mean was probably due to treatment for one month. Hypermedia is an instructional media capable of improving achievement especially for the HI learners who are visual learners. It allows the students to engage more fully with the subject matter at hand and facilitates deep understanding. The finding concurs with Schmidt et al. (2009) who affirm that hypermedia has ability to develop important understanding and reasoning skills such as critical thinking, problem solving and priotization.



### Pre-test Data Analysis

Table 2 reveals that Geography means score of experimental and control groups on pre-test GAT means scores were analyzed using t-test for independent samples analysis. The results indicates that control had (M=48.07; SD=8.6) and experimental registered (M= 43.6; SD= 8.0). These scores are relatively low, this could be attributed to the fact the topics are abstract and terminologies are difficult to explain effectively in KSL. Several scholars postulate that poor performance has been attributed to poor teaching strategies and medium of instruction for the HI learners (Adoyo, 2001, 2004; Ogada, 2012). Dye et al. (2008) affirm that there is also shortage of qualified teachers of deaf and of research-based teaching methods and instructional materials for HI.

Table 2: Pre-test Data Analysis

Group	Mean	Standard deviation
Control	48.07	8.6
Experimental	43.6	8.0

Data in table 3 indicates variability in the mean obtained by different groups. The difference in means may or may have not been caused by chance. To ascertain, an independent sample t-test was carried out at a significant level of 0.05 $\alpha$ . The following were the results of inferential statistics.

Table 3: t-test of Pre-test Means between Experimental and Control Group

Variable	Df	Sig. ( 2 tailed)	Mean difference	Std err difference	95% interval of the diff	
					Lower	Upper
Pre-test	34	0.130	4.45	2.86	-1.372	10.268

The study carried out the t-test on the means of experimental and control to find out whether the means are significantly different. Since the data did not provide sufficient evidence for rejection. It was therefore concluded that there is no significant difference between students in these schools. Meaning the entry behavior of the groups is similar and therefore giving the two samples (C & E group) homogeneity status. During form one selection, students are selected randomly so long as the student has attained 150 marks and above which is the KCPE pass mark for the HI students. All the HI secondary schools are national schools hence the entry behavior is the same. Disparity in achievement heavily relies on other factors such as environment, facilities, administration and pedagogy. The finding is in line with Means (2010); Shapely et al. (2010), when students are engaged in technology-immersed classrooms, there is a gain in achievement in all subject areas.



Table 4a: Pre-test between Control Boys and Girls

Gender	N	Mean	Sd	Df	t-value	p-value
Male	12	46.58	9.6	34	0.73	0.942
Female	3	54	2.65			

$P > 0.05$ , Not Significant

On comparing the means of control boys and girls, the statistic output in table 4a reveals that means score of girls ( $M = 54$ ;  $SD = 2.65$ ) and boys ( $M = 46.58$ ;  $SD = 9.6$ );  $t(34) = 0.73$ ,  $p > 0.05$ . The p-value of 0.942 is greater than the testing point of 0.05. This indicates that the pre-test means of the boys is not significantly different from pre-test means of the girls. It is evidenced that the mean achievement of the control group due to gender was not significantly different at 0.05 levels. The null hypothesis was accepted since the data did not provide enough evidence for rejection. Hence it was concluded that there is no significant difference between pre-test achievement of girls and boys students who were taught through conventional method of teaching. Meaning the entry behavior of the groups may be similar for having same means. Girls are competent just like boys and disparity in performance is affected by other factors. The finding is supported by Abubakar&Oguguo (2011) in their comparison, found no significant difference between performance of girls and boys. This agrees with Uduosoro (2011) who found no significant difference between performance of boys and girls. DFE (2007, p. 3) affirms that factors such as ethnicity and social class have a greater bearing on educational achievement than gender considered on its own. But a high standard deviation of 9.6 by boys clearly show that they achieved more than girls in terms of average as shown in table 4.7b thus they had better grades Agbuga& Xiang (2008) report that boys recorded high performance than girls in Geography. The result is similar to that of Kubiatio et al. (2012), the influence of gender was significant and the boys achieved statistically significant high scores.

Table 4b: Pre-test between Experimental Boys and Girls

Gender	N	Mean	Sd	Df	t-test	p-value
Male	14	44.64	7.4	35	4.4	0.000
Female	7	41.57	9.3			

$P < 0.05$ , Significant

Table 4b reveals that significant difference exists between pre-test means score of girls ( $M = 41.57$ ;  $SD = 9.3$ ) and boys ( $M = 44.64$ ;  $SD = 7.4$ );  $t(35) = 4.4$ ,  $p < 0.05$ . The p-value 0.000 is less than the testing point of 0.05 $\alpha$ . Therefore the result indicates that difference exists between experimental girls and boys. Boys before instruction are more competent than girls in Geography achievement. This could be attributed to perceived differences in the learning styles of boys and girls. This is one of the most frequently expressed explanations for the gender difference in achievement. Boys learn by doing things such as experiments or activities and girls would learn well visually by seeing. The finding is supported by Husain & Millet (2009), who report that test scores differs substantially by gender, significantly more boys than girls score very high ranges

in Geography thus gender disparity is significant. However this result is contradicted by Zember&Blume (2011) who report that most studies show that girls perform better than boys in schools. Warrinto&Younger (2007) reaffirm this reporting that girls outperform boys.

#### *Posttest Analysis of Data*

After a period of four weeks of learning Geomorphology, a posttest was administered to all the groups. This time the means were relatively high as compared to pretest. Experimental had a mean of 53 and control 47.1 as table 5 indicates. This could be attributed to the teaching instruction that had been used. Research has demonstrated that different teaching methods produce different results therefore the identification of the best teaching strategy must be done if the best results must be achieved (Houston &Parigoe, 2010). The outcome from previous research indicated that teaching with learning style adaptation increased students' performance and boosts their motivation to learn (Avile&Moren, 2010).

Table 5: Posttest Means at Group Level

Group	N	Mean	SD
Experimental	38	53	9
Control	41	47.1	8.5

It is evidenced from table 5 that students who were taught by use of hypermedia achieved statistical significantly higher scores in the GAT compared to those taught through regular teaching method. Table 5 reveals the results of different groups that sat for the posttest. Experimental group had a mean of 53 and control 47.1. This descriptive analysis shows a probability of experimental group being superior in achievement. However this can only be confirmed by an inferential statistic that will be carried out at a later stage.

Table 6: Posttest Means and Standard Deviation at School Level

School	Posttest	SD
Experimental (pre-test)	54.71	8.5
Experimental	53.20	9.3
Control (pre-test)	47.07	8.6
Control	47.13	8.7

The results as per schools are shown in the table 6 as follows; experimental pre-test had a mean of 54.71, experimental posttest only recorded a mean of 53.20. The difference in achievement of the two groups should be explained as influence of pre-testing. Pre-test may have influenced achievements. In control group, control pre-test had a mean of 47.07 and control posttest only recorded a mean of 47.13. This is contrary to experimental groups. The group that was not pre-tested is above the group that was exposed to both tests. This shows that pre-test did not have influence on posttest. It can be hypothesized that experimental are competent than control. The

competence of experimental is attributed to hypermedia treatment they received. However this is subject to confirmation after inferential statistic is carried out on the data as illustrated in table 7.

Table 7: t-test of Posttest and Pretest Difference

Variables	Df	Sig. (2 tailed)	Mean difference	Std err difference	95% confidence interval difference	
					Lower	Upper
Pre-test / posttest	35	0.000	6.056	1.377	3.261	8.850

An independent sample t-test was carried out for the purpose of inferring from the data and testing of the hypothesis, pre-test had no influence in the study as table 7 reveals. The t-test p-value was 0.000 as table 7 indicates. The t-test p-value is lower as compared to the set alpha of 0.05. This shows that there is statistically significant difference in the pre-test and posttest. The findings that high achievement was recorded on the posttest GAT could be due to some groups being given treatment. Mayer (2005) asserts that hypermedia is more effective for learners with low aptitude and it helps them to connect the new knowledge with the prior knowledge. Further finding indicates that support with careful planning, experience in teaching in a virtual environment can promote achievement in learning (ICM, 2012).

Table 8: t-test of Posttest Means between Control and Experimental Groups

Variables	df	Sig. (2 tailed)	Mean Difference	Std err Difference	95% confidence interval difference	
					Lower	Upper
Posttest	77	0.001	6.870	1.952	10.157	2.983

The study sought to test difference in means of control and experimental group. The significance was to establish the effectiveness of hypermedia as opposed to conventional methods of teaching. The t-test p-value is 0.001 less than alpha 0.05. This reveals that there is a statistically significant difference in the posttest means of experimental group and control group. The difference is in favour of experimental group that was exposed to hypermedia. The finding that the mean of experimental is high leads to conclusion that hypermedia is effective in improving achievement in learning Geomorphology in Geography by HI learners. This is because hypermedia enhances ranges of sensory stimuli in instructional circle, hearing, seeing and doing play important role in achievement. Moreover opportunities to learn from classmates are often lessened due to communication. Several research have supported this finding for example the findings of earlier studies, deaf students often perceive that they receive a distorted message when a non-signing teacher's lecture is translated by the interpreter (Vignare et al., 2007). Nearly 40 hypermedia studies found that compared to traditional lecture, learning improvement were higher for the groups that used hypermedia. This was further supported by meta-analysis by

various researchers who examined over 200 studies that compared learning presented in traditional way to the same information presented via hypermedia instruction and found that learning was higher through hypermedia than traditional (Long et al., 2011).

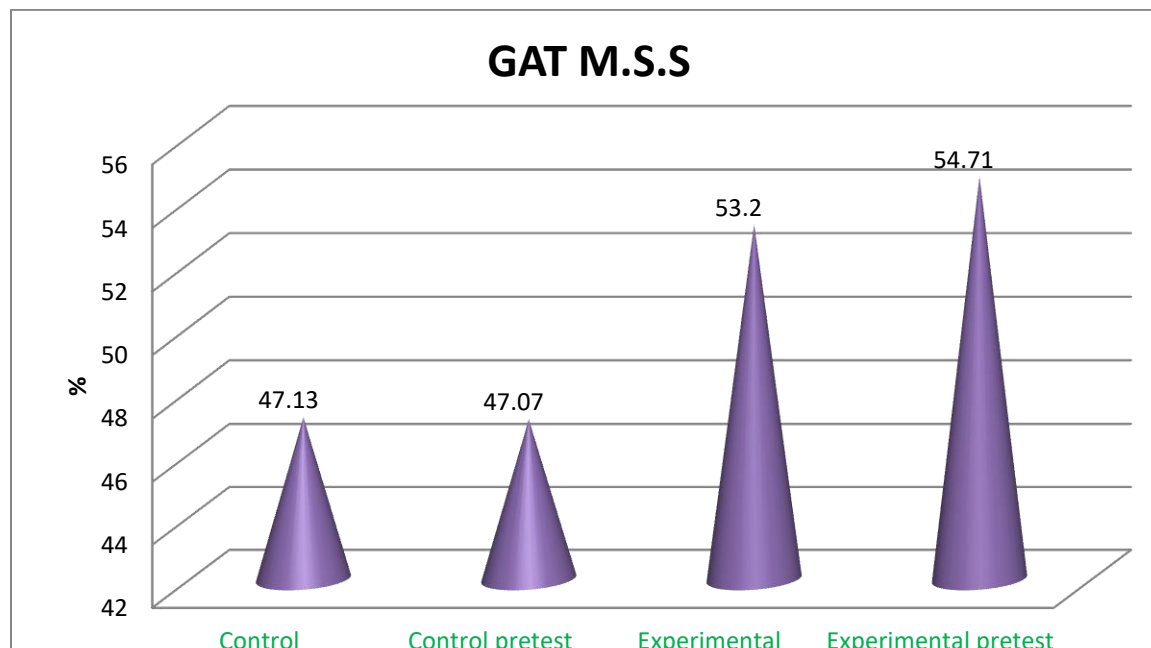


Figure 1: GAT Means by Groups

Control underperformed because HI students have difficulties in visualizing the concept of landform processing. These learners are lip readers hence require intense concentration and this is tiring over long time, this could have led to poor performance. Adoyo (2004) indicated that poor performance of HI is attributed to inappropriate teaching techniques. Teachers are not presenting the curriculum material in a logical form that is accessible to deaf students. They struggle to provide them instruction after class learning support (Liu & Hong, 2007). Zhang & Zhou (2006) further assert, the traditional mode of teaching is sign method, which has been criticized for being tiring, boring, authoritative and emphasis on memorization. Slobodzian (2009) affirms that extra learning resources may not be accessible in class and there is a widespread lack of accessible interactive materials (Parton, 2006).

Table 9: t-test Posttest Means between Experimental Girls and Boys

Variables	Df	Sig. (2 tailed)	Mean Difference	Std err Difference	95% confidence interval difference	
					Lower	Upper
Posttest	77	0.756	0.712	2.284	-3.836	5.259

Table 9 reveals that no significant difference exists between posttest Geography means score of girls and boys. An independence sample t-test for the group gave a p-value of 0.756. The p-value is greater than the set alpha 0.05. This means that there is no difference in the posttest in Geomorphology using hypermedia technique due to gender. The null hypothesis is therefore retained since the data did not produce sufficient evidence for rejection. This result implies that gender does not have any significant effect on performance means score of students exposed to hypermedia technique. Thus students perform independent of gender when taught using hypermedia. It also suggests that teachers should integrate hypermedia to teach students in order to reduce any gender difference in students' achievement in Geography. The finding of gender difference is in line with that of (Esiobu, 2011), gender is no longer a significant impediment for performance. However Zamfirov&Saera (2013) contradict, they found that girls and boys learn differently by considering difference in achievement. Further, in teaching Geography, Gender Geography (2010) research suggests that a strong masculine bias exists in the map reading. However Guis et al. (2008) had different opinion in their finding, they found that there is gaps in test score in all subjects.

Before a conclusion was drawn that hypermedia is a treatment that has enabled girls to be as competent as boys, it is necessary to test if the girls in control have performed as well as boys. The study tested the significance in mean difference between control girls and control boys using an independent sample t-test.

Table 10: t-test Posttest Means between Control Girls and Control Boys

Variables	Df	Sig. (2tailed)	Mean Difference	Std err Difference	95% confidence interval difference	
					Lower	Upper
Posttest	77	0.002	0.521	0.130	0.289	0.452

The t-test value was 0.002 as indicated in Table 10. The p-value is less than the alpha which was set at  $0.05\alpha$ . On the analysis it is found that the difference in means of control boys and control girls is statistically in favour of boys. Boys in control have outperformed the girls. This just confirms that it is hypermedia that created conducive environment that led to girls in experimental group to perform as well as boys. Warning, 2006; Younger (2007) affirm that in northern Nigeria, it is believed that subjects like physics, drawing, Geography and the like are for boys and not for girls. This finding is supported by Abigail (2007) assert that there are biological differences in brain development this determines the difference in thinking process between boys and girls. Therefore adapted hypermedia is an alternative to traditional approach to HI learners. It adopts information towards individual preference and improves the experience of the learner who interacts directly with the system. However Warrinto&Younger (2007) contradict the previous finding report that girls outperform boys at school at least in terms of certain key

academic hence there is need to refocus equal opportunities to redress the balance for boys. Therefore Alias (2010) reaffirms that it is important to identify the most effective strategies in the content delivery process to achieve objectives.

#### *Role of Students during Hypermedia Presentation*

Teachers were asked to state the role of the students during hypermedia presentation. The finding in table 11 indicates that 70% of the students were active. Hypermedia is an interactive learning media. New technology has drastically changed students' role from traditional instruction to virtual learning. Hypermedia is shifting the emphasis from teaching to learning. An active student will have more responsibilities of their own learning as they can share their knowledge with others.

Employing active learning strategies serves two fold purpose; they make a dynamic classroom ever changing environment in which students have a voice and allowed them to view teachers as people who are flexible enough to take risks in the classroom instruction. It also encouraged students to stay interested and learn more from class when teachers used many medium in single application. Hypermedia provides powerful tools to support the shift from teacher centered to learner centered paradigm and new roles of teacher-learner and new media. It is believe that the most important characteristic of hypermedia is its ability to encourage students to be proactive learners (Drayton et al., 2010).

#### *Changes in Learners*

From	To
Passive learner	Active learner
Reproducer of knowledge	Producer of knowledge
Solitary learner	Collaborative learner
Solely learning content	learning to learn, think, create and communicate

However 30% teachers agreed that learning with hypermedia is a passive way of learning. As stated earlier in literature, hypermedia is in three categories that is linear, network organization and hierarchical organization. These teachers could have used linear model which is a passive way of presenting information. In this model both the learners and teachers have very little to do. It is also likely that there are some teachers who have not had experience with hypermedia therefore they are not sure whether hypermedia can encourage passive or active learning. Sivapalan&Crega (2005) concurs that the main challenge is how to enhance students' participation during presentation. Classroom experience has demonstrated that students who contribute to Geography discussion tend to succeed academically, thus there is relationship between classroom participation and student achievement.

#### *Extent to which Hypermedia Change Teaching Method*

Table 11 reveals that 50% of teachers agreed that use of hypermedia greatly changes their teaching method. Hypermedia application involves use of several medium at ago. This relieves the teacher from carrying into class more medium. Hypermedia has potential to transform achievement of the HI through instructional technique.

#### Changes in Learners

From	To
Single sense stimulation	Multi-sensory stimulation
Single media application	Multimedia application
Delivery of information	Exchange of information
Monologue communication	Dialogue & collaboration
Analogue resource	Digital resource

All these changes in pedagogy demand a new learning environment to effectively harness the power of hypermedia (Zhu, 2003; Kim & Gilman, 2008).

*Table 11: Teachers' Opinion on Application of Hypermedia*

Opinions		Frequency	Percent
Most effective technique Employed	Illustration	3	30
	Hypermedia	2	20
	Power point	5	50
TOTAL		10	100
Role of students during Presentation	Passive	3	30
	Active	7	70
TOTAL		10	100
Extent to which hypermedia Change teaching method	Not at all	2	20
	Much	5	50
	Very much	3	30
TOTAL		10	100

From table 13 it reveals that use of hypermedia leads with 70% teachers accepting that hypermedia achieves equitable learning outcome. This is because hypermedia offers multiple learning styles and therefore each learner could meet his/her learning preference through the use of multimedia which employs the four senses. Students would benefit from the way in which the textbook contents are demonstrated. The use of technology in learning has helped them largely. This motivates their self- learning abilities by pursuing audio-video supported illustrations, texts, graphics and drawings. Chowdhuri et al. (2012) agree that deaf students cannot be exempted from e-learning approach.



None of the teachers agreed that CDROM and hyper-studio can achieve a positive outcome. CDROM is non-visual media thus audio aid therefore many learners are not able to benefit from the lessons in which it is used because majority of the learners in this study have conductive deafness. Berndsen&Luckner (2010) state that use of CD-ROM in the classroom is still pedestrian. Teachers were not familiar with variety of teaching strategies that can be used with CD-ROMs in order to increase its effectiveness. This is most likely a consequence of lack of available resources.

However CD-ROMs help to standardize the sign for particular concepts. This helps in avoiding to use interpreters who may lack sign for technical terms. This is one of the problems in teaching Geomorphology. Cooshna&Teelock (2006) report that the problem with teaching and learning Geography are terminology, symbols and interpretation of language. In this way technology has become a way of extending and developing good practice and providing permanent visual record. None use of hyper-studio was also noticed, this is a rare technique used in teaching the HI. Hence it is one of the most appropriate media because it can pull a variety of resources together, for example the teacher can have scrolling text for subtitles and video clips for signing, together with still pictures, text and sound. It seems teachers have no idea for this technology and that is why it was not regarded as one of the medium which can provide a positive outcome.

From the results in table 12, most of teachers (80%) agreed that hypermedia can extend learning. Students are able to self-adjust the time and determine the information based on preference since hypermedia provides different alternatives that individual learner can benefit from. Students can use hypermedia on their own time, place and speed to learn the concepts. Ma, O'Toole & Keppel (2008) support the finding reporting that based on individual differences students self-adjust the time and determine alternatives in learning.

However few (30%) teachers agreed that hypermedia cannot extend students' learning. This could be attributed to teachers who did not have experience with hypermedia. Hypermedia is one of the recent technologies which have just been introduced in the classroom instruction. These teachers find it difficult to incorporate hypermedia hence believe it cannot extend learning. The finding is supported by several researchers. Mishra & Sharma, 2004; Martin&Kleion (2008) who assert that, it is challenging to produce and incorporate multimedia enable learning methods into existing practice without creating unnecessary frustration in the learning process.

Table 12: Media which Achieves Positive Outcome

Variables		Frequency	Percent (%)
Achieves equitable learning outcome	Hypermedia	7	70

	CD-ROM	0	0
	Sign it	3	30
	Hyper- studio	0	0
TOTAL		10	100
Hypermedia extends learning	Yes	7	70
	No	3	30
TOTAL		10	100

N = 10

A further inquiry by an open-ended question was made by asking the reason why the media could extend students learning. Those who said that hypermedia can extend learning beyond classroom gave the following reasons;  $TE^1$ , *it improves understanding because students could see the process of various landforms for example formation of headlands and bays*,  $TE^2$ , *it can be used anytime anywhere and facilitates creativity*.

The results further revealed that hypermedia is the best because students can access information on their own through navigation. This motivates them hence learn better therefore teachers should always keep learning at the center of learners. Technology is the central focus and heart of all activities and pedagogy in classroom instruction. National Teacher Institute (2006) concludes that I hear I forget, I see I remember, I do I understand.

### Recommendation

National laws and policies should integrate accessible information, communication and technologies to ensure that their implementation enables persons with disabilities access them.

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## School Learners for Sustainable Development in Kenya

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### Abstract

*Critical thinking (CT) is an essential life skill that educators and mentors ought to equip learners with in order to enable attainment of Kenya's vision 2030 and the sustainable development goals (SDGS). Psychologists and philosophers argue that critical thinking provides individuals with the mental ability to think inquire and interrogate issues in society which eliminates bias and blind acceptance of viewpoints. Individuals who are proficient in critical thinking are able to conduct strategic thinking, creative thinking as well as engaging in appropriate decision making and problem-solving processes. Individuals empowered with these competencies are characterized by the ability to adjust to diverse demands of their environment. The outcome is individuals who are highly employable, adaptable and inquisitive with a propensity to positively influence society with innovations and social reengineering of communities with ideas. There is an apparent disconnect between the expected role of education in fostering critical thinking and the real products of our education from secondary schools in Kenya. A study by Githui, Njoka and Mwenje (2017) established that the levels of critical thinking among secondary school learners in Nairobi and Nyeri Counties were disturbingly very low. This scenario implies that students' mental abilities hardly perform beyond mere memorization of facts and information. Learners critically lack the abilities to synthesize, analyze and evaluate information. Such learners graduate from schools while weak or deficient in life skills necessary for effective living, work performance and inability to engage in activities of daily living in society. Unfortunately, educators in majority of learning institutions in Kenya lack the understanding of how educational technology can be harnessed to stimulate critical thinking skills among learners during teaching and learning processes. This is despite the fact that critical thinking can be infused in pedagogy across all disciplines without occasioning expensive curriculum reviews. This study seeks to provide insights and information to educators and policy makers on how educational technology can be harnessed to stimulate critical thinking among learners during the teaching and learning process for sustainable development in Kenya.*

**Key words:** *Critical thinking, creative thinking, pedagogy, educational technology, inquisitiveness*

### Introduction

The demands of life coupled with the complexity of our modern society continue to emphasize critical thinking as an essential life skill required of every individual in the contemporary times. The fundamental need to impart people with critical thinking skills is necessitated by diverse dynamics taking place in our contemporary society such as the rapid changes in technology, globalization and internationalization of labor and human capital requirements among other

socio-economic changes. Nyonje and Kagwiria (2012) argued that the school being one of the greatest socializing agents in the shaping of personality of individuals has a very instrumental role in inculcating life skills such as critical thinking. The school years represents a vital stage in the development of individuals when large populations of children are prepared to participate in society as good citizens and as agents of development. Healy (1990) argued that critical minds were increasingly gaining status as society's most valuable and sought after resource worthy of investing effort and time to cultivate. Scholars and policy makers argue that in order to produce students who are competitive globally, schools must churn out graduates who possess problem solving and critical thinking skills (Law & Kaufhold, 2009). Critical thinking skills is greatly emphasized as a fundamental life skill that every individual in society should acquire in order to promote sustainable development of their societies and nations.

### **Purpose of the Study**

The purpose of the study was to assess the levels of critical thinking among learners in public secondary schools from Nyeri and Nairobi Counties in Kenya.

### **Objectives of the Study**

The study was guided by the following objectives, to;

- i. Discuss how to harness instructional resources during pedagogy to stimulate critical thinking among learners for sustainable development in Kenya.
- ii. Assess use of instructional techniques to promote critical thinking among learners in secondary schools in Kenya.
- iii. Evaluate how assessment techniques are used in developing critical thinking among learners in secondary schools for sustainable development in Kenya.

### **Methodology**

The study was guided by the social cognitive theory (SCT) propounded by Albert Bandura as its theoretical framework. Library review of secondary data was conducted to provide information on how to harness educational technology to stimulate critical thinking among secondary school learners in Kenya. An empirical study on critical thinking skills conducted from Nairobi and Nyeri counties is also presented in the study. Empirical study was based on the descriptive survey research design. Kothari (2004) states that descriptive studies enable researchers to collect data relating to a phenomenon and are devoid of any form of manipulation of the variables in the study. Additionally, a descriptive design makes it possible to collect data over a large population within a short time (Kothari, 2004). Target population for this study consisted of learners from public secondary schools from Nairobi and Nyeri Counties. Nairobi had 86 schools with an enrollment of 10,796 students, while Nyeri had 214 schools with 58,424 students ((MoEST, 2013; Nyeri County office, 2013). Thus the total number of learners in the two counties was 69, 220. The schools were stratified into three categories, namely; boys, girls, and



co-educational (mixed) institutions.

Kothari (2011) asserts that a sample size of 10% of the target population is an adequate representation for a large population. Thus, a sampling index of 0.1(10%) was selected from the three categories of schools, which gave; 2 boys' schools from each county and 2 and 3 girls' schools from Nairobi and Nyeri Counties respectively. Further, 17 and 4 mixed secondary schools in Nyeri and Nairobi Counties were sampled, this gave a total of 30 schools for the study. Sampling tables by Krejcie and Morgan (1993) were used to determine the sample size, which yielded a sample of 376 respondents. Since the sampled respondents were distributed in the 30 sampled secondary schools, the number of students selected from each of the schools was 13. The sample size of the study is presented in Table 1. Data was collected using the Dindigal and Aminabhavi (2007) Psychosocial Competence Scale which was modified for the study. The responses of the students were used to work out a mean score which rated the learners' critical thinking skills on a scale of 1 to 5. Students who attained a mean score below 3.0 were rated as having a low level of critical thinking skills, 3.0–3.9 represented a moderate level while mean scores that were above 4.0 were considered to exhibit a high level of the attribute. The Statistical Package for Social Sciences (SPSS) version 20.0 was used to analyze data.

*Table 1: Sample Size*

County	Total No. of schools			Schools Sampled			Students Sampled	
	Boys	Girls	Mixed	Boys	Girls	Mixed	Boys	Girls
Nairobi	20	24	42	2	2	4	52	52
Nyeri	19	25	170	2	3	17	137	150
<b>Total</b>	<b>39</b>	<b>59</b>	<b>212</b>	<b>4</b>	<b>5</b>	<b>21</b>	<b>189</b>	<b>202</b>

## Literature Review

### *Educational Technology and Critical Thinking*

Educationists argue that harnessing educational technology to stimulate critical thinking among learners while in school is instrumental in empowering them with attitudes and abilities necessary for their active participation in the transformation of their societies. The term educational technology can be clearly understood by examining the major components of the concept, 'technology in education' and 'technology of education.'

### *Technology of Education*



The term ‘technology of education’ refers to application of theories and laws/rules in education for the purpose of improving the quality of education. Technology of education is a component of educational technology that embodies the use of systems approach to promote high quality education (Simiyu, 2000). Furthermore, this aspect of educational technology is concerned with the use of systematic and scientific procedures in educational practice (Maundu, Sambili & Muthwii, 2005). Simply put, technology of education refers to the application of the systems approach to educational enterprise. The cardinal concerns of technology of education involves empowering learners to perform activities such as; identification of educational problems, analyzing problems, setting objectives, suggesting solution strategies, synthesizing the processes, embarking on evaluation and providing feedback. These activities indicate the desired outcomes of critical thinking.

Gilkey and Howard (1977) define educational technology as a complex, integrated process involving people, procedures, ideas, devices and organizations, for analyzing problems and devising, implementing, evaluating and managing solutions to problems in all aspects of human learning. Mukwa (2015) argue that in educational technology, the solutions to problems take the form of all the learning resources that are designed, selected and utilized to bring about learning. In the educational sense, the resources are identified as messages, people, materials, devices, techniques and settings. This implies all the variables required in accomplishing effective communication. For critical thinking to be realized, learners must be actively involved in the teaching and learning processes by requiring them to apply their understanding as well as in manipulating the instructional resources used during instruction.

From these discussions, it is noted that a combination of the meaning of technology in education and technology of education provides an acceptable description of educational technology.

#### *Psychological Basis of Educational Technology*

As a discipline and in line with the dictates of technology of education, educational technology draws a lot from the field of psychology in general and psychology of learning in particular. The works of such psychologists as B. F. Skinner, Pressey and Watson greatly influenced the method and practice of educational technology (Coon, Mitterer, Brown, Malik, & McKenzie, 2014). Indeed, the influence of the behaviourist psychologists mentioned above has far-reaching effect on educational technology (Mukwa, 2015). The process of inculcating learners with critical thinking skills demands careful application of psychological principles of learning and reinforcement as well as adopting child-centered learning strategies and learner involvement.

The works of B.F. Skinner in the production of the teaching machines led to massive involvement of educational technologists in the production of more sophisticated instructional resources. The behaviorists’ interest in research and experimentations in mastery learning based

on the principle of individualization has metamorphosed into modern-day application of modular instructional packages as well as adoption of high technological-based distance education mode of information dissemination to a mass of populace (Otunga, Otero & Barasa, 2011). The works of the behaviorists led to theories such as reinforcement that has led to propagation of reward by the educational technology experts in their efforts at designing instructional packages.

Whether in live classroom teaching or mediated instructional process, an instructional designer knows that it is imperative to build an effective “reward” strategy. Thus, in computer-assisted designed program, such words like correct, right, good and splendid are used (Mukwa & Too 2001). Adherence of specialists in educational technology in the use of the principle of immediate knowledge of results (IKOR) was not unconnected to the work of the behaviorists or linguists. Because of this, rewards whether symbolic or not are usually provided immediately after a correct response. Psychological laws such as “readiness” which emphasize that students learn a task better and easier when they are mature for the task from psychological, physiological, and intellectual points of view, has been found applicable in the design of instructional packages by educational technologists. During the teaching and learning processes, teachers are expected to employ principles of educational psychology in ensuring learners are motivated and interested in what they learn especially critical thinking skills.

#### *Philosophical Basis of Educational Technology*

The definition of educational technology that has enjoyed general acceptability is that which defines it as “a systematic way of designing, planning, implementing and evaluating the total process of teaching and learning based on specific objectives using human and non-human elements together with application of communication theories to achieve predetermined objectives (Mukwa, 2015). In this sense, educational technology is defined as a systematic and scientific approach to identification of educational problems using human and non-human elements in the designing, planning, implementing and evaluating strategies aimed at a better performance of the educational system. By its very nature, educational technology is an eclectic discipline. By being eclectic is meant that the disciplines have elements of some other disciplines in it. The philosophical basis of educational technology stresses the need to involve learners in the learning process as well as ensuring learning activities and content reflect the developmental stages and interests of the child (Maundu, Sambili & Muthwii, 2005). Content learnt ought to be that which is within the mental level of the learner and has relevance to the needs of the society. In regard to life skills education, especially impartation of critical thinking skills, the values and abilities taught must be those that are relevant to the learner and the society.

In the contemporary times, employers are looking for employees who can think critically and produce results (Law & Kaufhold, 2009). Despite the emphasis on critical thinking as an educational outcome, majority of schools miss to inculcate critical thinking to their students. Failure to equip learners

with critical thinking skills while in school results in the majority of the general public not being able to practice it at all (Mendelman , 2007). Hayes and Devitt (2008) observed that critical thinking strategies are not extensively developed or practiced during primary and secondary education due to the emphasis on rote learning which is motivated by the need to attain high academic scores in national examinations. Nyonje and Kagwiria (2012) report that in Kenya, life skills education has always been imparted through co-curriculum programs which include activities such as games, sports, clubs, societies, music, guidance and counseling. It is good to note that these activities are handled outside the classroom. In Kenya, life skills education was introduced as a core subject and allocated space and time in the school timetables in 2009. The government of Kenya through the ministry of education together with support from development partners has spent a lot of resources in the inception and implementation of life skills education in public schools since 2009. The Kenya Institute of Curriculum Development (KICD) has designed a life skills education curriculum which is being implemented by public schools across the country (Nyonje & Kagwiria, 2012). However, the subject continues to be taught as a non-examinable subject just like physical education (PE) subject, which implies that many teachers may not place a lot of importance on it during teaching and learning processes.

#### *Use of Instructional technology to stimulate critical thinking skills*

Instructional technology plays a pivotal role in the process of imparting life skills especially critical thinking skills among learners. Peron (2010) argues that during pedagogy, teachers face the unique challenge of trying to balance between the twin academic processes of helping learners to acquire content together with stimulating critical thinking. This phenomenon is attributed to instructional requirements that place undue emphasis on mastery of core subject matter and the strive to satisfy stakeholder expectations of assisting learners to pass examinations and attain quality mean scores to enable educational institutions to be ranked at the top. The emphasis of passing examinations as a fundamental educational outcome among learners has probably compromised the need to focus instructional acquisition of critical thinking skills. Matheny (2009) reported that majority of teachers in public schools have become so overly focused on their students attaining high grades in examinations that many sometimes end up teaching the test itself. Jenkins (2009) points out that when critical thinking skills are omitted from the educational process, society misses tremendous benefits. In particular, students lack critical thinking skills which inhibit their ability to respond appropriately to challenges that they may encounter in new and unfamiliar situations that are helpful to intellectual development. In agreement to this view, Tsui (2002) noted that critical thinking skills challenge what is typically assumed by others and encourages learners to recognize the importance of different perspectives in problem solving. Indeed, Willingham (2009) observed that development of critical thinking skills improves content uptake and retrieval through the concept of meaningful learning. Matheny (2009) argued that critical thinking skills and acquisition of content complement each other, adding that the idea of

choosing between the two is a false dichotomy. Matheny further emphasized that instruction of critical thinking and core content should be designed to be delivered simultaneously.

McCollister and Sayler (2010) averred that critical thinking can be infused in lessons throughout all disciplines by utilizing in-depth questioning and evaluation of both the data and its sources. Having students track patterns in information stimulates them to look at the information as a process instead of simply information to be memorized and helps them develop skills of recognition and prediction. Evaluation of information helps students to learn appropriate procedures for utilizing credible information, as well as helping them to learn acceptable and appropriate ways to use discretion (McCollister & Sayler, 2010). These skills are helpful in reading, comprehension and problem-solving skills, all of which play an important role in standardized assessments (McCollister & Sayler, 2010). This deeper understanding allows the learners to better analyze the circumstances surrounding the occurrence and conflicting viewpoints about a phenomenon (Tsai, Chen, Chang & Chang, 2013).

Tsai, et al (2013) found that enhancement of critical thinking among students in science disciplines helped the students to better understand the scientific processes and also stimulated students to become more experimental and inquisitive of the diverse facets of the sciences. Knodt (2009) stated that innovative thinking is improved when the natural inquisitiveness that students bring to the learning process is inspired, affirmed, and cultivated. When given the opportunity to ask and explore openly, students acquire and blossom the critical thinking skills. Opportunity must be provided by the educator for students are to learn to be critical thinkers rather than passive dull thinkers. Opportunities must be provided for students to voice opinions and objections to topics rather than seek right or wrong answers. The brainstorming process is necessary to fuel the budding curiosity of the learner. Content knowledge is best taught using natural curiosity because there is an innate desire within every individual to learn by challenging traditional thinking patterns (Healy, 1990). Critical thinking, higher order thinking and problem solving make learning motivating, stimulating, and enjoyable (Jensen, 2005).

Experts have argued that effective teaching of critical thinking skills can be enhanced by having a more standard definition of what it entails (Choy & Cheah, 2009; Rowles, Morgan, Burns, & Merchant, 2013). This definition would allow educators at all grade levels to align the current curriculum with activities and lessons that help in cultivation of critical thinking among learners. In order to engage students in critical thinking, the teacher needs to act as a facilitator to give room for discussion and encourage a free thought process, as well as to encourage understanding that thinking critically does not always end with a right answer, but instead sometimes ends in more questions or differing evaluations of the theme being interrogated (Arend, 2009). The teacher's role as facilitator also boosts a peer review process that helps

students to learn appropriate responses to conflicting evaluations and opinions (Henderson-Hurley & Hurley, 2013).

Henderson-Hurley and Hurley (2013) suggested that the effort for more critical thinking is a holistic endeavor, which require cooperation among different departments, divisions, and classes. The development of critical thinking skills is not only applicable to core subjects such as reading, mathematics, language, arts, science, and social studies but cuts across the entire curriculum that learners are exposed to. This implies that every activity that learners encounter while in school should be structured in such a manner as to encourage and stimulate critical thinking. There is need for teachers to be conscious that core subjects, co-curricular activities together with the hidden curriculum in schools should all in an integrated and complementary way enable learners to cultivate and acquire critical thinking skills.

Kokkidou (2013) established that by challenging students to think critically, teachers were finding themselves thinking more critically about their subjects of expertise. Working to increase critical thinking of students has shown some promising results for both students and educators. The establishment of professional learning communities allows educators to think critically about the methods they use in teaching, and is a good starting point for ideas about inclusion of critical thinking skills in the classroom (Smith & Szymanski, 2013). Activities such as writing essays, debating and utilizing questions that adhere to higher order thinking in the Bloom's taxonomy are examples of ways to engage students in critical thinking in the classroom (Smith & Szymanski, 2013). Educational technology involving collaborative group work is essential in enhancing critical thinking. Collaborative group work is the use of works to solve problems/questions in education (Snodgrass, 2011). Sadker and Sadker (2003) states that in an education that promotes critical thinking skills, learners are encouraged to interact with each other and develop social virtues such as cooperation and tolerance of different points of view.

Over emphasis on teaching content is a significant impediment to the teaching of critical thinking skills. Jenkins (2009) states that across all subjects, content should be taught by integrating critical thinking with the objective of teaching students to think. Engaging the brain through critical thinking and problem solving is much more beneficial than memorization of isolated facts (Matheny, 2009). Other barriers to the teaching of critical thinking include the class size, the amount of time allocated per lesson and teacher attitudes (Slavin, 2009). The traditional pedagogical approach which perceives the teacher as the deliverer of information while the student plays the passive role of receiver of knowledge acutely impedes the development of critical thinking skills (Marzano, 2007). Educational technology that requires students to create study groups about the subject content they are studying or by having them analyze the information available in existing resources is stressed

as instrumental in stimulating critical thinking. Teachers need to integrate the content of different subjects and plan lessons that arouse curiosity and higher levels of thinking among learners during the teaching and learning processes.

### *Use of Assessment to Stimulate Critical Thinking*

Educationists argue that use of effective assessment techniques stimulates critical thinking. Dessie and Heeralal (2016) aver that integrating assessment in instruction greatly influences the degree of absorption and internalization of content delivered in the classroom. They further report that most teachers are less likely to use different assessment strategies as part of instruction to assess high order thinking and collect evidence to identify learning gaps for future learning. Such activities have negative implications on the quality of education and by extension internalization of content. In this regard, school administrators, teachers and researchers should do more in the area to effectively implement formative and summative assessments to improve students thinking skills. Libman (2010) asserts that assessment and teaching should be compatible and aligned to support one another especially in the process of building the learners high order thinking skills which has immense implications on critical thinking.

O'Leary and Hargreaves (1997) aver that when assessment is carefully designed and accorded considerable thought, it encourages and motivates learners to develop appropriate generic skills. The upshot is the acquisitions of such generic skills as problem solving, thinking critically and making judgements in addition to knowledge and understanding. Teachers should realise that assessment is an integral part of instruction and a powerful means to improve internalization of desired educational outcomes. This involves acquisition of knowledge and critical thinking (Cowie, 2012). Moreover, teachers need to provoke students' prior knowledge or schema through effective dialogue, questioning, self-assessment, open ended assignments, thinking and concept-mapping to support them to apply concepts, strategies in real situations (Hodgson & Pyle, 2010). Njoka (2012) argued that teaching and learning process should focus on developing high order thinking skills among learners to enable them effectively participate in the development of self and society. The use of assessment during instruction to promote critical thinking is based on the understanding that assessment could be used more than simply to test knowledge, but provoke learners to engage in higher order levels of reasoning and problem solving. In order to inculcate students with critical thinking skills, teachers should adopt such instructional techniques as use of self-directed learning activities, which involve project work, research, collaborative learning, group work, synthesis and analysis of collected



data, critical evaluation of the subject matter, world views and discourses.

Integration of critical thinking is very important in teaching at the secondary school level because it promotes content analysis and evaluation which in turn have a positive impact on achievement of the students. In the area of critical thinking skills, few studies are available related to instructional design in Kenya. If teachers really want to modify the behavior of learners in the classroom, it is indispensable to facilitate the critical thinking component of education. Owing to the paucity of studies in the area of critical thing in Kenya, the researchers felt the need to investigate the level of critical thinking skills among learners from public secondary schools from Nyeri and Nairobi Counties in Kenya.

### Results and Discussions

The purpose of the study was to assess the level of critical thinking skills among learners from public secondary schools in Kenya. Respondents were provided with items on a five point likert scale which required them to indicate their opinion regarding specific abilities that measured their critical thinking skills. The scores obtained were used to calculate a mean score ( $\bar{x}$ ) of critical thinking skills of the respondents measured on a scale of 1 to 5. The results are presented in Figure 1.

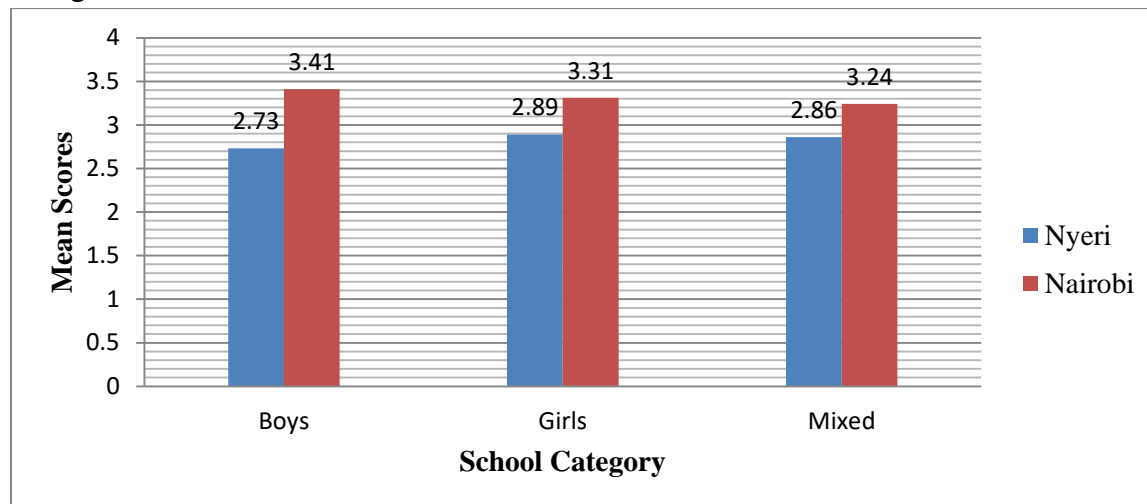


Figure 1: Critical Thinking Skills by School Category and County

Data analysis presented in Figure 1 clearly shows that learners in Nairobi County had higher levels of critical thinking skills compared to their counterparts in Nyeri County. In Nairobi County boys schools had a mean score of 3.41, mixed schools ( $\bar{x} = 3.24$ ) and girls schools ( $\bar{x} = 3.31$ ). In Nyeri County, students in girls' schools had the highest mean score ( $\bar{x} = 2.89$ ), mixed schools ( $\bar{x} = 2.86$ ) while boys schools had a mean of 2.73.



The findings of the study concur with a study conducted by Aliakbari and Sadeghdaghighi (n.d) among Iranian students which established that students had low levels of critical thinking. The study further revealed differences between male and female students in critical thinking abilities, with male learners outperforming their female counterparts. Floyd (2011) states that there are widespread perceptions that students from rural areas have low critical thinking skills compared to learners from urban settings due to their strong cultural orientation. However, instead of this view, more credence is being given to aspects such as linguistic aptitude and educational experience as contributing factors to learners' capability to exhibit high levels of critical thinking. The apparent deficiency in critical thinking abilities among students in Nyeri may be due to the fact that they had been raised under coherent societal norms where community welfare and traditional values are stressed beyond personal convictions. Consequently, rural communities place a lot of prominence on displaying regard for authority and conforming to the demands of societal values rather than standing out on individual convictions. This could be among the variables contributing to differences in critical thinking abilities between learners in Nyeri and Nairobi counties.

a) It had been hypothesized that there was no statistically significant difference in critical thinking skills among learners in boys, girls and co-educational schools. To test this hypothesis, one way Analysis of Variance (ANOVA) was computed. The statistical relationship between the levels of critical thinking skills among learners in boys, girls and mixed public secondary schools was presented as shown on Table 2.

**Table 2. ANOVA results on critical thinking skills among learners**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	15.221	29	.525	.849	.694
Within Groups	234.935	380	.618		
<b>Total</b>	<b>250.156</b>	<b>409</b>			

Table 2 shows that the analysis of variance results yielded p-value = .694 which was more than the alpha value  $\alpha > 0.05$ . This means that the observed differences in critical thinking were not statistically significant. Therefore the null hypothesis was accepted. The conclusion was that critical thinking skills of learners from boys, girls and mixed secondary schools were essentially the same.

These findings suggested that the overall critical thinking skills of learners in different school categories were the same. Peron (2010) observed no differences in critical thinking skills among learners in different school categories. This was attributed to similar classroom practices and

instructional strategies that did not drive students to give evidence and to reason. Schools did not employ pedagogical approaches such as debates, brainstorming, essay writing and questioning techniques in a way that stimulates development of critical thinking in the classroom. As a result majority of learners did not develop high levels of critical thinking despite being in different school categories. Consequently, the similarities in the instructional methods in different school categories could be a contributing variable to similarities in learners' critical thinking abilities.

b) It had also been hypothesized that there is no statistically significant difference in critical thinking among learners from secondary schools in Nyeri and Nairobi Counties. To test this hypothesis, independent sample t- test was computed for the means of the critical thinking skills for learners from rural and urban environments. The findings are provided in table 3.

Table 3. Independent sample t- test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Critical thinking	Equal variances assumed	3.352	.068	-4.869	409	.000	-.46846	.09621	-.65759	-.27933
	Equal variances not assumed			-5.127	192.381	.000	-.46846	.09137	-.64867	-.28825

Data analysis presented in table 3 shows that the level of significance of .000 was less than the p-value (.05). Therefore the null hypothesis was rejected. It was concluded that the level of critical thinking skills among adolescents in Nyeri and Nairobi Counties were different. This concurs with Leipert et al. (2012) who observed that several features of the rural context, such as geographical, socio-cultural, economic, and health care contexts, are relevant to understanding the critical thinking skills of rural adolescents. Rural communities tend to be more religious and hold traditional values and beliefs, which can preclude rural adolescents from being assertive (Riddell et al., 2009). Therefore the contextual variables in the rural and urban settings could be stimulating acquisition of the critical thinking skills among the learners differently.

## Conclusion

Descriptive data analysis established that learners in Nairobi County generally had higher levels of critical thinking skills compared to their counterparts from Nyeri County. The apparent deficiency in critical thinking abilities among students in Nyeri may be due to the fact that learners in Nyeri County have been raised under coherent societal norms where community welfare and traditional values are stressed. Rural communities place a lot of prominence on displaying regard for authority and conforming to the demands of societal values rather than standing out on individual convictions.

Inferential statistics results obtained from the computed value of ANOVA for the different school categories indicated the contrary. The differences observed were not statistically significant, suggesting that the overall critical thinking skills of learners in different school categories were the same. This was attributed to similar teaching methods across schools which could be contributing to similarities in learners' critical thinking abilities. However, independent sample t-test indicated that there was a statistically significant difference in critical thinking among learners in Nyeri and Nairobi Counties. These differences were attributed to contextual variables in the rural and urban settings which could be stimulating acquisition of critical thinking skills among the learners differently.

### Recommendations

The results of the study elicit several suggestions for the adoption of instructional methods in secondary schools in Kenya necessary in addressing the apparent deficiencies in critical thinking skills among learners. From the findings of this study, it is recommended that there is need to address the instructional procedures used by secondary school teachers in order to stimulate critical thinking skills among learners in both counties. It is important to note that schools in the rural environments are not inspiring learners enough towards acquisition of critical thinking skills. In this regard, secondary schools in rural areas ought to put in place mechanisms that compensate for this shortfall.

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## **An Investigation into Factors that Contribute to Cheating in Examinations in Technical Institutions in Central Province, Kenya**

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### **Abstract**

*Cheating in an examination is an act of deception by students to gain unfair advantage over others by using unauthorized materials and information. There is a significant increase in test cheating. Among those who cheat are students in technical institutions, where there is recurrence of cheating in the internal examinations. Some studies identify factors such as the following that contribute to cheating: students learning from a dishonest society, poor teaching, poor learning environment and lack of facilities, an education system that is concerned about performance, poor time management, lack of effective study habits and technology. However, there is no readily available information on factors that contribute to cheating in technical institutions. The purpose of this study was to investigate factors that contribute to cheating in internal examinations, methods used in cheating and reasons for students to cheat; and the main aim was to devise and recommend strategies that can be applied to curb cheating in examinations in technical institutions in Central Province, Kenya. The results of the study show several factors that contribute to cheating. These are: contextual factors such as class attendance, lecturer-student interactions, poor invigilation, and lack of adequate facilities. The participants raised the following suggestions on how cheating may be curbed: strict supervision of examination, provision of adequate facilities, and frequent administration of tests and assignment. Recommendations on measures to be applied were presented along with suggestions for further research in this area.*

**Key Words:** *Cheating Examinations, Education, Technical Institutions,*



## **Introduction**

Technical Institutes are middle level colleges which offer technical education to students who have not obtained the minimum requirement for University admission at C+ (Session paper, 2012:10). The programmes offered take two years in certificate courses and three years in diploma courses. Students studying craft courses take shorter time since they are employed as operatives while those studying for diplomas are employed as technicians with a supervisory role (Ngerechi, 2003:4). Cheating is a form of stealing, which results in the cheater attaining recognition and grades that he or she does not deserve. It is an act of obtaining or attempting to obtain, or aiding another person to obtain academic credit for work by use of dishonest, deceptive or fraudulent means (Pavela, 1997; Blankenship & Whitley, 2000 as cited by Lambert et al., 2003, Cizek, 1999:3).

Cheating has become an epidemic in our country. According to Centre of Academic Integrity (<http://www.academiintegrity.org>), there is a significant increase in test cheating, unpermitted student collaboration and an increased prevalence of chronic cheating. At the end of the term when the end-of-term examination marks are submitted, there are always cases of students who either cheated in the tests given during the term or at the end-of-term examination, reported. Cases of cheating are reported every term by teachers who catch students with relevant materials during continuous assessment tests (Aullo, as cited by Nyandoro, 2008:43). There are other cases of students who are not caught red-handed but reported to the principals or heads of departments through the suggestion box.

Majority of student cheaters are usually caught cheating in the subjects they perceive to be difficult (Diekhoff et al 1996; Lambert et al 2003). Students who cheat are either caught in possession of written materials in the form of crib notes, with written notes on the desks, copying from each other's work, or with formulas written on their calculators (Nyandoro, 2008:39; Adhola 2009:10). The problem is specifically rampant during the end-of-stage examination, which is administered at the end of the year in each course. Those who pass the end-of-stage examination move to the next level while those who fail are made to seat for supplementary examination or forced to repeat the course. These consequences make those who are not well prepared to cheat in order to pass and move to the next level.

## **Problem Statement**

Despite the fact that many institutions have examination policies that give information on consequences of cheating in examination, there has been recurrence of cheating in the internal examinations in Technical Institutions. Education by its nature and purpose is meant to teach students to be good citizens by developing in them a good character based on sound morals that would enable them to play a constructive role in their society. However, this is totally



undermined when cheating in examinations is allowed to take place without serious consequences. In reality, cheating does not allow the teacher to know whether the students have understood the course content and therefore the teacher is not able to correct the gaps in student learning by re-teaching current students and when preparing notes to teach future students (Nyandoro, 2008:17).

Cheating is very costly because of the consequences it has on all affected. Furthermore, it affects the students and the entire department's morale, and the reputation of the affected institutions as the public loses confidence in the education programmes offered in technical institutions (Nyandoro 2008:18, Knowledge, 2004 as cited by Simkin & McLeod, 2009:1)). It wastes time as teachers have to sit and discuss the problems associated with cheating because those caught cheating have to be dealt with (Nyandoro 2008:18; Chinamasa et al 2011:89). Generally speaking, there has been wastage of resources for parents who end up paying extra cash when children are suspended and consequently forced to retake courses as a result of cheating (Nyandoro 2008:17; Chinamasa et al 2011:89). Students who cheat at colleges will end up cheating at their workplace when employed and when caught they will consequently lose their jobs. In conclusion, cheating has become a big challenge in many institutions and the problem is that factors causing internal examinations cheating are not well understood and as such the problem persists. It is therefore necessary to investigate the causes, nature and purpose of cheating with the aim of coming up with solutions for curbing the vice.

### ***Objective of the study***

To determine how cheating takes place especially in the examinations in Technical Institutions in Central Region, Kenya.

### ***Research Question***

What are the methods used by students to cheat in the examinations in Technical College in Central Region, Kenya?

### ***Methodology***

The study was conducted using qualitative approach was used to help understand the meanings individuals constructed in the cheating phenomenon. Case study design of two technical institutions in central province, Kenya was adopted. Purposive sampling strategy was used due to the sensitive nature of the subject where sixteen students, 4 lecturers and 2 heads of departments were interviewed. Participant observation was used to provide detailed description of events, people, actions and objects in their settings. Document analysis of several records including crib notes and books confiscated from students, warning letters was done to complement data collected from interviews. Data from interviews was transcribed, and with the help of literature and research questions themes were identified and then data was coded, placed in categories and

sub categories. The facial and content validity was achieved through the use of combined methods to provide information on the issue of cheating in examination.

## **Results and discussion**

This study found out various trends in examination cheating, discussed as follows:

### *Factors that contribute to cheating in internal examinations*

From the data, several contextual factors were raised. Attendance rate both for lecturers and students was found to affect learning. On one hand, the literature posits that teachers absent from work frequently would lead to cheating in examination (Eckstein, 2003; Kathuri, 2002; Steininger & Kirts, 1964). The results of this study found that lecturers who miss classes tend to give notes to the students to copy without discussing them, ask the students to read and make their own notes. Absenteeism results in not covering all the topics as outlined in the course content. When lecturers miss lessons, respondents felt that students would not be guided, assessed and motivated as when lecturers attended lessons. Therefore, when the examination time comes students may not be well prepared, especially that examinations are based on all topics, including those not covered in class. In order to pass the examinations, the students may plan to cheat. This supports the expectancy theory whereby students will be motivated to write crib notes, use cell phones, or collaborate in order to be able to answer questions in the examinations and subsequently pass the examination.

On the other hand, poor attendance rate of students would affect learning thus leading to cheating. When students miss lessons, especially practical lessons, they may not be in a position to answer questions in examinations, since in an examination they are expected to apply theory to practice. They usually lack understanding of concepts learnt during their absence; to avoid failure they resort to cheating in examination. One respondent felt that in case of a practical question based on a topic a student missed when it was taught, a student cannot attempt to answer such a question based on the content he or she has never seen.

The results of the study indicate that there was adequate lecturer-student interaction and as a result, cheating was discouraged. On one hand, literature supports that students cheat less when professors show a real concern, are kind, respectful and understanding to the students (Roig & Ballow, 1994; Davis & Lodvigson, 1995; Genereux & McLeod, 1995 as cited in Wikipedia webpage). One respondent (S7) stated that adequate lecturer-student interaction would discourage cheating because students are able to discuss and interact well with the lecturers and can therefore solve their academic related problems. There would therefore be no need to cheat because lecturers would have explained difficult concepts and shown them (students) how to tackle problems, thus promoting their learning. It may be said that when lecturers are approachable, students feel free to ask questions and responses to their questions improve their

learning.

On the other hand, students who perceive their instructors as grumpy, callous or unfriendly, indifferent and who do not care whether or not they learn the course materials are more likely to cheat (LaBeff et al., 1990; Diekhoff et al., 1996). The results of this study suggest that there are cases where lecturers' attitude towards students is negative and this would lead to cheating since learning in such an atmosphere is usually not effective. In such a situation the student may not internalize or absorb the course material effectively because the lecturer has no time to explain and help students in tackling questions. Students may also fear to approach such a lecturer when they have unresolved issues about topics covered. When the examination time comes, the student may realize that he or she needs to cheat in order to pass the examination.

There lies a connection between this finding and the Expectancy Theory posited by Vroom (1964). This theory proposes that an individual will decide to behave or act in a certain way because he or she is motivated to select a specific behaviour over other behaviours owing to what he or she expects the result of that selected behaviour to be (Oliver, 1974). Owing to poor performance of the lecturer in class, which led the students not understanding the subject well from the beginning, students may assume that they can only pass the examination in that subject through cheating.

According to Chinamasa et al. (2011:98) and Adhola, (2009) poor supervision of examinations and large class sizes create opportunities for students to cheat since no effective invigilation is done. Steininger, Johnson & Kirts (1964) found that invigilators leaving the room during an examination could cause students to cheat more than they would normally do. This study found that out of twenty respondents, fourteen indicated that poor invigilation is prevalent. The respondents agree that some lecturers leave the examination rooms unattended to. Others would remain in the room seated in one position, either in front of the students or at the back, throughout the examination session. They are not on the alert against what is going on in the examination room. Since students may have observed the behaviour of the invigilators for some time, they may decide whether to cheat or not, when they see who is going to invigilate their session on the timetable, depending on the strictness of the invigilator concerned.

The results of this study support both the expectancy theory and the theory of planned behaviour. For the expectancy theory (Vroom, 1964), students who have prior knowledge that a certain invigilator is not focused when invigilating may prepare crib notes assuming they will be in a position to use them without being detected. This will help them answer questions in examination and thus lead to passing the examination without exerting much effort on their studies. The theory of planned behaviour (Ajzen, 1991) supports this sub-category in that students may have the attitude that cheating helps them to pass and that because other students

cheat and have not been caught since some invigilators are neither vigilant nor keen to take action when they see a student cheating, they believe they would succeed in cheating which will help them to pass the examination. The study found there is poor invigilation of examination and that students take advantage of the opportunity to cheat in the examinations.

In addition to the above factors, the results from the study showed that provision of course outline did not inhibit cheating in examination. Eleven respondents in the study agreed that at the beginning of each term, the lecturer in charge of a certain subject issues the course outline, and that the examination is set from the topics covered within that particular term. Because the students are well aware that the examination will come only from what they have covered, it makes it easy for them to write crib notes highlighting the main points as per the topics covered in the course outline. While the course outline is meant to inform them of what they should expect within the term, it may also become a tool used as a guide to perpetrate cheating in examinations.

As it has been identified in this study, on one hand, lack of enough facilities may lead to cheating. Asuru (1996) as cited by Korbs (2009:2) contends that poor learning environment and lack of facilities are factors that influence cheating. In the study, there were two cases observed where 42 students were taking their examination in a small room. Five students shared one desk and as a result, did not have enough space to sit comfortably. This led to collaborative cheating. That class had the highest number of students observed cheating.

According to Adhola, (2009) a school environment, which is not properly arranged for the number of students taking the examination, promotes cheating in examinations. When students are placed in such a congested environment, even those who did not have the intention to cheat may find themselves copying the work of their neighbours when stuck in a question. Lack of adequate facilities as a cause of cheating is supported by the Theory of Planned behaviour. When students know they are going to take examinations in a congested room, they may plan in advance to write crib notes with the intention of using them in the examination. They may also plan to sit in a place where the invigilator may not be able to see them when they refer to their crib notes. Others may plan to collaborate to copy from each other's work depending on how each is able to answer the questions.

On the other hand, where there are adequate facilities, and the sizes of rooms correspond to the number of students, cheating may be less, especially collaborative cheating, since students will be well spaced. The results of the study make it clear that lack of clear information on academic policy contributed to cheating in examination. According to literature reviewed institutions, which communicate effectively their policies on academic dishonesty and on common penalties, substantially reduce the amount of cheating on campus (Stuber-McEwen et al., webpage). The

researcher observed that in one of the institution, three out of eight respondents did not have an idea of what the academic policy states. S6 when asked whether there is an academic policy said, “I have never heard of it” and when asked what is done to students who are caught cheating said, “I don’t know”. This shows that there is need to make every student aware of examination regulations as soon as they join the institution so that they can be aware of the consequences early enough. In the same institution, it was observed that there were more cases of cheating reported than in the other institution whose academic policy is well known to the students and whose penalties are severe. Therefore, it may be said that a perception of severe penalties has the likelihood of inhibiting or deterring cheating behaviour in direct proportion to perceived probability and severity of punishment.

The study found several personal characteristics contributed to cheating in examination. As it is postulated in the literature reviewed, students are more likely to cheat when they doubt their intelligence, lack academic confidence or expect failure (LaBeff et al., 1990; Schab, 1991; Tana & Zuo, 1997 as cited by Robinson et al., 2004:2). McCabe & Trevino, (1997:380) found that students who perform poorly tend to cheat more than students who perform well. Some of the respondents agreed that when one is not sure of himself or herself, one is likely to prepare to cheat before the examination is taken. Students who are weak may cheat in examinations because they may not remember all the concepts learned in class. The pressure to get good grades in order to proceed to the next level in the course, places those students with low self-esteem, lack of self-confidence in a fix because they feel they have no ability to take up the challenge of examinations. Most of these types of students do not exert much effort on their studies as literature states. Davis and Ludvigson as cited by Bjorklund & Wenestam (1999) conclude that cheating in this case would be reduced by using positive reinforcement and by encouraging and fostering the students to acquire an outlook on life that will prevent them from cheating.

Another example from the data that assists in illustrating the value of Vroom’s theory of expectancy and Ajzen’s theory of planned behaviour is found in peer influence. In the data, respondents reported that students who had friends who cheated and were successful tended to follow suit. Others would cheat to compete favourably with their friends. Those who are not strong in moral values would be led astray by becoming indisciplined or abetting cheating. Although peers may influence students negatively, there were those who felt they also exercise positive influence on others by way of acting as role models, and by assisting them in their weak areas.

Those involved in extracurricular activities find themselves with less time to study and therefore, lack behind with their work and the examinations find them unprepared. They, as a result, decide to collude with their friends to cheat in the examination. The results of the study posit that as

students form relationships with peers, they may develop behaviours and ways of thinking that are in keeping with these groups. The behaviour may be positive or negative thus conforming to expectancy theory and theory of planned behaviour. Two respondents felt that extracurricular activities help one become revitalized in body and mind thus students will be in a better position to understand the course content because the brain becomes more alert when one exercises.

Report from the literature cites that two thirds of teachers believe that poor time management was the principal cause of cheating as a result of social engagement (Caroll, 2006 as cited in Wikipedia webpage). One respondent commented that students who participate in extracurricular and social activities spend the time they would have used to study away in these activities, leaving them not being prepared when examination time comes. This leads them to look for an option of cheating to pass the examinations. Students who plan their time well and start studying from the beginning of the term, perform well as they are not forced to rush to learn the content at the eleventh hour they supposed to have learnt throughout the term. There is need for students to set priorities and be disciplined so that they can better co-ordinate their activities.

Chinamasa et al. (2011:91) noted that students cheated for lack of orientation to university study methods. From the study results, it was clear that the two technical institutions did not have time set aside for students to study. There was also no lecture given to new students on how to study. Therefore it is left to the students to organize themselves on how and when to do their studies. The study shows that most students have poor study habits that hinder them from preparing effectively for their examinations. From the study, one of the reasons for cheating is unpreparedness. According to GSI (2011), ineffective or inadequate study habits influence cheating. Students lack the skills of studying that would help them retain what they have read. This study shows that most students do not read their course material until they know the examination is near thus leaving them unprepared to tackle the examination with confidence. Due to unpreparedness, students resort to cheating to pass the examinations. Most of the students in regular courses spend most of their time in social and extracurricular activities. Therefore, there is need for lecturers to counsel students from the beginning of the course to study hard and give them guidelines on how to study. There is also need for giving the schedules of tests and end of term examination so that students can prepare themselves accordingly.

From the results of the study, it was found that parents do not contribute much to cheating in technical institutions. Although they expect their children to have good grades, they do not have a great influence on the performance of the students. One respondent felt that parents would condemn cheating if they found that their son or daughter had cheated. Three respondents felt that parents would abet cheating in primary or secondary schools more that they would in tertiary institutions.



### *Methods used for cheating*

The respondents identified varied methods used in cheating in the interviews for this study. The results show that use of crib notes was the most common method in cheating. The notes were written prior to the examination as S4 commented, “before doing the examinations, someone writes notes expected to come in the examinations and then you carry it to the examination room and copy answers during examinations”.

Use of cell phones was the second most common method amongst students in the two institutions as per the data collected. It was found that invigilators who understand that cell phones should not be allowed in the examination room did not remember to ask the students to switch off their cell phones and keep them away. Cell phones were used to google answers from the internet, check answers saved in the message inbox; receive messages during examination while others saved answers in their e-mail inbox. Burke et al (2007) found that electronic devices such as cell phones, iPad, electronic calculators and personal data assistants are used for smuggling in formulas and other crucial information.

The collaborative methods commonly used were copying from friends by exchanging scripts and asking for answers to a question, use of codes and discussing with friends. In technical drawing course, students checked the work of the person in front since the desks are high and slanted. Other methods used but not very common were writing on body parts, walls, and desks. Literature reviewed supports the findings of this study as stated by Franklyn-Stokes and Newstead (1995); McCabe and Trevino (1996); William (2001) and Abiodun et al. (2011:278). They listed copying from each other, assisting each other, use of crib notes, asking for help, giraffing, and passing pieces of paper among the frequently used forms of cheating.

From the results of the study, it is clear that students plan in advance to cheat in examination and therefore prepare the materials to be used in answering examination questions. This supports the theory of planned behaviour (Ajzen 1991:181), which posits that a person's behaviour is determined by his or her intention to perform the behaviour and that this intention in turn is a function of his or her attitude toward the behaviour and his or her subjective norms. Some students may think they will not pass unless they cheat in examinations; others are driven by the knowledge that some of their invigilators are not keen to catch them while others copy their peers' work when exposed.

### *Reasons for cheating in internal examinations*

The results of the study show that students cheat because they do not want to fail their examinations. Usually they fail because they were not well prepared for the examination, which happens when a student lacks the necessary ability or has failed to manage his or her time effectively. S6 commented, “They cheat because they were not well equipped and not ready for



the examinations. Maybe they fear failing. They were not familiar with the course material”.

Others would cheat to obtain better grades. It may be that they would like to be regarded as good or intelligent students. Crome & Marlow (1964) support this finding as they found that college students with a high need for approval cheated more often than others because they are concerned about negative evaluation should they not succeed.

The other reason for cheating given by some respondents was advancement to the next level. S3 commented that “in this school after failing you do not get your results but you are asked to repeat again another year and this is wastage of time”. In the two institutions where the study was carried out, the pass mark for the end of stage examination is 40%. If a student does not attain that mark in any three subjects, their grade will be a “Fail”. They are required to either repeat the whole year or move to another institution. If they score below 40% in one or two subjects, the results show they are referred and therefore required to sit for supplementary examinations. It is only by passing the supplementary examination that they will be promoted to the next level. It is on the ground of this that students who are weak or not well prepared for the examination would resort to cheating in the examinations. The literature shows that school obsession with performance measures spurs cheating as it was found by Anderman, Griesinger & Westerfield, (1998); Waita (Daily Nation November 24<sup>th</sup> 2008: web page) and Aullo (2004). The expectancy theory (Vroom, 1964) may be used to explain the reasons for cheating. Some students may decide to cheat because they are motivated by the prospect to pass the examination, to achieve better grades and to move to the next level thus avoiding failure.

### *Strategies to curb cheating*

During the course of the interviews, respondents were asked what they thought should be done to prevent cheating in examinations. They offered measures that should be taken by the administration, the invigilators and the lecturers throughout the course of the student’s stay in the institutions. Those that occurred most frequently included: strict supervision, provision of adequate facilities, maintaining strict rules, strict class attendance, frequent administering of tests and assignments, orientation to academic policy and counselling of students as they continue with their course. Discouraging sharing of materials was mentioned by one respondent.

The study found that there was need for strict supervision of examinations. It was observed that most invigilators are not alert and actively involved when supervising an examination. When asked why lecturers are not focused when invigilating, L1 stated, “I think it takes too long and you are not doing anything for 2-3 hours, too long and you are just seated there watching students. The teacher himself or herself is not being supervised by anybody, he or she is left by himself or herself, so it is up to him or her. I also realized there is no motivation like when we do supervision for KNEC, you get nothing from it”. Aullo (2004) recommends a need for lecturers

to be trained on invigilation and supervision of examination. This would help them to be able to recognize the importance of invigilation, identify signs of those cheating and be able to catch them thus inhibiting future cheaters.

There are rules that are laid down to be observed when administering an examination. The results of the study found that most invigilators do not adhere to some of these rules. Due to the fact that students know what invigilators do and not do, they are able to look for loop holes. From the study, it was observed that frisking was not done. Students were in the examination room by the time the invigilator arrived with the examination papers. Most of the respondents felt that invigilators should ensure all textbooks, note books are removed from the desks and they should check the entire room. It was agreed by most respondents that invigilators should remind students that cell phones are not allowed in examination rooms. The invigilators need to check that what is written on the desks and walls is not relevant to the particular examination being taken. As S10 commented, “students should be checked on hands, book, invigilators should be keen enough to observe students whether they have materials on them or operating their mobile phones”. When those intending to cheat realize the invigilators are thorough in their work, they may be hindered from cheating.

Three respondents identified provision of adequate facilities as being necessary during the examination period so that there would be proper spacing and lecturers have room to move around the examination room. One respondent felt that the examination officer should allocate examination rooms according to the class size. There should be enough desks and chairs so that students can be well-spaced to hinder colluding with each other and for easy supervision. Ogumniyi, (1984) recommended that students should sit on alternative seats (that is, not their usual seats) when taking the examination. This may not be possible in the Kenyan situation but if there is enough room between students coupled with strict supervision, it would hinder students copying from each other and exchanging papers. One respondent commented that course coverage was important in preventing cheating. Although most of the respondents indicated that they covered all topics in the course outline, there were those who felt that there should be strict class attendance on the side of both lecturers and students. This would enable those students who are equipped with the necessary abilities, to understand when the lecturer teaches and their motivation for good performance would be heightened.

Another strategy to curb cheating was frequent administering of test and assignments. The respondents who commented on this issue said that there was need to familiarize themselves with examination format and way of answering questions in order for their confidence to be boosted in preparation for the end of term or stage examinations. S14 commented, “Students should be shown how to answer examination questions to minimize examination cheating”; and another respondent said examinations help them to gain more knowledge by applying what they have

been taught, for what they practice stays in the mind. It may be concluded that when students understand the course content well cases of cheating would decrease since they would feel confident and prepared to tackle what is expected in the examination.

Effective communication of academic policy and examination regulations is important so that all students are well versed in them before examinations. The study results show that three respondents from one institution did not have an idea of what the academic policy was. Since respondents were chosen randomly, it may be that there are many others who do not know about the academic policy at that institution. Respondents from the other institution had adequate knowledge of the academic policy and the researcher observed that there were less cases of cheating at that particular institution. From this, it may be said that institutions should make sure that new students are oriented to the academic policy and copies of the policy be displayed at strategic positions within the institutions. Strict penalties should be set so that when one is caught cheating is punished; consequently others would fear to repeat the same mistake. No student would like to be disqualified or ordered to repeat a course while his or her colleagues continue to the next level.

Apart from orientation to the academic policy, seven respondents stated that students need to be counselled in order to enlighten them on the consequences of cheating. Counselling is important since it helps to instill self-discipline in students and self-disciplined students are not easily attracted by bad practices such as cheating. S3 said to prevent cheating, “students need to be counselled on the effects and consequences of cheating”; and another respondent, S5 commented that discipline should be instilled in the students as this may be a process of bringing change in their lives. Counselling that encourage students to work hard to internalize what they learn would go a long way in helping them (students) to discover their potential in their studies. Counselling may also help to instill moral values in students so that they become capable of distinguishing between what is wrong and what is right, as they lead their lives at colleges. If students work hard and pass their examinations without cheating, they will realize they possess the necessary capabilities, and therefore would feel empowered to desist from committing vices such as cheating.

### **Conclusion**

Cheating is at its highest levels in our institutions today. Students are taking advantage of technology and lecturers’ reluctance to report cases of cheating. While cheating will likely never be eradicated completely, guidance and counselling may eventually weaken the urge to cheat among students.

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## **Empirical Assessment of Demographic Factors Influencing Organizational Commitment in Secondary Schools in Kenya**

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### **Abstract**

*Organizational Commitment (OC) is increasingly becoming an important research concept in the fields of organizational behavior and human resource management. It's particularly relevant to schools where attainment of organizational goals is highly dependent on teachers' efforts. The purpose of this paper was to explore the factors that motivate teachers' commitment to their institutions. The study specifically aimed at establishing whether there is a relationship between teacher's demographic characteristics (age, gender, academic qualifications, tenure and position held) and School Commitment (SC). The study adopted the descriptive research design, targeting*

*1670 secondary school teachers in in four sub-counties in Nakuru County. A sample of 310 educators that was selected through stratified random sampling procedure. The groups that formed the sample strata comprised of school principals, deputies, heads of department, class teachers and subject teachers. Data was collected using the Allen and Meyer (1990) Three Component Model Employee Commitment Questionnaire. Relationship between variables was established by use of Spearman's rho and Linear Regression while the level of teacher commitment was established by use of descriptive statistics including means, frequencies and percentages. A high level of SC among Kenyan secondary school teachers was established. Age and the position held in the school was found to be positively related to SC. Negative correlation was established between SC, and academic qualifications and tenure. There was no significant relationship between gender, and OC. Although a relationship was noted between most demographic variables and SC, the correlations were predominantly low leading to the conclusion that demographics was not a major factor in predicting SC. Consequently, the study recommends that further research be done to explore the other antecedents of SC such as conditions of service and school environment in order to explore their link to teacher commitment.*

**Key words:** *Demographic, commitment, age, tenure, relationship, characteristics*

## **Introduction**

### *Background of the Study*

Behavioral scientists often argue that organizational leaders who know why their employees behave the way they do are better equipped to motivate them to contribute to the achievement of organizational goals (Gray and Starke 1988). The tendency for workers to react and interact in certain ways in various work situations is what is referred to as organisational behavior. It is the study of beliefs, attitudes, and behaviours displayed by workforce within an institution. In a school setting, principals can influence their teachers towards school commitment if they understand the factors that motivate them towards certain behavior. The purpose of this study was to investigate the factors that influence organization commitment in the context of the Kenya secondary school system. The study was motivated by the perceived low level of commitment reported among teachers in Kenyan schools. In Kenya the teaching profession is characterized by frequent strikes by teachers seeking enhanced pay packages and improved conditions of service. Poor remuneration, poor working conditions, stagnation in one job group, frequent transfers and the low social status of the teaching profession leads to the perception that teachers in Kenya are demoralized and demotivated and therefore have low commitment.

For many years, researchers in the field of organizational behavior have been trying to better understand work attitudes and behaviour that affect the performance of workers as well as the effective functioning of organisations (Chughtai, 2008). One main work-related attitude that has been the central focus of studies in the field of organizational behavior is organizational



commitment (OC). Meyer and Allen (1991) define OC as the psychological state that characterizes an employee's relationships with the organization and has implications for the decision to continue membership in the organization. By this token, School Commitment (SC) is viewed as a psychological connection that teachers have with their schools, characterized by strong identification and a desire to contribute to the accomplishment of school goals. It's the degree to which teachers identify with their schools and their willingness to put forth a substantial effort on the school behalf and their intention to stay in the school for a long time (Wagner and Hollenbeck, 2010)

In this regard, commitment in the school context can be construed to imply the teachers' firm confidence in school objectives and epitomes, willingness to apply considerable effort when discharging school activities and a strong desire to continue teaching in that particular school. School commitment is evident when teachers are loyal and willing to exert effort on behalf of their school. It occurs when teachers display a high degree of goal and value congruency with the school and desire to maintain membership (Cohen 2007). OC is particularly critical in a school setting since performance is highly dependent on the effectiveness of its teachers. Pohlman and Gardiner, (2000) reiterate that the nature of human resource in any organization is a major influence in the success of its endeavors. In order for schools to effectively disseminate its core mandate, teachers, a fundamental element of the educational system, have many fundamental tasks and responsibilities. The successful implementation of school curricular rests on teachers who are principally accountable for the educational programmes in their schools. It's for this purpose that a lot of attention should be given to the understanding of teachers' behaviors and performance within the organizational environment of their schools (Tsui and Cheng, 1999). SC should therefore be one of the ultimate goals of the efforts of a school principal, since it leads to the creation of a productive teaching staff. Teachers who have a high level of SC work with a greater sense of loyalty and responsibility. Hartman (2000), reiterates that SC inculcates skills, knowledge and attitudes of the school community. As a critical resource in schools, teachers should develop a positive attitude towards their schools in order to be professionally productive. Yavus(2010)states that low committed teachers do not only deter the successful performance of their pedagogical duties but also affects the efficiency and effectiveness of the accomplishment of predetermined school goals in totality. Research has also found a relationship between organizational commitment and a variety of organizational outcomes such as: increased employee performance and job satisfaction, reduced turnover, lower absenteeism rate and increased organizational citizenship behavior (Meyer et al, 2002; Trunk et al., 2013, Fornes, 2008; Babnik et al., 2014).

Mowdayet *al.* (1982), suggest four categories of variables that may influence organizational commitment: personal characteristics, job characteristics, work experiences, and structural characteristics. This study opted to focus on teachers personal characteristics since they



touch directly on the individual teachers and may be critical in explaining teachers' individual behavior. Personal characteristics, also referred to as demographic variables, have been the most commonly tested antecedents of organizational commitment and they include age, gender, education level, marital status, and tenure and family responsibilities. Despite the many studies in OC, it is nevertheless noted that majority were conducted mainly in health, banking, hospitality, industry and manufacturing sector, thereby paying less attention to the educational setting, particularly secondary schools in Nakuru County, Kenya. This dearth of research on OC in the Kenyan education system motivated the conception of this research. The study is aimed at bridging this research gap by exploring the impact that teacher personal characteristics may have on their commitment. The study may help to initiate more extensive research to explore the various factors that affect teacher commitment in Kenyan schools. The findings will assist school principals in devising techniques for enhancing teacher commitment and thereby build more effective schools.

This paper examines commitment levels of teachers based on the Meyer & Allen (1997) Three-Component Model (TCM) of commitment. In this framework, Meyer and Allen recognize three dimensions of organizational commitment: affective commitment, continuance commitment and normative commitment. Commitment is considered important in schools since it implies an intention among teachers to persist in their quest to attain institutional goals. Therefore, schools regularly try to nurture commitment in their teachers in order to attain stability and reduce turnover rates. It is commonly held that highly committed teachers tend to strive harder and be more likely to exert extra effort to achieve school objectives. Studies have reliably demonstrated that commitment certainly contributes to a decrease staff turnover (Tett & Meyer, 1993; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002).

#### *Objectives of the Study*

The general objective of the study was to find out whether there is any relationship between teachers' personal characteristics and the level of commitment they display towards their schools. The specific objectives were to: establish the level of school commitment among secondary school teachers in Kenyan secondary schools; find out if there is any relationship between the age of teachers and the level of commitment they display towards their schools; determine the relationship between teachers' gender and their school commitment; examine the association between the academic qualification of teachers and their level of school commitment and assess whether a teachers length of service in a school has a relationship with their commitment to the school;

#### *Hypotheses of the Study*

In order to achieve the study objectives, the researcher formulated the following null hypotheses to be tested: there is no significant relationship between the age of a teacher and their level of

school commitment; there is no relationship between the gender of a teacher and their level of school commitment; there is no significant relationship between a teacher's academic qualifications and their level of school commitment, and there is no significant relationship between a teacher's tenure and their level of school commitment.

## **Empirical literature Review**

### *Organizational Commitment*

The intrigue with which the subject of OC has held researchers in the field of organizational behavior can be observed from how it has evolved over time. Earlier researchers such as March and Simon (1958) perceived OC as a give-and-take association involving parties making certain demands upon the other while providing something in return. Applied in the field of education, this observation implies that the more effective a school is, in providing openings for teachers to attain their various needs, the higher would be the inclination for them to contribute enthusiastically to school productivity. Etzioni (1961) distinguished among three forms of responses for organizational motivation for participation: moral, calculative, and alienative involvement. In schools, moral involvement would imply identification with and internalization of institutional values and goals. Calculative involvement would be displayed through a positive orientation to school management which nevertheless is less intense because it is grounded on a rational exchange of paybacks and rewards between the parties. Alienative involvement on the other hand would reflect negative bearing towards school authority, found in associations characterized by exploitation by management.

Porter et al. (1974) described organizational commitment as the relative strength of an individual's identification with and involvement in a particular organization. They viewed commitment as comprising of three elements: (a) a strong belief in and acceptance of the aims and ideals of the school; (b) a readiness to exert extensive effort on behalf of the school; and (c) a strong aspiration to remain in the school. More recently a three-component model of organizational commitment was described by Meyer & Allen, (1987) who distinguished three forms of commitment: affective, continuance and normative commitment. In a school set up, affective commitment is characterized by a teacher's psychological attachment to the school displayed by such feelings such as allegiance, affection, friendliness, and belongingness. Continuance commitment is exhibited by the teachers' choices for retention within the school because of the high personal costs they perceive are linked to their transfer from the school. Normative commitment on the other hand is shown through teachers' the compulsion to stay in the school because of internalization of the school's vision and mission. Mueller and Wallace (1992) discerned two dominant conceptualizations of organizational commitment: loyalty and intent to stay. Applied in education, loyalty can be viewed as a teacher's affective response to and identification based on a sense of duty and responsibility for their school.

### *Affective Commitment*

Allen & Meyer (1990) define affective commitment as “employees’ emotional attachment to, identification with and involvement in the organization. In the context of this study, it is the moral commitment which occurs when teachers totally embrace the aims and tenets of the institution and become emotionally involved with and feel personally responsible for the school’s level of achievement. Allen and Meyer (1990) have suggested that the precursor of affective attachment to the school can be divided into four categories: personal characteristics, job characteristics, work experiences and structural characteristics within their schools. It is suggested that individuals with a higher level of affective commitment to their organization demonstrate higher willingness to exert more effort at work (Meyer & Allen, 1997). Committed teachers therefore are likely to display high levels of performance, positive work attitudes, and a desire to stay in the school. Teachers who enjoy their work are likely to feel satisfied and contented with their jobs. This increased job satisfaction is likely to add to their feelings of affective commitment. Teachers with strong affective commitment continue teaching at their school willingly and eagerly.

### *Continuance Commitment*

Meyer and Allen, (1991) presented continuance commitment as referring to the awareness of the costs associated with exiting the school. Teachers whose primary link to the school is based on continuance commitment remain because they need to do so. They owe their commitment to the benefits associated with staying versus the personal costs associated with leaving the school such as pensions, seniority, social status, and access to social amenities that attach them to the school and would be at risk if the teacher left the school (Dawley, et al., 2005; Shahnawaz, and Juyal, 2006).

Continuance commitment refers to the teachers’ perception relating to the costs associated with leaving their school. It is basically the fear of loss. It is based on teachers’ awareness that leaving the school will come with certain costs which may inconvenience them. Teachers with a high level of continuance commitment continue teaching in the school because it is a necessity to do so. It is a calculative commitment which takes place when teachers base their relationship with the school on what they are getting in return for their efforts and what they would lose if they quit the institution. They focus on the pay and benefits that accrue to their involvement in the school. Such teachers usually exert their best effort only when the rewards match their expectations. Continuance commitment is seen when the teacher weighs the pros and cons of leaving the school. They feel the need to stay because the loss they experience by leaving is greater than the benefit they think they may gain in their new station. These perceived losses can be monetary gains or professional skills acquired over the years spent in the school. The severity of these losses often perceived to increase with age and length of service. Teachers are therefore

likely to experience continuance commitment when they are in an established successful role or have had several promotions within one school.

### *Normative commitment*

Normative commitment refers to the teachers' perception relating to their obligation to stay. It occurs when the teacher feels a sense of obligation to their school even when they are unhappy or even if they want to peruse better opportunities. The teacher feels that they should stay with their organizations because it is the right thing to do. This sense of obligation may arise if a teacher feels that the school has provided a reward in advance, for example, investing money or time in their training. It occurs when teachers remain with a school on the basis of expected standards of ethics and norms. These teachers value compliance, obedience, caution, and formality. Teachers high in normative commitment also feel that they ought to maintain membership in the organization, sometimes due to the pressures from colleagues (Allen and Meyer, 1996). Normative commitment is viewed as the feeling of obligation to continue working in an organization. Teachers with a high level of normative commitment feel that they ought to remain with the school in which they are teaching (Allen and Meyer 1990). These teachers stay in the school because they believe it is the morally correct to do so and would therefore feel guilty if they left the school, even if they had to reject better job offers in other institutions. Teachers' emotional attachment to their schools (affective commitment) has been considered a crucial determinant of devotion and loyalty. Committed teachers are therefore viewed to have a sense of belonging that makes them to identify with their institutions. This consequently enhances their participation in the school's activities and their disposition to pursue the school objectives and their aspiration to remain in the institution (Meyer and Allan, 1991). It's in this light, that relationship has been found between affective commitment in organisations and absenteeism, performance, and turnover (Mathieu and Zajac, 1990; Meyer and Allen 1997).

## **Research Methodology**

### *Research Design and Sampling*

The study employed the descriptive survey research design. The target population of the study was 1670 teachers from four sub counties in Nakuru County, Kenya. Two stage cluster sampling was used to select the four sub counties which formed the study location. Cochran (1977) formula was used to determine the sample size and it yielded a sample of 310 respondents. Stratified sampling was used to select individual study subjects. A total of 217 teachers responded to and returned the questionnaires giving a 70% response rate.

### *Data Collection Instrument*

The Data for this study was collected using an adaptation of Allen and Meyer (1990) Three Component Model (TCM) Employee Commitment Survey. The questionnaire consists of 24

statements with 8 items each measuring affective, continuance and normative commitments. Although the original Allen and Meyer (1990) questionnaire comprised of a 7 point Likert scale, the current study used a 5 point adaptation. The Allen and Meyer(2004) user guide for the scale recommends that it can be altered to suit specific research conditions without a major impact on reliability and validity. The 5 point response scale was found to be appropriate in this study for ease of data analysis and interpretation. This study also customized the items in the original questionnaire to suit the Kenyan secondary school set-up in which the study was based. The item 'organization' for instance was substituted with 'school' for the purpose of this study. Some items in the scale were reversed as recommended in Allen and Meyer (1990) in order to control for acquiescence response bias, that is, the tendency to answer affirmatively to questions irrespective of their content.

The reliability of the questionnaire was done through test-retest method by conducting a pilot study of 20 respondents. The correlation of the scores from the two sets of responses done using Cronbach's alpha formula and coefficient of 0.78 was achieved indicating that the instrument was acceptably reliable. This reliability result is backed by tests done by previous researchers who also sought to establish the reliability of Allen and Meyer's commitment scale. Allen and Meyer tested the reliability of their OC scale and achieved a reliability coefficient of 0.70 (Allen and Meyer 1990); Dunham (1994) found 0.74; Cohen (1996) achieved a reliability of 0.79. Although the OCS is standardised and has been pretested and used by many researchers over time, the questionnaire adopted for the current study was also checked for content and face validity. This was done by academic experts who were requested to check all the items for their appropriateness in assessing the target variables. It was agreed that the scale was valid in measuring what it was purported to measure.

### *Data Analysis*

The study data was analysed with the aid of the Statistical Package for Social Sciences (SPSS). Descriptive statistics including frequencies and percentages were used to describe the study findings while inferential statistics including Spearman's Rank Correlation and Multiple Linear Regression were used to test the hypothesis.

## **Findings and Discussions**

### *Demographics*

This section presents the demographic data of the sample under study. The overriding objective of the study was to establish whether teachers' demographic variables are significant predictors of their school commitment. The demographic variables that were under investigation included the age, gender, academic qualifications and tenure of the respondents. This study hypothesized that teachers' demographic characteristics will have no relationship with their school

commitment.

Table 1: Demographic Data of the respondents

Variable	Attributes	N	%
Age	Below 25	55	25.3
	25-35	72	33.2
	36-45	50	23
	46-55	37	17.1
	Above 55	3	1.4
Gender	Male	102	47
	Female	115	53
Academic Level	Diploma	33	15.2
	Bachelors	148	68.2
	Masters	33	15.2
	PhD	3	1.4
Position Held	Principal	17	7.8
	Deputy	29	13.4
	Head Of Department	111	51.2
	Class Teacher	53	24.4
	Subject Teacher	7	3.2
Tenure	Under 5	109	50.2
	6-10	69	31.8
	11-15	25	11.5
	16-20	14	6.5
Total Number of Respondents		217	

Majority (58.5%) of the respondents were aged below 35 years indicating that most schools had young teachers. There was a relative gender balance in the sampled schools with 53% being female while 47% were male. A majority of the teachers 68.2% had first degrees while 15.2% had diplomas. Only 16.1% teachers had postgraduate qualifications. Heads of departments formed majority (52.5%) of the respondents while the rest comprised of classteachers (7%), deputy principals (29%), principals 17% and subjects teachers (7%) without administrative responsibilities in the schools. Majority of the teachers (81%) had been in their current stations for less than 10 years.

### *Descriptive Analysis*

This section presents the descriptive findings on the levels of SC registered in the schools. The level of affective, continuance and normative commitment was calculated by taking the average of the means scores of each of the three components. This yielded a composite mean for each commitment component. The average of the means of the three commitment components was

then computed to yield the overall SC score.

Table 2: Teachers Level of Affective Commitment

Affective Commitment Construct	Percentage					Mean	SD
	1	2	3	4	5		
Happy to spend the rest of career in school	16.6	32.3	18	18.9	14.3	2.8	1.45367
Enjoys discussing school with people outside	8.3	24	6	37.8	24	3.5	1.35322
Feel that school problems are own	14.7	23.5	1.4	34.1	26.3	3.3	1.30547
Can be attached to another school as to this	21.2	32.7	4.6	31.8	9.7	2.8	1.22558
Doesn't feel like "part of family" in the school	13.8	2.8	0	47.9	35.5	3.9	1.32297
Does not feel emotionally attached to school	5.1	15.7	0	37.8	41.5	3.9	1.30272
School has personal meaning to them	11.1	17.1	4.1	43.3	24.4	3.5	1.45367
Does not feel strong sense of belonging	8.3	13.8	1.4	36.9	39.6	3.9	1.35322
Composite Affective Commitment	3.5						

Scale: 1=strongly disagreed; 2= disagree; 3=undecided; 4= agree; 5= strongly agree.

Affective commitment, as composite construct, which yielded an overall mean of 3.5 in a 5 point Likert scale. This indicates that the level of affective commitment was high meaning that the teachers are happy to be in their respective schools. They are emotionally attached and have a strong sense of belonging to their schools. Most of the affective commitment indicators had high means ranging from 3.3 to 3.7

Table 3: Teachers Level of School Normative Commitment

Continuance Commitment Construct	Percentage					Mean	SD
	1	2	3	4	5		
I am not afraid to quit job without another	6.5	20.7	10.6	33.6	28.6	3.6	1.27775
I finds it hard to leave school right now	17.7	26.3	8.8	35.5	12.0	3.0	1.34155
Life would be disrupted if I leave school now	17.5	24.4		40.6	17.5	3.1	1.43719
It wouldn't be costly for to leave my school now	24.0	22.1	5.1	27.2	21.7	3.0	1.51880
My staying in school is a matter of necessity	18.0	28.6	3.2	30.0	20.3	3.0	1.46163
I have too few options to consider leaving school	18.9	35.0	4.1	22.1	19.8	2.8	1.44551
I can't leave this school for scarcity of alternatives	25.3	31.3	2.8	25.3	15.2	2.7	1.44616
Leaving would requires personal sacrifice	17.5	38.7	2.8	17.5	23.5	2.9	1.47520
Composite Continuance Commitment Mean	3.0						

Scale: 1=strongly disagreed; 2= disagree; 3=undecided; 4= agree; 5= strongly agree.

Most of the continuance commitment constructs were rated above average with means ranging between 3.0 and 3.6. This is an indication of a SC level that is above average. It means that the respondents felt it necessary to remain in their schools because it would be costly for them to leave.



Table 4: Level of School Normative Commitment

Normative Commitment Construct	Percentage					Mean	SD
	1	2	3	4	5		
People move from school to school too often	6.0	33.6	5.5	41.9	12.9	3.2	1.21217
A person mustn't always be loyal to their school	6.0	23.5	2.5	31.3	33.6	3.6	1.32026
Jumping from school to school is not unethical	14.7	32.3		24.4	28.5	3.2	1.50690
I haven't moved due to moral obligation to stay	12.0	23.0	6.0	37.3	21.7	3.3	1.35818
I wouldn't feel it was right to leave my school	24.9	43.8		20.3	11.1	2.5	1.35096
I was taught the value of being loyal to my school	8.3	25.8	4.6	35.5	25.8	3.4	1.33618
People should stay in one school for most of career	24.4	51.6	4.1	12.9	6.9	2.3	1.16672
Composite Normative Commitment Mean	3.1						

Scale: 1=strongly disagreed; 2= disagree; 3=undecided; 4= agree; 5= strongly agree.

Table 2 shows that the respondents rated five of the normative commitment indicators above average with mean scores ranging from 3.2 to 3.6 while two indicators registered low means ranging from 2.3 to 2.5. This indicates a high level of normative commitment in the schools. This means that teachers are happy with what their schools have done for them. This shows that the teachers appreciate the benefits associated with being in the school and therefore feel obligated to remain in the school. They see their schools as deserving their loyalty and they also feel the moral responsibility to dedicate themselves to their schools.

Table 5: Level of Overall School Commitment

Type of commitment	N	Mean
Affective commitment	217	3.52
Normative Commitment	217	3.13
Continuance Commitment	217	3.1
Overall School Commitment	217	3.28

Overall school commitment was calculated by taking the average of the affective, continuance and normative commitment means. The overall cumulative school commitment score was 3.28 indicating that SC among the teachers under study was high.

### Correlation Analysis

This section presents correlation results for teachers' demographic characteristics against their level of school commitment. Spearman's Rank Correlation coefficient was computed to assess the relationship between the respondents' demographic characteristics and their level of school commitment.

Table 5: Relationship between for Age and School Commitment

		Age	School Commitment
Spearman's rho	Correlation Coefficient	1.000	.252
	Sig. (2-tailed)		.000
	N	217	217
	Correlation Coefficient	.252	1.000
	Sig. (2-tailed)	.000	
	N	217	217

The study established a positive significant relationship ( $r=.252$ ,  $n=217$ ,  $p>.05$ ) between the teachers' age and the level of commitment to their schools. This means that the level of school commitment tended to rise with increase in age. The first null hypothesis of the study ( $H_{O1}$ ) which predicted that there is no significant relationship between teachers' age and affective commitment to their schools was therefore rejected.

Table 6: Relationship between Gender and School Commitment

		Gender	School Commitment
Spearman's rho	Correlation Coefficient	1.000	.014
	Sig. (2-tailed)		.837
	N	217	217
	Correlation Coefficient	.014	1.000
	Sig. (2-tailed)	.837	
	N	217	217

No significant relationship was established between gender and SC among teachers ( $r=.014$ ,  $n=217$ ,  $p>.05$ ). The second null hypothesis ( $H_{O2}$ ) which stated that there is no significant relationship between gender and teachers' SC is therefore supported. This is construed to imply that the gender of a teacher does not affect their level of commitment to their schools.

Table 7: Relationship between Level of Education and School Commitment

		Qualification	School Commitment
Spearman's rho	Correlation Coefficient	1.000	-.318
	Sig. (2-tailed)		.001
	N	217	217
	Correlation Coefficient	-.318	1.000
	Sig. (2-tailed)	.001	
	N	217	217

The study findings also established a significant negative relationship between the academic

qualifications and commitment levels of teachers ( $r = -.318$ ,  $n = 217$ ,  $p > .05$ ). The third hypothesis stating that there is no relationship between academic qualifications and SC was therefore rejected. This means that a teacher who is highly educated is less likely to be committed to their school than one who has less qualification. This finding is in line with that of Salami (2008), who found that there is a significant negative relationship between education and organizational commitment. The implication of this finding is that teachers who are highly educated may not find it difficult in securing other jobs in other sectors of the economy and are, therefore, less likely to be committed to their organization because they have more opportunities for leaving the teaching profession.

Table 8: Relationship between Tenure and School Commitment

		Position Held	School commitment
Spearman's rho	Correlation Coefficient	1.000	.212
	Sig. (2-tailed)		.002
	N	217	217
	Correlation Coefficient	.212	1.000
	Sig. (2-tailed)	.002	
	N	217	217

The fifth objective of this study was to establish whether a teacher's length of service in a school has a relationship with their SC. The study established that there was a negative correlation between the number of years spent in the school and SC ( $r = -.212$ ,  $n = 217$ ,  $p > .05$ ) indicating that commitment reduced with an increase in number of years spent in a school. The study hypothesis stating that there is no relationship between tenure and SC was therefore rejected.

#### Regression results

Multiple linear regression analysis was used to establish the extent to which demographic variables predicted school commitment among teachers. All the predictor variables were simultaneously entered into regression analysis to determine the independent influence. The multiple correlations were used to show the combined contributions of the independent variables. The model summary is depicted in Table 9.

Table 9: Regression Model for Demographics and SC

#### Regression Results

Model	R	R Square	Adjusted R Square	Std. Error of the
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				Estimate
1	.287 <sup>a</sup>	.082	.056	.57578

Table 9 presents the regression model depicting the relationship between teachers' demographic attributes and school commitment. The R value indicates a weak correlation (.287) between school commitment and teachers personal attributes. The value of R square ( $R^2=.082$ ) means that demographics can account for only 8.2 % of the factors that predict SC in Kenyan secondary schools. There might be other factors that can explained the relatively high level of commitment ( $\mu=3.28$ ) indicated by the teachers. This implies that 92% of what motivates teachers towards high commitment in secondary schools in Kenya cannot be explained by personal characteristics alone. There must be other variables that also have an influence.

## Discussion

It's evident in this study that OC is a concept that is being studied in many research efforts worldwide. This is because it is a crucial determinant of organizational effectiveness. This study attempted to examine the relationship between the personal characteristics and levels of commitment of various categories of educators in secondary schools in Kenya. The study specifically focused on age, gender, tenure, educational qualifications and position held, and attempted to establish how they linked to SC. The findings of the study revealed that the SC levels of these educators is above average. It was however established that although demographic attributes played a role in determining SC, their effect was not fundamental given that the correlation coefficients were relatively low. Age and position held was the only variable that registered significant positive correlation with SC. This means that the levels of SC rose in concordance with the age and seniority of the educators.

Findings across researches have yielded contradicting results on the relationship between age and commitment, raising the question as to whether age really has any significant effect on workers commitment. Despite contradicting results across empirical literature, most studies concur with this study's finding. Meyer and Allen, (1998) for example found a significant link between age and organisational commitment. Other researchers who found a significant and positive relationship between age and employees' commitment include Mathieu &Zajack (1990), Allen and Meyer (1990), Steers (1997; Angle and Perry (1991), De Gierter et al. (2011) and Salami (2008). Sommer, Bae &Luthans (1996) also found that the organizational commitment among Korean employees increases with age. (Newstrom, 2007) attributed this link between age and commitment to the fact that older people through experience, tend to lower their expectations to more realistic levels and adjust themselves better to their work situations. In the context of this study, this finding could perhaps be linked to the expectation that older teachers have higher school commitment due to higher job satisfaction derived from the high job groups they hold, or higher responsibilities they hold in their schools. Teachers in the younger age bracket may not

develop emotional attachment to the school due to the short span of time in which they have been in the institution. The general perception is that older employees have higher commitment due to higher job satisfaction and better positions in the organization. It's thought that younger employees may need more time to develop emotional attachment to their organizations. Another possible explanation for this link is that there are fewer employment opportunities to older employees and that such employees may find that leaving the organization may be more costly to them than staying (Mowday et al., 1982).

The study established no relationship between gender and the level of SC in the schools under study. The question as to whether there is a relationship between gender and levels of organizational commitment has often, emerged as an important research issue. Among the myriad studies that have explored the correlates of organizational commitment, the literature on the relationship between gender and organizational commitment has had mixed results. The results of this study therefore concur with and yet contrasts with several earlier studies in equal measure. Some researchers have advocated that women are less committed to their organisations than men (Yammarino& Dubinsky, 1988; Karrasch, 2003; Schwartz, 1989). Others found no gender differences in organizational commitment (Riketta, 2005; Meyer et al., 2002; Thorsteinson, 2003). Chughtai al Zafar (2006) found no significant relationship between gender and organizational commitment. This could perhaps be a result of personality characteristics such as self-efficacy defined as individual capacity to perform tasks (Bandura 1986). Some gender arguments revolve around claims that men and women have different psychological traits that predispose them towards different levels of commitment. Women for instance are said to have more extensive social and affective interests than men do, (Giele 1998) perhaps as a result of gender socialization practices. Such differences might lead to higher commitment on the part of women. Another opinion suggesting that women will exhibit higher levels of organisational commitment focuses on the fewer choices that females often face within the job market. Some of these limitations may include domestic responsibilities that prevent women from searching for jobs beyond the geographic area in which they reside since they prefer being close to their families. In light of these limited alternatives, it is argued that dissonance-reduction processes lead female teachers to place greater value on their schools than would males in comparable circumstances.

A significant negative correlation was registered between the respondent's academic qualifications and SC. This means that SCdeteriorated with enhanced educational level.This revelation is concordant with the findings Steers (1977) who likewise established a negative relationship between the level of education and OC. Al-Kahtani (2012) and Igbal (2011) opined that more educated people may have high expectations which the organization may be unable to meet. According to Igbal (2011) highly educated individuals may have less commitment since they may have other opportunities of employment. Mathieu &Zajac (1990) confirmed that the

relationship was significantly strong. Salami (2008) however found a positive association between educational level and commitment. He observed that there is the likelihood that employees with high academic qualifications occupy higher ranks in the organizational structure and therefore have more responsibilities which require more commitment to the organization.

The fourth objective of this study was to establish whether a teacher's length of service in a school has a relationship with their commitment to the school. The study established that there is a significant negative correlation between tenure and school commitment. This means that school commitment reduces with increased number of years in the school. Perhaps this scenario can be attributed to the teacher employment and posting policy in Kenya. In the Kenyan context, employment and posting is the mandate of Teachers Service Commission the central teacher management agency. Teachers therefore have little choice on the location of the school they are going to be employed. Due to limited teacher vacancies most teachers end up in schools don't like. Such teachers usually seek for transfers to their schools of choice which often takes time. The more year's teachers spent in such schools, the less committed the affected teachers would become. Research findings from other counties however achieved results that contradict the findings of this study. Meyer and Allen (1997), found a positive relationship between tenure and OC. They observed that uncommitted employees leave an organization while those with a high commitment remain.

Multiple regression analysis was run to determine the extent to which the demographic variables under study influenced dependent variable. The results indicated that the dependent variables played a minimal role in influencing commitment since they accounted for only 8.2% of the factors influencing SC. This means that other factors outside the study accounted for 92 % of the factors influencing SC. The literature indicated that there are other variables that significant in determining the level commitment of employees in an organization including school culture, location, environment, leadership style, organizational structure etc. This study therefore opens other areas for further research that could explore the extent to which they influence the level of commitment in schools. This study faced certain limitations. Firstly, the study targeted teachers from four sub counties of Nakuru county and the results might therefore not be generalised to all schools in Kenya.

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## **The Journey towards Enhanced Quality of Basic Education in Kenya: Challenges and Policy Suggestions**

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### **Abstract**

*Kenya is a signatory to the 2015 United Nations Sustainable Development Goals. The fourth goal focuses on provision of quality and inclusive education. The government of Kenya has made some reforms in education both at the basic and higher education sector which is geared towards the provision of quality and inclusive education. The context-input-process and outcome educational quality indicators point to a worrying trend towards enhanced and sustainable quality of basic education. By the use of secondary sources, the study will outline the system wide and school challenges hindering enhanced quality of education. The system level challenges to be highlighted include the demographic, social and economic context of education, financial and human resources invested in education, access to education, participation and progression. The study will also concern itself with transition from school to employment, and student achievement and social and labour market outcomes. At the school level, the study will delimit itself to community involvement, financial and human resources utilization, achievement policy and educational leadership. Others will be school climate, efficient use of time, opportunity for learners to learn and teachers' ratings by both pupils and peers. The study will make policy suggestions to address these challenges.*

**Key Words:** *Basic Education, Quality Indicators, Educational Challenges, policy*

### **Introduction**

Indicators tend to be classified depending on whether they reflect the means, the process, or the end in achieving the objective of a particular set of development policies, programs or projects. Good evaluation indicators should have an appropriate balance between different types of indicators that can establish the link between means and ends. Prevailing classifications of indicators are roughly similar, though some important differences exist. For the purpose of this paper, education quality indicators will be categorized as context, input, process or outcome indicators.

**Context indicators:** (defined at the level of national education systems) refer to characteristics of the society at large and structural characteristics of national education systems. Examples include

demographics; e.g. the relative size of the school-age population; basic financial and economic context; e.g. the GDP per capita; and education goals and standards by level of education; e.g. higher completion rates. Others are more equitable distribution of university graduates and the structure of schools in the country.

**Input indicators** at system levels refer to financial and human resources invested in education. These include aspects such as expenditure per student, expenditure on Research and Development in Education; and the percentage of the total labour force employed in Education. Others are pupil teacher ratios per education level and characteristics of the stock of “human resources”, in terms of age, gender, experience, qualifications and salaries of teachers.

**Process indicators** at system level are characteristics of the learning environment and the organization of schools that are either defined at system level or based on aggregated data collected at lower levels. These include the pattern of centralization/decentralization or the “functional decentralization” specified as the proportion of decisions taken in a particular domain that is taken by a particular administrative level. Also includes priorities in the intended curriculum per education level, expressed, for example, as the teaching time per subject. Others include the priorities in the education reform agenda, expressed, for example as the proportion of the total education budget to specific reform programs and also investments and structural arrangements for system level monitoring and evaluation at a given point in time.

**Output or outcome** indicators at system level refer to statistics on access and participation, attainment statistics and aggregated data on educational achievement. These include participation rates in the various education levels (primary, secondary and tertiary) and progression through the education system, expressed for example of the proportion of students that gets a diploma in the minimum formal time that is available for a program. Others are drop-out rates at various levels of the education system and the average achievement in basic curricular domains, for example in subjects like mathematics, science, literacy, measured at the end of primary and/or secondary school;

### *Basic Education Demographics in Kenya*

The Ministry of Education, Science and Technology (2014) has provided data for enrolment at the various levels of education between the years 2009 to 2014 as shown in the tables below

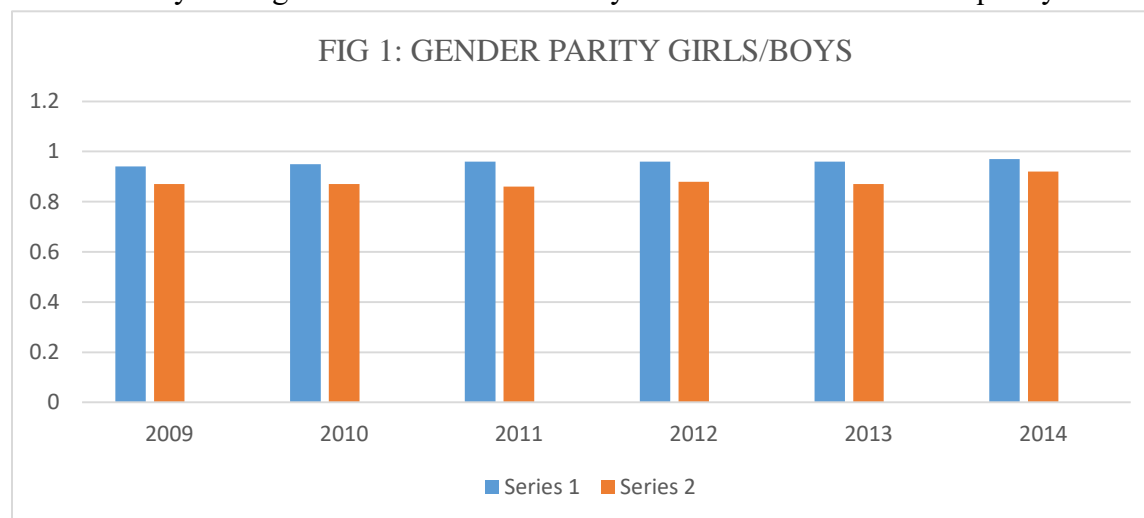
Table 1.0: Enrolment at Basic Education Institution in Kenya (in ‘000)

<b>Primary</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Boys	4772.8	4789.8	4887.3	4972.7	5019.7	5052.4
Girls	4460.7	4563.1	4673.7	4784.9	4837.9	4898.4

Total		9183.5	9352.8	9561.1	9757.6	9857.6	9950.7
<b>Parity</b>	<b>index:</b>	<b>0.94</b>	<b>0.95</b>	<b>0.96</b>	<b>0.96</b>	<b>0.96</b>	<b>0.97</b>
Girls/Boys							
<b>Secondary</b>							
Boys		787.9	885.5	948.7	1019.0	1127.7	1202.3
Girls		684.7	767.8	819.0	895.8	976.6	1107.6
<b>Parity</b>	<b>Index:</b>	<b>0.87</b>	<b>0.87</b>	<b>0.86</b>	<b>0.88</b>	<b>0.87</b>	<b>0.92</b>
Girls/Boys							

**Source: Ministry of Education (2014)**

From the table 1.0 above, it is clear that the enrolment in both primary and secondary schools has been on an upward trend. The gender parity has been minimally on the increase, however the gender parity index in secondary schools is lower than in primary schools. This implies there is quite a significant number of girls who do not transit to secondary schools hence not completing the basic education cycle. This may be attributed to backward cultural practices such as female genital mutilation and early marriage in some Kenyan communities which affect the access of education by the girl child. This is likely in turn to affect the quality of education.



Within the same period, the schooling profile indicators for some selected classes was as shown in table 2.

**Table 2.0: School Profile Indicators**

	2009	2010	2011	2012	2013	2014
Standard One	112.4%	109.7	107.8	105.8	104.3	102.1
Access	95.0	93.0	97.8%	97.2%	102.2%	100.2%

Standard 6						
Access	86.5%	84.8%	83.3%	81.7%	80.0%	79.3%
standard 8						
Promotion	57.0	59.2	60.1	69.5	75	
Rate (Std						
Eight to Form						
One)						
Transition	55.0	61.0	63.5	64.5	74.7	79.6
Rate( Primary						
to Secondary)						

Source: Ministry of Education (2014)

From the Table 2.0, it is clear that the numbers that joined standard one within the indicated five year period was more than the number that should have joined standard one then. This may be as a result of either underage or overage learners joining standard one or even repeaters or drop-outs who come back to school after several years. Those who have access to standard eight level for the five year period is less than 100% meaning that a number may have dropped out along the way due to either lack of opportunities or even repeated. Though the transition rate has been on the increase within the five year period, it is less than 100%. There is therefore a need for the government to come up with strategies that will ensure 100% transition. The retention rate within primary school has been on the increase attaining a maximum of 77.7% in the year 2014. In secondary school, the retention rate has been erratic with a minimum of 70.3% in 2010 and a maximum of 86.7% in 2013. This implies that there is need for the government to come up with policies that will ensure 100% at the secondary school level.

### ***Socio-Economic Context of Basic Education in Kenya***

Kenya attained her independence in 1963. The Kenyan economy is mainly agricultural based with cash crops such as tea and coffee being the main source of foreign exchange earner. In the Eastern African region, Kenya is the biggest economy, however other countries such as Rwanda and Tanzania have faster growing economies. The 2008 World Bank figures indicate that between 2005 and 2007 the economy grew from 5.5% to 6.5% after years of economic decline in the 1980s and 1990s ("Kenya - Data and Statistics," 2008). This decline was the result of inappropriate policies, inadequate credit, and poor international terms of trade. The Gross Domestic Product (GDP) growth in 2006 was estimated at 6.1%. In contrast, the GDP in 2003 was \$12.7 billion with an annual growth rate of 5.8% in 2005, and a per capita income of \$471 (Human Development Reports - Kenya 2007/2008 Report, 2008; Kenya Education Sector Support Project, 2006; UNICEF, 2008). Kenya enjoys major achievement in education across all levels compared to other countries within the region. The current population of the country is estimated at 48 million with an annual population growth rate of 2.3% (CIA World Fact Book -

Kenya, 2017; UNESCO Institute for Statistics, 2008b; The World Health Report - Kenya, 2008). UNESCO reports also indicate that of the total population, 60% are youth under the age of 30 years. The World Health Organization (WHO) and the United Nations Development Program (UNDP) Human Development Reports estimated the life expectancy at birth to be about 50% to 52% in 2005. The figures from UNESCO and UNICEF also show that the adult literacy rate for age 15 and older for between 1995 and 2005 was 73.6%, reasonably higher than that of many countries in Africa. The combined gross enrolment ratio for primary, secondary and tertiary education in 2005 was 60.6% with the government allocating 29.2% of the budget to education (Bunyi, 2006; UNESCO, 2008c)

### ***Financial and Human Resource Invested in Education***

According to the Economic Survey (2014) the MoEST's total expenditure was expected to grow by 17.2 per cent from KSh 260.1 billion in 2012/13 to KSh 304.9 billion in 2013/14, and the total recurrent expenditure was expected to increase by 11.2 per cent to KSh 259.1 billion in 2013/14 from KSh 233.1 billion in 2012/13 (KNBS, 2014). Recurrent budget on pre-primary education dropped significantly mainly due to transfer of pre-primary education function to the County Governments. The recurrent expenditure on university education was expected to increase by 10.4 per cent from KSh 42.4 billion in 2012/13 to KSh 46.8 billion in 2013/14 while that on higher education support services was expected to increase by 23.5 per cent to stand at KSh 6.2 billion in 2013/14. The increase may partly be attributed to an increase in the number of public universities to 31 in 2017 and salary awards for university staff. This is likely to rise during the 2017/2018 fiscal if the salary agitation by university lecturers and other staff is honoured. The Ministry's total development grew by 41.9 per cent from KSh 27.0 billion in 2012/13 to KSh 38.3 billion in 2013/14. Development expenditure on primary education grew considerably from KSh 330.0 million in 2012/13 to KSh 16.1 billion in 2013/14. The increase may be attributed to GOK's pledge to supply all class one pupils in public schools with one laptop each through the one laptop per child project and the required infrastructure and capacity building for teachers.

### ***Access, Relevance and Equity in Basic Education***

The GOK introduced Free Primary Education in 2003 and Free Day Secondary Education in 2008. The objectives of these programmes were to increase access, quality, equity and relevance in basic education and to cushion poor households by abolishing school fees. The partnership between the development partners and government led to increased enrolment rates and retention of learners in schools. In evaluating UPE progress various indicators to determine achievement have been used and are explained below. Trends in Primary enrolment grew from 6.1 million in 2000 to 7.4 million in 2004, to 10.2 million in 2013. The steady increase, especially since 2003, can be partly attributed to strategies put in place by MoEST such as the free primary education and the school infrastructure expansion.



The GER increased from 88.7percent in 2000 to 119.6 percent in 2013, indicating enrolment of either under-age or over-age pupils or both in the system. The NER has been rising steadily since 2000 reaching 95.9 percent in 2013 against a target of 90percent by 2010. However, an analysis of geographic and gender trends shows unsatisfactory enrolment levels. For example, NER in the counties of the North Eastern region was 40.3 percent against a national average of 91.4 percent in 2010. In general, the NER for boys was higher than that of girls in all Counties except Central Kenya. Development partners have supplemented government efforts towards enhancing access, retention and equity in education especially in areas where the GER and NER are lower than the national average. The Gross Enrolment Rate (GER) shows the general level of participation in a given level of education. It indicates the capacity of the education system to enroll pupils of a particular age group at a specific level of education and is complementary indicator to net enrolment rates (NER) by indicating the extent of over-aged and under-aged enrolment. GER can be over 100percent due to the inclusion of over-aged and under-aged pupils/students because of early or late entrants, and grade repetition. NER show the extent of participation in a given level of education of children and youths belonging to the official age group corresponding to the given level of education. This is a very important indicator in measuring rates of access to education. Since the introduction of Free Primary Education in 2003, the GER has remained above 100.0 per cent, indicating enrolment of over-age and under-age pupils. In 2000, the primary completion rate was 57.7 percent (60.2 boys, 55.3 for girls). By 2013 it had increased to 81.8 percent (80.3 boys and 78.8 girls). Since the introduction of FPE in 2003, the pupil completion rate has been fluctuating between 57.2percent and 83.2percent. During this period 2003 - 2009, the pupil completion rate was just below the third quartile (75.0%). After 2009 it went above the third quartile. This remarkable achievement in completion rate can be attributed to increased access to basic education due to infrastructure development and policy shift favoring the promotion of girl education.

### ***Transition from Primary to Secondary***

In terms of financial resources, a total of Ksh 85,955,498,783.55 billion has been spent on the program through purchasing instructional materials, as well as general-purpose expenses/recurrent expenditures through a capitation grant of Ksh 1,020 per child in 77,532 public schools; 273 Mobile schools and 1,439 NFE since FDSE was initiated in 2008 (MoE, 2014) . Ministry of education further reported that despite the numerous achievements made by the free primary education initiative, 1.01 Million children were still out of school (GMR, 2013/4). The introduction of free day secondary education has also seen an increase in the transition rate, surpassing the national target of 70 percent of 2008 to stand at 76.6 (74.6 boys and 78.6 girls) in 2012 (World Bank, 2012). The capitation grant is Ksh 20,000 per student per annum, covering tuition and general-purpose expenses. Parents cater for boarding expenses, lunches, uniform and other development expenses. Trends in FDSE Capitation (2008 – 2014) Up

to the financial year 2009/2010, MoEST disbursed Ksh 55,540,140,323 billion to 1,605,364 students in 6,009 schools in support of this programme (MoE, 2014). Free secondary education provision led to urgent need for more classrooms to accommodate more students who were transiting from primary level from primary level. Other programmes under FDSE include the general expansion of national schools to allow more students transiting from primary schools. Initially there were 18 national schools. For these schools to accommodate more students, a plan was put in place to upgrade them whereby they were given Ksh 48 Million to expand infrastructure, especially classrooms and laboratories so as to improve access (KNBS, 2014). This translates to Ksh 864 million per school. In 2011/12, 2012/13, 2013/14 FY another 30 schools were upgraded to national level with each getting Ksh 25 million to improve infrastructure (MoE, 2014). This translates to Ksh 75 billion. These funds were disbursed in three tranches between 2012/2013 FY to 2013/2014 FY. In the financial year that is 2014/2015 FY another 27 schools were to be upgraded to the national level where another Ksh 25,000,000.00 was to be disbursed to each school to upgrade their infrastructure to improve access. Sustained high level of investment in the education sector resulted in tremendous achievements in terms of access, transition, retention and quality in education. The transition rate from primary to secondary school has increased from 64.1 (61.3boys and 67.3 girls) in 2009 to 76.6 (74.6 boys; 78.6 girls) in 2012. This can be attributed to the government initiatives such as the Free Day Secondary Education programme which has expanded access to secondary education. Previously, user fees and levies hindered many learners from accessing secondary education due to the poverty level of learners mostly in the marginalized areas such as ASAL's, urban informal settlements among others. The government is now geared towards 100% transition. However, teacher shortage has been a hindrance to this. In the year 2018, primary school shad a shortage of 40972 teachers while secondary schools had a short of 63849(TSC, 2018).

## **Recommendations**

### ***Policy Suggestions***

In order to achieve a gender parity of 1.0 both at the primary and secondary school level, the government should sensitize the public and where possible enforce policies in support of the girl-child education. These may include total ban on female genital mutilation and early marriages, readmission of girls back to schools after teenage pregnancy, enhance the provision of sanitary pads in both primary and secondary schools. Although education is a basic right as stipulated in the Kenya Constitution 2010, there should be emphasis on the psychologically supported school age in order to avoid cases of over-age and under-age pupils in schools which is likely to lead to wastage in forms of drop-outs, repetition and poor school performance.

The transition rate from primary school to secondary may be high in certain regions and very low in certain marginalized regions. Unless the government formulates and implements appropriate strategies especially among the marginalized communities, it may not be easy to achieve 100%

transition as it is anticipated. Though the government has made very positive efforts towards FDSE and FPE, there are need to diversify the sources of government revenue in order to create adequate financial resources that can be allocated to education and other competing sectors such as health and security.

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## Performance of Imputation Methods towards Increasing Percentage of Missing Values

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### Abstract

*The aim of this paper is to study the performance of eight different existing imputation methods used on simulated and real dataset. The methods are compared in terms of their ability to estimate the missing observations and estimate some statistics (mean, standard deviation and coefficient of a regression) using the full data set completed by the imputation. The comparisons are made using root mean square error, mean absolute deviation and bias observed after estimation of statistics. Simulation results using specific simulated data and bootstrap show that Mean Imputation and Complete case analysis are the best method in completing the data set and in obtaining best estimators for statistics. However, the results are subject to major changes if parameters like sample size, number of replication and type of distribution chosen are modified. In short with real data, result will change depending on the structure of dataset to impute. For example, application of the simulation results to a Rwandan dataset on smallholder farmers revealed that k-NN is the best method in reconstructing and Multiple Imputation can be used as imputation method in case we are to estimate some statistics. Our final conclusion is that imputation methods cannot be compared since in most cases their performance is parametrically linked to the data. We finally proposed a methodology and a simulation protocol to identify for any data set which imputation method will give the best results and therefore should be applied in priority.*

**Keywords:** *Bias, Bootstrap, Imputation, Root Mean Squared Error, Mean Absolute error.*

### Introduction

Missing data is a common problem in applied statistics when dealing with collected data. It is a classical problem in all areas of research including: biology (Troyanskaya O et al, 2001), medicine (Lewis HD, 2010), climatic science (Schneider T, 2001) and others. Nearly all standard statistical methods presume complete information for all the variables included in the analysis. However, a relatively few missing observations on some variables can dramatically shrink the

sample size and affect the quality of estimators produced from those data (Marina Soley-Bori, 2013). After data collection where sampling has been done properly, often the data set will come with blank spaces meaning that some questions have not been responded to during survey or some specific information were not collected properly. This situation raises one main question: how can we manage the units with the missing information?

Many researchers have proposed steps to study the problem of missing data, starting by the missingness mechanism, why some observations are missing? Then follows the decision between dropping units with missing observation or imputation. Finally, in case imputation is chosen, which imputation method to adopt considering the situation.

This paper aims to analyse the performance of imputation methods toward an increasing percentage of missing values and draw the related conclusion on comparing imputation methods. The paper is organized as follows: Section 2 discusses the missingness mechanism with some typical examples and implication of having missing data in the set. Section three presents some of the most used imputation methods including the most recent like Multiple imputation and weighting. Sections 4 and 5 investigate and discuss the simulation and the results obtained from simulation. Finally, section 6 concludes and introduces different uses of imputation methods beyond replacing missing data.

### *Missingness Mechanism*

Early works on missing data were carried out by Rubin (1987, 1996). Close to that, some researcher like Afifi and Elashoff (1966), Hartley and Hocking (1971), Orchard and Woodbury (1972) and Little (1971) did a bit more on the topic with some applications in different areas of study. Most of these works started with the missingness mechanism.

Prior to presentation of general imputation methods or how to handle missing data problems, it is good to know why these data are missing. We present different missing data mechanisms, meaning how in our data base missing values appeared? There are 4 main situations where data can be missing:

Missingness completely at random (MCAR): the probability of missingness is the same for all unit in the sample. For a given variable  $X$  in the data base, the probability for an observation to be missing does not depend on  $X$  itself and on other variables of the same data base. The perfect example will be if the choice is given to respondent to answer a question or not given a random condition (rolling a dice for example). It is difficult to have this situation in the real survey but it is the most common hypothesis in simulation or with real data imputation (Briggs et al., 2003; Allison, 2001).

Missingness at random (MAR): Most missingness is not completely at random, as can be seen

from the data themselves. Probability can depend on an auxiliary variable in the same survey. Respondent can decide to answer or not, or interviewer may forget to ask some questions to respondents. A more general assumption, missing at random, is that the probability a variable is missing depends only on available information. Thus, if for example sex, race, education, and age are recorded for all the people in the survey, then “earnings” is missing at random if the probability of nonresponse to this question depends only on these other fully recorded variables (Allison, 2001; Gelman & Hill, 2006).

Missingness that depends on unobserved predictors (NMAR): Missingness is no longer “at random” if it depends on information that has not been recorded and this information also predicts the missing values. There are some underlying unobserved factors that could lead people not to answer a given question and they can differ from one person to another. Therefore, the probability of missingness is different across unit in our survey. An example is when during a survey a corrupted person is not going to declare his revenue because he knows that if he declares he can be exposed to pursuit because of corruption (information not recorded) the data will be missing (Allison, 2001; Gelman & Hill, 2006).

Missingness that depends on the missing value itself: Finally, a particularly difficult situation arises when the probability of missingness depends on the (potentially missing) variable itself. For example, this often happens because people are unlikely to reveal a high income to avoid being exposed (Allison, 2001; Gelman & Hill, 2006). All these types of missingness can happen during survey and can be observed in data set depending on variables and the data collection process. To identify the type of missingness, the final data set ultimate user should be close to the data base constructor or be involved in data collection. The most frequent type of missingness mechanism is MAR. Practically, this is the one which can easily happen.

#### *Different Imputations methods*

In handling, missing data, we have two possibilities: discard missing data or imputation. Discard some unit presenting missing cases implies to reduce significantly the sample size especially in case more than one variable present missing data at different lines (cases). As a result, the precision of confidence intervals is harmed, statistical power weakens and the parameter estimates may be biased (Soley, 2013). So, the best solution will be to impute data. There are several direct and simple methods of imputation including: Mean imputation (replace missing values by the mean or conditional mean or marginal mean of the variable), Last value carried forward (use the last value from a unit which logically is supposed to be close to the missing one), Using information from related observations (impute by a value from an individual which is closed to the missing one), Indicator variables for missingness of categorical predictors (add an extra category for the variable indicating missingness.), Indicator variables for missingness of continuous predictors (replace the missing value by a zero or by the mean), Imputation based on logical rules (use the logic of questionnaire to impute a value) (Allison, 2000, 2003).



As we said earlier, our research focuses on comparing any action taken to deal with missing data including discarding cases with missing data. Classical imputation methods are divided into two main groups. Let's assume that our variable of interest with missing observation is  $Y$  and the set of covariates without any missing observation is  $X$ . To simplify notation, forget about the indexes specifying the case. A missing observation in the set is denoted by  $Y_m$  and a non-missing one by  $Y_{nm}$ . Of course, the corresponding covariates will be  $X_m$  and  $X_{nm}$  but it doesn't mean that they are missing.

Imputation methods that doesn't incorporate random variation

The main characteristic of these methods is that the missing value is replaced by a single estimator of the true value. They are deterministic methods meaning that there is no randomness in the set of values used for imputation. Running the same method on the same sample will always produce the same imputed values for unit missing with the same characteristics.

#### *Mean Imputation and Conditional Mean Imputation*

This method can be applied on any type of dataset, with or without covariates. It recommends to replace the missing value by the mean of the missing variable obtained using the non-missing observations. The user can just replace the missing observations in  $Y$  by the marginal mean directly:  $Y_m \square E(Y_{nm})$  or knowing some properties of  $Y$ , conditional mean can also be used. The mean of  $Y$  given certain existing covariates  $X$  in our dataset:  $Y_m = E(Y_{nm} / X = x_m)$ . For example, if among our covariates, there is a variable sex and our variable of interest is determined by sex, we divide our sample into two groups: male and female, then perform mean imputation in each group. It is the most used method even if it leads to biased estimates and low variance and covariances (generally underestimate variances).

#### *Nearest Neighbours Imputation*

To apply this method, a data set with a set of covariates is absolutely needed. The first step of this method is to define what is a neighbour using the set of covariates  $X$ . To define a neighbour, there is a need to define the distance between cases. The default distance is the Euclidian distance:  $d_{ij}^2 = (X_i - X_j)'(X_i - X_j)$ . We can also use the Mahalanobis distance by introducing a transfer matrix in the Euclidian distance. After defining a distance, the user can now decide for a given missing value which case is close to it or not. You can replace the missing observation by the value of the nearest neighbour or by a fixed  $k$  nearest neighbour (averaging) or use a value obtained by all the data set weighting each available case by the inverse of the distance between the missing case and all of them (weighting average). The simulation in this study used the Gower distance developed by Gower (1971) which aggregate all the distances between two points for each variable in one single quantity. The distance was included in the



package VIM on R by Kowarik (2016).

#### *Last value carried forward*

This method recommends to use the last value known about the variable for imputation. It means that if we have another survey, collecting the same information a time before the actual survey, from that survey you take information from the same variable and impute to the missing value in the actual data set. This method assumes the value doesn't change much with time. It can be true for some variables like sex but it is not always true.

#### *Regression to perform deterministic Imputation*

The method is a model-based method. It uses econometric (linear regression model or quantile regression for example) to build a model with available cases of  $Y$  and their corresponding covariates. The deterministic part of that model is used to predict the missing values given that all the values of the covariates for each of them are known:  $Y_m \approx f(X_{nm})$ . The main advantage of this method is the fact that it uses all information available on different units to predict the missing value and with a good  $R^2$ , imputation can give interesting results. The disadvantages are: it overestimates model fit and correlation estimates and weakens variance of the variable  $Y$ .

#### *Simple random Imputation (Hot deck imputation)*

This method recommends to randomly select a set of available cases among our non-missing observations and impute them to the missing observation or for each missing observation, randomly select another one among the set of observed data and impute,  $Y_m \approx \text{Sample}(1, Y_{nm})$ .

This method is quite simple and looks interesting but for some database and if you want to perform some specific studies, results can be very bad. It doesn't take into account the covariates if they are available, consequently you can have some atypical case for example a 12-year-old child with a PhD as educational level. This method is suitable if the population is stratified according to some determinant of our variable of interest.

#### *Imputation methods that do incorporate random variation*

This group of methods are characterized by the fact that it allows for randomness in the prediction of missing values. Running this method  $n$  times in a given sample may produce  $n$  different values for a single imputation. Some of the methods presented here can be repeated then the final imputed value will be the average of the different output obtained during repetition.

#### *Regression to perform random Imputation*

This imputation method is almost the same as regression presented in the previous section. It also uses suitable econometric models to build a function of covariates that are going to be used to

predict the value of the missing observation. The difference now is the error. After estimation of the coefficients of the regression, we obtain the deterministic part of the model and the error. Knowing the distribution of the error, this method recommends to generate for each predicted value an error and add to the deterministic part to obtain the final predicted value. The result is of the form:  $Y_m = f(X_{nm}) + \varepsilon_m$ , with  $\varepsilon_m$  following a specific distribution determined by the econometric model. The main advantage here is the fact that the variance of the variable is preserved due to the randomness of predicted values. The drawback is the same, estimation of coefficient comes with some bias because the coefficient that we are using in the model are not the true coefficients but just estimators which of course brings another bias.

### *Multiple Imputation (MI)*

Among imputation methods, Multiple imputation is one the most interesting methods and most performant according to literature. The main objective of this method is to replace the full set of missing values by different sets of possible candidates provided (each set) by different methods or by a single method allowing random variation. Multiple Imputation is a simulation procedure and the aim is not to obtain imputed values close enough to the real one but obtain acceptable estimators from the completed dataset (Schafer, 1997).

Multiple imputation involves three main steps:

For each missing observation, generate  $m$  imputed values to obtain  $m$  completed sets of data. After identifying which variable has missing values, the user should identify the missingness pattern and then decide which imputation methods to use keeping in mind that each should allow for randomness;

Analyse the  $m$  set of completed data using standard procedures to produce estimators that we want. In our case, each completed data set will produce some estimators; All the estimators produced from each completed data set are combined to form a single set of final estimates of the parameters of interest. In this step, the average can be used to obtain the final parameters with a standard deviation and confidence interval.

As advantage, this method can be used with any kind of data and model. It is simulation based therefore any user who is good in programming can perform it in using any software. When data is MAR, Multiple Imputation can lead to consistent, asymptotically efficient, and asymptotically normal estimates. The main drawback is instability of the method. Because of randomness, different users can perform it and obtain totally different results. Even the same user, every time you run the program, you obtain different results hopefully slightly different. In the simulations, the MI method used generates Multivariate Imputations by Chained Equations (MICE). In the

MICE procedure, a series of regression models are run whereby each variable with missing data is modeled conditional upon the other variables in the data. This means that each variable can be modeled according to its distribution, with, for example, binary variables modeled using logistic regression and continuous variables modeled using linear regression.

#### *Maximum likelihood Imputation (ML)*

This method is used to obtain the variance-covariance matrix for the variable in the model based on all the available data points, and then use the obtained variance-covariance matrix to estimate the regression model (Schafer, 1997). This method is quite simple if you use an appropriate software, you only need to specify your model of interest and indicate that you want to use ML. Theoretically, the basic idea is as follows. Given a set of data with  $n$  independent observations and  $k+1$  variables  $(y_i, x_{i1}, \dots, x_{ki})$  and assuming that there is no missing data in that set, the likelihood function is given by:

$$L = \prod_{i=1}^n f_i(y_i, x_{i1}, \dots, x_{ki}; \theta) \quad (3.2.1)$$

where  $f_i(\cdot)$  is the joint probability function of  $i$  observations and  $\theta$  the set of parameters to be estimated. The ML estimates are the values of  $\theta$  that maximise  $L$ . Now, in the specific case of this research, suppose that for some observations  $i$ , the first variable  $Y$  has missing data that satisfies MAR assumption of missingness. Now the joint probability of the observed data is given by:

$$f_i^*(x_{i1}, \dots, x_{ki}; \theta) = \int_y f_i(y_i, x_{i1}, \dots, x_{ki}; \theta) dy \quad (3.2.2)$$

For each observation's contribution to the likelihood function, we integrate over the variables that have missing data, obtaining the marginal distribution of observing those variables that have actually been observed.

Considering that there are  $m$  missing observations in the first variable over  $n$ , ordered such that the first  $n-m$  lines are completed and the last  $m$  have missing data, the likelihood function of the full data set becomes

$$L = \prod_{i=1}^{n-m} f_i(y_i, x_{i1}, \dots, x_{ki}; \theta) \prod_{i=n-m+1}^n f_i^*(x_{i1}, \dots, x_{ki}; \theta) \quad (3.2.3)$$

This likelihood function can then be maximized to get ML estimates of  $\theta$  using several different methods.

There are two main ML methods:

Direct Maximum Likelihood: implies direct maximization of the multivariate normal likelihood function for the assumed linear model.

The expectation – Maximization (EM) algorithm: provides estimates of the mean and covariance matrix which can be used to get consistent estimates of the parameters of interest.

For the simulation, the R package MissMech is chosen. Two options are used to perform ML: firstly, the program assumes that data follow a multivariate normal distribution then secondly no assumption is made on the distribution but a maximization algorithm is used to obtain the covariance matrix.

### *Simulations and Results*

This section presents an analysis of performance of different imputation methods on a simulated data set. The aim is to answer the question: which imputation methods gives better results in terms of reconstructing dataset and in terms of leading to better estimates of some statistical quantities for simulated data?

#### *Simulation protocol*

To simplify our analysis, we assume that there is only one variable  $y$  with missing observations in the data set with in the sample of size  $n$ . In addition to that, there are some covariates  $x_1, x_2$  and  $x_3$  generated given specific distributions (continuous and discrete) which determine the variable  $y$ .

Initially, the variables  $y, x_1, x_2$  and  $x_3$  are generated without missing value according to the regression equation  $\hat{y} = \hat{\alpha}_1 x_1 + \hat{\alpha}_2 x_2 + \hat{\alpha}_3 x_3$ . With the data set without missing values (sample size  $n$ ), we compute the true sample value of the mean  $\mu$  of  $y$ , the standard deviation  $\sigma$ , the coefficients  $\alpha_i$  already known, in short the vector  $param = (\mu, \sigma, \alpha_1, \alpha_2)$  is computed. Then, we gradually create missing data in the data set for the variable  $y$  from 10% of missing values up to 60% with a step 10%, 6 different percentages of missing values. For each percentage of missing values generated, firstly the vector  $param$  is estimated using the complete case available (listwise deletion). Secondly, using specific imputation methods, the  $s\%$  missing is estimated and then the vector  $param$  is again estimated in a bootstrap of 1000 replication and compared to the true value. In addition to  $param$  in the second step, the RMSE and MAE are computed to see how good the imputation methods were.

#### *Steps of simulation*

Step1: Generate a sample of  $n$  observation of the random vector  $(Y, X_1, X_2, X_3)$  such that there is a linear and significant link between  $Y$  and the  $X$  covariates: output  $(Y_i, X_{1i}, X_{2i}, X_{3i})_{i=1}^n$ .

Step 2: Compute the population or the full sample parameters from the simulated data such that  $param = (\mu = mean(Y), \sigma = std(Y), \alpha_1, \alpha_2)$ ; where  $\alpha_1$  and  $\alpha_2$  are coefficient of  $X_1$  and  $X_2$  in the linear regression  $Y = f(X_1, X_2)$ .

Step 3: Create randomly  $s$  percent of missing value in the vector  $Y$  with  $s \in \{10, 20, 30, 40, 50, 60\}$ , leading to six  $Y$  variables with different percent of missing values.

Step 4: For each percentage of missing value, first compute the vector *param* using complete case analysis meaning cases with missing data are deleted before estimation. Secondly, using each imputation methods selected, impute the missing values and compute the vector *param* and the quantities *RMSE* and *MAE*.

Step 5: Compare the output of the simulation in bootstrap procedure of 1000 replications. Firstly, compare the vector *param* for complete case analysis and for the one obtained in each imputation method to the real value of parameters and for different percentage of missing values (to see which method is best in estimating the true parameters). Secondly, compare *RMSE* and *MAE* for different imputation method and different percentage of missing values (to see which method is best in reconstructing data).

As said in the last step, to make sure that the results are robust and to get standard errors, the simulation is associated with a bootstrap procedure of 1000 replication (creation of *s* percent of missing value 1000 times).

## Results and Discussion

All the simulations were done with a sample size of 1000 unit and 1000 replication in the bootstrap (for a given percentage, sampling 1000 times missing values) to see stability of results. Here is summary of results from two points of view: Reconstruction of data and ability to give better estimates of the full sample parameters. The results are specifically for the simulated data that we have, changing parameters of simulation can lead to other results.

### *Ability to reconstruct the data*

The general comment on the results is that the value of RMSE is almost the same for all percentages of missing value for a given imputation method, with a slight increase for higher percentages of missing values. Figure 1 shows that for ML imputation, the RMSE is around 109 for the first 3 percentages of missing values but slightly above 110 for the last 3. This remark is the same for all the 7 RMSE computed. In addition to that, the error observed on RMSE is quite small meaning that the results obtain after simulations are quite stable and are not due to randomness. Comparing now different imputation methods, Figure 1 shows us that the best imputation method in data reconstruction (smallest RMSE) is Mean Imputation no matter the percentage of missing value, with an average RMSE of 100.78, followed by Regression Imputation without randomness with an average RMSE of 101.12 among all the percentage of missing values.

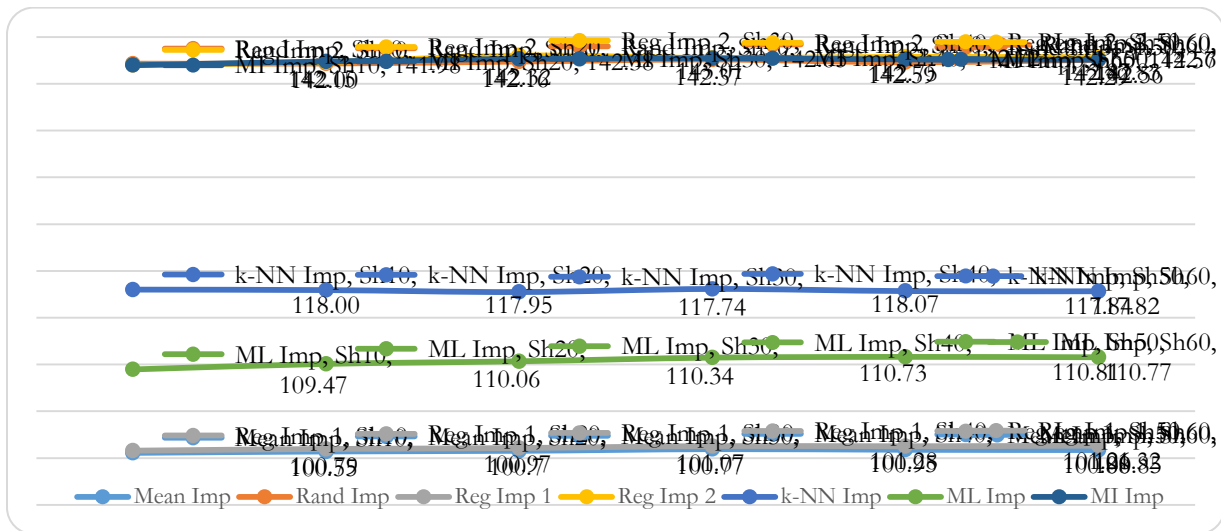


Figure 1: RMSE for imputation methods per percentage of missing value

The methods performing less than the others are Random imputation, Regression imputation with randomness and Random imputation. Their RMSE is above 140 which is clearly above all RMSE observed.

When we look at the MAE trends in Figure 2, the tendency is the same as for the RMSE. The value is quite constant along the different percentages of missing values but with a slight increase when the percentage increases. The errors are also small meaning a good stability in results.

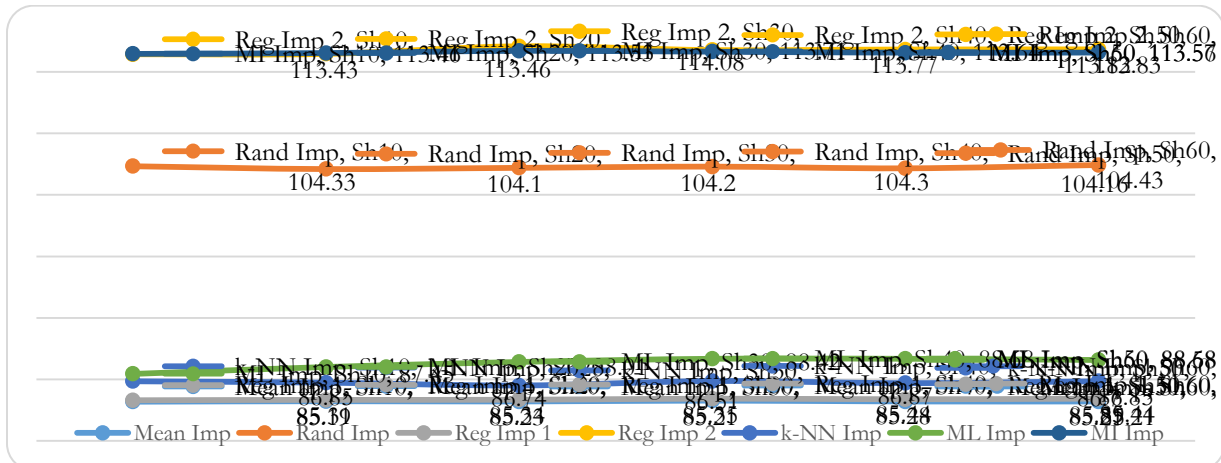


Figure 2: MAE for imputation methods per percentage of missing value

Here again the best imputation method is Mean imputation with an average MAE of 85.22 among all the percentages of missing value tested. The second best is the deterministic Regression Imputation with an average MAE of 85.38. When we look at the methods with the highest MAE, we find that Multiple imputation and Regression imputation with randomness are the one with the bad results. To sum up, the best methods in data reconstruction are Mean

imputation and deterministic Regression imputation. The weaker methods in data reconstruction are Multiple Imputation and Regression with Randomness. It seems like in general, with simulated data (given distribution clearly known) imputation methods including randomness performs less compared to those without randomness.

#### *Ability to estimate full sample parameters*

Secondly, the methods are tested on their ability to estimate some statistics computed on the full sample without missing values. As said in the simulation protocol, those statistics are mean, standard deviation and coefficient of a linear regression applied on data.

In summary for the results, if we consider mean as parameter and all the percentage of missing values, the methods estimating mean with a small bias are Listwise deletion, Mean imputation and Deterministic Regression imputation. The worst is k-NN with the biggest bias no matter the percentage of missing values observed. Considering the standard deviation as parameter, again here Listwise deletion and Mean imputation are among the best methods in estimation. Close to them, Multiple Imputation can be added as good imputation method to estimate standard deviation. The worst method here is regression imputation without randomness with the biggest bias considering all the percentage of missing values. For the coefficient of linear regression, the Listwise deletion and Mean imputation are on top of the methods, followed closely by regression imputation. Looking at the worst imputation methods used to estimate the coefficients, k-NN is on top of the list.

#### *General comments and discussions*

The results presented here are results from simulated data using specific distributions, sample size of 1000 and 1000 replications which leads to quite interesting and good results especially with mean imputation and Listwise deletion. These results can change if these parameters are changed. For example, with a bigger sample size or a smaller sample size, the results can change. With 200 as sample size you cannot impute 60% with a risk of changing the nature of initial distribution while with a larger sample size (2000 for example) you can go up to 70 percent if you want depending on the method. This simulation shows that up to 60% of data missing, results are almost the same. Bias is almost the same for all the percentages meaning that it is possible, in certain cases, to impute more than 50 percent of the data when they are missing.

In this work, we found that for imputation methods like regression, the better the  $R^2$  the better will be the imputation results. It is not good to use regression imputation when the covariates explain a few percentage of the dependent variable presenting missing data. Consequence will be a very bad reconstruction of data leading of course to bias in all other estimators.

For some cases, methods like mean imputation can be improved by conditional mean imputation. In case the variable to impute is quite linked or determined by another variable, conditional mean imputation on that other variable is advised. It is the same case for k-NN imputation which in



this study did not perform very well because all the variables were generated randomly without link which is rarely the case in the true data sets.

As we have seen also in this simulation study, the sample size is quite big and we went up to 1000 replication to make sure of the stability of results. With a real data set, the statistician should rely on bootstrap to soften the bias that may occur during imputation. In addition, he/she should go for imputation methods that allow randomness like random regression imputation and multiple imputation.

The main conclusion or output drawn from the simulation section is a process to identify which method is suitable for imputation given a dataset. The process is as follows: use the variable in your dataset with missing data that you want to impute, truncate your data set and use only available cases to run the previous simulation process. This means that in the full matrix of the truncated data set, create missing values in the variable of interest and impute them using different methods. The method that gives you the best results will be used in the initial dataset to impute the values that are really missing. The algorithm to perform the best imputation with a real dataset is as follows:

Step 1: Identify which variable in your dataset (Y) you would like to use imputation on, compute the percentage of missing values (s%) and identify all other variables that are determinant to Y in your data set.

Step 2: Truncate your initial dataset and consider only case with all observations, a kind of complete case analysis. In this secondary data set, perform the simulation explained early in this section with s% of missing data. In other words, in the secondary data set without missing data, create s% of missing data in Y and impute them and compute RMSE and MAE, perform it 1000 times to get standard deviation. The best method is the one that gives smallest values of RMSE and MAE.

Step 3: Using the best method identified in step 2, perform imputation once in the initial dataset of step 1.

The results obtained from this process are surely the best we can get for imputation.

### *Applications*

After simulations, the output of the analysis is a process to identify which method to use when we have a real data set. This section presents an application of this process. The data used here are from an agricultural household survey in Rwanda on 406 farming household over 4 regions in Rwanda. The variables of interest here is the Production of beans in Kg during wintering season of the year 2016 – 2017. Among the covariates we have: Use of climate information, Quantity of labour used, Quantity of seeds, Area cultivated, Tropical Livestock Index and Asset index. We applied the process described at the end of the section 4 and the results are summarized below.

### Reconstruction of data

As in the simulation section, the reconstruction of data is measured by RMSE and MAE parameters. Figure 3 presents the change in RMSE according to each imputation methods and an increasing percentage of missing values.

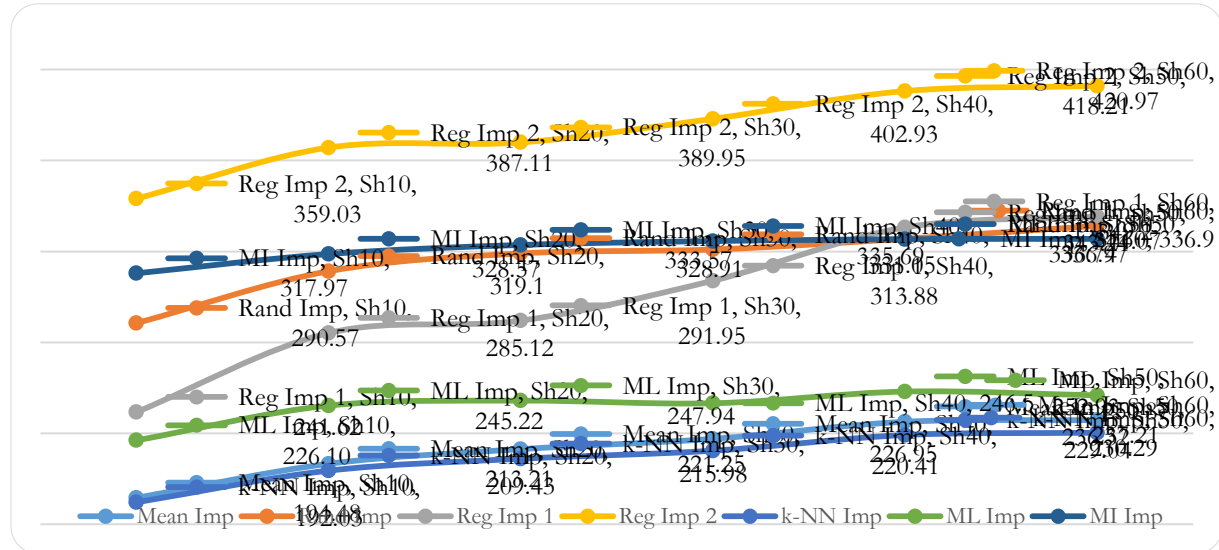


Figure 3: RMSE for imputation methods on real data of Rwanda

It is clear that for all the imputation methods, the RMSE increase with the percentage of missing values and the best method in reconstructing data is k-NN for this given data set. The second best is Mean imputation and the worst method is regression imputation with randomness.

If we look at the second indicator of goodness-of-fit in reconstruction in figure 4, the MAE is quite stable with the increasing percentage of missing value and it decrease even for Regression imputation and Multiple Imputation.

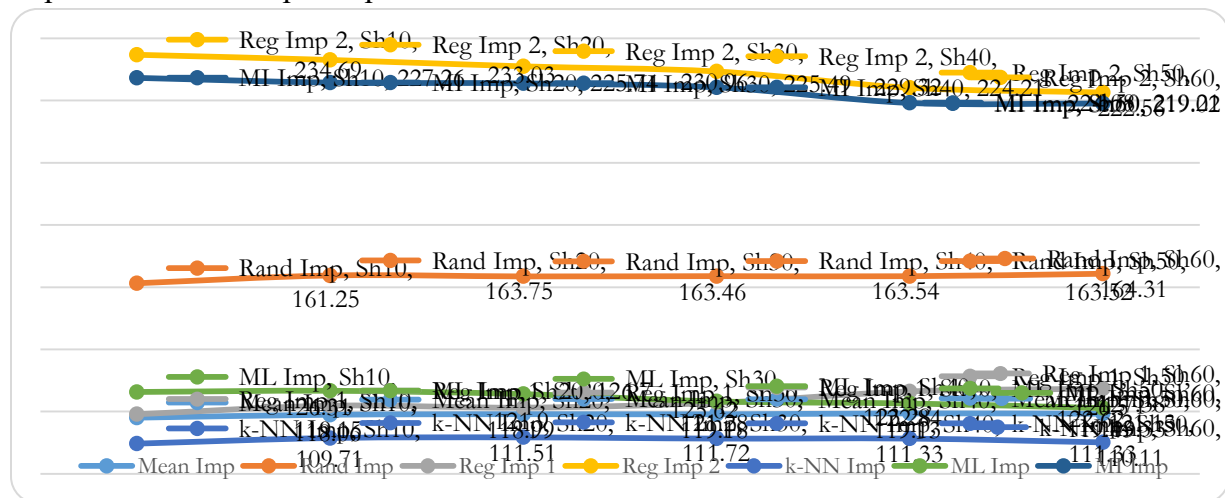


Figure 4: MAE for imputation methods on real data of Rwanda

Here again the best method in data reconstruction is k-NN and the second best is mean imputation. The worst methods are Random regression imputation and Multiple imputation. The conclusion here is that for this given dataset, in case imputations have to be made to reconstruct the data, the suitable methods are k-NN applied very well and Mean imputation.

#### *Estimators of some statistics*

If we look at the statistics estimated by the complete case analysis and the imputed dataset for each method on our variable of interest, the following conclusions can be drawn:

In estimating the mean with the smallest bias, Listwise deletion, mean imputation and MI imputation are the three best imputation methods;

In estimating standard deviation with the smallest bias, Listwise deletion, Multiple imputation and Regression imputation are the best three methods;

In estimating coefficients of the linear regression, Regression imputation deterministic and random are the best methods.

Depending on what exactly you want to generate with your data, some methods are better than others. In absolute necessity of imputation, Multiple imputation will be the best one in estimating specific statistics with this dataset.

#### **Conclusion**

The aim of this study was to analyse the performance of imputation methods in case of simulated data and in case of real data. Finally, the main result obtained is that the performance of Imputation methods is closely link to the parameters of simulation and to the structure of data. Thus, an absolute decision cannot be taken. A major result here is that using bootstrap, the percentage of missing data in the variable doesn't matter much. We imputed up to 60% of missing data with quite good results in this study both in simulated and real dataset.

Practically, this study is more about explaining the process required to calibrate and identify which method will give better results during imputations in case data are missing completely at random. It cannot be used to compare imputation methods and conclude. In fact, as we have seen in simulations and applications, the methods performing very well are different depending on the simulation parameters and on the structure of the data when data are simulated. Even in case of real data, performance can change according to the profile of data (what are the different distributions concerned? are we having extreme values? Atypical values?). This study shows essentially in a case of missing data in a dataset, how to calibrate and choose which method will give you the best results.

More examples of simulation and data set can be done using the simulation protocol developed here. There are many other imputation methods that can be tested. Given that bootstrap is used and 60% of data can be estimated using the methods tested in this work, imputation methods can be used beyond simple missing data estimation but also for censored data to estimate

counterfactual in the framework of impact evaluation.

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## **Advancing a Clean Cookstove Culture in Sub-Saharan Africa: The Transformative Power of Afrikan Innovation**

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### **Abstract**

*A transition to an energy-efficient, clean and safe cookstove culture among the global energy-poor can reduce mortality, poverty and positively impact the protection of biodiversity and the climate, as identified in the United Nations' Sustainable Development Goals. Despite broad support, only a limited number of interventions have shown success, at scale, over the long term. The uncertain, complex and dynamic nature of sustainable development programmes is increasingly being recognised. Current design methods appear limited in addressing the*

*inherent complexities of the sustainable integrated design of products, services and systems. Transdisciplinary design methods need to be considered, inculcating an African perspective. In this paper, the applicability of indigenised design approaches in achieving a significant shift to a safe and energy-efficient cookstove culture among energy-poor sub-Saharan households is investigated. The use of innovative transdisciplinary methods, specifically participatory methods embedded in local culture, could contribute significantly to shifting energy-poor sub-Saharan households to a clean and safe cookstove culture. The integration of Africa's resilient cultural practices could provide individual and collective alternatives to design research methods rooted in Western ontological and epistemological approaches, in transitioning to a sustainable future.*

**Keywords:** *Afrikan Design Innovation, Afrikology, Appropriate Technology, Clean Cookstoves, Design Thinking, Radical Incrementalism, Transformation Design, UN Sustainable Development Goals.*

## **Introduction**

Household air pollution (HAP), in large part due to the use of inefficient cookstoves, is the third most significant global cause of morbidity and mortality, primarily affecting women and children (WHO 2014). A transition to an energy-efficient, clean and safe cookstove culture among the global energy-poor can reduce mortality, poverty and positively impact the protection of biodiversity and the climate, as identified in the United Nations' Sustainable Development Goals (Yamey et al. 2014).

Despite broad support, only a limited number of interventions have shown success, at scale, over the long term (Hanna et al. 2012; Urmee & Gyamfi 2014). The challenge remains how to significantly increase clean and safe cookstove use within communities, reduce respiratory disease and mortality, protect biodiversity, climate protection (reduced greenhouse gas emissions) and poverty reduction, without on-going external development assistance. The uncertain, complex and dynamic nature of development programmes is increasingly being recognised (Alesina & Dollar 2000; Morrissey 2004; Stokke 2013). The use of development assistance as an extension of soft power traditionally by the West and recently China in sub-Saharan Africa is well established (Ayithey 2015; Nye 2012; Pamment 2015; Zhang et al. 2016). The intention is to portray a narrative of partnership, friendship, sympathy, appeal and influence, and assist the attainment underlying long-term strategic goals (i.e. markets for consumer products or securing natural resources) (Nye 2005; Pamment 2015).

Current design methods are limited when tackling the inherent complexities of the development sphere (Ceschin 2014; Qureshi et al. 2013). Any design-led efforts that address the use of inefficient cookstoves need to inculcate the explicit, implicit and tacit motivations of the various political, social and economic factors. This deeper understanding is often lacking due to the designers originating from a different cultural and socioeconomic backgrounds, leading to



remote design solutions parachuted in with little effect (McClelland & Suri 2005; Ramirez 2010).

### *Transformation Design*

Drawing on the field of *transformation design*, transdisciplinary design approaches are suggested in overcoming the abovementioned complexities and power dynamics (Ceschin 2014; Sangiorgi 2011; Vezzoli et al. 2014). *Transformation design* can be defined as a human-centred, transdisciplinary process to create sustainable changes in human behaviour and their systems and organisations to achieve social cohesion and equity (Burns et al. 2006; Jonas et al. 2015). A key component of *transformation design* practice is a concern with the power of decision making in the participatory design process, with the participant becoming co-creator (Sangiorgi 2011). Central to a transformation in cookstove use is the real empowerment of the cooks (i.e. the local women bearing the largest part of the burden). Transformative clean cooking initiatives could empower women, providing significant opportunities for social and economic empowerment.

### *Afrikan Design*

An *Afrikan* design approach, informed by Nabudere's concept of Afrikology, is proposed as a transdisciplinary approach during the design process of finding sufficient alignment in values between the different perspectives of stakeholders and beneficiaries. The convergence afforded by an *Afrikan* communitarian worldview provides a window of opportunity during a design process for a radical incrementalist process where the transformative change consists of a series of small changes over time, laying the groundwork for far-reaching large-scale changes, without maintaining the status quo. Nabudere (2012) suggests that in Afrikology, knowledge emerges holistically from a combinatory understanding of seemingly disparate fields (i.e. socio-economics, philosophy, spirituality, governance, technology and science). Nabudere (2012) argues that it is impossible to detach a research problem from its larger context, suggesting a conscious process geared towards collective development, grounded in an African worldview. While Norman and Verganti (2014) believe that a typical human centred design process is better suited to an incremental innovation approach, Ma (2015) suggests that reframing the meaning-making process at the outset of a design process can accommodate the long-term goals associated with a radical transformative approach as found in the fields of social innovation and transformation design,

Ma (2015) asserts that the anthropogenic worldview in most design processes of designing to meet a short-term need through the lens of the desirability, viability and feasibility of a solution, without acknowledging that humans are part of a larger bio-physical, social, and economic infrastructure is the root of the problem. In this sense, a holistic African Design approach can accommodate radical incrementalist design process is guiding a long-term vision with incremental efforts to respond to, and influence human values and actions towards states of



convergence within a variety of spheres.

### *Problem Statement*

Design research appears to be deeply rooted in Western ontological and epistemological approaches, with designers attempting to bridge cultural differences by modifying existing design strategies, frameworks, methods and techniques to suit different cultural contexts with limited success (Truna et al. 2007; Winschiers-Theophilus & Bidwell 2013). In this regard, designers appear to approach local cultural differences as a collection of attributes associated with specific artefacts rather than an interactive engagement with local cultural practices (Winschiers-Theophilus et al. 2012).

The primary goal of achieving a measurable change in cookstove related practices appears to be subordinated to the design of increasingly efficient stoves. Abdelnour (2015) ascribes this phenomenon in clean cookstove initiatives to a form of *techno-saviourism*, where the technological object is elevated to the point where it can solve a myriad of complex and interrelated problems, yet neglecting to place the culinary practices of poor women at the centre. Sommer and Welzer (2014) suggest that sustained transformative change cannot be planned either politically or administratively at bureaucratic international conferences – a common feature of sustainability initiatives over the last four decades. Abdelnour (2015), Welzer & Leggewie (2009), Sommer & Welzer (2014) assert that sustained changes in practices do not occur due to the introduction of a superior technology or published scientific findings.

### *Research Question*

The question arises whether an *Afrikan* design approach could significantly change cookstove-related practices, and help reduce the scourge household air pollution in sub-Saharan Africa.

### *Main Research Aim*

The aim in this paper is to investigate the applicability of *Afrikan* design approaches in achieving a significant shift to a clean and energy-efficient cookstove-related practices among energy-poor sub-Saharan households.

### *Design in an Afrikan Context*

The practice of design in an African context needs to be grounded in perspectives of local history and culture (Asabere-Ameyaw et al. 2014). *Afrikan* design necessitates local participatory design processes and practices, taking cognisance of the danger of remaining in a neo-colonial paradigm (i.e. remotely designed cookstoves parachuted in as developmental assistance) (Asabere-Ameyaw et al. 2014). Mafundikwa (2009) holds that the complexity of *Afrikan* creative expression and problem solving ability is underestimated due to the deceptively “simple” appearance of designed artefacts. The Western approach of linking cognitive abilities and narratives to traditional forms of literacy, lead to overly simplified narratives, thereby neglecting the complex cognitive practices developed in verbal and multilingual contexts (Bidwell et al.

2011).

Ambole (2016) suggests the necessity of comprehensive transdisciplinary frameworks when designing transformative systems in complex informal urban areas, with multiple actors and networks, spanning multiple modes of knowledge production. Ambole (2016) furthermore proposes co-creative and participatory design methods when attempting to meet the needs of poor communities in sub-Saharan Africa, with an ethnographic-based design approach succeeding where standard design practice has failed.

### **Methodology**

To gauge the possible role of an Afrikan design approach in improved cookstove projects, Yin (1999) suggests a qualitative research approach with a literature-based cross-case study method when scanning selected projects, identify matching patterns, analyse general commonalities, uncover insights, and provide explanations.

A systematic bibliographic search on improved cooking stoves that had achieved some measure of success in cookstove dissemination within sub-Saharan Africa was screened down to five projects. This group was scanned for aspects of an Afrikan design approach. The main aspects were summarised, allowing conclusions to be drawn. As no successful large scale implementation of a design-driven strategy was found in the sub-Saharan region, the three case studies were selected due to the (often unintentional) use of design methods in the programme implementations. The following were selected for review, namely: the Jiko Stove Project, the Basa Njengo Magogo Project and the Tree is Life Trust Cookstove Project.

### **Results**

The literature-based cross-case study of improved cookstove dissemination programmes found that aspects of Afrikan design approaches were present in the selected cookstove projects as summarised below. A focus on the local needs and practices of the beneficiaries is paramount. Near all stove, projects applied participatory techniques embedded in the community with residents and artisans participating in the design process. The inclusion of participatory methods that incorporate the beneficiary as co-designer in a communitarian manner is particularly evident in the case of the Jiko Stove. The use of participatory methods in the Basa Njengo Magogo study was prevalent in the beginning, yet receded towards the end. Behavioural techniques were found in all the projects were used. Common in both the Jiko Stove Project and the Tree is Life Trust Project is the time spent of the development team and the community in coming to a common understanding of the problem, and jointly designing the solution. This success can largely be attributed to the dedication of the designers and the patient support of donors, in contrast to the Basa Njengo Magogo Project, where support was limited.

#### *The Jiko Stove*

The Jiko charcoal stove (Jiko meaning quick in Kiswahili), has become a ubiquitous part of Kenyan cookstove culture - its versatility in design lending itself to cooking and roasting meats and vegetables. The success of the ceramic Jiko Stove in Kenya is attributed, in part, placing the user as part of the broader community as the starting point in the dissemination strategies contextualised within the local community and the environmental pressures experienced (Hyman et al., 1987; Njenga et al., 2014). The Jiko stove success has led to the development of an indigenous relatively self-sufficient national production and dissemination infrastructure for higher efficiency charcoal stoves, with non-governmental organisations acting as technological and developmental intermediaries. This nascent industry developed despite Kenyan duties on the raw material imports used in the construction of the cookstoves (UNCTAD).

The Jiko phenomenon was the brainchild of the late Dr Maxwell Miringu Kinyanjui, a pioneer of a wide range of sustainability initiatives in Kenya, most notably the design and development of the charcoal-saving Kenya Ceramic Jiko, the promotion of commercial reforestation and efficient charcoal production in Kenya (Dunford, 2012). Kinyanjui's design approach approximates a circular design approach. This circular approach is best illustrated by the seed-to-ash philosophy central to Cookswell Stoves – the family-owned stove manufacturing company now run by his son Ted Kinyanjui (Dunford, 2012; Cookswell, 2017). The holistic strategy of the seed-to-ash cycle foresees a virtuous cycle where the planting and sustainable harvest of trees provides the feedstock for energy-saving biomass fuelled stoves, ovens and kilns. Central to the design process was a co-creative process with the final beneficiaries informed a communitarian ethos espoused by Kinyanjui.

The design of the Jiko was in response to the energy needs of Kenyan households, where traditional biomass still accounts for the majority of Kenya's cooking needs. The country's demand for firewood exceeds its supply by an estimated 2 million tonnes per year, leading to deforestation, desertification, droughts and famine. Modern energy services are unaffordable for the majority of the population.

Incremental improvements to the stove design continued after its launch in 1982 in a co-creative manner, increasing the usability, affordability and efficiency of the stove (Dunford, 2012). After prototyping a variety of different designs of efficient cooking stoves, Kinyanjui oversaw the production, marketing and of the cookstove. As part of the design process, Kinyanjui started a small manufacturing business, hiring and training artisans in the manufacture of the stoves, with the goal of creating sustainable communities of practice with skills required to build the cookstoves considered as necessary as the dissemination of the artefact itself. The artisans were assisted in establishing their stove manufacturing businesses. The stove designs were not patented, with the copying of the stove design encouraged, to aid a speedy dissemination process (Dunford, 2012). This cooperation with manufacturers enabled the establishment of viable marketing and distribution networks and ensured consistency in the initial build-quality of the

stoves. This cookstove infrastructure provided the base for local women's groups and individuals being trained, thus leaving institutional knowledge and a thriving stove market as a legacy (Chavangi, 1995; Karekezi, 2002). The consistency in the stove's quality and appropriateness to local cooking needs at an affordable price built confidence among customers and employment opportunities in the stove production sphere.

As part of the dissemination strategy in Kenya, households with relatively higher living standards were targeted initially. This might appear counter intuitive, yet as producers and local marketers grew their business and achieved economies of scale, the prices started to drop, achieving market penetration among all the other urban segments. By the year 2002, the Jiko charcoal stove initiative had achieved a penetration rate of approximately 50%, while the firewood-based version languished at around 5% penetration. This poor performance has been attributed to the communal lack of incentive to save fuelwood except where it was already scarce. The Jiko design has become the template for numerous stove projects around the world. However, most other attempts have met with failure (Karekezi, 2002; Bazilian et al., 2012). In addition to the initial prototype of the "Kenya Ceramic Jiko" stove, the product range has widened to include ovens and griddles — the charcoal oven reputed to be 70% more cost-efficient than its gas or electricity counterparts (Dunford, 2012).

#### *Basa Njengo Magogo*

One of the most notable programmes to promote clean and safe cookstove behaviour in South Africa was the *Basa Njengo Magogo* alternative fire lighting method for coal-fired self-constructed stoves. While not explicitly a design intervention, the programme used participatory research methods. Developed and piloted by the *NOVA Institute* in 1999, the behaviour change intervention entails inverting the way fires are lit as shown in **Error! Reference source not found.** below.



Figure 14: Basa Jenje Magogo Demonstration (Nova Institute 2017)

The name *Basa Njengo Magogo* originates from Mrs. Nebelungu Mashinini, an elderly grandmother from the eMbalenhle community, who participated in the design process and means

“to start a fire like grandmother”. Household air pollution from coal-fired stoves is reduced by applying the suggested top-down ignition method. While laboratory tests confirm a reduction of smoke emissions by 80% a large scale dissemination has not yet been demonstrated (Nuwarinda 2007).

#### *Tree is Life Trust Cookstove Project*

The *Tree is Life Trust* of the Laikipia and Nyandarua Districts in Kenya, is a training and capacity building project assisting local households in the sustainable use of their natural resources. Most of the households depend on firewood and charcoal for cooking and heating, leading to deforestation and a reduction in biodiversity (Kiendi 2016).



Figure 15: Stove, heater & chicken brooding box, Laikipia District, Kenya (Obiria 2016)

The project provided local entrepreneurial farmers in Laikipia County with the nudge to design and build an efficient ceramic cookstove and space heater, with the added benefit of a chick brooding box as demonstrated in Figure 2. The popularity of the design has been attributed to its simple indigenous design and ease of construction with local materials. The accruing benefits are listed as the fuelwood saved, increased survival rates of hatchlings and a measurable increase in household income notwithstanding a warmer, healthier household in this colder mountainous region (Kiendi 2016; Obiria 2016).

#### **Conclusion**

*Afrikan* design approaches, specifically participatory methods informed by a communitarian philosophy, can contribute significantly to shifting the cookstove-related practices of energy-poor sub-Saharan households to a cleaner and safer cookstove culture. The integration of Africa's resilient cultural practices could furthermore provide individual and collective insights for a meaningful redistribution of power to specifically energy-poor women and children. An *Afrikan* Design approach can provide a resilient complex interconnected and at times adversarial dynamic process across disciplines in achieving transformative change.

It is anticipated that a prospective pilot design project in Sibabalwe, an informal settlement on the outskirts of Cape Town in South Africa, could act as a case study in how to apply *Afrikan*



design research methods to shift energy-poor sub-Saharan households to a clean and safe cookstove culture. On a broader scale, it is hoped that the study will contribute to fundamentally transforming the underlying socio-cultural dynamics around efforts to achieve the global Sustainable Development Goals.

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## **Does Innovative use of Social Media Training Enhance Business Growth? A Case of Subira Self Help Group, Nairobi**

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### **Abstract**

*The general purpose of this study was to investigate the role of innovative entrepreneurial training programs on business growth among Subira Self-help group Nairobi. The innovative training included use of smart mobile phones to conduct business and market products, use of*

*social media to reach customers and advertising of products by use of mobile phone technology. The study used a descriptive research design approach. The study sample was all the 48 members of the Self-help business group. A research questionnaire was used to collect the data. Descriptive statistics techniques were used to analyze the quantitative data. The researcher conducted regression analysis on the dependent variable aspect of business growth and the independent variable aspects of innovative business training programs (use of social media). According to the ANOVA results, the aspect of the independent variable was found not to be significant towards business growth represented by p- value of 0.324. We therefore accept the null hypothesis and conclude that business growth does not depend on innovative social media training. The study found that a unit increase in social media training programs led to an increase in business growth penetration by a factor of 0.146 but is weak. The study concluded that various types of business training programs were responsible for the business growth. The study therefore recommends that there is need for the members of the group to adopt and equip themselves with modern use of phone technology and applications that can grow businesses but still adopt other factors of business growth in the market. They should also be ready to be trained by field officers and colleagues on those programs that enhance business growth; since such programs portray positive impact towards business growth.*

**Keywords:** *Business growth, Innovation, Mobile phone technology, Training program, Social media, Self-help group*

## **Introduction**

### *Background of the Study*

In the last three decades there has been a dramatic increase in the urban informal sector all across sub-Saharan Africa. Most of this growth has taken the form of an ever increasing number of very small enterprises, typically with no paid employees. The World Bank (2001) has shown that lack of access to business training and innovative opportunities, lack of affordable credit facilities is also a major cause of poverty in Kenya which leads to economic stagnation. Economic growth in industrialized as well as developing countries remains a central issue and, as such, particular interest is focused on the role of innovative entrepreneurship to achieve and maintain thriving and modern economies.

Subira self help group is a group of businessmen and women who came together, pooled resources in the name of revolving funds or Chamas as they are popularly known in Kenya to boost their businesses. The group lends money to individuals who are members of the group at a low interest rate of 10%. Besides lending, the group sources for experts in the area of business to offer training programs that may be of interest to them at a small fee. Among the training programs that have been offered is the use of social media to win customers and grow business networks.

### *Statement Problem*

In Kenya, there are many examples of businesses that have been started and operated by people who have received no formal training, financial aid, or extension assistance (Gully, Payne, Koles &Whiteman, 2002). Lack of current and innovative entrepreneurial training has led to businesses operating at below capacity and many business people are unable to enter the global market due to fear of competition and ignorance. Subira self help group had the capacity to pull resources and yet the individual businesses were not operating in a way to demonstrate growth and increase. As such it is essential to incorporate modern methods of training, namely: use of social media training programs to achieve growth and reach customers, rather than depend on physical clients only.

### *Research Questions*

This study was guided by the following research question; to what extent does the use of social media training program affect business growth among members of the business group?

### *Hypothesis*

$H_0$  (null hypothesis): There was no significant influence in business growth reported by entrepreneurs of the business group before and after social media training program

$H_1$  (alternate hypothesis): There was significant influence in business growth reported by entrepreneurs before and after social media training among members of the business group

## **Literature Review**

### *Facilitation Theory (the humanist approach)*

Facilitation theory developed by Carl Rogers and others in 1965 indicates that a facilitator has to be present for learning to take place the facilitator acts as a guide and creates an environment that is fit and comfortable for learning to take place. Dunn (2002) identified that people are always waiting and responsive to new ideas hence ready to learn. The learner is willing to change behavior especially when faced with unpleasant consequences.

The theory explains that facilitators are supposed to be responsive, accept feedback and are good listeners for learning to take place. The learner enjoys an environment that has a variety of activities and relevant training programs. Learning and training at given to Subira self help group members is handled by qualified and experienced facilitators who ensure that a conducive environment is in place, materials and equipments are set, while at the same time ensuring that the learning is well conducted. The facilitator selects staff of the right profile and puts them in work teams for better learning to take place. Any training that takes place has to be implemented for it to be effective; the facilitator also oversees and monitors the implementation process.

### *Forms of Social Media*

There are different forms and categories of Social Media that can be used in business as introduced by Fridolf and Arnautovic (2011). The categories include to name bit a few: Blogs which are ideas posted online journals by firms, media images and copied links to various web pages; Social networks or groups are sites where individuals with similar ideas or concerns join together and develop one another through creation of online relationships; Content communities plan and organize information which is accessed and then shared by other people on the website; bulletin boards are those types of information that educate people on certain topics of interest and in process they allow people to exchange ideas on particular interest. Examples of social media sites commonly used by people both individually and for business purposes include: Facebook, watsup, MySpace, LinkedIn, Flickr and Instagram (Drury, 2008).

Social networks are accessed for various purposes among them: finding friends, conducting business, selling, purchasing products, exchanging ideas among others. For example LinkedIn connects with people in business and in the same profession and finding business partners. MySpace connects people in music and classmates can connect through classmates.com. For purposes of charting and creating friendships online, people use Facebook; while some people communicate through the use of twitter to pass messages (Flink, 2011). However, all channels have been turned to marketing channels with time

#### *Social Media as a Marketing Tool for Business Growth*

Business people desire to belong to groups that will enhance their business and improve profits. The world has become a global village where people are now able to communicate easily, faster, widely concerning many aspects of life as well as connect to conduct businesses through online platforms (Lewis, 2010). Most organizations and individuals have realized the importance of this communication and network connection channel that enables sharing and bringing business opportunities to the firms. As a result, any business person is keen on ways of connecting with the other person or market to grow their networks, therefore using social media to create more business opportunities. Social networking has therefore become an important business reaching idea for both profit making and non-profit making organizations. However, as Lewis (2010) explains, despite this involvement, there is limited understanding of how social media can be well utilized to draw purchases and choices of users. It is with this understanding in mind that, the study will enable us to find out how effective this tool is and what else can be done to ensure it well utilized to bring growth to entrepreneurs. For this reason the company and individual has to choose wisely which social media channel to use to in order to carry out advertising campaigns or marketing of products (Kaplan & Haenlein, 2010).

Social media can be used as an advertising tool because it enables companies to communicate directly with customers about their products and with one another. The manager or business owner may however not be able to control communication between individuals and who are on

the forum for example on 'watsup' or on 'face book'; it is usually beyond the control of the firm. The individuals may decide to communicate at odd hours and the frequency cannot be predetermined. This is contrary to the traditional methods of advertising and integrated marketing where business owners and entrepreneurs are able to direct communication and shape its flow (Bond, 2010).

Social media use has several advantages such as: it enables customers to engage in information sharing in a timely manner; it is affordable and comes at a fair cost, hence more efficient than the traditional methods of advertising. Small firms as well as large firms can both benefit from social media at low costs. Most companies have a regular website but will from time to time turn to social media to advertise their products or get customer feedback concerning their services. This use of social media enables people and firms to reach many people and as fast as possible within a very short time as explained by Halligan & Shah (2010) in his study on inbound marketing and social media usage. Customers are able to use social media channels to communicate with one another about a product or service and therefore creating a lot of influence on a product, which could lead to purchase or rejection. Another advantage of social media usage is the freedom that consumers are able to enjoy through the ability to make their own choices and not stick to brands which do not add them value. This means that the customers/consumers are able to control the information they get from organizations by blocking those they do not need and respond to information that they need. They later on learn to trust social media channels than the actual firms. For this reason, firms have to post information that should work to their advantage and respond quickly to those that can damage reputation. Consumers are able to share information of all types across networks and people end up engaging in debates concerning the firm's products which could then lead to purchase or shift as described by Keller (2009). Social media use can therefore be very challenging to the company because the customer has a free choice and free will. It is therefore up to the firm/organization to manage the information sent and received.

Social media being a strong marketing tool, it is not free from challenges that may discourage users such as: Negative posts on the Facebook concerning a product, exaggerated information, bias among others. These mentioned factors can cause consumers to lose trust in products offered by the firm or negative reactions can be generated from customers by information that is purely meant to push for sales. Another challenge is lack of time to make the company site attractive or update consumers. Lack of an updated website could lead to loss of sales due to customers withdrawing from the site. Return of investment on use of social media may also not be accurately measured due to lack of knowhow and uncertainty on investment, and lack of adequate knowledge on how to use social media for marketing purposes (Ghali, 2011)

For a firm to make to actively make use of social media in a way that will generate sales, then the firm has to remain open and sensitive to customer requirements. The products should be

“pushed” gently while at the same time avoiding aggressive selling that could lead to conflict. Kingsland (2007) in his studies on finding business opportunities through use of social media advices that a firm has to understand that, most people who participate on social networks are not purchasing but are doing so mainly for purposes of creating relationships. He explains that customer opinions should be valued and the firm sensitive to changing trends. This approach ensures that customers are not pushed through aggressive marketing and made to purchase products that do not suit them. Gruber (2004) agrees that customers should not purchase a product due to coercion, since it will lead to dissonance and hence failure of repeat purchases. The customers should be well managed by engaging them through feedback forms and getting their opinions and suggestions.

#### *Entrepreneurial Education and Training*

There is general agreement by researchers in the field of entrepreneurship that emphasis should be placed on entrepreneurship education and training. The Consortium for Entrepreneurship Education (2004) points out that entrepreneurship education is a life-long learning process and consists of five stages: basics, competency awareness, creative applications, start-up, and growth. For this reason, continuous training and learning are important tools that enable organizations to adjust well to the market and environmental changes taking place. Organizations are now becoming learning environments with managers taking the teaching role; employees the students.

Entrepreneurs require different skills and abilities that help them to achieve success in promoting innovation and creating business enterprise. They should predict the future and the changes that may occur in the ability of firms in justification and approval of establishing a business. This ability requires an understanding of the ever changing business environment and development strategies of markets and other new skills in the market so as to grow their businesses (Zahra, 2006). This training can be at three levels: business formation stage, performing stage and development should begin as early as the business formation level and end with exit. This type of training focuses areas such as: favorable business planning, selecting target markets, future profitability, financial planning, identifying competitors, designing new products and receiving rewards for success in business. Business performing training deals with general knowledge for business operations as described by Keller (2009). It includes measures such as financial planning, development of markets, maintaining current markets, understanding expected functions and transferring knowledge from entrepreneurs to managers. Personal development training should also be encouraged so as to foster confidence, leadership skills and critical thinking throughout the organization.

#### *Measures of Business Growth*

The category of success/performance is set as a dependent variable primarily in relation to management practice and the volume of management activities in small businesses in order to



explain connections and possible influences in the direction of improving business results. Therefore, it becomes necessary to precisely understand and restrict the notions of success and performances that are usually used as synonyms. It is also necessary to define criteria which really measure success of small businesses. Success is a specific aspect of performance or is identified with high performance and increase in profits (Thiel, 2014). Some of them recognize success in growth and profitability, but this aspect has significant shortcomings in the field of small businesses where goals do not coincide, comparison and a real success statement are difficult to be presented, hence the need to look at other aspects of growth such as increase in number of staff employed, increase in stock, reduced customer complaints and diversification of businesses among others as described by Toivanen and Vaananen (2010).

Financial indicators are simple for success definition and statement, but they can ignore the possibilities of alternative criteria for success definition, based mainly on personal goals of owners/entrepreneurs/managers. The optimal level of performance regarding growth and development is therefore broad and should include other parameters and measures (Phelps, Adams & Bessant, 2007). However, it is noticeable for small businesses that personal success is identified with business success, while in other cases nonfinancial criteria and the lifestyle are far more significant. Besides usual and most used measures for the performance of profitability and growth (number of employees and amount of profit), some authors use business period as a practical measure of individual business satisfaction and personal success.

In a detailed analysis of success/failure of the small enterprise, business period and length of years in business can be a reliable indicator of success only if a small enterprise is closed down or business project is cancelled non-voluntarily, i.e. if it is a forced collapse (OECD, 2011). The forced closing down or business collapse happens after some period when it is impossible to continue with the business. This form of closure of business is explained as collapse or bankruptcy. On the other hand, business can be a voluntarily closed down (transition from self-employment to employment or unemployment) because of the lack of readiness or motivation. Generally, we can talk about voluntary and forced closure of own business, while survival as a measure of success of small business implies the period of doing business that will be ended by some forms of business closure without a new form of self-employment (to be self-employed in some period). Therefore, the measure of success of small business is determined by business period, which will be ended exclusively by forced and non-voluntary leaving of own business. Consequently, we can conclude that in case of the research on the sample of active small businesses, i.e. by researching the current owners/entrepreneurs/managers we can notice that the small enterprise with longer period of existence is more successful than the others as indicated by Thiel (2014). We can definitely agree that, due to problems of measuring success, especially in the early stages of small business, then other measures of growth are taken into account.

### Conceptual Framework

The conceptual framework below represents the use of designed social media innovative training programs to enhance business growth. This conceptual framework indicates that a training program has to be in place for a successful measure of growth and outcome. As mentioned, facilitators used training methods and programs that allowed for implementation of acquired knowledge. Growth was measured by the following outcomes increase in profits, expansion of business, increased stock and diversification of business activities.

Independent variables

Dependent Variable

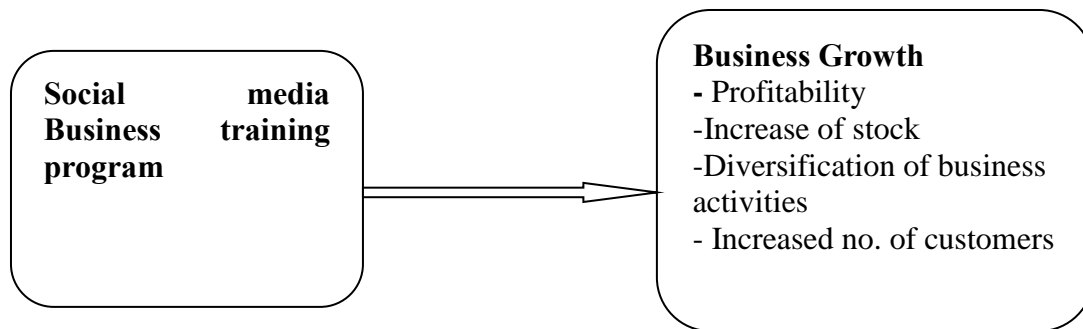


Figure 16: Conceptual framework

### Methodology

The study adopted a descriptive survey design which aims at determining the role of entrepreneurship training on business growth. Leedy and Ormrod (2005) explains that a descriptive survey design is appropriate because it is seen as an efficient method of collecting original data from many respondents a wide range of respondents given a short time. Target population as defined by Mugenda and Mugenda (2003) is a group of items or objects where a sample is drawn because of the similar characteristics. The target population for this research was all members of the self help group who were 48 in number. Thus a census population of 48 respondents was taken to increase the representativeness of the sample, minimize sampling errors. A research questionnaire was issued to the respondents to collect data and allow the researcher to reach a wide population of respondents. The questionnaire had both open ended questions and closed ended questions. Data was analyzed using quantitative means by use of Statistical Package for Social Sciences (SPSS). The hypothesis was structured to ascertain the extent to which social media training programs affect business growth in the study.

### Results and Discussion

All the 48 questionnaires were returned duly filled; giving the study a response rate of 100%.

## ***Demographic information***

### *Age of respondents*

Majority of respondents were between the ages of 31 and 40 years represented by 50%, as indicated on table 1 below, while those between 41 and 50 years old were represented by 43.8%. Only 6.3% of the respondents were over 50 years of age. It showed a mature population in business

Table 1 Age of respondents

	Frequency	Percent	Cumulative Percent
31 years to 40	24	50.0	50.0
41 to 50	21	43.8	93.8
Above 50	3	6.3	100.0
Total	48	100.0	

### *Marital status and Sex of respondents*

Majority of respondents were married as represented by 60.4% as shown on table 4.2 below. Single people were represented by 22.9%, divorced were 12.5%, while widowed were 2%. We can assume that there was support in business operations from spouses.

Majority of respondents were females represented by 64.6% while the males were represented by 35.4%; meaning females in business were more than the males by 29.2%

Table 2: Marital status of respondents

	Frequency	Percent	Cumulative Percent
Single	11	22.9	22.9
Married	29	60.4	83.3
divorced	6	12.5	95.8
Widowed	2	4.2	100.0
Total	48	100.0	

### *Educational level of respondents*

The study sought to find out the educational status of respondents and it established that majority were well educated business people with 72.9% having tertiary education and hence the training type would be well understood and comprehended. Those with 'O' level education were 16.7% and 10.4% did not indicate their level of education.

Table 3: Education level of respondents

	Frequency	Percent	Cumulative Percent
O level	8	16.7	16.7

Tertiary	35	72.9	89.6
Not indicated	5	10.4	100.0
Total	48	100.0	

#### **Businesses owned by respondents**

The study established that the respondents sampled by the study carried out various business operations. According to the results, majority of the respondents were in agribusiness represented by 27.1%; followed by majority in general shop and retail outlets represented by 22.9%, catering / baking and hotel management were 14.6%, Clothing/ uniforms/boutique (12.5%), Salon and hair accessories (10.4%), Business consultancy (4.2%) and other business operations were represented by 4.2% in that order.

**Table 4: Types of businesses**

	Frequency	Percent	Cumulative Percent
Catering	7	14.6	14.6
General shop	11	22.9	37.5
Grocery	2	4.2	41.7
Agri business	13	27.1	68.8
Consultancy	2	4.2	72.9
Clothing	6	12.5	85.4
Salon	5	10.4	95.8
Other	2	4.2	100.0
Total	48	100.0	

#### **Forms of business ownership**

The study established that most businesses were owned by sole proprietors represented by 62.5% and family owned businesses were represented by 27.1%. The study also established that partnership owned businesses were 2.1% while 8.3% of respondents had registered their businesses as company limited.

**Table 5: Forms of business ownership**

	Frequency	Percent	Cumulative Percent
Self proprietor	30	62.5	62.5
Family	13	27.1	89.6
Partnership	1	2.1	91.7
Company limited	4	8.3	100.0
Total	48	100.0	

#### **Use of social media in transacting business operations after training**

The study sought to find out from respondents on how often they used social media to transact businesses after training. The findings are illustrated on table 4.6 below as follows: 45.8% of respondents use social media to a moderate extent, while 41.7% use it to great extent and 12.5% to a less extent. The study can therefore conclude that the number of respondents who used social media to engage in business activities after training was quite high giving a total of 87.5%.

Table 6: Use of social media in business transactions

	Frequency	Percent	Cumulative Percent
Little extent	6	12.5	12.5
Moderate extent	22	45.8	58.3
Great extent	20	41.7	100.0
Total	48	100.0	

#### ***Type of social media channel commonly used***

The study sought to find out the type of social media that was commonly used or preferred and the respondents indicated their preferences. Watsup 37.5%, those who used different combinations was 39.6%, Instagram was 16.7% while Facebook users were represented by 6.3%.

Table 7 Type of social media channel commonly used

	Frequency	Percent	Cumulative Percent
Facebook	3	6.3	6.3
Watsup	18	37.5	43.8
Instagram	8	16.7	60.4
Combination	19	39.6	100.0
Total	48	100.0	

#### ***The role of social media on business growth***

The study sought to establish the respondents' level of agreement on whether social media training and usage had improved their businesses in terms of growth, increase in profits, and increase in number of customers among other parameters. Respondents agreed as indicated on table 8 below that there was improved profits represented by a mean 3.79; influence of social media on business growth with a mean of 3.23 and reported improvements after training represented by a mean of 3.50. According to the results displayed on the table 4.9 below majority of the respondents were in agreement that they have managed to post improved profits as represented by 22.9%; the number of customers had increased (29.2%); complaints had reduced since training as represented by 4.2% of respondents; 16.7% of respondents said they had increased stock levels and 22.9% had noticed growth represented by a combination of factors. Service had also improved as represented by 4.2% because customer complaints were handled early and suggestions made by customers had been implemented or addressed.

Table 8: Descriptive statistics on the role of social media on business growth

	N	Minimum	Maximum	Mean	Std. Deviation
Improved profits	48	3	4	3.79	.410
influence of use of social media on business growth	48	2	4	3.23	.857
Improvements after training on social media usage	48	2	4	3.50	.619
Valid N (listwise)	48				

Table 9: Specific Improvements after use of social media

	Frequency	Percent	Cumulative Percent
Increased profits	11	22.9	22.9
Number of customers	14	29.2	52.1
Improved service	2	4.2	56.3
Reduced customer complaints	2	4.2	60.4
Increased stock	8	16.7	77.1
Combination of growth factors	11	22.9	100.0
Total	48	100.0	

### **Statistical Analysis**

#### *Correlation matrix of social media training on business growth*

The result on table 10 below indicates the correlation matrix between social media usage and business growth is slightly positive in nature at 0.146. According to the result, there is a positive influence of magnitude but the relationship of influence is weak since the magnitude of influence is low at 0.146.

Table 10: Correlation matrix of industry size on adoption of system

		Improved growth	Use of social media
Improved growth	Pearson Correlation	1	.146
	Sig. (2-tailed)		.324
	N	48	48
Use of social media	Pearson Correlation	.146	1
	Sig. (2-tailed)	.324	
	N	48	48

#### *Regression Analysis of social media training and business growth*



The study conducted regression analysis to establish the relationship between the study variables which were: influence of social media use on business growth. The information on table 11 below indicates that adjusted R square of 0.000 means that the variables studied contribute to 0% of the factors that influence growth of business and hence other factors contribute to 100% of the growth. Since the R is 0.021, a conclusion can be made that innovative training is positively correlated with the growth in business but the relationship is very weak since R is close to 0.

Table 11: Model summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.146 <sup>a</sup>	.021	.000	.410
a. Predictors: (Constant), Use of social media				

### ANOVA results

From the ANOVA results on table 12 below, the p-value is 0.324 greater than significance level of .05; meaning the level of influence of social media and business growth is not significant; hence we accept *the null hypothesis that* there is no significant influence in business growth reported by entrepreneurs of the business group before and after social media training program

Table 12 ANOVA results of social media training on business growth

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.168	1	.168	.995	.324 <sup>b</sup>
	Residual	7.749	46	.168		
	Total	7.917	47			

a. Dependent Variable: Improved growth

b. Predictors: (Constant), Use of social media

### Regression Coefficients of social media on business growth

The data findings presented on table 13 below indicate that taking all other independent variables at zero, a unit increase in use of social media leads to a 0.087 increase in business growth; the increase is quite minimal in nature not indicating significant change in the training given.

Table 13 Regression coefficients of social media training on business growth

Coefficients <sup>a</sup>				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Beta		
	Std. Error			

---

(Constant)	3.504	.295		11.893	.000
Use of social media	.087	.088	.146	.998	.324

---

a. Dependent Variable: Improved growth

### Conclusions and Recommendations

The study concludes that social media training programs are responsible for the business growth among members of the self help group. The study concludes that the innovative social media training program (related to business formation, business development, business performance) influences business growth to a little extent. The hypothesis test was however not significant which led to acceptance of the null hypothesis that there was no significant influence of social media on business growth as represented by a p-value of 0.324 which is bigger than level of significance. Various roles of the influence of training programs were established which were profitability, customers increase, reduced customer complaints, increased business stock and diversification of business approaches. The study also concluded that there was general consensus to promote social media training and usage at all levels of business. Entrepreneurship education and training can make a positive contribution to employee morale and productivity, hence enhancing business growth.

The study recommends that there is need for the members to adopt and equip themselves with more innovative entrepreneurial programs other than social media usage since social media is cheaper and has a positive impact towards business growth. Under the theme *entrepreneurial process*, the following aspects should be covered in the training programs: how to create jobs, dealing with unemployment; tax returns; personal and financial management; industry knowledge; new business idea development, e.g. searching for innovative business ideas; creativity and innovation. This helps them understand on the issues and the way to handle them.

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## Screening Selected Maize Single Crosses for Tolerance to Low P in Acidic Soils of Bumala and Maseno

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### Abstract

Generally, 13% of Kenya's arable land mass (7.5 million ha) is acidic and prone to poor phosphorus (P) availability and soil acidity. This results in crop yield losses due to the direct adverse effects Aluminium toxicity and P deficiency due to fixation of this element in the soil. The objective of this study was to develop and select P efficient maize single crosses developed by crossing as per North Carolina II mating design. Sixty maize genotypes, among them 34 single crosses were screened under acidic soils in Bumala and Maseno in a randomised complete block design. Sixty-seven percent of these single crosses were efficient, while 33% were inefficient. Two percent were efficient and responsive, 14% were inefficient but responsive, and the 79% were efficient but non-responsive. Generally, GY had a positive correlation with EH (0.45) and PH (0.61), while PH and EH had a positive correlation ( $r=0.86$ ) for the single crosses. The addition of P had significant effect on the grain yield, plant height, ear height and flowering of the genotypes at Bumala and Maseno. However the effect of 26kgP/ha was marginal at Maseno as compared to Bumala. The sites and genotypes varied significantly with regard to soil analysis and grain yield respectively, with the efficient and responsive genotypes selected for use in low input farming systems. Also, some of the efficient but non-responsive lines can also be selected for low input farming.

**Keywords:** Maize, Single crosses, Aluminium toxicity, P efficiency

### Introduction

Globally, maize is considered as the third in importance after wheat and rice among consumed cereals (Ali et al., 2013; Onasanya, 2009). In Sub Saharan Africa and Kenya, the cereal is ascribed a unique importance because of its value as a staple food crop, an industrial raw material and an animal feed (Magenya et al., 2008). Produced by both small and large scale farmers, maize provides Kenyans with a source for approximately 35.7% of consumed calories (Gichuru, 2013) due to its staple status. However, its production is hampered by both biotic and abiotic constraints (pests, diseases, poor weather and soil conditions, poor seed quality, etc.). Soils that are categorised as being low in available P are however considered major challenge to

maize productivity (Ouma et al., 2015). Also according to Magenya et al (2008) and Gichuru (2013), P sorption in acid soils that leads to P deficiency, poor soil fertility, significantly lowers maize productivity. In Kenya, approximately 7.5 million ha of maize producing as well as agriculturally viable land is acidic (Kisinyo et al., 2014). In such soils, applied P becomes fixed due to acidity and concurrent aluminium toxicity (Mumtaz et al., 2014), thus making chemical amelioration less effective. In western Kenya, soil acidity is a common occurrence and is commonly associated with aluminium toxicity as well as P deficiency. Such areas are reported as expressing an available soil P of between 2-5 mg/kg, whereas the minimum threshold for maize production is set at 10mg/kg (Brink and Bellay, 2006; Yang et al., 2013; Kisinyo et al., 2014; Ouma et al., 2012). This situation has resulted in yield losses of between 20%-58%, while its accompanying Al toxicity has resulted in yield losses of between 16%-45% (Kisinyo et al, 2011; Ouma et al.,2012). Addressing the issue of low P availability therefore becomes vital in Western Kenya.

Phosphorus is among the major crop nutrients required for growth and development of crops, and deficiencies of this mineral leads to negative effects on the crop's development process and eventually reducing yield (Ward et al., 2011). As a major nutrient, this element is required in significantly larger amounts, similar to Nitrogen and Potassium. It is an important molecule in the ATP molecular structure as well as in phospholipids and nucleic acids and is an essential requirement in photosynthesis (Obura et al., 2009). In addition to these roles, Phosphorus availability is important in minimizing Aluminium induced root damage, and ameliorating accumulation of the toxin in root tips cells (Sun et al.,2008). In terms of importance, the fully oxidised and inorganic form of this mineral element is considered as the most important form for plant use due to its function in the above mentioned roles (Satyaprakash et al., 2017). In addition to soil acidity and Al toxicity, P availability is also influenced by lack of or presence of organic matter in soil as well as the continual use of acidic fertilisers (Sharma et al.,2013; Ware, 2006). Crops exposed to low P conditions express symptoms such as the progressive purpling of leaves from tips to the margins and eventually the whole leaf, necrosis of the stem, poor flowering and seed fill, poor yields, and the complete elimination of young susceptible plants (Fageria, 2009).

Traditionally, P deficiency can be ameliorated by application of lime or organic and inorganic fertiliser's (Kisinyo, 2011). However, in most P deficient soils, only 20% of applied P remains available for plant use and acquisition in a majority of soil ecosystems due to fixation of the remaining 80% (Balemi & Ngeshio 2012; Mumtaz et al., 2008). This then, due to the diverse nature of soil, leads to the development of P depleted pockets supplying between 10-15% of supplied P (Obura et al., 2014), and a process that may eventually lack economic sustainability. In addition, liming or the use of other soil amendments, is considerably expensive for small scale farmers (Kisinyo et al., 2014; Ouma et al., 2012), and it is therefore prudent to explore genetically conditioned tolerance. According to Kisinyo et al(2014), maize genotypes with

adequate phosphorus utilization potential (PUE), or those adopted to enhanced acquisition of P (PAE) become an indispensable tool in dealing with the constraint of low available P especially for low income small scale farmers. This study therefore aimed at selecting P efficient F1s from an F1 group developed by crossing.

## **Materials and Methodology**

### *Study Sites*

The study was carried out in three different locations, Rongo University, Maseno University and Bumala. Rongo University farm was the crossing site for development of single cross hybrids, Maseno university farm and the farmer's fields in Bumala were the sites for evaluation of the F1 hybrids. Rongo University is located at between 1300-1500m a.s.l, receives an average of 1600mm of rainfall pa, and experiences a temperature of between 20-21.7°C (Low, 1997; MoA, 2014). Bumala is located between 1135-1500m a.s.l, experiences a temperature of between 20.5-22.7°C, receives an annual rainfall of approximately 900-1700mm, and is reported as having acidic soil with a pH of 4.5-4.6 and available soil P of 2.74 mg/kg (Ouma et al.,2012). Maseno is located approximately 1500m a.s.l, experiencing a rainfall average of 1750mm pa, a temperature of 28.7°C, and has acidic soil of pH 4.5-5.4 with an available soil P of 4.5 mg/kg (Gichimu et al.,2009). While soils in Bumala are classified as orthic ferralsols (Ouma et al., 2012), Maseno soils are classified as dystric nitisols (Mwai et al., 2001).

### *Genetic material*

The germplasm used in the study was sourced from Rongo University and the University of Kwazulu Natal. From Rongo university was sourced the 14 Aluminium tolerant and P efficient maize genotypes, while the 9 Maize streak virus tolerant genotypes were sourced from the University of Kwazulu Natal. The material from the University of Kwazulu Natal were all inbred lines, while from Rongo University were a mixture of inbred lines, and populations from Brazilian introductions (Ouma et al., 2012).

### *Development of Single Cross hybrids*

Crossing was done in Rongo, at the University collage field in the short rains of 2015, using the North Carolina II mating design with the Kenyan inbreds as female and South African inbreds as male. Pollen was transferred in pollen bags set up overnight from the tassel of the male plants to the silks of the female plants at 9 am in the morning to 10 am during the two week flowering period. It resulted in 34 single cross genotypes for screening. The crossing block consisted of two plots staggered by a week and a half, each consisting of two plots (male and female), with each male and female having two rows for each of the genotypes.

*Field screening for tolerance to Maize streak virus, Aluminium toxic/ P efficient.* The field

experiment was laid out in RCBD with the genotypes and two P levels, P0 and P1, as treatments. Each treatment was replicated twice. A total of 34 single crosses, 2 repeats, 23 parietals and 1 check were evaluated. Each plot had ten genotypes and each block has six plots, with each genotype represented in singular rows (3m long, with 0.75 m inter-row spacing and 0.25 m intra-row spacing) (Gichuru, 2013; Ngwira & Khonje, 2005; Scott *et al.*, 2009).

The genotypes under screening were subjected to two rates of P, (P0) 0kgP/ha and (P1) 26Kg P/ha while N was applied at 30kg N/ha at planting and at knee height 45Kg N/ha (NAFIS; Gudu *et al.*, 2011; Gudu *et al.*, 2005). Due to its capacity to supply N at 18%, which is equivalent to 6.48 kg of N per 100kg DAP, the treatment with -P (P0) was supplied slightly more CAN than +P (26kgP/ha) to balance the 18% N supplied by DAP.

#### *P-deficiency tolerance assessment*

P efficiency was evaluated on basis of grain yield (GY), plant height (PH), ear height (EH), days to 50% silking and 50% anthesis. Data was collected for all these traits for P efficiency assessment (Jiang *et al.*, 2010; Too *et al.*, 2014), with plant height and ear height being collected at plant maturity.

Model:  $Y_{ijk} = \mu + b_i + P_j + G_k + PG_{jk} + \epsilon_{ijk}$

Where;  $\mu$ -general mean,  $b_i$ - blocking effect,  $G_k$ - Genotype effect,  $P_j$ - Treatment effect,  $PG_{jk}$ -treatment genotype interaction,  $\epsilon$ -error term

% Response to P application of P for the various inbred lines and single cross hybrids was calculated according to Ouma *et al.* (2012) as:

$$\%R = \frac{P1}{P0}$$

#### *Data analysis*

The data for analysis was subjected to ANOVA in GENSTAT version 14 and mean separation done using DMRT test at 5% level of significance.

#### *Soil Sampling*

Soil sampling was done using systemic quadrates (Midwest Laboratories, 2004; Okalebo *et al.*, 2002), and the zigzag method (Okalebo *et al.*, 2002). The method used nested the zigzag systems within the quadrates. The sub-samples were mixed thoroughly and approximately 1.2 kg composite samples were packed in a black polythene bags and transported to the laboratory for were air-drying, grinding and sieving via a 2 mm sieve. The samples were then tested for pH using the HANNA soil analysis tool kit (Vanek, 2017), texture and organic carbon according to Okalebo *et al.* (2002), and available P using Olsen *et al.* (1954).

## **Results**

#### *Soil testing results*

Results of the soil analysis showed that the two sites were generally low in fertility, and also had



low pH and available P. Bumala had a pH 4.6, while Maseno had a pH was 5.2. These values indicated that the two sites have strongly acidic soils (Table 1), with Maseno having a slightly higher available P. The two sites also had low C level but Maseno had a slight advantage over Bumala for this trait as well.

Table 1: Soil analysis results for the experimental plots used in the study at Maseno and Bumala.

SITE	Organic Carbon	P	pH	Textural Class	Soil Type
BUMALA	2.66	3.3	4.6	Sandy clay loam	Orthic ferasols
MASENO	3.18	4.8	5.2	Clay loam	Dystic Nitrisols

*Response in P deficient/ low P conditions in Acidic soils of Maseno and Bumala*

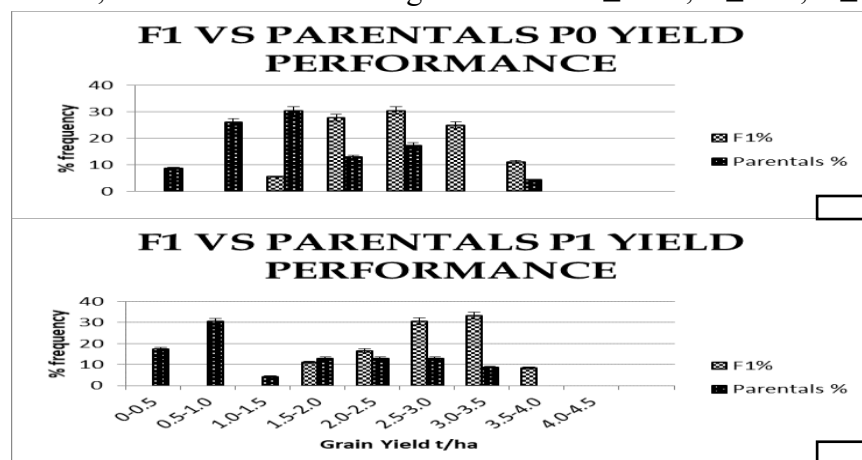
The genotypes used in the study varied significantly in terms of PH, EH, GY, days to 50% silking and days to 50% tasseling ( $p < 0.05$ ), with the single cross hybrids outperforming the parental inbred lines under both low P (0kgP/ha) and high P (26kgP/ha) conditions. The interaction between the genotypes and sites was significant ( $p < 0.05$ ) for GY, PH, EH, days to 50% tasselling and days to 50% silking. The interaction between sites and P was significant ( $p < 0.05$ ) for GY, PH, EH, and days to 50% tasselling but not for days to 50% silking, while the interaction between genotypes and P was significant ( $p < 0.05$ ) for GY, PH, EH. Only PH and EH were significantly affected by the interaction between site, genotype and P (Table 2).

Table 2: Mean square tale for maize genotypes tested for P efficiency under field condition in Bumala and Maseno

Source of variation	d.f.	GY	PH	EH	SILK	TASS
SITE	1	109.712***	911121***	273537.4***	3.98	150.1**
GENOTYPE	59	5.5897***	305881***	24345.9***	244.31***	196.08***
P	1	16.3042***	157049***	85166.5***	1520.22***	1535.74***
SITE.GENOTYPE	59	1.7929***	326699***	3643.7***	65.19***	52.36***
SITE.P	1	4.3532***	12386***	182261.1***	49.31	186.74**
GENOTYPE.P	59	1.0631***	5337***	2142.7***	30.77	32.62
SITE.GENOTYPE.P	59	0.5285	9449***	3679.4***	37.05	23.42
Residual	239	0.3874	1218	475.3	5.7	27.46
Total	478					
MEAN		2.119	148.03	50.07	73.54	68.42
SE		0.6224	34.904	21.801	5.694	5.241

CV 29.4 4.2 13.5 7.7 7.7

Note \*, \*\* and \*\*\* indicates significance at  $P \leq 0.05$ ,  $P \leq 0.01$ ,  $P \leq 0.001$  levels, respectively.



With regard to the performance of the single crosses across the sites in P0 5.6% expressed a GY of 1.0-1.49 t/ha, 27.8% expressed a GY of 1.5-2.0t/ha, 30.6% expressed a GY of 2.0-2.49t/ha, 25% expressed a GY of 2.5-3.0t/ha, 11.1% expressed a GY of 3.0-3.49t/ha. This performance was better than the parental lines that had 8.7% expressing 0-0.49 t/ha, 26.1% expressing 0.5-0.99 t/ha, 30.4% expressing 1.0-1.49 t/ha, 13.0% expressed a GY of 1.5-2.0 t/ha, 17.4% expressed a GY of 2.0-2.49t/ha, 0% a GY of 2.5-3.0t/ha, and 4.3% expressed a GY of 3.0-3.49t/ha. On the other hand, all the single cross hybrids expressed a GY of greater than 1t/ha under 26kg/ha P, while only 47.82% of the parental inbred lines expressed the same grain yield under 26kg/ha P, and majority of the parental inbred lines (52.18%) expressed a grain yield of below 1t/ha under 26kg/ha P.

The best single cross in Maseno under low P (P0) was 4BXSYNAL with a GY of 5.4 t/ha, and the worst was 13MAK-13BXKML036 with a GY of 0.94 t/ha. Under high P (P1), the best single cross in Maseno was 4BXSYNAL with a GY of 6.23t/ha, and the worst was 13MAK-13BXKML036 with a GY of 1.90 t/ha. The best single cross in Bumala under low P was 203B-9X54B with a GY of 1.2 t/ha, while the worst was 203B-9X4B with a GY of 0.09 t/ha. Under high P the best single cross in Bumala was 1BXBRC with a GY of 2.1 t/ha and the worst was 9BXCON5 with a GY of 0.46 t/ha. Across the two sites, the best single cross under low P was 4BXSYNAL with a GY of 3.3 t/ha, while the worst single cross was 13MAK-13BXKML036 with a grain yield of 1.10. Under high P, the best single cross across the sites was 4BXSYNAL with a GY of 4.42 t/ha and the worst was 13MAK-13BXKML036 with a grain yield of 1.75 t/ha (Table 6). Comparatively, addition of P had a 21.1% incremental effect on the grain yield of the single cross F1 used in the study, with a 7.1% increase of grain yield in Maseno and a 29.1% increase of grain yield in Bumala due to addition of P. Also, the overall grain yield for the F1 hybrids in Maseno was 38.5% higher than in Bumala. In addition, the addition of P had a

significant effect in improving ear height (EH) and plant height (PH), as well as reducing the days to 50% tasseling, and reducing the days to 50% silking. The single cross hybrids were further classified into different categories (tolerance to low P soils, and responsiveness to P) based on their grain yield at the different P levels. The classification resulted in the conclusion that 97.1% were efficient, 17.65% were responsive to P, and 14.71% were both P efficient and responsive (Table 6).

Table 3: Means for traits under low P and High P in acidic soils of Maseno and Bumala. Means across the same row with different letters differed significantly

Trait Measured	P0	P1	MEAN	SED
Grain yield	0.421 <sup>a</sup>	1.054 <sup>b</sup>	0.737	0.369
Plant height	114.12 <sup>a</sup>	151.6 <sup>b</sup>	132.86	13.817
Ear height	28.31 <sup>a</sup>	51.72 <sup>b</sup>	40.01	8.118
Days to 50% tasseling	69.82 <sup>a</sup>	65.14 <sup>b</sup>	67.48	3.98
Days to 50% silking	75.56 <sup>a</sup>	71.31 <sup>a</sup>	73.43	4.644

Table 4: Means for traits across sites (Maseno and Bumala). Means across the same row with different letters differed significantly

	Maseno	Bumala	MEAN	SED
GY	2.597 <sup>a</sup>	1.641 <sup>b</sup>	2.119	0.6224
PH	165.81 <sup>a</sup>	130.24 <sup>b</sup>	148.03	34.904
EH	59.82 <sup>a</sup>	40.32 <sup>b</sup>	50.07	21.801
Days to 50% tasseling	68.98 <sup>a</sup>	67.86 <sup>a</sup>	68.42	3.98
Days to 50% silking	73.45 <sup>a</sup>	73.63 <sup>a</sup>	73.54	4.644

*Phenotypic relationships among maize performance indicator traits across sites*

GY had a strong and positive correlation with both EH ( $r=0.82$ ) and PH ( $r=0.80$ ) for the all genotypes in the study. Also, PH and EH had strong positive correlation ( $r=0.82$ ) for all the genotypes in the study. For the inbred lines, correlation between GY and EH, GY and PH, and EH and PH was strong and positive at ( $r=0.87$ ), ( $r=0.93$ ), and ( $r=0.96$ ) respectively. For the single cross hybrids, correlation between PH and EH was positive and strong ( $r=0.86$ ), correlation between PH and GY was moderate and positive (0.61), while correlation between EH and GY was weak and positive (0.45). For all the genotypes in the study, GY had a positive and insignificant correlation with days to 50% tasseling ( $r=0.01$ ) and with days to 50% silking ( $r=0.09$ ), this was similar to the F1, where GY had a positive yet insignificant correlation with days to 50% tasseling ( $r=-0.06$ ) and with days to 50% silking (0.17). For the inbred lines correlation between GY and days to 50% tasseling ( $r=0.41$ ), and GY and days to 50% silking ( $r=0.50$ ) was moderate and positive (Table 4).

Table 5: Correlation between GY, EH, PH and days to 50% flowering of all genotypes tested for P-efficiency in Maseno and Bumala.

	Grain Yield	Plant height	Ear Height	Days to 50% Tasseling	Days to 50% Silking
Grain Yield	1				
Plant height	0.8**	1			
Ear Height	0.82**	0.82**	1		
Days to 50% Tasseling	0.01	0.15	0.25*	1	
Days to 50% Silking	0.09	0.3	0.39*	0.92**	1

\* and \*\*; Significance at 5 and 1%, respectively.

Table 5: Table with Selected F1s for grouped for P efficiency and response to P based on Grain yield means.

GENOTYPE	Grain Yield		Response to P	
	P0	P1	P1/P0 (R)	Categories
4BXSYNAL	3.34	4.42	1.33	EN
54BXBRC	3.20	2.88	0.90	EN
9BXSYNAL	3.18	3.44	1.08	EN
203B-9X54B	3.14	3.01	0.96	EN
44BX203B-9	2.89	3.06	1.06	EN
44BX203B-14	2.85	2.73	0.96	EN
41BX203B	2.69	2.36	0.88	EN
4BX203B-1	2.65	2.28	0.86	EN
41BXCON5	2.31	2.74	1.19	EN
13BX203B-14	2.17	3.67	1.69	ER
203B-9X4B	2.13	3.24	1.52	ER
41BXBRC	1.59	3.76	2.36	IR
1BXBRC	1.57	3.54	2.25	IR
1BXAO809	1.53	1.96	1.28	IN
13BXKML036	1.10	1.75	1.59	IR

KEY: I, Inefficient; R, Responsive, E, efficient; N, non-responsive; IR, inefficient and responsive; ER, efficient and responsive; EN, efficient and nonresponsive; IN, inefficient and

nonresponsive.

## Discussion

### *Variation in agronomic traits due to P addition, genotypic differences, and site*

The genotypes and P treatments had a significant effect on the plant height, ear height, grain yield, and days to flowering of the genotypes in the study. At Bumala the addition of P led to an overall increase in grain yield by 29.1%, plant height by 24.7% and ear height by 45.8% but reduced days to 50% tasseling by 7.2% and days to 50% silking by 5.6%. In Maseno, grain yield was increased by 7.1%, plant height by 0.42% and ear height by 8.8%, days to 50% tasseling and days to 50% silking reduced by 3.4% and 4.1% respectively due to the addition of P. This effect of P in improving agronomic crop traits identified in this study relates well with other studies. Fosu-Mensah & Mensah (2016), Ouma *et al* (2013), Umeri *et al* (2016) reported that the addition of P resulted in a reduction of days to flowering (tasseling and silking), as well as an increase in grain yield. According to Ouma *et al* (2013), P addition at 26kgP/ha resulted in a grain yield increase by a margin of 73.5%, as well as a corresponding increase in ear and plant height. Besides these findings, Lokhande *et al* (2015) concluded that an increase in wet and dry biomass, as well as increased plant height for Coriander due to application of P at 45kgP/ha. Also, Alias *et al* (2003) concluded a 15% increase in plant height and a 53.76% increase in grain yield due to P supply at 150kgP/ha for maize. On the other hand, Dai *et al* (2013) reported a yield loss of 560kg/ha/year for maize due to lack of P fertiliser thus indicating the mineral's importance to improve grain yields for the crop.

In addition, the different genotypes expressed varied grain yield response due to P addition. This could have been due to inherent genetic differences in acquiring P from the soil. These results are similar to those reported by Fosu-Mensah & Mensah (2016) as well as Ouma *et al* (2013) and Umeri *et al* (2016), who reported that genetic differences among genotypes contributed to variance in acquisition and utilization of soil P. Although the grain yield at Maseno was better than Bumala the effect of P addition was marginal at Maseno as compared to Bumala. This difference may be due to the higher soil P, variation in response to added P at 26kgP/ha at the two sites, and higher soil pH at Maseno as compared to Bumala. These results are comparable to those of (Kihara, 2016) who reported variation in the effect of NPK fertiliser on grain yield across sites. The soils in these two regions also expressed a variation in organic carbon content with Maseno having a slightly higher level. High organic carbon is known to increase the soil CEC which affects retention of cation nutrients, as well as improving water infiltration and retention (Noellemeyer & Six, 2015). In addition to the soil issues, the variation in rain fall

received by these two regions may also have affected overall grain yield.

The reported improvements in plant grain yield and yield components due to the addition of P can be ascribed to its role in the development of plant roots as these are the main water and mineral absorption organs. In addition, P is essential in photosynthesis, cell division and elongation, and being synergistic to Nitrogen absorption (Ouma *et al.*, 2013; Salehi & Anampanah, 2015). Despite the improved yields due to P addition, the overall yields of the genotypes in the study at Bumala neither met the 3t/ha threshold set by Gudu (2011), nor did they meet 3.41-8.7t/ha threshold set by Ouma *et al* (2012). These results can be attributed to the prolonged drought at Bumala during the experimental season that also interacted with late flowering for some of the genotypes. According to Halindu (2015), prolonged drought can cause yield losses of between 50-100% depending on the length of the scourge. At the study site in Bumala, nearby fields and the farmer's field had visible effects of the drought with losses of up to 100% for some of the neighbouring farms.

#### *Phenotypic relationships among maize performance indicator traits across sites*

PH and EH had a positive and significant correlation to each other as well as to GY. These results are in agreement with those of Appiah *et al* (2014). Such positive correlation presents that these yield components are associated positively with GY and can be used effectively in selection purposes for GY (Akongwubel *et al.*, 2012). Between grain yield and flowering the general correlation was positive but weak and insignificant for all the genotypes in the study and for the F1s. These findings are similar to those reported by Yousuf and Saleem (2001). However, the correlation between grain yield and flowering dates was positive and moderate for parental inbred lines, where GY and days to 50% tasseling ( $r=0.41$ ), and GY and 50/5 silking ( $r=0.50$ ).

#### **Conclusion**

The study identified 23 P efficient single crosses and 11 inefficient single crosses. Of the efficient single crosses, only two were responsive to P addition, while of the inefficient three were responsive to P addition. These genotypes can therefore be utilized in further development of three way and top crosses for P efficiency as well as gene pyramiding to develop multiple tolerant maize genotypes. Also, genotypic variability for P efficiency and response to P was identified among the maize genotypes in study and was further enhance by soil fertility variation among the sites.

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### **Economic Gains of Water Scarcity Adaptation Strategies in Makindu Sub-County, Kenya**

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#### **Abstract**

*Water a very critical role in Kenyans economy in terms of food security, and improves all sectors of economy. However, water sector is under threat particularly in arid and semi- arid lands which are vulnerable to climate change. Adapting and coping with water scarcity is the only remedy for communities in those areas. This strategies provide economic gains to rural households. Thus, it is important to understand the economic gains of water scarcity adaptation strategies in Makindu Sub-County, Kenya to which the paper contributes by examining the gains drawn from these strategies. The study adopted descriptive survey design. Data was collected from 370 households through simple random and purposive sampling. The study findings shows that the adopted adaptation strategies contribute to improved economic status and livelihood of the communities living in the area. However, the economic gains varied depending on factors like financial ability of households and the knowledge about adaptation to water scarcity. Hence, there is need to sensitize rural communities to adapt and cope to water scarcity for better livelihood socially and economically.*

**Key words:** *Economic gains, water scarcity, adaptation strategies, Kenya*

## **Introduction**

Water plays a role in all sectors of economy and is essential in achieving sustainable development (UN-Water, 2012). Water scarcity can broadly be understood as the lack of access to adequate quantities of water for human and environmental uses (White, 2012). There are two categories of water scarcity namely: physical water scarcity and economic water scarcity. Economic water scarcity occurs when there is lack of investment and proper management to meet the demand of people who do have the financial means to use existing water sources and it's characterized by poor infrastructures (Molden, 2007; FAO, 2012). Adaptation strategies to water scarcity have several economic values ranging from water security to food security for both people and livestock.

Water-efficiency strategies provide important benefits to farmers, ecosystems, and society. Some of the water adaptation strategies represent new supply that can be dedicated to other uses. But there are also compelling reasons to seek reductions in total water withdrawals, e.g., allowing farmers to maintain and even improve crop yields and quality; protecting water quality; reducing fertilizer, water, and energy costs; and boosting profits.

The multiple benefits associated with reducing both consumptive and non-consumptive water uses argues for a comprehensive approach for promoting water-efficiency improvements. These allows communities to address complex and interrelated water management challenges conflicts among water users. For example, Pastoralist dig shallow wells on dry water pans to reach the water for their livestock and other uses as Rutten (2005) argues that Maasai pastoralist in Kajiado County, Kenya made use of dry river beds during dry periods by scooping sand. Further, rain water harvesting constitute a potential source of drinking water and irrigation water and if properly managed could reduce water and food crisis in several developed countries suffering from water shortage (Helmreich & Horn, 2009).

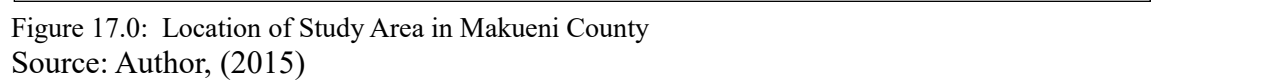
## **Objective of the Study**

The main objective of this study was to examine economic gains of water scarcity adaptation strategies in Makindu Sub-County of Makueni County, Kenya.

### **Study context**

#### **Study site**

Makindu Sub-County has an average elevation of about 1064 meters above sea level. It is located in south eastern Kenya with a size 2075.6 km<sup>2</sup>. Makindu Sub-County lies on latitude 2° 10' and 2° South and longitude 37° 40' and 37° 55' East (Makueni CIDP, 2013). The sub county has 4 locations namely Makindu, Kiboko, Nguumo and Twaandu and 15 sub locations namely Manyatta, Kiu, Kai, Syumile, Ndovoini, Ngakaa, Muuni, Kisingo, Kaunguni, Kamboo, Kyale, Kasuvi, Mitendeu, Kalii and Mulilii. The study area is shown in Figure 1.0 below.



## du Sub County

al rivers and

Permanent River

Makindu Sub-County is served mainly by River Kiboko and Maangi-uvungu which are permanent and Rivers Kyumbi, Makindu, Kikuu, Muooni which are seasonal and their flows become irregular as they move to the low lying areas due to high usage of water for small scale irrigation at the source. Surface and ground water resources found the locale are unevenly distributed. There is spatio-temporal variability of river water resources. Other sources of water in the area of study include communal dams, private dams, roof catchment, boreholes and Kwa-Vombo spring which is the main spring in the study area. Due to scarcity of water in the sub county, people have settled near water catchment areas near River Makindu hence affecting the supply in Makindu town and its environs. Sand harvesting along the river bed has had effects on

retention of water in rivers in the area leading to water scarcity (Makueni CIDP, 2013).

#### Population and Livelihood Systems

In this study, the target population included rural households of Makindu Sub-County. A target population of 9,907 households was used and the area had a population of 42,094 (KNBS, 2009). The main economic activities are subsistence agriculture, agro-pastoralism, small scale trade, irrigation farming. The area is dominated by Kamba Maasai ethnic groups. The Sub-County is served by the Nairobi-Mombasa railway. This eases the transportation of goods in the area. The main crops produced in the area are maize, green-grams, yams, pigeon peas, sorghum, paw paws and oranges. The area has a Motor Cycle assembly and offers employment to its residents. (Makueni CIDP, 2013)

#### Climate, Soil and Vegetation

Makindu Sub-County is typically arid and semi-arid land (ASAL) and often experiences prolonged drought. The area normally experiences a bimodal rainfall distribution patterns. The long rains mainly fall from March to May and short rains fall from October to December (Makueni CIDP, 2013). However, this has kept on changing over time with respect to climate changes, which have involved shifts in the timing when rains begin in the area. The area lies in lower side of Makueni County and receives annual rainfall ranging from 300mm-400mm (Makueni CIDP, 2013). Drought is a recurrent phenomenon in the history of the region that has often been marked by crop failure. Generally, the area experiences maize crop failure during short rains every 1 in every 3 years. Rainfall has been characterized by spatio-temporal distribution and variability which leads to water scarcity. Over the last couple of years extreme temperatures have been reported. For instance the area often experiences a minimum temperature of 24<sup>0</sup>C to a maximum temperature of 35.8<sup>0</sup>C (Makueni CIDP, 2013). During the dry periods between May and October the area experience severe heat at a temperature of 30<sup>0</sup> C on average.

The soils in this area are well drained, shallow to deep, yellowish red to dark brown colored, friable high rich in calcisols, cambisols, luvisols dominated by calcium carbonate (Muchena, Mbuvi & Wokabi, 1988). The predominant vegetation in this area is mainly a cover of shrubs and thicket, grass and herbaceous plants. The dominant wood tree species include baobab trees (*Adansonia digitata*), Umbrella thorn tree (*Acacia tortilis*), *Terminalia brownie*, *Sanseveria*, *Acacia melliferra* and *Acacia etbaica* (Gichuki, 2000).

### Methodology

The study is descriptive and relied on primary data. Information regarding of water adaptation strategies was sought from KIMAWASCO (Kibwezi Makindu water and Sanitation Company), Tanathi water services board officer in Makindu district water office, G.A.A (Germany agro action field officers) and Lutheran world relief and rural households. The target population of the study was 9,907 households. A total of 370 households were randomly sampled. Purposive sampling method was used during data collection from key informants. Key informants included Makindu Sub-County water supply and connections officer, Regional Coordinator of the



Ministry of Water and Irrigation in the Sub-County, KIMAWASCO Manager. To supplement the data from rural households, photography was also used. This was crucial in understanding the economic gains of adopted adaptation strategies in the area.

#### Results and Discussion

##### Water Scarcity Adaptation and Coping Strategies

The study revealed that households' used various water scarcity adaptation strategies with 33.5 percent using rain water harvesting techniques, 22.4 percent using boreholes, 14.6 percent using piped water, 8.6 percent used shallow wells and 20.9 percent used water tankering, sand dams and earth dams and walking for long distances (Table 1.0).

**Table 1.0 Adaptation Strategies to Water Scarcity**

<b>Adaptation strategy</b>	<b>No. of rural households</b>	<b>Percentages (%)</b>
Boreholes	83	22.4
Rainwater harvesting	124	33.5
Piped water	54	14.6
<b>Coping strategies</b>	<b>No. of rural households</b>	<b>Percentages (%)</b>
Shallow wells	32	8.6
Walking for long distances, water tankering, sand and earth-dams	77	20.9
Total	370	100

Source: Authors compilation from field data, 2015.

Data from Table 4.0 indicate that rain water harvesting was the most preferred water scarcity adaptation strategy. This was because the households used storage structures such as storage tanks and techniques like roof catchment to harvest water which go to waste during rainy season. These results are consistent with Ngima (2015) that most households' adapt to erratic water supply by buying water containers for storage purposes once the water is harvested.

#### ***Economic Gains of the Adaptation Strategies***

##### *Irrigation Farming For Food Security*

The study established that water harvested during rainy season helped farmers practice farming of kales and fruits for enhancing food security (Plate 1). Households indicated that they harvested rain water which lasted for a period between 1 to 4 months depending on the size of storage structures and they planted vegetables for home instead of buying. The money instead was used for boosting their small scale trades. Households with tanks of large storage capacity



practiced roof water harvesting during rainy season which provided water unto them during the dry spells (Plate 2)



Plate 1: Kales and passion fruits grown by irrigation farming in Kiu Sub-location.

Plate 2: Water harvesting and a green house in Kisingo Sub-Location.

The study established that households could afford this strategy because once they bought and constructed storage structures like masonry and plastic tanks and installed gutters for harvesting water then less cost was incurred in maintenance. When prompted further, the households stated that it was less expensive to harness both surface runoff and roof catchment since it used cheap labour which was less than Kshs. 10,000 for installation.

### *Feasibility*

Households stated that they harvested rainwater which lasted for about 2-3 months once it was harvested ensuring availability of water during dry months from June to July. This statement is in line with Enfors (2009) that water harvesting and storage would be vital to ensure water availability especially during prolonged dry season and droughts which can be used for family farming. According to Kimani, Gitau & Ndunge (2015) rainwater harvesting has shown a high degree of reliability especially to households who have invested in high capacity rainwater storage tanks. This was the most accessible water scarcity adaptation strategy in Makindu Sub-County. Households indicated that it was easier to access water since the distance to the storage structures was in range of metres. In addition, households indicated that technologies to harness the water were locally available and once water was harvested, it was easy to access it.

### *Availability of water*

An interview with G.A.A field officer indicated that water from the boreholes was available all times. This implies that boreholes are reliable sources of water in Makindu Sub-County during water scarcity regimes and for households to cheaply buy it. This statement corroborates with US-Geological Survey (1993) assertion that in arid or dry regions people rely on ground water (Boreholes) to meet their needs. For instance, in Isiolo County, boreholes were the most reliable sources of water during dry spells (Mati, Muchiri, Njenga, Penning de Vries, Merreys, 2005). Households argued that they were able to access water from boreholes since most of them did not go dry throughout the year. For example households from Twaandu Location accessed water

easily from Ngakaa, Kwanzioka and Ngomano boreholes which were near their homesteads. The study established that the distance travelled by households to access water from boreholes was about 5km on average. This implies that boreholes should be sunk in every location to increase accessibility and expand irrigation farming for kales (Plate 3)



**Plate 3: water from borehole used for farming kales**

#### *Sustainability*

Earth-dams were sustainable since household stated that two out of five earth-dams could hold water throughout the year enabling irrigation farming for food self-sufficiency. They included Kwa-Luma and Sekeleni earth –dams and they had served the households from Ngakaa and Nguumo location for 7 years and 5 years respectively. The study also established that G.A.A was involved greatly in disilting the earth dams and maintaining them to ensure maximum harvesting of surface run-off during rainy season. This suggests that well-constructed and maintained earth-dams can serve households and their livestock for long time during drought years. Households stated that in terms of consumption and proximity to the earth-dams household fetched water for free. The study established that the earth dams were constructed by N.G.Os. Households stated that earth –dams harnessed a lot of water during rainy season which they used for their livestock and irrigation farming during prolonged drought. This improved food security in the area.

#### *Reliable for Farming*

Piped water was reliably used for house chores and irrigation farming. An interview with a pump water attendant indicated that piped water was reliable because its source was Kwa-Vombo spring which was permanent. Farmers used the water to irrigate their vegetables besides home use (Plate 4). However, damaged pipes led to delays in repairing them causing water shortage. This finding is in line with Munyao (2014) who stated that households' inability to pay electricity bills and delays in fixing damaged pipes made piped water unreliable.



**Plate 4: Piped water for irrigation**

In addition, households stated that piped connections minimized the distance taken by households to other water sources making water accessible to them. The study established that 21.1 percent of the households in the study area had access to piped water. These results are slightly below the 28.5 percent of the people who have access to piped water in Eastern and 30 percent of the households in Kenya (G.o.K, 2010). This implies that existing piped water should be improved through increasing the community drawing points for instance, water kiosks. This finding corroborates with David & Katua (2013) who stated that in Marsabit County people were able to draw water from built kiosks. An interview with the area Water Manager also indicated that piped connections were installed to minimize distance taken to water points during dry months. He further stated that the once the piped connections was done water could be supplied for a duration of about 2-3 months but with rationing mostly in Kalii and Kyale Sub-Locations which are located far from the Kwa-Vombo spring and besides household consumption few farmers who had mixed adaptation strategies used the piped water to practice farming( Plate 5).



**Plate 5: piped water used for irrigation farming.**

#### *Livestock use*

Households argued that sand dams (Plate 6) were used for about 2 months when the rivers dried up. For example an interview with Chief from Makindu Location indicated that Kisingo sand dam was used for about 3 months when River Kiumbi dried. When prompted further, households

stated that the sand dams could supply water for about 2 months during dry months as a strategy to water scarcity and would supply water to their livestock and farming alongside them. This statement concurs with IISD (2009) who stated that households of Sakai in Mbooni addressed water scarcity by construction of three sand dams which provided water to 382 households and 1,146 cattle from four villages.



**Plate 6: Sand dam in Kisingo Sub-Location**

### **Conclusion and Recommendations**

Kenya classified as a water scarce country requires harnessing of available surface, sub-surface and ground resources that go to waste. This is because the challenge of water scarcity in recent years has doubled the focus of water economic and sustainable development. The study established that rural households adapted and coped with water scarcity using various strategies. These ranged from boreholes to sand dams. These strategies provided gains to the households economically and improved their livelihoods in terms of food security and water sufficiency. This paper will be suitable and applicable to policy makers, County government and non-governmental agencies as they carry out water management projects to involve community in decision making and planning of water management practise. However, poverty was the main drawback to households as depicted throughout the study. The results and findings of the study are suitable in arid and semi-arid areas where water scarcity is a challenge. This paper has unearthed the economic importance of adopted adaptation strategies. Further research can be done on the effects of encroachment in water sources affecting water flow and retention in water catchment areas and gender roles adapting to water scarcity in the County.

The study recommends that; the county government should sensitize people on utilizing available water in a manageable way for economic benefits and the County government in partnership with NGOs should enlarge earth-dams and drill boreholes to enable the rural community to practice irrigation farming for food self-sufficiency and water adequacy.

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## **Right to Food and Sustainable Livelihoods: Use of Pastoral Cycle Approach to Respond to Communities' Needs, Isiolo County, Kenya**

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### **Abstract**

*The constitution of Kenya provides that each and every person has a right to adequate and quality food. Sustainable Development Goals (SDGs) 1, 2 and 6 focus on ending poverty and hunger, and availability of clean water to all people. However, all these provisions are articulated in the presence of a global environment under constant threat of degradation from extreme and uncontrolled human development. In this context, the study underscores what the Laudato Si document refers to: The earth must not live in poverty, and must therefore not be neglected, exploited and left ecologically unkempt. While Africa has experienced economic growth in the past two and half decades, the number of people still suffering from extreme hunger and poverty is unjustified; and such growth has not facilitated comprehensive cushion for marginalized groups of people. The Eastern region has failed to arrest the declining state of food security, and has even, under the now phased out Millennium Development Goals, not articulated comprehensive strategy to increase the resilience of their communities against hard core hunger. This is a contrast from the West and Southern regions where, the former successfully achieved MDG 1 while the latter seems headed there by 2020. In Kenya, millions of families still suffer food insecurity, and are thus not able to maximize their potential and contribute to their families and communities effectively. This study was carried out in Isiolo County, and aimed to a) build and strengthen the capacities of Isiolo county residents on resilience to food insecurity; b) facilitate the creation and firming of local advocacy actions on their right to food and c) promote alternative thinking like use of green technological to increase food production among target communities and protect environment from adverse global warming. The study employed mixed methods of research – qualitative and quantitative techniques. The key findings showed that drivers of change shaping global progress towards food security are multifaceted and communities are drivers to this transformational journey. This study recommends a bottom-up approach to understanding the communities' ill-being and accompanying them to realize their potential to claim their rights; hence engage with the service providers to supply the required amenities for their community transformation and sustainable development.*

**Key Words:** *Food insecurity, Pastoral cycle approach, sustainable livelihoods, pastoralist communities*

## **Introduction**

### *Background to the study*

There is a growing trend around the world for collaborative efforts to enhance social transformation through the SDGs. The achievement of food security plays a key role in claiming to this goal. However, since the factors contributing to food insecurity are multifaceted; a multidisciplinary approach will then be reliable in ensuring a sustainable impact. This paper then implies the use of pastoral cycle approach in responding to the challenge of food insecurity and mobilizing communities to take advocacy actions with relevant authorities for their right to food.

Kenya covers a surface area of approximately 582 Km<sup>2</sup>, of which only 20% is categorized a highly potential agricultural land. Of the total land mass, 70% is under customary ownership and use, 10% is government land/reserves and 20% is privately owned (Njunguna and Baya 1999). About 85% of the population relies on agriculture for primary livelihood, yet only 88.4% of these have access to less than 3 hectares each (O'Brien, 2011). This reflects unstable situation as only 6% of the land in the country is registered under individual titles. Additionally, Kenya is ranked among the countries most vulnerable to flood insecurity and drought caused by climate change and uncontrolled human development. Kenya is a member State to several international and regional human rights instruments such as the international Covenant on Economic, Social and Cultural Rights ratified in 1972. Despite this, the country is still struggling to realize the rights enshrined in the Covenant. A New Land Policy (NLP) which has been in the making for several years was finally adopted by parliament in December 2009. The current constitution sets out three types of land: government land, private land and trust lands which is distinguished by the NLP. The NLP also ensures that land use complies with environmental standards and that land use benefits first and foremost, the local communities. The 999 years colonial land leases are now limited to 99 years as per the National Land Policy (Bruce, 2009). Besides, the Kenyan government has a national economic development plan 'vision 2030'. The vision considers foreign investments a key to agricultural development. Hence the Kenyan government has sought to attract investors particularly into agriculture to grow cash crops both for export and for domestic consumption. According to the Kenyan investment authority, the country has three bilateral investments treaties in force: with Germany, Italy and Netherlands. The treaties with China (2001), Switzerland (2006) and the United Kingdom (1999) have been sign but have not yet been enforced (encyclopedia of the Nation's, 2010). The Kenya government also entered into a deal with the Qatar government and dominion from USA. The agreement were to lease part of the land in the Tana river delta and Yala wetlands swamp to these international investors for food production ( Mulama, 2010).



Changes in land use and its effects on food security in Kenya is an observable phenomenon. These changes and their dynamics are multifaceted and are characterized by shifts in the utilization of land. According to 2013 report, by Alliance for Green Revolution in Africa (AGRA), smallholder farmers account for most of the cultivated land and sizable share of the agricultural production. Land access and size of holdings according to the report have been affected by a growing rural population, changes in infrastructure and market access; rapid urbanization; investment in new crops and species, and, due to new policies coming in place. For example, the influence of the devolved system of government in the land use especially in infrastructure development could be a threat to food insecurity. Therefore, subsistence farming is increasingly threatened by a combination of factors such as climate change, market forces and weak and/or inefficient farmers unions. Secondly, there are no clear institutional mechanisms to cushion local communities through well-functioning agricultural and food markets. Third, is the acquisition of farmland for other purposes such as production of bio-fuels, mineral exploration, large-scale farming for export and cutting off fertile zones have left large tracts of land hoarded by rich buyers for limited use which undermines efforts to food security. Arid and Semi-arid Lands (ASAL) in Kenya are no exception. Kenya, particularly the north accounts for about 1.6 million. There has been an increase in food insecure populations since August 2014 in the areas of Marsabit, Wajir, Isiolo and Garissa and noticeable water depletion that has necessitated 50% more trekking time for pastoral communities seeking for water points (Nyariki, 2007).

An estimated 1.1 million People are acutely exposed to ravages of food insecurity. Alongside other factors discussed above; diseases and livestock ailments; conflict scenario including the threat of Al shaabab has not made it any easier. However, in mitigating against food insecurity, both national and county governments have together adopted a relief approach, though confined in the emergency paradigm, it defeats the concept of sustainable food security. Mobilizing and activating drought emergency funds for the Arid and Semi-Arid counties and prioritizing Hunger Safety Net Programmes for the critically affected regions is commendable. However, undertaking such well-meaning interventions in the absence of a replicable resilience building strategy entrenches dependency amongst such communities. There is need that emergency oriented programmes be enshrined in a more sustainable intervention that must pursue pro-active tendencies, rather than one off projects like distribution of relief food, provision of school meals and other feeding programs. The sustainable approach feeds well in to the Malabo Declaration on “Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods” of 2014.

#### *The Research Problem*

Though the 2013 Global Hunger Index (GHI), which reflects data from the period 2008–2012, shows great improvements in global food security, there are 870 million people in the world

exposed to extreme levels of hunger (GHI, 2013). The GHI score for Kenya for the periods of 1990, 1995, 2000, 2005 and 2013 are given by the report as 21.4, 21.0, 20.5, 20.2 and 18.0 respectively showing some slight improvements. However, the 2007 Economic Review of Agriculture indicated that 51 percent of Kenyan population lacked access to adequate food. The situation seems to have worsened in 2008 and subsequent years as depicted by a high proportion of the population having no access to food in the right amounts and quality. Households are also incurring huge food bills due to the high food prices. Maize being staple food due to the food preferences is in short supply and most households have limited choices of other food stuffs. The current food insecurity problems are attributed to several factors, including the frequent droughts in most parts of the country, high costs of domestic food production due to high costs of inputs especially fertilizer, displacement of a large number of farmers in the high potential agricultural areas following the post-election violence which occurred in early 2008, high global food prices and low purchasing power for large proportion of the population due to high level of poverty (Kenya agricultural research institute, 2012). Mobility in labour force to other more promising sectors by the youth, the fastest growing population in the country, from agriculture is also a contributing factor to the endemic food insecurity. This is attributable to low investment in agriculture, low productivity, poor markets and, consequently, poor returns of agricultural produce. According to Kenya Food Security Steering Group (KFSSG) “October To December 2013 Short Rains Season Assessment Report” the population in need of emergency humanitarian assistance (acute food insecure population) increased by more than 50 percent between August 2013 and February 2014 because of poor performance of the short rains season, increasing food prices and conflicts. Between February and August 2014, about 1.3 million people were in need of emergency humanitarian assistance.

The report further points out that the national maize stock balance sheet evaluated on December 2013 and projected through March 2014 indicates that the maize availability will be 30 percent below the five year (2008-2012) average of 2.9 Million Metric Tonnes. By the end of March 2014, available stocks lasted the country only through June 2014, prompting imports to fill the deficit before the long rains harvests reach the market. Such has persisted to today where the 2017 general elections found its bases with the government being forced to subsidise the 2kg packet of maize flour. Therefore, to enhance agriculture, food security and agribusiness for community transformation, there is need to empower communities especially those in ASAL areas to build resilience to the multifaceted factors to food security, engage in advocacy for social justice as well as promoting technological interventions to increase food production and environmental conservation. A problem solving approach is then quite appropriate for an inclusive discussion and to generate sustainable solutions to the threatening food insecurity challenge.

### *Objective of the Research*

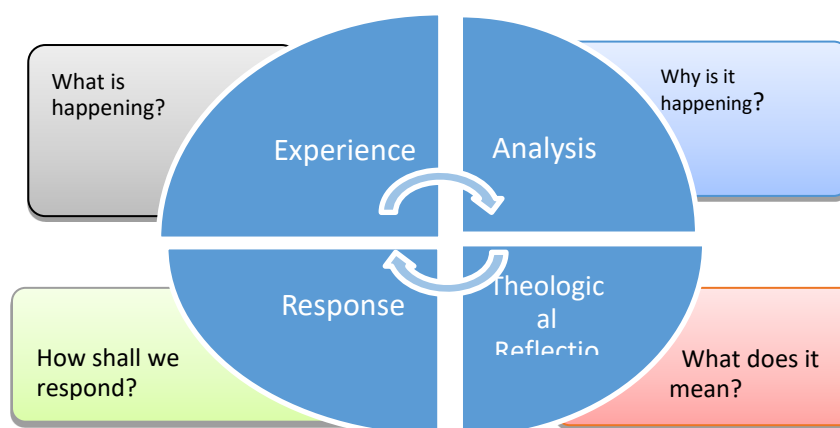
This study sought to address the gap of engaging the local communities for alternative livelihoods given the multifaceted factors which threaten right to food and sustainable livelihoods in Isiolo County. This research based advocacy aimed at: strengthening capacities of Isiolo county residents on resilience to food insecurity, facilitating the creation and firming of local advocacy actions on their right to food, promoting alternative thinking through green technological interventions that increase food production and protect environment from adverse global warming.

## Literature Review

### *Theoretical Framework*

According to Bodewes (2005) Pastoral cycle is a pastoral theology method developed by Joe Holland & Peter Henriot SJ to assist groups responding to social issues. It is widely used by social justice workers around the world since the booklet *Social Analysis* was published by the Centre of Concern in 1980. A revised and expanded edition of *Social Analysis: Linking Faith & Justice* was published by Orbis in 1983. It has roots in the ‘see, judge, act’ method of Cardinal Joseph Cardijn; the ‘hermeneutic circle’ of Juan Luis Segundo; the methodology of modern Catholic Social Teaching; and the spirituality of St. Ignatius of Loyola (Holland & Henriot, 1983). It is a flexible framework that can be used for pastoral, academic or community action purposes (Cranton, 2006). It is not a closed circle. Action leads to a new reality, a new experience to be examined.

Figure 1 below describes a pastoral cycle framework.



The pastoral cycle framework seeks to answer four key questions: What is happening? Why is it happening? What does it mean? How shall we respond? The first question seeks to open “small

holes” of entering into people’s experience and it involves a lot of dialogue with the people as they slowly and keenly unveil their experience up to the core of their understanding. It creates a chain of their reality in search of the underlying truth. Here the generated information is purely qualitative. The second question seeks to identify facts of the perceived reality using systematic method of study. Here the facilitator of the community engages the wisdom of science in explain the reality (Hope & Timmel, 1995).

The third question takes the community into a deep reflection of the reality in reference of their faith tradition. This enables them to identify with the challenges, awakening them to new thinking and understanding of the same lived challenge (Jeketule et.al, 2012). The discussion by Einstein, whose essay “Science and Religion” was published in 1954, finds a round table. Through the support of the Social Transformation agents, the communities are able to understand the statement by Einstein that, “Science without religion is lame & religion without science is blind.” This means that science and religion are harmonious though they have a distinct but complementary tasks: science helps us understand the physical structure of the reality, while religion deals with human values, morals, and meanings connected to the reality (Trooper, 1964). The community realizes their power and capacity to make a move towards a positive response to improve their lives and the society at large (Holland, 2006). A new worldview gets formed and worldview provides the much needed foundation for new behaviour, attitude, thought and assumptions which govern how peoples’ lives and the underlying set of ideas that enables people to cope with life and seek for their rights in a given society (Kuhn, 2012).

### **Research Design and Methodology**

To further understand the gap of responding to the threat of food insecurity in ASAL areas, literature review realized that the cause to the phenomenon has multifaceted factors. However, the response has been one way hence leaving behind important wisdom – the community, towards enhancing sustainable livelihoods. The study used survey research design which involved gathering data that describe events and then organized, tabulated, depicted, and described the data collection. It also used visual aids such as graphs and charts to aid in understanding the data distribution. Quantitative method was used to collect data that included the use of questionnaires. The study also used qualitative research method to explore the research problem in depth, to generate a deeper understanding of the full range of opinions and experiences on the problem. Focus group discussions and key informant interviews were of great use here.

This research targeted individual and groups engaged in agricultural activities like livestock keeping/pastoralism and crop farming. The sample size was broken into 100 respondents for quantitative data 5 key informant interviews with professional and people of experience in the thematic area and 2 focused group discussions to generate the qualitative findings. The key

informants included scholars, senior government officials (county and national government) and field officer and non-state actor. The focused groups consisted of members from sampled community groups in Isiolo County.

The research intended to have 50:50 gender distributions but only managed to sample 55% male and 45% female. Only 57% had education level above secondary school while the 43% were from primary education level and below. The age gap was between 25 years and 60 years.

## Results

### *Right to food and food Security*

The findings shows that majority of Kenyans are highly dependent on cereals for staples food, particularly maize. Most respondents (69.9%) grow cereals, some in large scale but most in small scale. 37.9% of the respondents practice livestock keeping mainly for provision of milk and meat. Overall, more than 50% of respondents recorded reductions in agricultural production and 83% had experienced at least an incidence of crop failure and death of their animals due to heavy drought. Although traditional crops are highly tolerant to diseases and varying climatic changes, only 27.7% of the respondents grow them.

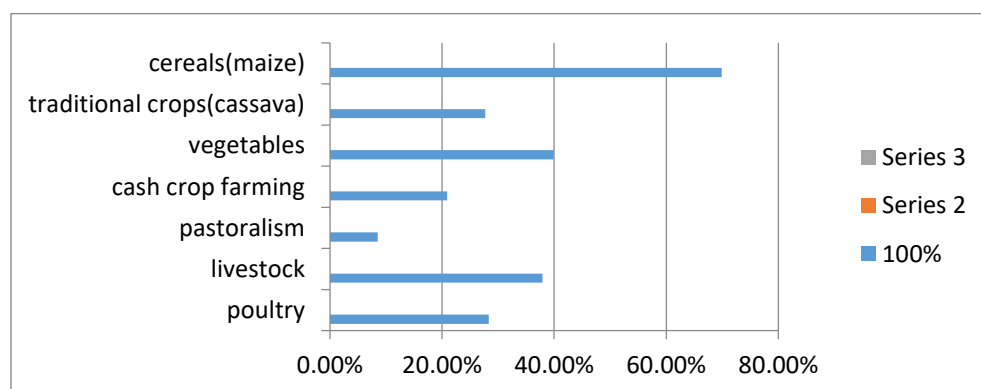


Figure 2: Agricultural activities farmers engage in

To assess the dietary habit of the sample areas, respondents were asked about foodstuffs that they would or not have. Most respondents expressed their preference for *ugali*. Figure 3 indicates the type of food commonly used by the residents of Isiolo.

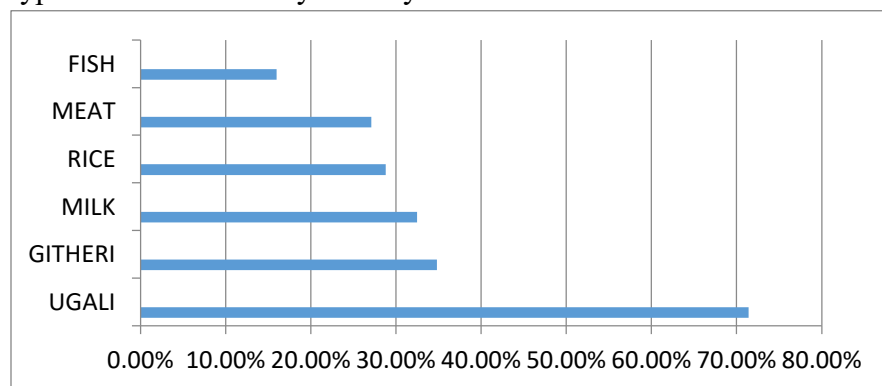


Figure 3: The commonly used food item within six consecutive months

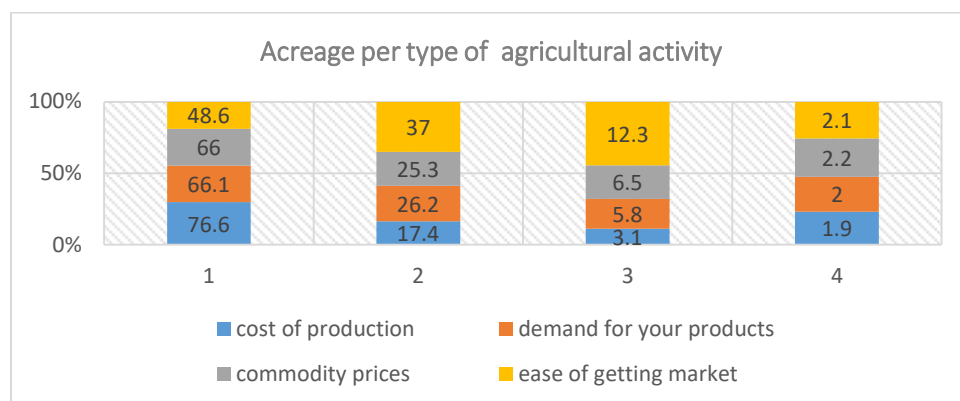


Figure 4: Acreage per type of Agricultural Activity

The acreage under different categories of crops is shown in Figure 4 above. Further analysis of responses from open-ended questions on the types of crops grown and the land sizes occupied shows that most farmers carry out their agricultural activities on pieces of sizes less than or equal to an acre. 26.9% of the respondents cultivate cereals in small pieces of land of sizes less or equal to an acre. 20.6% of the respondents engage in cereals on pieces of land between one and five acres. 15.6% of the respondents cultivated traditional crops on pieces of land that were less than an acre in size. 22.6% of the respondents grow vegetables on pieces of land less than an acre. 7.1% of the respondents engaged in cash crops on pieces of land measuring less than or equal to an acre and 5% on pieces of land that is over an acre but less than five acres. When asked about the reasons that made them engage in the same activities for over two years, 49.2% of the respondents said they were dependent on farming for income generation to meet their needs. 21.3% depended on it for their food sustenance. 39.2% of the respondents consider farming a major source of income as their harvest improved. This could indicate the effects of individual motivation have effects on the production. As shown in the qualitative responses.

#### Qualitative responses:

Respondents made the following comments;

*It is the sole economic activity to supplement income*

*It pays my bills*

*It has raised my tuition fee thus I progress in academics*

*When we sell milk we get money for domestic use*

*Because it is my source of food*

*For food security and sustenance*



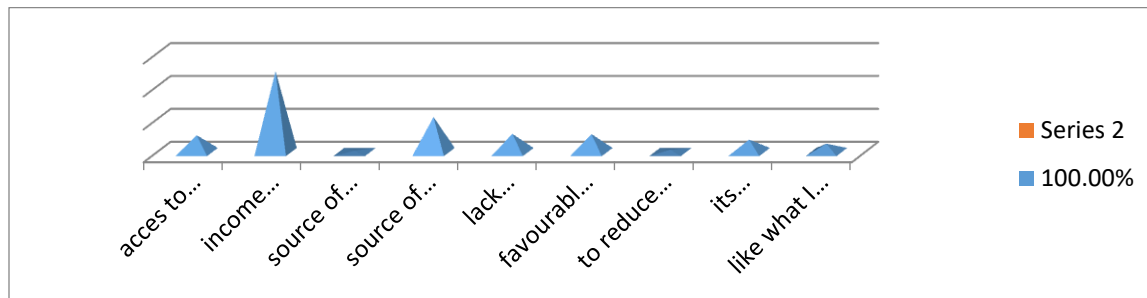


Figure 5: If the responds engaged in the above activities (Figure 4) for over 2years, what has made them engage in the same activities

In addition to the above findings; the qualitative shed more light on why one could engage on the same activity in consecutive years. Their responses include the following;

*Habit of our village*

*Lack of alternative crop since there is no water*

*Lack of alternative means of livelihood*

*Lack of enough funds to try optional methods of farming*

*I found my parents doing it, no other good crop to plant.*

When asked to indicate the statement which could explain their level of production; 47% of respondents produced less than the yields of the previous year, while 20% produced the same yields as previous year. Only 33% of the responds in Isiolo produced more than the previous years. The livestock farmers noted that their livestock produce reduced every year.

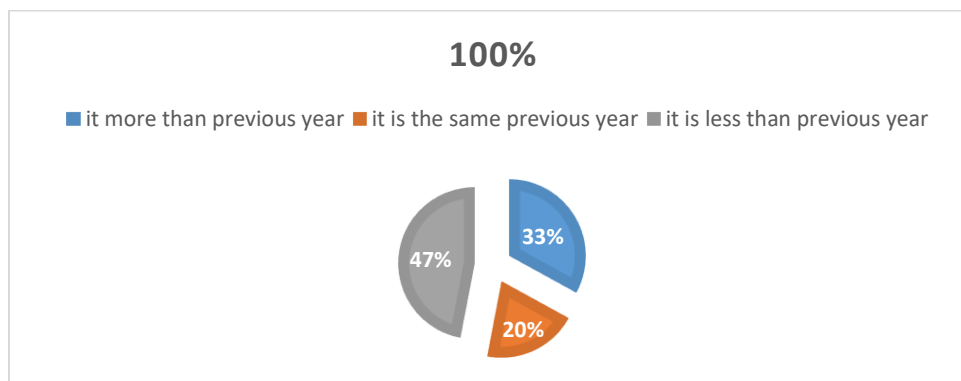


Figure 6: Measuring the level of production

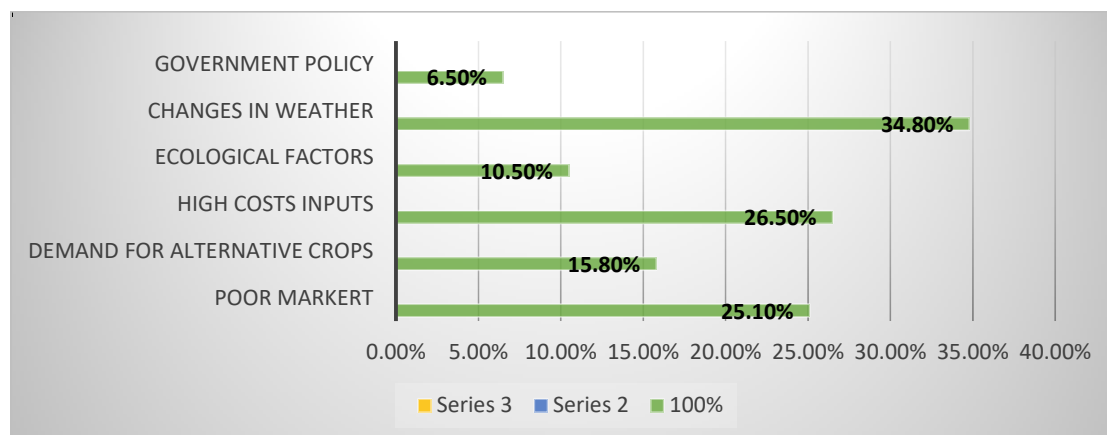


Figure 7: Factors contributing to change of agricultural activities:

The changes from one agricultural activity to another were occasioned by poor markets, demands for alternative crops, high costs of inputs, and changes in weather and ecology as well as government policy. Climate change accounted for the most changes in agricultural activities among the respondents as the graph below shows. 34.8% of the respondents said that varying and unpredictable changes in weather patterns was the main cause for changing from one agricultural activity to another. 26.5% of the respondents cited high cost of inputs while 25.1% said the changes at the markets as reasons for them shifting from one activity to another. These reflect concern of respondents and the need to address the question of the cost of inputs and provision of stable markets for agricultural products.

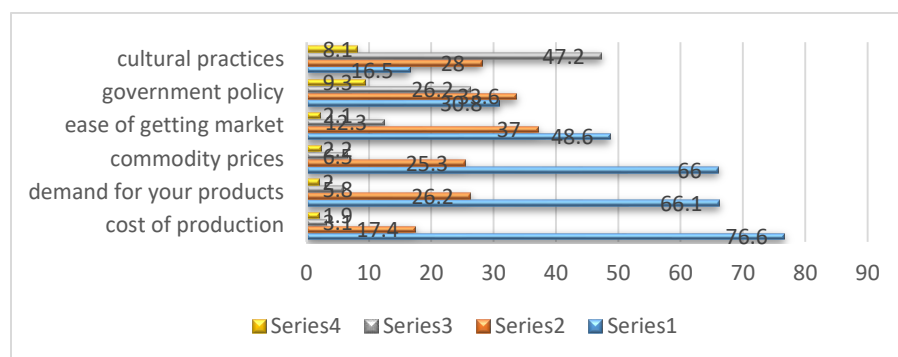


Figure 8: Factors that influence farmers' decisions regarding their agricultural activities check:

Farmers are influenced by many factors when determining the agricultural activities to engage in. The cost of production has the highest influence at 76.6%. 66.1% respondents consider demand for commodities, and 66% consider prices of the produce as graph 7 above shows. 48.6% and 46.5% respondents consider the ease and cost of going to the market as having great influence in their decisions regarding agricultural activities respectively.

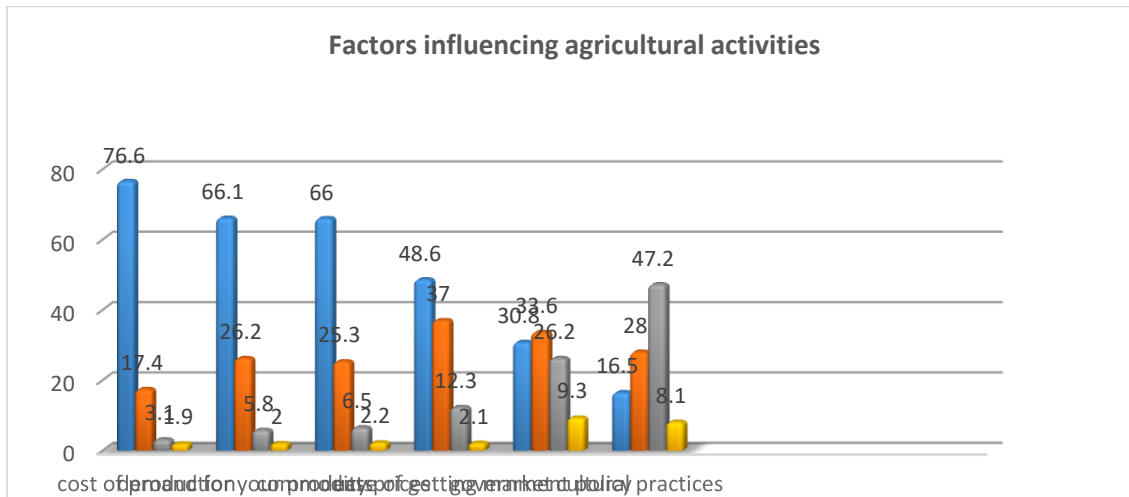


Figure 9: The rate at which the factors influence agricultural activities:

Although farmers feel that with more funds they can do better only 29.4% feel that access to loans has strong influence on their farming activities. This may explain the low willingness of farmers to take loans for agricultural activities. 12.3% of the respondents cited international policies having strong influence in decisions regarding their agricultural activities. Other factors that influence agricultural activities are shown in graph 8 above. 81.2% of respondents cited rainfall patterns while 76.7% of them cited soil fertility as having which had strongly influence on their agricultural activities. 46.3% of the respondents cited soil erosion and 45.9% cited deforestation as having great influence on their agricultural activities.

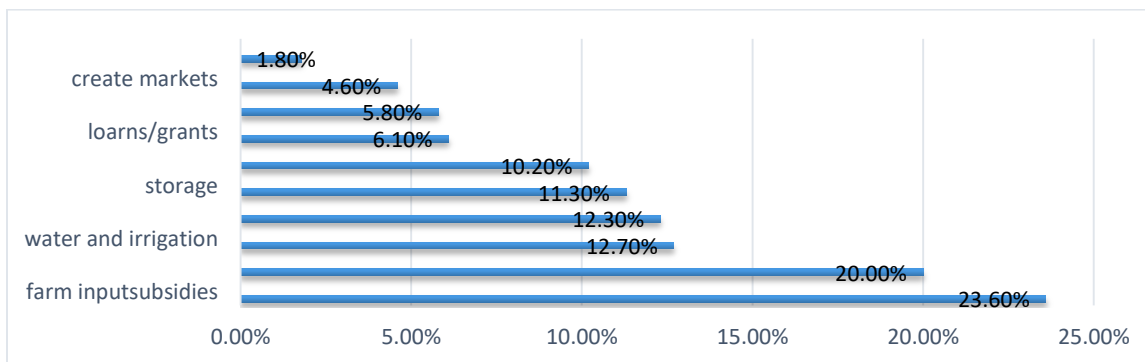


Figure 10: opinions on food security

Respondents' opinions on what should be done to enhance food security recommended that

farmers be supported with farm inputs subsidies (23.6%) and 20% said there is need for enhanced capacity building for farmers. Provision of water and irrigation system (12.7%) was of importance while storage (11.3%) could ensure food preservation to be used in time of calamities.

#### *Land and food security*

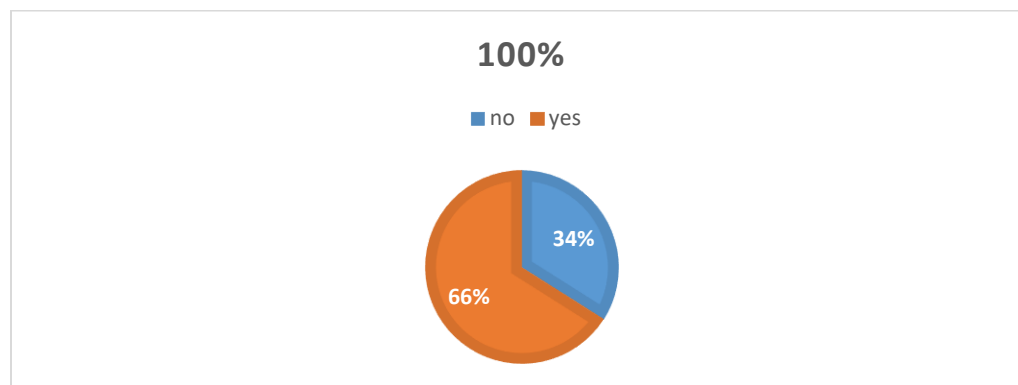


Figure 11: Significant changes on land use in the area

Changes in land use were acknowledged by 66% of the respondents noting that this has happened their area of residence and 34% said they did not notice any changes in the use of land in their areas. The difference of opinions was influenced by the agricultural activities the responds were engaged in. Through the key informant discussions, it was realized that there has been tremendous changes in land use, with 41.8% of respondents having noted that the land was being used for crop production before the change occurred; 26.5% observed that it had been idle, 15.1% that it had been used for livestock keeping and 11.1% observed that it was a forest.

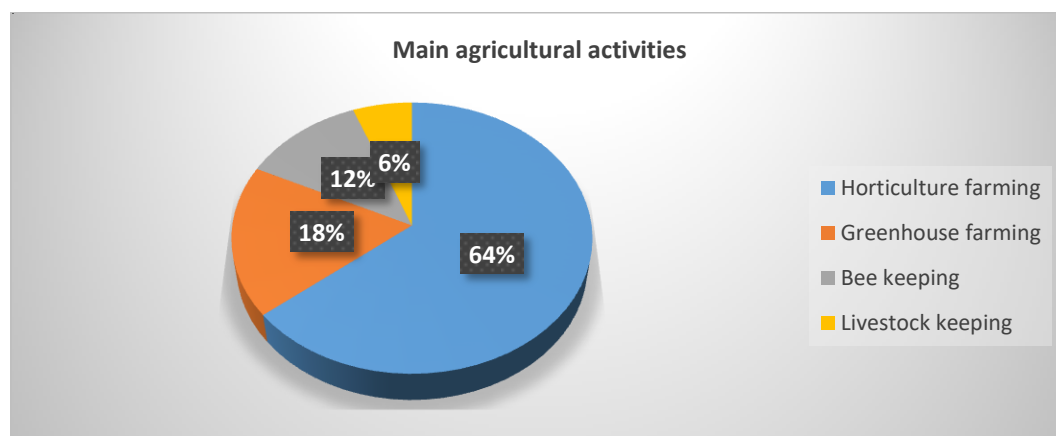


Figure 12: adoption to new agricultural activities in the area

Question on farmers' adoption of new agricultural activities and methods indicated that 64% of the respondents had observed horticulture farming being practiced in their area, 18% the use of green houses, 12% observed the practice of apiculture (bee keeping) and Livestock keeping 6%.

Group discussions feedback included;

*Most of the land in Isiolo is public land, communal land.*

*Not many people have individual title deeds but this is not a problem for farming or lack of farming*

*Most of the land lies idle while in various places there is irrigation*

*Majority of the people in Isiolo have not embraced the importance of crop production*

There are large scale (like 5 acres) farming basically for tomatoes, however, because there is no land ownership, they lend the land to the visitors.

The key informant interviews on land access brought out the following;

- ✓ There is a land policy in place however, there is need for land use policy that outlines the amount of land one has to have in order to produce food
- ✓ The constitution gives access to land but women are still unprivileged due to cultural practices
- ✓ The main challenge is the desire to own land as opposed to land access
- ✓ Land is a significant factor in the identity of any individual and usually emotive issue. The government should therefore provide documents to ensure secure land tenure
- ✓ There is an attachment to land as a source of power – huge chunks of idle land
- ✓ There is need for change of attitude towards land as a source of wealth or a possession to a commodity needs to be emphasized.
- ✓ People own huge chunks of land which they leave idle while others do not have land to use for food production.
- ✓ The government ought to tax land to make people use land to increase food productivity.
- ✓ People need to change attitude that I have to grow food in order to have food.
- ✓ Government and other stakeholder support to increase food productivity among the residents
- ✓ Stop the dependence on rain-fed agriculture and adopt alternative thinking
- ✓ Adoption of necessary and tailor made technology
- ✓ Provision of subsidies in terms of farm inputs e.g fertilizers and use of extension officers
- ✓ Need to consolidate farms to increase productivity
- ✓ Need for feeder roads which is now the responsibility of the county government
- ✓ Government can lease land to foreign investors so long as they produce food for the

country, share the technology and offer employment to the local people

- ✓ If investors are allowed to access fragile ecosystems it would also lead to environmental damage.
- ✓ Large scale farming is good as there is more productivity that can feed the ones who are not farming.
- ✓ Government and other stakeholders need to collaborate with the local to find safety nets (factories or industries) for livestock keepers and warehouses for storage of products in Isiolo to ensure their security and safe from calamities.
- ✓ The feeder roads should be enhanced to ease the transportation of farm produce to the nearby markets.

## **Conclusion**

There are worrying trend in food production in the country due to a combination of factors such as drop in yield per hectare, subdivision of agricultural land and weak support from stakeholders (on issues relating to the cost of production and markets) on food security. Cereals (mainly maize) form a big part of the Isiolo community diet even though most residents would prefer traditional foods in the absence of their favourite staple diet. There is decline in the production of the traditional crops across the county. Food security is also threatened by changes in land use that are characterized by changes within the agricultural sector (from one agricultural activity to another) or movement from agricultural activities to non-agricultural activities. This is due to ecological factors, market forces and policy issues. Changes in climate have affected every farmer in Isiolo. Many have experienced crop failure decline in productions, and death of livestock due to increase in pests and diseases and erratic weather patterns. While the demand for produce, cost of production, commodity prices, ease of getting to the market and access to credit highly influence on the choice of agricultural activities, fewer farmers are members of co-operative unions that could have provided alternative markets, loans and trainings.

Although Kenya is a signatory of Maputo declaration (2003) that requires the government to allocate 10% of its budget to agriculture, 2013/2014 budget was 4%. As a result the government seems to be struggling to assist small scale farmers. Agricultural extension services meant to support farmers, for instance, are not felt by many of the respondents. In addition, most farmers find it difficult to access the available subsidized inputs such as fertilizers and seeds. Capacity development among the farmers is also lacking. Of big cry is that the community feels that they are left out on decisions on food security in the area and yet they are directly affected by the decision. The grabbing of land by “private investors” and the political class is becoming a threat to the livelihoods of Isiolo. Pastoralist feel they are pushed on the periphery for the change in land use hence leaving them vulnerable and powerless to other threats of food security.

The study recommends that the government need to allocate more resources to the agriculture



towards meeting the Maputo declaration, extension services need to be enhanced for farmers to receive the necessary capacities for farmers and address the immediate farmers issues (such as pests, diseases), farmers should be encouraged to join the cooperative unions and take advantage of opportunities that come with it such as loans, trainings and alternative markets.

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## **Effect of Strategic Direction on the Performance of Technical Training Institutions in Meru County, Kenya**

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### **Abstract**

*Organizational performance is important in justifying its existence and resources allocation. To enhance performance, Strategic direction has been identified as useful in promoting organizational performance. For Technical Training Institutions to achieve their core mandate in human resource training, the Government has emphasized on their development and implementation of strategic plans. Technical Training institutions have been operating with strategic plans for at least the last ten years; however no systematic study has been carried out to investigate the influence of these strategic plans on the performance of the institutions. The current study sought to investigate the effects of the strategic direction on performance in respect to enrolment, resources, quality and efficiency. The study used the cross sectional descriptive survey research design. Questionnaires were used for data collection. Instruments were tested for reliability by use of the cronbach's alpha and a correlation coefficient of 0.75 was obtained. Validity of instruments was ensured by use of peer reviewers and research experts. The researcher personally administered the instruments; this helped in realizing a high return rate. Data was analyzed by use of both descriptive and inferential statistics including frequencies, percentages, means and the regression analyses and presented by use of tables and figures. The study established that the strategic direction had significant influence on the performance of technical training institutions. The introduction of the government policy has a moderating variable improved the model on organizational direction. The researcher recommends the alignment of the institutional philosophy, priorities, innovations and collaborations to the institutional strategic direction which could improve the performance of Technical Training Institutions.*

**Keywords:** *Effect, Strategic Direction, Performance,*

## **Introduction**

Strategic planning is a deliberate process to envision the future and develop plans for interacting with the competitive environment to achieve that future (Pearce & Robinson, 1995). Strategic planning is an organization's process of defining its direction, and making decisions on allocating its resources to pursue this strategy. According to Byars (2001) a strategic plan is used to describe the steps taken by an organization in achieving its objectives and mission. In addition to this, Starkey (2004) points out that the mission is the first step of the strategic plan that defines the long-term vision of the organization. If an organization does not have a vision, then there is no reason for existing. Henry (2004) argues that this is the process for creating and choosing a particular strategy to respond to future events and plan how to implement it.

The concept of performance is vital in all organizations whether commercial; profitmaking or Not-for-profit organizations, private or public sector (Johnson, *et al.*, 2008). Organizational performance is a measure of the extent to which the organization's goals and objectives have been achieved. Such measure of achievement informs all the stakeholders of the extent to which organizations are succeeding in their business. Based on their object and context, different organizations use different modes of performance. Mazzarol and Rebound (2009) notes that, organizational performance can be measured as achieving sustainable growth over time using such indicators as annual turnover, the number of employees, size of assets and equity in the balance sheet, market share and profitability. However, Bolo, Muturia and Oeba (2010) observes that firm performance refers to how well or badly a firm is performing both financially and non-financially thus exclusive use of financial achievements or indicators as the sole yardstick to determine organizational performance would be biased because organizations desire to achieve broad objectives. Kaplan and Norton (2008) suggest that, use of a balanced scorecard for measuring company performance that tracks the achievement of both financial objectives and strategic objectives is critical.

Measurement of performance in educational institutions will therefore include academic excellence, land infrastructure development, discipline and school culture, quality and relevance of graduates to market skill needs, stakeholder satisfaction, financial stability and excellence in non-academic activities (Okwako, 2013). This is in conformity with Denison (2006) who argues that modern approaches in measuring performance should consider all aspects in the organization. Firm performance is therefore a very essential aspect of a firm because as March and Sutton (1997) puts it, performance comparisons become a basis for evaluating executives, making decisions about resource allocation of human and other resources, for writing history and for stimulating arrogance and shame.

The desire for Strategic plans in Kenya commenced slowly and gradually back in the 1960s but has presently gaining currency and popularity (Yabs, 2007). The public sector finds the concept

of strategic plans just as important as in commercial firms and hence Technical Training Institutions in Meru County are required to formulate strategic plans in tandem with the MoE's strategic plan in order to foster the government's agenda to provide trainees with the quality education and training (Birgen, 2007). Strategic plans are expected to positively influence performance by enhancing the financial and non- financial outcomes in the training institutions. This makes the strategic plans a necessary management tool for Technical Training Institutions in Meru County if these institutions are to justify their public financial support and produce graduates that help in meeting the country's development vision.

A number of scholars such as Cole (2004) and Ansoff (1990) have argued that there is a positive correlation between strategic planning and performance while others argue that the relationship between planning and performance is inconsistent and thus still debatable (Barney 2007, Thompson et al, 2007). There have been studies on influence of strategic planning on performance in other education sectors. For instance, Mukokho (2010) studied the influence of strategic planning on performance of public universities in Kenya, the case of university of Nairobi, Gode (2009) studied influence of strategic planning on the performance of public secondary schools in Kisumu East, Ayieko (2011) studied strategic planning practices and performance of manufacturing firms. The above studies recommended for the development of strategic plans to enhance performance in the studied sectors. A study of strategic planning and performance in public secondary schools in Rarienda District by Okwako (2013) indicated the importance of strategy planning in public secondary schools and therefore suggested a replication of the study in different parts of the county and other levels of education. Despite the critical role that the Technical Training Institutions play in human resource training and the concern raised with regards to the quality of graduate, the enrolment levels and resources in these institutions, the sectors seems to have been ignored by researchers which shows a knowledge gap that needs to be addressed. Do strategic plans influence performance in Technical Training Institutions in Meru County? The current study sought to determine the effect of strategic direction on the performance of Technical Training Institutions in Meru County.

### **Research Hypothesis**

H<sub>01</sub>: There is no effect of strategic direction on the performance of Technical Training Institutions in Meru County.

### **Methodology**

The study used cross-sectional descriptive survey research design. The target population for the study was the 90 members of management in the three technical training institutions in Meru County. All the three technical training institutions (Meru National polytechnic, Nkabune and Kirua Technical Training Institute) which have implemented a strategic plan for atleast one complete cycle in the county were used for this study. The management of the training

institutions participated in the study. These included the top management, made up of the Principal, the two deputy Principals, the finance officer and the registrar, the middle level management made up of the heads of departments and the dean of students and the lower level management, made up of the heads of sections participated in the study. All the 90 subjects participated in the study.

Primary data was collected by use Questionnaires. Structured and unstructured items were included in the questionnaire. The questionnaires were administered to the top management, middle and lower level management. Closed ended items were categorical and likert scale format. To ensure the validity of the instruments, the researcher involved peers and research experts in the department of business in Kenyatta University. The researcher personally administered the instruments to the respondents. The data was analysed using both descriptive and inferential statistics. A regression analysis was conducted to establish the effect of the independent variable on the dependent variable.

## **Results and Discussions**

### **Demographic Characteristics of Respondents**

An item was included in the instruments that sought information on the duration that the respondent had served in their current management positions. This information is presented in Table 1.

Table 1: Duration served in the Current Position

Duration of service	Frequency	Percent
<2 years	22	17.7
2-3 years	20	16.1
4-5 years	19	15.3
>5 years	61	49.2
Total	122	98.4

Information in Table 1 indicates that 49.2% of the respondents had served in their current position for over five years whereas 17.7% of the respondents had served for less than two years in their current positions. Having 49.2% of the respondents who had served in the institutions for more than five years means that respondents had experienced the planning and implementation of the strategic plans which was critical in the current study.

The researcher sought information on the academic qualifications of the respondents. The responses are presented in Figure 1.

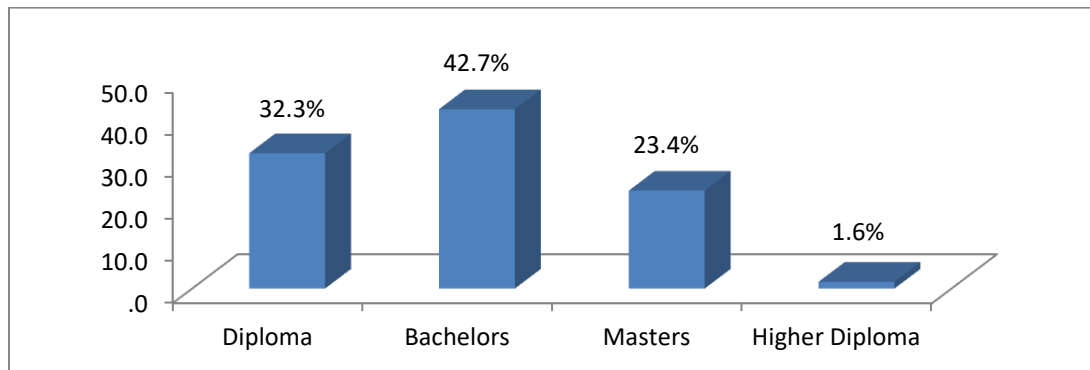


Figure 1: Academic Qualifications of Respondents

Information in Figures 1 shows that 42.7% of the respondents had a bachelor's qualification while 32.3% had a diploma qualification.

#### *Competency levels in Strategic Planning*

The researcher further sought information from the respondent on their self-rating on competency in strategic planning. This information is shown in Table 2.

Table 2 Competency Level

Responses	Frequency	Percent
Very competent	18	14.5
Competent	44	35.5
No Opinion	24	19.4
Incompetent	1	.8
No response	37	29.8
Total	124	100.0

Information in Table 2 shows that 35.5% of the respondents rated themselves as competent while 19.4% of the respondents held no opinion on their levels of competence in strategic planning. Only 14.5% of the respondents indicated that they were very competent in strategic planning.

#### *Development of the Strategic Plan*

The researcher sought information on who developed the institutional strategic plans for the Technical training Institutions. This information is presented in Figure 2.



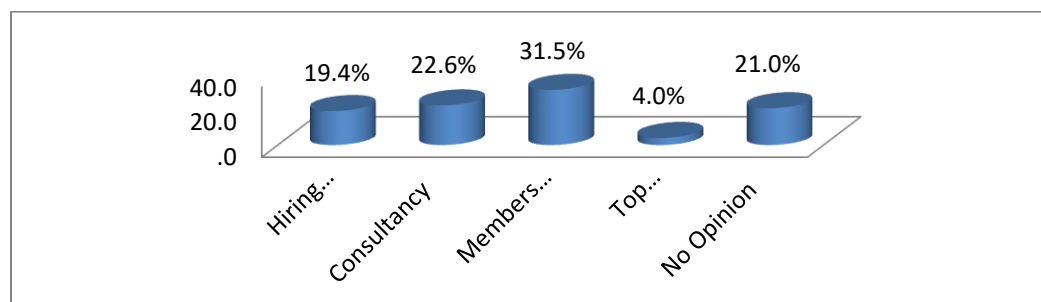


Figure 2 Development of the Strategic Plan

Information in Figure 2 shows that at 31.5% respondents indicated that strategic plans were developed by the members of staff within the institution whereas 22.6% indicated that the institution used skilled staff on consultancy bases for the development of the strategic plans. Respondents at 19.4% indicated that institutions hired professional experts for the development of their strategic plans.

### *Descriptive Statistics*

To achieve the objective of the study on the determination of the effects of the strategic direction on performance the researcher sought information on various dimensions of the strategic plan. The likert scale with a five level scale where 1 – no extent and 5 very great extent was used. Descriptive statistics of the mean and standard deviation were used to analyze the results. This information is presented in Table 3.

Table 3 Organizational Direction

Organizational Direction	N	Mean	Std. Deviation
Mandate	124	4.03	.569
Vision	124	4.15	.404
Mission	124	4.10	.400
Philosophy	122	3.90	.536
Goals	124	4.12	.374
Objectives	122	4.20	.444
priorities	124	3.94	.810
Overall mean score		4.07	.505

The results in Table 3 yield an overall mean score of 4.07. Organizational objectives dimension of the strategic plan had the highest mean score (mean score=4.20, SD=0.444). Two dimensions were rated lowest philosophy (mean score=3.90, SD=0.536) and priorities (mean score=3.94, SD=0.810). This means that the dimensions rated highest are those that respondents could be able to relate directly with the strategic plans. There is need for the institutional managers to align the institutional philosophy and the priorities to the institutional strategic plans.

### *Government Policy*

The researcher sought information on the extent to which the Government policy being a moderator variable impacted on the institutions' strategic plan. This information is shown in Table 4.

**Table 4: Government Policy**

Government Policy	N	Mean	Std. Deviation
Accountability	122	3.98	.966
Stability	120	3.84	.879
Effectiveness	120	3.82	.869
Regulatory quality	122	3.97	.852
Rule of law	122	3.95	.822
Control of corruption	122	3.90	.885
Overall mean score		3.91	.879

Information in Table 4.4 shows that the government policy impacted to a great extent on the strategic plans. Accountability (mean score=3.98, SD=0.966) and Regulatory quality (mean score=3.97, SD=0.852) were most important in the institutions strategic plans. Effectiveness (mean score=3.82, SD=0.869) and stability (mean score=3.84, SD=0.879) were rated least important in the strategic plans.

### *Performance*

To achieve the objectives of the study, the researcher sought information on the performance of technical training institutions. Various indicators were used to assess the extent of performance by the Technical Training Institutions. This information is shown in Table 5.

**Table 5: Performance**

	N	Mean	Std. Deviation
Quality	124	4.22	.657
Quality of trainers	124	3.91	.884
Quality of infrastructure	124	4.01	.888
Quality of training tools	124	3.75	.976
Quality of curriculum	122	3.87	.970
Quality of skills	122	4.02	.643
Quality of knowledge	120	3.88	.881
Quality of graduates	120	3.73	.995
Resources	120	3.89	.848

Adequacy of training materials	120	3.61	1.079
Infrastructure development	120	3.93	.909
Human resource development	120	3.79	1.003
Availability of teaching materials	120	3.25	1.204
Workshop tools & equipment	116	3.66	.961
Enrolment	118	3.77	.861
Students Enrolment	122	3.86	.816
Retention rates	122	3.78	.828
Completion rates	122	3.96	.648
Efficiency	118	4.01	.722
Efficiency of training process	120	3.78	.822
Acquisition of practical skills	122	3.80	1.018
Utilization of resources	121	3.83	.886

The results in Table 5 reveal four indicators of performance in technical institutions with a mean of above 4.00. Quality (mean score=4.22, SD=0.657), quality of skills (mean score=4.02, SD=0.643), quality of infrastructure (mean score=4.01, SD=0.888) and efficiency (mean score=4.01, SD=0.722) were rated most important dimensions of performance in the technical training institutions. Availability of teaching materials (mean score=3.25, SD=1.204) was rated least among the various indicators of performance in the technical training institutions.

#### *Regression Analysis and Hypotheses Testing*

The hypothesis of the study sought to establish the effect of the organizational direction on the performance of technical training institutions. Simple regression analysis was done to establish the effects of the strategic direction on performance. Information on this analysis is presented in Table 6.

Table 6: Regression Analysis on Strategic Direction and Performance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.694	.495		3.418	.001
Organizational Direction	.516	.121	.359	4.247	.000
R square=12.9%		F-Statistic=18.041(0.000<0.05)			

Table 6 shows the relationship between organizational direction and performance. This implies that 12.9% of the variation in performance can be accounted for by organizational direction in the model. Also the F-statistics of 18.04 (p-value 0.00<0.05) indicating that the overall model

was statistically significant at 95% confidence level. The relationship between the organizational direction and performance was statistically significant ( $t=4.247$ ,  $p\text{-value } 0.00 < 0.05$ ). This implies that for one unit increase in organizational direction, performance will increase by a factor of 0.516. The hypothesis that there was no significant relationship between organizational direction and performance was not supported in the current study. The predictive regression model can be stated as:

$$Y = 1.694 + 0.516X_1$$

Where Y – Performance

$X_1$  – Organizational Direction

1.694 – Constant

0.516 – Is the estimate of the expected change in performance  
when organizational direction is increased by one unit.

These results are in harmony with the findings that strategic direction has an impact on the performance of organizations. Bart *et al.* (2001) study found that mission statements can affect financial performance, partially. The study also observed that commitment to the mission and the degree to which an organization aligns its internal structure, policies and procedures with its mission were both found to be positively associated with “employee behavior”. Bart (1999) in another study of 103 Canadian Hospitals found a strong connection between mission content and degree of satisfaction with the mission as well as between mission content and degree of satisfaction with financial performance. However, Bart and Baetz (1998) in a study from a sample of 136 large organizations in Canada found out that that mission statements and some of their specific characteristics are selectively associated with higher levels of organizational performance. According to Ireland and Hitt (1992) mission statements provide critical direction for all types of organizations. Developing effective organizational direction can contribute to increases in a firm’s overall performance.

#### Moderating Effect of the Relationship between Organizational Direction and Performance

The researcher sought to establish the impact of the various dimensions of the strategic plan on performance in the presence of the government policy which was considered to be a moderating variable in this study. The results on impact of the organizational direction with the moderator variable are presented in Table 7.

Table 7: Regression result of the Organizational Direction with government policy

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.764	.504		3.500	.001
Organizational Direction	.497	.124	.344	4.016	.000

2	(Constant)	1.503	.465		3.234	.002
	Organizational Direction	.242	.125	.168	1.939	.055
	Government Policy	.331	.068	.423	4.893	.000
1	R squared =0.118	F-statistic=16.125(P-value=0.000)				
2	R squared =0.266	F-statistic=21.574(P-value=0.000)				

As shown by the moderation results in Table 7, there is statistically significant change in the percentage of the variation explained by the interaction of the organizational direction and the government policy. The results indicates a change in  $R^2$  when interaction of organizational direction and government policy is introduced ( $r = 0.118$  and  $0.226$ ). The significance results indicates a significant variation in relationship between organizational direction and performance on the introduction of government policy  $0.242$ ,  $0.331$ ;  $p$ -value =  $0.055$ ,  $0.000$ . Although organizational direction influences performance the presence of government policy improves the relationship significantly. Based on these results performance can be predicted as follows:

$$Y = 1.503 + 0.242X_1 + 0.331M$$

Where Y = performance of technical training institutions

$X_1$  = Organizational direction

M= Governmentpolicy

This implies that  $0.331$  is an estimate of the expected increase in the performance of technical training institutions corresponding to an increase in government policy.

## Conclusions

Judging from the findings resulting from the data collected from this study, the results reveal some vital facts upon which the conclusions are based. One of the things we can deduce from this study is that strategic direction has significant influences on organizational performance of Technical Training Institutions in Meru County. Organizational objectives dimension of the strategic plan had the highest mean score whereas two dimensions compared to the philosophy and priorities of the organizations captured on the strategic plans.

The introduction of the government policy has a moderator variable in the relationship between strategic direction and performance results in a significant increase in the performance of Technical Training Institutions.

## Recommendations

Based on the findings of the current study, the researcher made the recommendations that there is need for the institutional managers to align the institutional philosophy and the priorities to the institutional strategic plans.

The Technical Training Institutions should enhance the competencies of the members of management through training. Training could a good method to equip members with knowledge and skills in strategic planning.

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### **Climate Change and Maize Yield in Kenya: An Econometric Analysis**

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#### **Abstract**

*The agricultural sector plays a critical role in the Kenyan economy in terms of employment and food security. However, the sector and particularly crop farming is vulnerable to climate change, given that rain fed agriculture accounts for approximately 98 percent of agricultural activities. Crop farming in Kenya has limited diversification and maize production is critical. Maize production forms a strong base to food security, employment, income generation, poverty alleviation, as well as economic growth and development. This notwithstanding, maize production has greatly fluctuated leaving about 40 percent of population food insecure. Maize production largely depends on climate variables and is highly sensitive to climate change. Thus, it is important to understand the effects of the changing temperature and rainfall patterns, to which this study contributes by analyzing the marginal effects of climate change on maize yield.*



*The study adopted an econometric modeling approach using data for the period between 1970 and 2014. The study findings show that climate change has adverse effects on maize yield. In addition, the study finds a nonlinear relationship between maize yield and climatic variables. However, the direction and magnitude of the effects vary depending on the season. Hence, there is need to elevate the potential of rain fed agriculture in the midst of the risks posed by climate change.*

**Keywords:** *Maize Yield, Temperature, Rainfall, Temperature Variability, Rainfall Variability and Climate Change.*

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## **Introduction**

Climate change threatens the achievement of sustainable development goals aimed at ending extreme poverty in all forms by 2030; end hunger, achieve food security and improved nutrition and promote sustainable agriculture and as well, promote sustained, inclusive and sustainable economic growth (United Nations Development Programme (UNDP), 2015). These issues are of great concern to sub-Saharan Africa where majority of the people depend on rainfed agriculture to support their livelihoods. Consequently, the effects of climate change in the agricultural sector and more specifically crop production is of great concern.

According to Intergovernmental Panel on Climate Change (IPCC), 2014: 120), "Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer". Climate change has a direct influence on quality and quantity of agricultural crop production. The climate of an area is highly correlated to the crops cultivated and thus predictability of climate is imperative for planning of farm operations (Sowunmi, 2010). Climate change is expected to increase with global warming with the average temperatures expected to increase by between 1.4° Celsius (C) and 6.4° C by 2100. This is above threshold limit of 3°C beyond which it becomes impracticable to avoid dangerous interference with the global climatic system (World Trade Organization (WTO)&United Nations Environment Programme (UNEP), 2009). This average is anticipated to be higher throughout Africa, where average temperature is projected to rise 1.5 times more compared to the global level. Countries near the equator like Kenya, many of which are developing, are likely to experience unbearable heat, more frequent droughts and ruined crops, exacerbating the hunger crisis (Food and Agriculture Organization (FAO), 2012; WTO & UNEP, 2009). The increasingly irregular and erratic nature of weather conditions places more burden on food security and rural livelihoods (FAO, 2009).

In Kenya, crop production is a major source of livelihood for most rural communities practicing smallholder farming. It is mainly rain fed and changes in rainfall and temperature patterns are

expected to affect its potential (Stern, 2007). Indeed, Kenya has experienced patterns of climate changes, with El Nino and La Nina episodes being most severe (Stockholm Environmental Institute (SEI), 2009). As well, temperatures are expected to increase by about 4°C and variability in rainfall expected to rise up to 20 percent by 2030. These changes are likely to affect the optimal conditions required at each stage of crop growth and development and consequently affect the quantity and quality of harvested crops (Stern, 2007).

Crop farming in Kenya has limited diversification and maize serves as the main staple and key to food security (UNDP, 2002; Alila&Otieno, 2006). Thus, to continue supporting the livelihood of a rapidly growing population, there is need to have a sustainable increase in maize production. Although, economic incentives are provided to farmers to improve crop production, climate change is likely to undermine these efforts, threatening the livelihood of over 85 percent of Kenyan population. It is in the light of the importance of maize in Kenya's economy and to the livelihoods of majority of rural inhabitants that this study seeks to empirically determine the effects of climate change on maize yield using econometric analysis and thereof draw implications on food security as maize supply is to a large extent synonymous to food security in Kenya.

#### *Climate Change in Kenya*

From the 1960s, Kenya has generally experienced increasing temperatures at an average rate of 0.21°C per decade with trends in both minimum and maximum temperatures depicting a general warming over time. Annual highest rainfall events show a falling trend for the 24 hour intense rainfall and the amount recorded in the long rain season from 1960 to 2014 (Republic of Kenya, 2015). Figure 1 and 2 displays the year to year variability of temperature and rainfall in maize growing areas in Kenya.

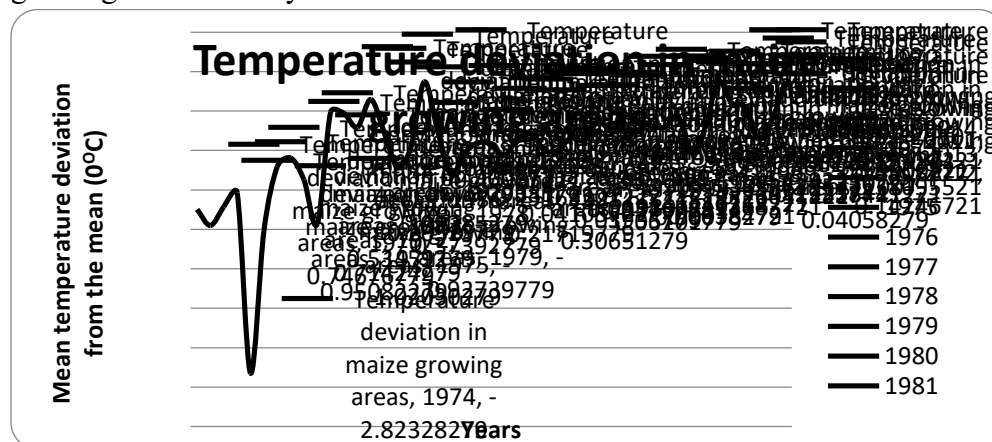


Figure 1: Annual Mean Temperature Variations in Maize Growing Areas in Kenya (1970-2014)

Source: Kenya Meteorological Department



Figure 2: Annual Rainfall Deviations (%) From the Mean in Maize Growing Areas in Kenya (1970-2014)

Source: Kenya Meteorological Department

The temperature and rainfall variations in maize growing areas are computed using data recorded in various weather stations, in areas where there is high potential for maize farming. These stations include: Kitale, Nyahururu, Nyeri, Thika, Narok, Nakuru, Kabete, Machakos, Kakamega, Meru, Embu, Kisii, Kericho and Eldoret.

The year to year variation of average temperature for the period 1970 to 2014 shows a slight increase in temperature with fluctuations of up to minus 2.8°C and plus 1°C. The deviation of rainfall amount from the mean annual rainfall for the period between 1970 and 2014 show drought and flood conditions in the crop growing regions. The fluctuations depict occurrence of extreme weather events that have been witnessed in Kenya. For instance, severe droughts occurred in 1971/73, 1983/84, 1991/92, 2004-2006, and 2008-2010. As well, flooding occurred in 1997/98 and 2002, which is closely linked to El Nino events with a severe frost occurring in 2012 (Rarieya *et al.*, 2009; KIPPRA, 2013).

Projections of mean rainfall indicate increases in annual rainfall in Kenya at -3 to +49mm per month for the months of October, November and December (OND) and larger proportional changes in January and February (JF) at -7 to +89% by 2030. The unpredictability of Kenya's rainfall and the tendency for it to fall heavily during short periods is likely to cause problems by increasing the occurrences of heavy rainfall periods and flooding. As well, temperature increase is expected to exacerbate the drought conditions (Osbaahr & Viner, 2006; McSweeney, 2010).

#### *Agriculture sector in Kenya*

The importance of agricultural sector and the ensuing vulnerability, more so in Kenya, makes it a

key concern for this study. The agricultural sector in Kenya contributes to 30 percent of Kenya's Gross Domestic Product (GDP) and employs over 40 percent of total population. Additionally, over 80 percent of rural people depend on agriculture for their livelihood. It also accounts for more than 60 percent of export earnings and about 45 percent of government revenue. Further, the sector is estimated to have an indirect contribution of nearly 27 percent of GDP through linkages with manufacturing, distribution and other service related sectors. Imperatively, the agricultural sector forms a strong base for food security, creation of employment and generation of foreign exchange and it is central to the country's development strategy given that majority of industries in Kenya are agro-based (Republic of Kenya, 2005; 2011, 2016).

Rain fed agriculture accounts for approximately 98 percent of agricultural activities in Kenya (UNEP, 2009). This makes the sector highly vulnerable to increasing temperatures, droughts, floods and changing rainfall patterns. The effects threaten livelihood of farmers and are likely to influence farming decisions. The performance of the agricultural sector mainly depends on crop production, which is largely dependent on climate conditions. Evidently, the sector's growth rate has been fluctuating over the years. This has been attributed to over reliance on rain fed agriculture, which is prone to erratic weather conditions plus high cost of agricultural production (Republic of Kenya, 2012; 2014; Alila & Otieno, 2006; KIPPRA, 2013).

#### *Maize Production in Kenya*

In Kenya, maize (*Zea Mays*) constitutes the most important staple food. Its contribution to consumption and income is important and an anchor to food security. Maize is a cereal crop grown in a range of agro-ecological environments. Globally, there are over 50 species of maize consisting of different colors, texture, sizes and shapes with yellow and white species being the most common preferred types. In Kenya, maize farming is spread all over the country from 0-2200 meters above sea level (masl), facilitated by hybrids and composites developed for different ecological zones by the national maize breeding program (Mbithi, 2000).

Maize crop performs best in well drained and well aerated loam soils with a pH of 5.5 -7 and is intolerant to water logging. Low production is recorded in very high and low altitudes with optimum temperatures for good yield ranging between 18 to 30°C. Cold conditions lengthen the maturity periods with high temperatures reducing production. Maize grows well with 600-900 mm of rainfall, which should be well distributed throughout the growing period. Rainfall is most critical at flowering and silking stage. Drought at the flowering stage obstructs pollination and considerably reduces yield. Towards harvesting dry conditions are necessary to support drying of the grain (Hughes, 1979; Schroeder *et al.*, 2013). As noted by Bergamaschi *et al.*, (2004) maize plants are sensitive to water deficit during a critical stage from flowering to the start of grain filling period. At this stage, there is high water requirement in terms of high evapotranspiration and high physiological sensitivity as number of ears per plant and number of kernels per ear is

determined.

In Kenya small scale maize production accounts for 75 percent while large scale production account for 25 percent (Export processing Zone Authority, 2005; Olwande, 2012). Hybrid varieties correspond to different agro ecological zones. Highland maize varieties include H627, H626 and H625 while those recommended for medium altitude agro- ecozone include H513, H515, H516, H623 and H624. In the lowland agro-ecozone, Pwani hybrids PH1 and PH4 are recommended, they are short, resistant to lodging and more tolerant to moisture stress. As well, In the dry land agro-ecozone the varieties recommended varieties include Katumani Composite, DH01, DH02, DH03, DH04, and Makueni SCDUMA43 (Schroeder *et al.*, 2013; Kenya Seed Company, 2013; National Farmers Information Service (NAFIS), 2015).

Enhancement of maize production is critical as a shortage in maize supply is, largely, synonymous with food insecurity (Owour, 2010; Republic of Kenya, 2000; 2005; 2010). Majority of households in Kenya grow maize, as it is the main staple food. It forms the diet of over 85 percent of the population, accounts for 68 percent of daily per capita cereal consumption, 35 percent of total dietary energy consumption and 32 percent of protein consumption (FAO, 2008a; Mohajan, 2014). Hence, Kenya's national food security has a strong relation to production of sufficient quantities of maize to meet an increasing domestic demand arising from a growing population. In addition, maize accounts for more than 20 percent of total agricultural production and 25 percent of agricultural employment (FAO, 2008a; Schroeder *et al.*, 2013; Mohajan, 2014).

In the face of the need to increase maize production, there is evidence of stagnation in maize production and productivity. This has led to an increasing gap between production and consumption besides increasing frequency of supply shortages. Figure 3 depicts maize yield trend in Kenya for the period 1970 to 2014.



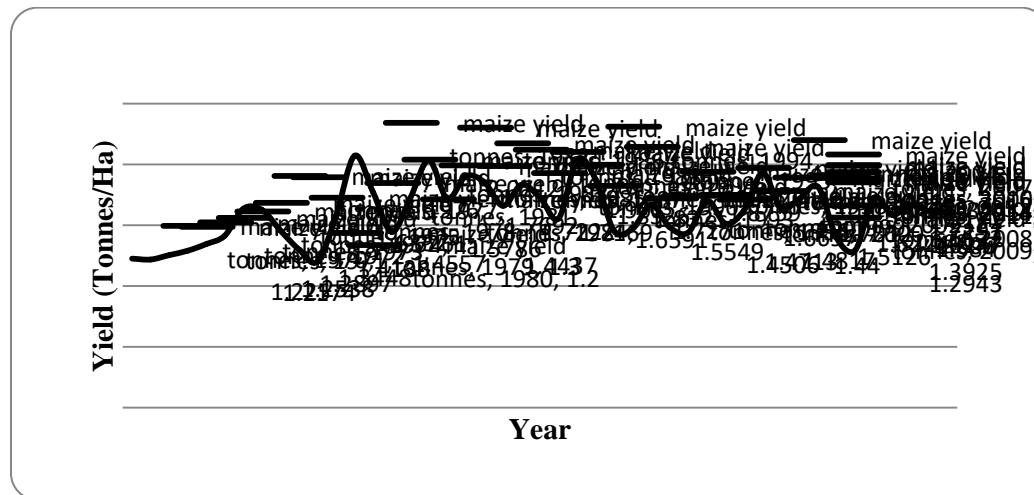


Figure 3. Maize Yield Trend in Kenya (1970-2014)

Source: Republic of Kenya, Economic Survey (Various Issues).

Figure 3 shows that there was tremendous growth in maize production between 1970 and 1982 with a peak yield of 2.07 metric tonnes per hectare. After 1982 there was a slight decline in yield after which the yield improved to a high of 1.87 metric tonnes per hectare in 1994. The growth was highly attributed to introduction of hybrid maize (Kibaara&Kavoi, 2011). However, from 1994 there has been a decline in yield with the lowest yield of 1.29 metric tonnes per hectare in 2009, consequently leading to maize consumption deficit over the years. Figure 4 shows the gap between maize production and consumption in Kenya for the for the period 1970 to 2014

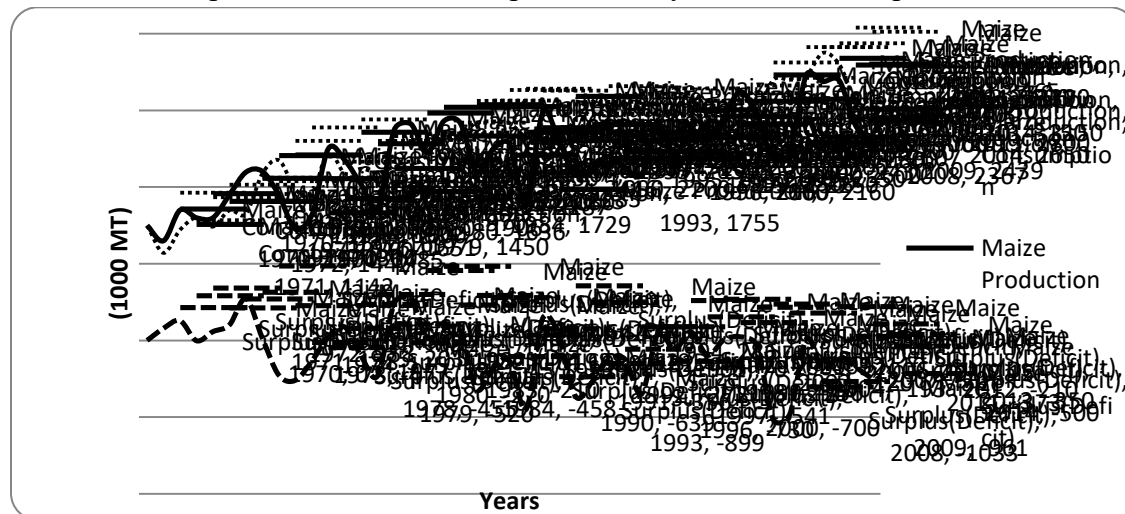


Figure 4. Maize Production and Consumption Trends in Kenya (1970-2014)

Source: Republic of Kenya. Economic survey (various issues).

Figure 4 demonstrates trends in maize production and consumption and the supply surpluses/

shortages. Notably maize production drastically dropped in some years such as 1979, 1984, 1993, 1997, 2008, 2013 and 2014. The trend shows wide fluctuation in maize production over the years resulting to a supply shortage since 1989 save for 1994, 2001 and 2003 where production was above consumption demands. Between 1970 and 2014, the average annual maize production stood at 2.3 million tonnes compared to an average annual consumption of 2.6 million tonnes in the same period (FAOSTAT, 2015). Equally, the production of rice and wheat, the main substitutes for maize, has been below the demand with the country only being able to produce 40 percent of its wheat requirements and 34 percent of the national rice consumption requirement (Republic of Kenya, 2003; 2005; 2009; 2011; 2015; Gitau *et al.*, 2011).

Moreover, growth rate in maize production has been marginal averaging about two percent which is lower than the annual population growth rate which averages 3.5 percent. Thus, for self sufficiency, maize production needs to grow by over 4 percent. Consequently, Kenya remains a net food importer with about 40 percent of its population being food insecure. As well, the overreliance on imports may trigger diversion of development resources for food procurement (Republic of Kenya, 2013; Mutimba *et al.*, 2010; FAOSTAT, 2015). The drop in maize yield coupled with increase in consumption compromises food security in the country.

#### *Problem Statement*

In Kenya, adequate supply of maize is an indication of food security, a source of employment and income generation. However, maize outputs levels have been fluctuating over the years making its production fall below consumption in most years. Further, the growth rate in maize output has been marginal, averaging about two percent which is lower than the annual population growth rate which averages 3.5 percent (Republic of Kenya, 2013; FAOSTAT, 2015). Consequently, there is need to have a sustainable increase in maize output in order to continue supporting the livelihoods of the growing population in Kenya. However, sustainable maize production is likely to be affected by climate change.

Studies measuring the impact of climate change on crop yield in Kenya have concentrated on impacts of climate means (Jones & Thornton, 2003; Kabubo-Mariara & Karanja, 2007; Bilham, 2011; Cheserek, *et al.*, 2015). Beyond changes in climatic means, variability in temperature and rainfall is expected to rise in some regions, including the intensity and frequency of extreme events (Solomon *et al.*, 2007). Such changes are likely to have more adverse effects on crop yield than changes in climate means alone (Porter & Semenov, 2005; Tubiello *et al.*, 2007; Rowhani *et al.*, 2011). To bridge the gap, this study sought to empirically, determine the effects of climate change on maize yield, by incorporating climate variable means and their variability. Anchored on empirical analysis, detailed review of literature and by considering climate factors as direct inputs, the study examined the effect of rainfall and temperature and their variability on maize yield in Kenya.



## Literature Review

### Theoretical Model

This study adopted a quantitative research design and employed production theory in developing theoretical framework and to specify empirical model. The study assumed that climate variables are likely to have nonlinear effects on crop yield. Thus, the study adopted a Cobb-Douglas production function from Blanc, (2011) and Mahmood et al., (2012). Production theory explains the economic processes of producing outputs from various combinations of inputs. Moreover, production theory provides a convenient way of summarizing the production possibilities for the firm. The theory provides a way of determining the technologically feasible combination of output and various inputs. The common way of representing the relationship of output and input in physical terms is through the use of a production function. A production function describes a frontier that represents the maximum amount of output that can be obtained from a feasible combination of various inputs (Varian, 1992; Nicholson & Snyder, 2008). In general a production function may be written as:

$$Y = f(A, K, L) \dots \dots \dots (1)$$

Where: Y is output; A is technology, K is capital and L is labor. One of the most commonly used functional forms of production function is the Constant Elasticity of Substitution (CES) production function. According to Arrow et al., (1961) a CES production function takes the form:

$$Y = A(\alpha K^\rho + \beta L^\rho)^{\frac{v}{\rho}} \dots \dots \dots (2)$$

Where: A is an efficiency parameter, equivalent to technology in (1);  $\rho$  is substitution parameter and it measures the ease with which two inputs can be substituted;  $\alpha$  and  $\beta$  are distribution parameters and they show how the two inputs are distributed over the production of one unit of output and v is the degree of the homogeneity of the production function and it's a measure of returns to scale. A CES production function assumes that the elasticity of substitution is constant. Under different assumptions about  $\rho$ , the CES production function can collapse into any of the specific forms. If  $\rho = \infty$  the two factors are assumed to be complements, with C.E.S manifesting itself as a fixed proportions/ Leontief production function. However, as  $\rho$  approaches zero CES will manifest itself as a Cobb Douglas function (Varian, 1992), which takes the form:

$$Y = AK^\alpha L^\beta \dots \dots \dots (3)$$

Hence, the two factors of production are imperfect substitutes. Augmenting or directly adding land and climate variables to equation (3) yields the most commonly used Cobb-Douglas production function in agricultural research. Climate variables are included to capture the effect of changing climate on agricultural output (Nastiset al., 2012). The augmented Cobb-Douglas is expressed as:

$$Y = AK^\alpha L^\beta \text{Ln}^\gamma W^\delta R^\theta \dots \dots \dots (4)$$

Where Y is output; K is capital; L is labour; A is an efficiency parameter, Ln is land, W is a

vector of climate variables,  $R$  is a vector of other variables affecting production and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  and  $\theta$  are input elasticities of output or factor shares (Blanc, 2011; Mundlak, 2011; Kawasaki & Herath, 2011; De-Graft & Kweku, 2012; Mohamood *et al.*, 2012; Bizuneh, 2013; Kumar, 2014).

#### *Empirical Model*

Following the production theory equation (4) expresses output as a function of capital, labour, land and climate variables. Intuitively, the production theory may also be used to measure crop yield, since yield is defined as output per unit of land. Thus from equation (4), the study estimated an extended model for maize yield ( $j$ ) specified as:

$$CY_{jt} = \delta_{j0} + X'_{jt}\lambda_j + W'_{jt}\phi_j + \mu_{jt} \dots \dots \dots (5)$$

Where:  $CY$  is yield;  $t$ = time period from 1970 to 2014;  $\delta_j$  is the unknown intercept;  $\lambda$  and  $\phi$  are unknown parameters;  $W$  is a vector of agro climate variables that include: rainfall amount, temperature, rainfall variability, temperature variability, squared terms of rainfall and temperature and  $X$  is a vector of control variables that include: area under crop, fertilizer use, labor employment and use of certified seeds.

Crop Yield is the crop production per area of land under crop in tonnes per hectare; Mean temperature is measured in degree Celsius, recorded in the months of JF, MAM, JJAS and OND in a given year for selected weather stations in maize growing areas. Rainfall is amount of rainfall, measured in millimeters, recorded in the months of JF, MAM, JJAS and OND in a given year for selected weather stations in maize growing areas; Rainfall Variability is intra rainfall variability measured by the coefficient of variation of rainfall in a given year, for selected weather stations in maize growing areas; Temperature Variability is year to year variability of mean temperature measured by the squared annual temperature deviation from the long term mean; Land Use is the area under maize production measured by the number of hectares; Fertilizer use is fertilizer consumption measured in tonnes per hectare of crop area; Labour is labor force employment in agricultural sector per hectare of crop area and Seed use is the amount of certified maize seeds used in kilograms per hectare.

Area under crop is included to capture decreasing marginal productivity, as farmers are assumed to cultivate in better soils first before expanding to land of lesser quality (Blanc, 2011). This study uses national data that reflect the actual cropping decisions and thus land is included as an explanatory variable to capture decreasing marginal productivity of land (Chen *et al*, 2004; Kawasaki & Herath, 2011; Blanc, 2011; De-Graft & Kweku, 2012). The coefficient of area under crop is expected to have a negative sign to indicate diminishing marginal productivity.

For given agronomic conditions, crop yield is expected to increase with increased consumption of fertilizers. However, excessive use can be detrimental as well (Winch, 2006). Although, use of fertilizer in Sub Saharan Africa is low there has been growth in use of chemical fertilizer in Kenya since 1990, thus this study incorporates fertilizer consumption as an explanatory variable

for crop yield.

Labour is a key input in agricultural production in Kenya with most farmers especially the smallholder employing traditional farming methods where most land is cultivated manually. However, most of labor is provided by family members with the level of labor input depending on family structures and the number of hours worked. As well, labor requirements differ with season and labour characteristics such as education and health. In addition, farming experiences influence crop yield through work capacity and quality of crop management practices (Blanc, 2011). Labour data specifically used in production of specific crops under study in Kenya is limited and the rural population data available may not be a good proxy for labour used in production of each crop under study. The study thus adopted employment in agricultural sector in Kenya to capture use of labor in crop production process.

The vector of climate includes the level of precipitation and temperature. These variables are expected to have both direct and indirect effects on crop yields, especially under rain fed agriculture. Thus, in this study seasonal mean temperature and seasonal rainfall are included in the specification. As well, to capture the effect of climate risks emanating from change in climate on crop yield, rainfall and temperature variability are included in the specification. Further, to account for nonlinear weather effects on crop yield, quadratic terms for rainfall and temperature are included in the specification.

## **Methodology**

### *Data Type and Source*

The study used annual time series data for the period between 1970 and 2014. The data was gathered from government publications, Kenya Meteorological Department, World Bank, IMF and FAOSTAT database. Weather variables used in maize model were computed using data from the following weather stations: Kitale, Nyahururu, Nyeri, Thika, Narok, Nakuru, Kabete, Machakos, Kakamega, Meru, Embu, Kisii, Kericho and Eldoret

### *Estimation Method and Unit root tests*

Crop yield model was estimated by Ordinary Least Squares (OLS) method. Prior to model estimation, series were subjected to various tests to confirm various properties required for OLS to give results that are efficient and consistent. The model was estimated consistently by OLS after ascertaining that the error term ( $\varepsilon_j$ ) is a white noise process or more generally, if the error term has a zero mean, constant variance and uncorrelated with the explanatory variables and its previous realizations. As well, given the use of time series data, it was necessary that, before estimation of the equations, the series had to be tested for unit root. The study employed the Augmented Dickey-Fuller (ADF), Philip Peron (PP) and Kwiatkowski, Phillips, Schmidt, and

Shin (KPSS) tests. (Green, 2008; Gujarati, 2004; Dickey and Fuller, 1979; Kwiatkowski, Schmidt & Shin 1992).

The unit test results showed that variables are a mixture of I (0) and I (1), the models could not be estimated at levels, since there is a likelihood of yielding spurious results (Heijet *al.*, 2004; Woodridge, 2012). An alternative is to use the first difference of variables. Although, using the first difference changes the nature of model, the method is as informative as modeling in levels (Woodridge, 2012). Thus maize yield model was estimated at first difference. To ensure that estimates obtained were unbiased and consistent, diagnostic tests were undertaken. The tests included: the normality test using Jarque- Bera statistics, Breuch-Godfrey Lagrange Multiplier test for serial autocorrelation, Lagrange Multiplier test for autoregressive conditional heteroskedasticity (ARCH), Ramsey RESET test for specification error and CUSUM test for parameter constancy. The P values associated with the computed test statistics were greater than 0.05 and thus the estimates were considered to be unbiased and consistent.

## Results and Discussion

### *Effects of Rainfall and Temperature on Maize yield*

The coefficient estimates for the crop's yield model are shown in Table 1.

Table 1: Maize Yield Model Coefficient Estimates

Dependent Variable	D(Maize Yield)	
Explanatory variables	Coefficient (Standard Errors)	Explanatory variables      Coefficient (Standard Errors)
D(Area Under Crop)	-6.35E-07*** (1.84E-07)	D(Squared Rainfall-MAM) -8.46E-06*** (1.62E-06)
D(Mean Temp-JF)	-0.1222 (0.0905)	D(Squared Rainfall-OND) -2.16E-06 * (1.07E-06)
D(Mean Temp- JJAS)	13.35869*** (3.7886)	D(Squared Mean Temp--0.375089*** (0.1059)
D(Mean Temp-MAM)	10.66330*** (3.5293)	D(Squared Mean Temp--0.272724*** (0.1842)
D(Mean Temp-OND)	0.09483 (0.1151)	D(Fertilizer use) 0.01916** (0.0071)
D(Rainfall-JF)	-0.002596*** (0.0009)	D(Labor use) -8.413114 (8.5114)
D(Rainfall-JJAS)	0.002399 (0.0025)	Constant -0.002621 (0.02118)
D(Rainfall-MAM)	0.008577*** (0.0085)	R-squared 0.88

D(Rainfall-OND)	0.001972** (0.0008)	Adjusted R-squared	0.75
D(Rainfall Variability)	-0.099747 (0.3028)	F-statistic	6.63
D(Temperature Variability)	-0.05939** (0.0303)	Prob(F-statistic)	0.00
D(Squared Rainfall-JF)	7.13E-06*** (2.32E-06)	Durbin-Watson stat	1.80
D(Squared Rainfall-JJAS)	-1.84E-06 (4.04E-06)		

Standard errors in brackets; \*\*\*, \*\*, \* significant at 1%, 5% and 10% respectively  
Source: Author's computation.

The regression model yield a relatively moderate value for adjusted R squared. The adjusted R<sup>2</sup> value of 0.75 implies that 75 percent of variations in maize yield are explained by climate variables, area under crop, fertilizer consumption and labour use.

#### *Marginal Effects of Rainfall Amount on Maize yield*

The study findings indicate a nonlinear relationship between maize yield and rainfall. Specifically, the coefficients estimates of linear terms of rainfall in March to May period and October to December period are positive and significant at 1 percent and 5 percent level respectively. Conversely, the coefficient estimate of linear term of rainfall in January to February period has a negative sign and is significant at 1 percent level. However, the coefficient of linear term of rainfall in the June to September period and the coefficient of rainfall variability are insignificant. The coefficients of squared rainfall amount in the period of March to May and October to December have a negative sign and are significant at 1 percent and 5 percent level respectively. This implies that, during the long rains and short rains period, an increase in rainfall raises maize yield with diminishing marginal benefits up to a maximum turning point after which further increase in rainfall, impacts maize yield negatively.

Since both level and square of rainfall variables are in the model, the marginal effects need to be calculated. The marginal impact of rainfall in January to February period is specified as:

$$\frac{\partial \Delta Q}{\partial \Delta R_{JF}} = -0.002596 + 2(7.13E - 06)\Delta \overline{R_{JF}} \dots \dots \dots (6)$$

Holding other variables constant, an increase in rainfall amount by 1 mm relative to the periods mean rainfall amount of 117.6 mm decreases maize yield by 0.0009 tonnes per hectare.

The marginal impact of rainfall in March to May period is specified as:

$$\frac{\partial \Delta Q}{\partial \Delta R_{MAM}} = 0.008577 - 2(8.46E - 06)\Delta \overline{R_{MAM}} \dots \dots \dots (7)$$

Holding other variables constant, an increase in rainfall amount by 1 mm relative to the periods mean rainfall amount 465.33 mm increases maize yield by 0.0007 tonnes per hectare.

During the October to December period the marginal effect of rainfall on maize yield is given as,

$$\frac{\partial \Delta Q}{\partial \Delta R_{OND}} = 0.001972 - 2(2.16E - 06)\Delta \bar{R}_{MAM} \dots \dots \dots (8)$$

Holding other variables constant, an increase in rainfall amount by 1 mm relative to the periods mean rainfall amount 334.66 mm increases maize yield by 0.0005 tonnes per hectare.

The results indicate that an increase in rainfall, prior to the main planting period has a negative effect on maize yield. January to February period lies outside the growing season but usually corresponds to a stage where the short rains crop grown in medium potential -areas that support two growing seasons- is harvested and drying conditions are necessary. As noted by Hughes (1979) and Schroeder et al., (2013), towards harvesting, maize requires dry conditions towards to support drying of the grain. In addition, dry conditions during January to February period, facilitates adequate land preparation before planting at the onset of long rains in March. This indicates that dry conditions in January to February period, provide an enabling environment for drying of grain and adequate time for land preparation, which enhances yield. Thus, early rains can distort farmers planting plans, as they have a short time to prepare their land and as well, they may not have adequate resources in January to purchase farm inputs, thereby adversely affecting yield. This finding is consistent with Cabas (2009), who observed that an increase in precipitation in months around planting and harvesting decreases crop yield. Conversely, Kawuna (2011) indicated that in Ethiopia Pre-season rainfall had a positive effect on maize production.

Increase in rainfall during the growing period for the main crop as well as the short rains crop is expected to increase maize yield but at a decreasing rate. As maize crop goes through the vegetative and reproductive stages, sufficient rainfall water is required. However, water level beyond the crop requirement has a negative effect on yield. These results are consistent with the findings made by Akpalu *et al.*, (2008), Blanc (2011) and Bhandari, (2013) that precipitation has a positive effect on maize yield while Sowunmi and Akimola (2010) concluded that with sufficient water maize can be grown in many parts in Nigeria. The nonlinear influence of rainfall on maize yield is consistent with the finding made by Cabas, (2009) and Blanc (2011). Further, Moula (2008) and Bhandari, (2013) observed that rainfall variability has a negative effect on maize yield. Conversely, Rowhaniet *al.*, (2011) estimated that an increase in inter seasonal precipitation reduces maize yield.

#### *Marginal Effects of Temperature on Maize yield*

On the effects of temperature on maize yield, estimates from the maize yield model show that the coefficients of linear term of mean temperature in the march to May period and June to



September are positive and significant at 1 percent level. The coefficient of temperature variability is negative and weakly significant at 10 percent level. However, the coefficients of linear terms for mean temperature in January to February and October to December periods are insignificant.

The coefficients of squared term of mean temperature in the March to May period and June to September period are negative and significant at 1 percent level, indicating an inverted U relationship. This result indicate that during the main crop growing season an increase in temperature is of benefit to crops but does so with diminishing marginal benefits up to some optimal point beyond which an increase in temperature would have damaging effects.

The marginal effect of temperature in March to May period is specified as.

$$\frac{\partial \Delta Q}{\partial T_{MAM}} = 1066330 - 2(0.272724)\overline{\Delta T_{MAM}} \dots \dots \dots (9)$$

Holding other variables constant, a rise in temperature by 1<sup>0</sup>C mm relative to the period's average of 19.9<sup>0</sup>C reduces maize yield by 0.19 tonnes per hectare.

The marginal effect of temperature in June to September period is specified as.

$$\frac{\partial \Delta Q}{\partial T_{JJAS}} = 13.35869 - 2(0.375089)\overline{\Delta T_{JJAS}} \dots \dots \dots (10)$$

Holding other variables constant, a rise in temperature by 1<sup>0</sup>C mm relative to the period's average of 18.25<sup>0</sup>C reduces maize yield by 0.33 tonnes per hectare.

The coefficient of temperature variability is negative and weakly significant at 10 percent level. The coefficient estimate indicates that when temperature variability increases by one standard deviation, maize yield decreases by 0.06 tonnes per hectare. The nonlinear relationship between temperature and maize yield observed in the main crop growing season shows that increase in temperature leads to an increased yield but beyond the optimum level, further increase in temperature reduces maize yield. This can be as a result of the fact that higher temperatures when water /moisture is limiting usually dry out silks and damage pollen resulting in scatter grained ear or an ear with a barren tip. Consequently, this causes maize yield and output supply to decline (FAO, 2015; Wiatrack, 2015).

These results are consistent with the findings made by Rowhaniet *al.*, (2011), Blanc (2011) and Ereghaet *al.*, (2014) that temperature has a negative effect on maize yield. Similarly, the results are consistent with those of Cabas (2009) that increase in temperature can have both positive and negative effect depending on the season. On the contrary, Akpalu *et al.*, (2008) and Bhandari, (2013) found that maize yield responds positively to temperature. The finding that temperature variability has influence on maize yield is consistent with the finding made by Moula (2008), Cabas (2009) and Bhandari, (2013). As well, the study findings are consistent with other studies that found a nonlinear relationship between temperature and precipitation on crop production

(Mendelsohn *et al.*, 1994; Kabubo-Mariara and Karanja, 2008; Krukulasuriya and Mendelsohn, 2008; Cabas *et al.*, 2009; Rowhani *et al.*, 2011).

The findings indicate that during the growing season for maize, there is a higher yield, when rainfall is sufficient and when temperature is not beyond the required optimum. Adequate moisture content, during the growing period, which corresponds to March to May period and June to September period for the main crop varieties and October to December for the short rain varieties, boosts availability and uptake of nutrients. This makes the plants stronger and less susceptible to disease and insect damage ultimately increasing maize yield.

#### *Marginal Effects of Economic Variables on Maize yield*

Coefficients estimate for area under crop indicate that changes in area under crop has significant effect on maize yield. The estimated coefficient has a negative sign and is significant at 5 percent level. This result indicates that owing to decreasing marginal land productivity, maize yields is decreasing, as area under crop increases. The coefficients of fertilizer consumption is positive and significant at 5 percent level of significance. As fertilizer consumption increases by one kilogram, maize yield increases by approximately 0.0192 tonnes per hectare. Use of fertilizer improves soil fertility and is useful in replenishing soil nutrients. Thus, use of fertilizers for sustained crop yield is integral given that in Kenya, farmers cultivate sub optimal land and use the same plot season after season given that only 20 percent of land in Kenya is agriculturally productive (Johnson *et al.*, 2003; Sheahan, 2011). The coefficient of labor use is insignificant while the coefficient of maize seed use is positive and significant at 5 percent level. The results show that an increase in the use of certified seeds by 1 kilogram raises maize yield by 0.046 tonnes per hectare. This indicates that one of the ways to increase maize productivity is to increase the use of certified maize seeds, as noted by Okoboi *et al.*, (2012) farmers who apply fertilizers on improved seeds record the highest maize yield. Thus, limited use of fertilizers and improved seeds is one of the major constraints in raising maize yield.

#### **Conclusion and Recommendations**

Maize yield analysis provides an insight on how climate change influences crop yield. The analysis showed a concave relationship between maize yield and rainfall in the long rains and short rains period. These indicate that an increase in rainfall is expected to raise yield but with diminishing marginal benefits. The findings indicate that water remains an integral factor in maize production and occurrence of adequate rainfall is imperative in boosting maize yield. Thus, low and unreliable rainfall restricts suitability of maize production and has been a contributor to declining maize yield in Kenya. Early rains have a negative effect on maize yield and indicator that changes in rainfall patterns could be making it hard for farmers to make proper and timely decisions. The unpredictability of Kenya's rainfall and its trend to fall heavily in a

short period is likely to raise the climate risk faced by small scale farmers consequently raising uncertainty to food security.

The effects of increase in temperature on maize yield depend on the season and to an extent the stage of crop growth and development. Overall, the study finds that increase in temperature has a negative effect on maize yield. A concave relationship between maize yield and mean temperature is observed in March to May season. Thus, increase in temperatures beyond the optimum level even in wet seasons lowers maize yield. Additionally, analysis show that larger effects of change in temperature and rainfall on maize production are observed in the main crop growing period. These results indicate that warmer temperatures when water is not limiting tend to benefit maize crop up to a maximum threshold beyond which further increase becomes detrimental. Hence, with a projected rise in temperature maize production is likely to reduce, hence there is need to establish measures geared towards averting the situation.

Evidently, from the study findings climate variability has an adverse effect on crop production in Kenya, posing a greater concern food security. Thus, there is need for a wide-ranging policy that will elevate the potential of rain fed agriculture in the midst of the risks posed by climate change. The significant response of maize yield to climate variability points to a possible decline in crop production in the future, in absence of adaptation and mitigation mechanisms. In turn, this would make Kenya more food insecure and adversely affect foreign revenue, employment and income generation.

The adverse effects of climate change on maize yield creates a need to formulate all-inclusive policies, strategies, and instruments that specifically address effects of climate change, paramount in building adaptation and mitigation mechanisms. Specifically, amid the threat to food security, there is need to: shield highly productive agricultural land from other non-agricultural developments especially real estate development; Provide climate information to relevant stakeholders in a timely and useful format and supplement rainfed agriculture through irrigation which can be attained through rainwater harvesting. This calls for Ministry of Agriculture, Kenya Meteorological department and relevant stakeholders to commit more resources towards adaptation and mitigation mechanisms.

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## **Management Commitment and the Extent of Corporate Social Responsibility Reporting among Companies Listed on Nairobi Securities Exchange in Kenya**

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### **Abstract**

*The purpose of the study was to assess whether management commitment determines the extent of corporate social responsibility reporting of companies listed in Nairobi Securities Exchange in Kenya. Descriptive survey research design was employed to survey whether the identified variable is true and significant determinant of the extent of corporate social responsibility reporting among the companies. A sample of 148 respondents was selected using proportional stratified sampling method. Document analysis was used to collect primary data from the companies' annual reports on the extent of corporate social responsibility reporting, while structured questionnaires were used to collect primary data from the identified respondents on their perception with regard to management commitment. Secondary data pertaining to literature review was collected from online journals and selected text books. The collected data was edited, tabulated and analyzed using statistical package for social sciences (SPSS version 20). The descriptive statistics revealed that the management of the samples companies on average are committed to CSR reporting in terms of adequacy of holding CSR meetings and conduciveness of the reporting environment but were less committed to investing in having innovative methods of CSR reporting. The hypotheses testing revealed that management commitment has a significant and positive influence on the extent of corporate social responsibility reporting. The study recommends that the management should align their corporate strategy in such a way that will achieve the required profits and at the same time engage in social and environmental activities. These will improve transparency and accountability in reporting CSR activities*

**Key words:** *Corporate social responsibility, reporting, management commitment, reporting environment*

### **Introduction**

### *Background of the Study*

The accounting profession has not been left behind with the new boom in the global sustainable development research. Sustainability in the accountancy profession proves to be the new trend in research with many focusing on the content of sustainability reports. Research on the determinants of sustainability reports is still minimal. Accountability and transparency has been considered key components in achieving the economic goals of the Kenya's Vision 2030. To achieve these economic goals, companies are expected to be more transparent and accountable on how they utilize stakeholder's resources at their disposal. Due to the massive company failures experienced in the 21<sup>st</sup> century stakeholders are becoming more proactive in demanding for more comprehensive information from the managers about the performance of their organizations. Preparation of financial reports has been used as a tool for communicating, monitoring and evaluating the management's stewardship, accountability and transparency. The financial reports focus mainly on reporting the economic aspect of performance which makes them limited because the social and environmental aspects are left out hence the need for more comprehensive reports which focus on all areas of business performance including the economic, environmental, employee welfare, community involvement, product or service quality as well as corporate governance. Many stakeholders are considering sustainability as a major factor when evaluating investment decisions; it is becoming clear that communicating effectively with stakeholders on the progress towards economic prosperity, environmental quality and social justice will become the defining characteristic of corporate responsibility in the 21<sup>st</sup> century (Wheeler & Elkington, 2001). As sustainability takes effect it is expected to have fundamental effect on business value (KPMG, 2012) as the management will be expected to put every issue and opportunity into business context with enough details for stakeholders to understand the potential implication for the business value.

Sustainability reporting which takes into consideration corporate social responsibility (CSR) has been cited as a common practice among the developed economies. According to KPMG (2011) survey on G250 companies 71% of European countries reported on CSR activities with American companies at 69%. A number of important markets in developing and emerging economies still show low levels of CSR reporting with only 20% of Indian companies adopting the practice 37% in Taiwan. Though Kenya was not included in the survey the research by Baroko, Dulacha and Brown (2008) indicated a very low level (15%) of CSR reporting in the banking sector and also similar results were reported by Okoth and Ponnu (2009) and Kalunda (2012). Current studies are showing signs of improvements year after year with Kipruto (2013) indicating that 18% of the sampled companies in the banking sector had some sort of CSR reporting.

In Kenya sustainability reporting is done on voluntary basis but the full disclosure principle requires that the companies provide detailed information on all transactions and events which

take place within a given period of time. Runji (2014) asserts that completeness of information allows stakeholders to understand companies' activities, policies, performance as well as providing a competitive edge). Incomplete information on the other hand may encourage unethical behavior such as fraud, loss of company resources as well as increased cost of capital (Rory, 2011). In many organizations a considerable amount of resources are being used in funding corporate social responsibility activities. According to Ufadhili trust (2010) 12% of Kenya's companies spent between Ksh20M and Ksh150M on CSR activities in one year, but the level of disclosure on CSR activities is very low compared to most developed countries (Kalunda, 2012). Due to these massive investments in CSR activities, stakeholders are demanding to be provided with clear, complete and up to date information about the resources used in CSR activities to be able to evaluate the returns on such investments. The success of sustainability and its related activities is evident with the support of the chief executive officer (CEO) and the top management. The top managers are the driving force behind the CSR programs, CSR policies as well as communicating these efforts to required stakeholders (Crespin & Boudrie, 2011). It is on this basis that this study sought to assess the role played by management commitment in determining the extent to which company management is willing to disclose corporate social responsibility information with particular focus on listed companies in Kenya.

#### *Objective and Hypothesis*

The objective of the study was to examine extent to which Management commitment determines the level of corporate social responsibility reporting of companies listed in Nairobi Securities Exchange in Kenya. The following hypothesis was generated and tested.

H0<sub>1</sub>: Management commitment does not determine the extent of corporate social responsibility reporting of companies listed in Nairobi Securities Exchange in Kenya.

### **Literature Review**

#### *Theoretical Review*

The study was based on stakeholder theory which focuses on individual stakeholders expectations from the organization by considering the different stakeholders within the society and identifying how they can be managed to meet specific group's expectations. A stakeholder is defined as any group or individual who is affected and can affect the achievement of the organization's objectives (Freeman, 1984). Based on the ethical perspective of stakeholder theory, each of these groups has different interests which conflict with those of others and so it is the responsibility of the entities to manage the business in such a way that balances the interests of all these stakeholder groups (Deegan, 2002). Accounting is concerned with managing the relationship between the business entities and the different stakeholder groups through provision of information concerning what the entity is doing to safeguard their interest. With regard to CSR

each of these stakeholders requires knowing how the organization is meeting their corporate social responsibility expectation which is achieved through CSR reporting. Nakabiito and Udechukwu (2007) identified that the major stakeholders have an influence on the level of CSR disclosures among Swedish public companies based on the Global reporting initiative (GRI) guidelines. The management of businesses in the 21 century is increasingly recognizing the importance of CSR and much more disclosing their CSR efforts to stakeholders. The management of these organizations have the sole responsibility of determining the content, quality and quantity of information provided to the specific stakeholder. The motivation to provide more than the legal requirement will depend on the attitude of the manager and on the benefits accrued to the organization.

### ***Empirical Review and Research Gaps***

Management commitment and extent of corporate social responsibility reporting

In addition to the company characteristics discussed above as having an impact on the level of CSR disclosure, internal contextual factors may also have an influence on the extent of CSR reporting. Nakabiito and Udechukwu (2007) identified that the major stakeholders have an influence on the level of CSR disclosures among Swedish public companies based on the GRI guidelines. The current trend in business has seen stakeholders' engagement becoming a key concern for managers as the investors are becoming more aware about sustainability. Many stakeholders are considering sustainability as a major factor when evaluating investment decisions; it is becoming clear that communicating effectively with stakeholders on the progress towards economic prosperity, environmental quality and social justice will become the defining characteristic of corporate responsibility in the 21<sup>st</sup> century (Wheeler & Elkington, 2001).

The ability of a business to continue as a going concern requires the legitimacy to operate from the government, community and other stakeholders (Epstein, 2008). Failure to manage this critical stakeholder engagement may have negative impact to the business interests of damage to company image and reputation. As companies acknowledge the importance of stakeholder engagement and the value associated with it, the use of CSR reporting has showed considerable improvement as indicated by a U.S survey (2012) where the number of companies which disclose CSR information increased from 20% in 2010 to 53% in 2012 among the sampled S&P 500 companies.

The success of sustainability and its related activities is evident with the support of the CEO and the top management. The top managers are the driving force behind the CSR programs, CSR policies as well as communicating these efforts to required stakeholders (Crespin & Boudrie, 2011). The boards of directors are great influencers of determining to what extent they are willing to balance the desire for short term profitability against the pressure for sustainability.

Developing sustainability strategies as well as their implementation is often a big challenge for most top managers (Epstein, 2008). The managers are pressured to deliver profits for the corporation and their performance is typically measured on how successful they deliver that profit. This brings in the dilemma of aligning the corporate strategy so as to achieve the required profits and at the same time engage in social and environmental activities so as to obtain legitimacy, royalty and trust from stakeholders. The managers in the level of board of directors have a responsibility of providing direction to the organization with regard to the content and mode of communication with stakeholders. Krongkaew & Setthasakko (2013) focused on management attitude towards CSR disclosures as factors influencing sustainability reporting and made a conclusion that the managers can greatly influence the content of the reports they publish to stakeholders. The managers are in a position to sieve the content of the report as indicated by Kalunda (2012) who assessed the content of CSR report among public companies in Kenya and identified that those who reported only focused on reporting the good news with the aim of painting a positive picture of their companies in order to be considered good corporate citizen and be given the legitimacy to continue operating.

Epstein (2008) noted that the management of businesses in the 21 century is increasingly recognizing the importance of CSR and much more disclosing their CSR efforts to stakeholders. The impetus for implementing corporate strategy to integrate social and environmental information into the economic impact information can be driven by the management commitment to sustainability reporting. Not unless the managers are committed to sustainability they may not recognize that sustainability can create financial value for the corporation through enhanced revenues and reduced costs. Due to increased management commitment the size of corporate social and environmental expenditures is increasing rapidly and the necessity to improve reporting of these impacts have become critical because of the pressure from the general public, government and activist NGO's who are increasingly becoming aware of sustainability and the impact that corporations have on the society and the environment. Thus it is the responsibility of the managers to determine the social and environmental issues that are important to the key stakeholders and take the necessary steps to foster the relationship with such stakeholders by communicating to them the efforts they have undertaken to improve sustainability through the use of CSR report.

The review of literature has provided evidence that CSR reporting is widely accepted practice among the developed countries with a lot of consistency in their reporting. In developing countries disclosure practices are done on ad-hoc manner, inconsistent, incomplete and lack the reliability and objectivity required to be used to provide the much needed information by stakeholders about the CSR activities in the organizations. Most of the information disclosed is focusing on the positive results making CSR to be used as a marketing tool hence increasing the cost of asymmetry where the stakeholders are not accessing the much needed information to

facilitate informed decision making.

In Kenya, literature on the determinants of CSR reporting is still minimal, majority of the researchers have focused on assessing the extent of CSR disclosures which provide conflicting results as to the extent of CSR reporting in Kenya using content analysis and company websites to collect the required data. Current studies have shown that the concept of CSR reporting is gaining recognition with several companies demonstrating the interest to report on their CSR activities on their annual reports with the majority using narrative forms of disclosure mainly as disclosure notes. Those who have CSR activities are concerned with the non-monetary form of disclosures which pose a challenge of accounting. Several determinants have been identified in literature which may be used to explain the reason behind CSR reporting among many companies. The current study sought to extent knowledge on the determinants of CSR reporting in Kenya, by focusing management commitment and assesses the extent to which it can be used to explain the extent of CSR reporting based on the Kenyan context.

### **Methodology**

This study adopted a descriptive survey design which involved the collection of data, analysis and test of hypotheses with the aim of answering questions under study. According to Cooper and Schindler (2011) descriptive studies are concerned with finding out ‘whether’, and they aim at addressing the concerns of a particular population in a specific time or over a period of time. Surveys are most used methods in business research since they provide an accurate and valid representation of the variables under study (Saunders, Lewis & Thornhill, 2003). Descriptive studies require a specific form of data collection such as a survey or a case study and also offer a unique means of collecting confidential information such as content analysis. Descriptive survey research design presents an opportunity to fuse both qualitative and quantitative research. Quantitative research is a systematic investigation of quantitative properties of data to provide meaningful insight into the quantitative characteristics of the data and any statistical association between the variables of study (Cooper & Schindler, 2011).

The population comprised of all the 60 companies listed on the Nairobi Securities Exchange, from which a sample of 37 companies were selected using proportional stratified sampling method where four respondents (company CEO, the Accountant, the Assistant Accountant and the chief internal auditor) were purposively selected from each sampled company to form the sample size of 148 respondents. Self-administered questionnaires were used to collect primary data concerning management commitment while secondary data was collected from review of literature from journals as well as selected books. Document analysis of the 2013/2014 annual reports from the company’s websites was used to collect data pertaining to the extent of CSR reporting among the sampled companies.



## Findings and Discussion

### Descriptive findings on Management commitment

The management commitment in this study was measured in terms of adequacy of company meetings, conduciveness of the reporting environment, and the level innovation in CSR reporting. The descriptive results (table 4.13) reveal that the managers of the sampled companies have a moderately above average level of satisfaction with regard to the number of CSR meetings (mean, 3.45) in a scale of five, as well as with the percentage of the number of CSR meetings (3.33) in relation to other types of company meetings. With regard to having a supportive and conducive environment for reporting the findings indicate a high level of supportive environment with regard to setting up specific department for CSR activities (mean, 3.47) as well as having a clear policy (mean, 3.46) which is understood by those concerned with CSR activities. With regard to rewarding best performing employees on CSR activities, the results reveal that on average the companies are performing well (mean, 3.5) and a standard deviation of 0.73. implying that the companies are not significantly different with relation to the way they reward those who perform well in CSR activities. In addition to having adequate meetings, and conducive environment for reporting; management commitment was also measured in terms of innovativeness in reporting. Innovation into new technology has enhanced the speed with which organization perform their tasks. To measure the level of innovativeness towards CSR reporting this study sought to identify whether the companies had software which was used in recording the CSR data as well as whether they had alternative methods of publishing their CSR report in their websites or newsletters. The findings of the study (table 4.13) reveal that with regard to using a software to record CSR data the performance was below average (mean, 2.39) as well as low performance (mean, 2.45) with regard to publishing their CSR information in their websites. The results on management commitment are found in table 1.

**Table 1: Descriptive statistics on Management commitment**

	Mean	Std. Deviation
Satisfaction with the number of CSR meetings held in a week	3.45	.84
The % number of CSR meeting compares well with other types of company meetings	3.33	.84
The CSR activities are carried out by a specific department	3.47	.81
The management rewards best performing employees in CSR activities	3.50	.73
The company has a clear CSR reporting policy	3.46	.79
The company has software for recording CSR data	2.39	.65
The company publishes CSR information in its website	2.45	.75
Valid N (list wise)		

The success of sustainability and its related activities is evident with the support of top management (Crespin & Boudrie, 2011). Management commitment towards CSR can be determined by the priority the top managers give with regard to the CSR meetings. It is in such meetings where they are expected to develop sustainability strategies as well as their implementation (Epstein, 2008). When managers are committed to the best performance of CSR activities they have the motivation to inform their principals of the steps they are taking to ensure sustainability. Reporting on CSR information gives the management an opportunity to prove to the stakeholders that they are socially responsible in their steward's role. A conducive and supportive environment is a key determinant of management commitment towards CSR reporting. In this study the conduciveness of the environment was measured by assessing whether the company has set aside a specific department to deal with CSR activities, having a clear CSR reporting policy and whether the management rewards the best performing employees in matters of CSR. The descriptive findings reveal that the managers of the sampled companies are doing well with regard to specific department for CSR activities as well as having a clear which is understood by those concerned with CSR activities. The management commitment was also supported by the high level of rewarding best performing employees on CSR activities.

These findings imply that the top management provides support to the departments with the aim of encouraging the practice of CSR reporting. Having a specific department to deal with CSR matters provides the required environment for the managers to develop strategies and ensure effective implementation as it brings a level of accountability and transparency which is necessary for improving reporting by the organizations (Epstein, 2008). This can then ensure that CSR strategies are integrated with other strategic decisions of the whole organization. The management commitment is demonstrated when a company takes issues of concern with utmost level of importance. This has been evidenced by the high level of performance with regard to having a clear policy on CSR reporting. When a policy is in place and it is understood by those concerned with CSR activities it is indicative that they will take the responsibility with utmost level of importance since the policy provides guidelines on how to communicate CSR information to the respective recipients. The managers in the level of directors have the responsibility of providing direction to the organization with regards to the content and the mode of communication with stakeholders (Krongkaew & Setthasakko, 2013) which should be guided by the reporting policy. This was in line with the findings by Runji (2014) who asserts that when an organization fails to consider CSR issues as of strategic importance puts the organization at a strategic and competitive disadvantage. Having a clear CSR policy enables the organization to deal with the challenges of adopting the new practice of CSR as well as their disclosures. Innovation into new technology has enhanced the speed with which organization perform their tasks. The current mode of annual reports are in print media which has a varied of challenges as indicated by Barako et al (2006). Print media is considered inadequate in terms of low speed of distribution where some of the annual reports do not reach the recipients or if they do they are

too late to be reliable for decision making. The advent of the internet and the web sites has provided companies with new stage to communicate with the wide and ever increasing group of information users. With this benefit the current study reveal that with regard to using a software to record CSR data the performance was below average (mean, 2.39) as well as low performance (mean, 2.45) with regard to publishing their CSR information in their websites. This implies that these companies have not adopted the use of technology in CSR reporting despite the level of benefits documented through research.

The public availability of data regarding how companies perceive and project CSR activities provide an opportunity for the public to examine the scope as well as the force driving CSR activities within the company (Tello & Yoou, 2014). Effective engagement and communication with stakeholders needs to take place on a more frequent basis than just once a year in an annual report. In order to reduce the costs associated with reporting to diverse stakeholders the use of company web site can ease the distribution of information targeting specific needs both in content and frequency. Data collection and recording was cited as a major challenge facing the listed companies in recording CSR information (fig 4.2 in the appendix). With the advent of modern technology, the use of software has been a key boost towards quality, efficiency and effectiveness of data management. Having no software to ease the process of data collection and recording can limit the content and timeliness of CSR reports. The use of technology has been cited as a boost even to reducing the costs associated with data collection and recording hence it is paramount that business organizations should be willing to incur such costs which may have a positive effect on the overall performance of the organization. While there has been debate about the accuracy of self-reporting (porter & crammer, 2006), the emergency of formal guidelines and standards such as those of GRI (2011) suggests that CSR information will become increasingly accessible to stakeholder who rely on such information as a basis of purchasing and investment decision, hence such information should be collected, summarized and distributed in the most cost effective and efficient way on timely basis. This has contributed to the advocacy for the concept of sustainable innovation which can produce solutions to the environmental problems while improving business efficiency.

#### *Regression analysis and hypotheses testing*

The objective of the study sought to examine whether Management commitment determines the extent of corporate social responsibility reporting of companies listed in Nairobi Securities Exchange in Kenya. To achieve this objective the Null hypothesis was tested;

H<sub>01</sub>: Management commitment does not determine the extent of corporate social responsibility reporting of companies listed in Nairobi Securities Exchange in Kenya. The regression model to test the hypothesis was;  $CSRDI = \beta_0 + \beta_1 X_1 + e$  Where;

CSRDI= Corporate social responsibility disclosure index

$\beta_0$ = Intercept

$\beta_1$ = regression coefficients

$X_1$ - management commitment

e = error term

The model summary results reveal that there was a positive relationship ( $R^2 = 0.12$  and  $R=0.34$ ) between management commitment and the extent of CSR reporting among the sampled companies. The coefficient of determination ( $R^2$ ) revealed that management commitment contributes to 12% of the extent of CSR reporting while the remaining 88% can be explained by other factors.

**Table 2: Management commitment Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.34 <sup>a</sup>	.12	.09	19.68

a. Predictors: (Constant), management commitment

To test the significance of the overall linear relationship of the model (goodness of fit) the F-test was carried out based on the analysis of Variance (ANOVA). The F-test results show that the model was significant ( $F(1, 35) = 4.625$  and a P-value of 0.038) at 5% level of significance as depicted on table 3.

**Table 3: Management commitment ANOVA<sup>a</sup>**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1790.56	1	1790.56	4.63	.038 <sup>b</sup>
	Residual	13549.25	35	387.12		
	Total	15339.81	36			

a. Dependent Variable: reporting. Index

b. Predictors: (Constant), management commitment

The regression model was used to test the second hypothesis, the Beta coefficient results show that management commitment significantly influence the level of CSR reporting among the companies ( $t= 2.15$ ,  $p= 0.038$ ) at 5% significant level. Hence the Null hypothesis that management commitment does not significantly determinant the extent of CSR reporting was rejected based on the results on table 4. Similar results were reported by Krongkaew &

Setthasakko (2013) who concluded that management commitment has great influence on reporting decisions.

**Table 4: Management commitment regression coefficients**

Model	Coefficients			T	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	12.02	18.66		.64	.524
Management commitment	11.51	5.35	.34	2.15	.038

### Discussion of findings

The findings of the study reveal that management commitment contributed to 11.7% of the extent of CSR reporting among the companies. The regression analysis reveal that management commitment had a positive ( $R=34\%$ ) and significant influence ( $p=0.038$ ) on the extent of CSR reporting. Several studies found a positive relationship between management commitment and the extent of CSR reporting (Epstein, 2008; Crespín & Boudrie, 2011 and Krongkaew & Setthasakko, 2013). According to the stakeholder theory managers are at a position to determine the content and the mode of communication with their stakeholders as they have sole discretion to prepare reports to the stakeholders and as such they can determine to what extent they would want to report to the stakeholders. The managers in the position of board of directors have the key responsibility of developing policies which govern the operations of the entities. They have the mandate of determining to what extent they are to carry out voluntary activities based on whether they have positive impact on the operations. Engaging on CSR activities is part of the voluntary activities which the management can determine the extent including their reporting. Legitimacy and institutional pressures exerted on the management to ensure transparency and accountability to the stakeholders has seen many companies engage in voluntary activities beyond what is required by the regulators (KPMG, 2011). These findings support those which were identified by Epstein (2008), Kalunda (2012) and Krongkaew & Setthasakko (2013) who support the notion that management commitment towards reporting influence the extent of the reporting. Management commitment can be demonstrated by the managers setting aside a specific department to deal with CSR issues, such department are expected to spend their time and resources allocated to them on CSR related issues such as training and organizing seminars on CSR reporting. Among the challenges of CSR reporting according to the qualitative findings



of this study was lack of guidance on the policies and the framework to be followed as a guide in CSR reporting. Having a clear CSR policy can act as a guide to all CSR activities including their reporting. In addition to policies, conduciveness of the environment is an important determinant of the management commitment to CSR reporting. This can be achieved when the management provide the required resources for CSR reporting, support the implementers' of the CSR policies by providing training were necessary as well as developing mechanisms of evaluating their performance and rewarding best performing employees. Hence it is the responsibility of the management to support the practice of CSR reporting by developing the guidelines to support the accountants in the process of collecting, summarizing and reporting on sustainability issues.

#### Conclusions and Recommendations

The objective of the study was aimed at examining the extent to which management commitment determines the extent of CSR reporting of companies listed in NSE in Kenya. The descriptive statistics reveal that the management of the samples companies on average are committed to CSR reporting in terms of adequacy of holding CSR meeting and conduciveness of the reporting environment but were less committed to investing in having innovative methods of CSR reporting. The Null hypothesis was tested to examine the relationship between management commitment and extent of CSR reporting. The linear regression results reveal a significant p-value=0.038) and positive ( $R=0.43$ ) relationship between management commitment and extent of CSR reporting among the companies. The results further reveal that management commitment contributes to 11.5% ( $R^2=0.115$ ) of the level of CSR reporting among the companies, based on these findings the Null hypothesis was rejected which indicated that management commitment does not determine the extent of CSR reporting, thus the conclusion that management commitment is a significant contributor towards the extent of CSR reporting among the companies.

The findings of the study reveal that management commitment has a significant positive relationship with CSR reporting. The management should align the corporate strategy in such a way that will achieve the required profits and at the same time engage in social and environmental activities. The study further recommends that the management should set a specific department to deal with CSR activities such as setting up CSR policies, ensuring their implementation as well as their effectiveness. These will improve transparency and accountability in reporting CSR activities. Another study could be carried out on the private sector who are not controlled by the CMA to ascertain if similar findings would be established.

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advantage and corporate social responsibility. *Harvard Business Review*, 84 (12), pp. 78-92.

## **Making Market Orientation Decisions: The Case of Smallholder Farmers in Kenya's Kiambu West District**

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### **Abstract**

*Smallholder Agriculture is important to livelihoods of many rural households in developing and emerging economies like Kenya. Agriculture supports the livelihoods of about 80 % of Kenya's population, 70 % of who live in rural areas. The rationale for market orientation which is the focus of this study is that it enhances consumers' purchasing power for food, while enabling re-allocation of household incomes by producers to high-value non-food agribusiness sectors and off-farm enterprises. The idea of market orientation has been used widely in the manufacturing sector; but market orientation in agriculture, particularly in the development literature, is defined less on sophisticated concepts of market intelligence and competitive intelligence gathering and use of that information to make decisions, but more on the degree of allocation of resources (land, labour and capital) to the production of agricultural produce that are meant for exchange or sale. The aim of this study is to examine factors that influence smallholder farmers in Kenya to make decision to be market oriented. This study is based on primary data collected from smallholder farmers in Kiambu West district in Kenya. Descriptive measures and multiple regression models were the methods used to analyse the data. Factors such as age of household head, vegetable prices, contractual agreements and membership in marketing groups were found to significantly and positively influence decision to be market oriented. Household size and farm size significantly and negatively influenced smallholder farmers' decision to be market oriented. Policy measures such as those that can reduce the intensity of land fragmentation, improve physical infrastructure, facilitate smallholder farmers' access to credit and facilitate contractual agreements between producers and buyers were recommended as a way of improving market orientation among smallholder farmers in Kenya.*

**Key words:** *Market orientation, farm capitalisation, commercialisation, smallholder farmers, developing countries, Kenya*

### **Introduction**

Smallholder Agriculture is important to livelihoods of many rural households in developing and emerging economies like Kenya. Agriculture supports the livelihoods of about 80 % of Kenya's population, 70 % of who live in rural areas. The aim of this study is to examine factors that influence smallholder farmers in Kenya to make decision to be market oriented. Kohli & Jaworski (1990) state that market orientation is defined as the organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide

responsiveness to it. The idea of market orientation has been used widely in the manufacturing sector, essentially referring to the extent to which a producer uses market information such as customer needs and product prices as a basis to make decisions on the three economic questions of what to produce, how to produce and how to market (Kohli & Jaworski, 1990; Jaworski & Kohli, 1993; Fritz, 1996). However, (Hinderink & Sterkenburg, 1987; Immink & Alacorn, 1993) suggest that market orientation in agriculture, particularly in the development literature, is defined less on sophisticated concepts of market intelligence and competitive intelligence gathering and use of that information to make decisions, but more on the degree of allocation of resources (land, labour and capital) to the production of agricultural produce that are meant for exchange or sale. Berhanu & Moti (2010) states that market orientation in agriculture is mainly a production decision issue as influenced both by production conditions and market signals. Hence, Haddad & Bouis (1990) states that the concept of market orientation in agriculture implies the percentage of marketed output from total farm production.

In the 1990s, the concept of market orientation moved from an idea discussed among practitioners and academics to a rigorously developed and tested concept which can be empirically measured. (Day, 1994; Kohli & Jaworski, 1990; Narver & Slater, 1990) suggest that the study of the market orientation concept has continued, aided by the seminal works of a handful of researchers. Lafferty & Hult (2001) states that while these influential researchers had their own individual conceptualizations of a market orientation in theory and practice, common threads were evident. First, the search for value was universally viewed as the origin for the development of a market orientation. Secondly, each conceptualization of market orientation has within it embedded a cultural component which in turn influences the behaviour of the firm and its employees. The following paragraphs present previous empirical studies on the concept of market orientation.

### **Statement of the Problem**

In Kenya, the contribution of smallholder agriculture to national income, employment, food and nutrition security is recognized in various development strategy policies such as the “Kenya Vision 2030” (Republic of Kenya, 2012). However, smallholder farmers’ participation in modern markets is low despite the envisaged benefits of market orientation. Access to emerging high-income agricultural markets (e.g. supermarkets) is perceived to be skewed in favour of large-scale suppliers. The asymmetric structure of many markets which include high transaction costs and lack of market information may represent considerable barriers to market access by smallholder farmers. Moreover, remoteness, poorly maintained roads, inadequate transport and storage facilities hinder the smallholder farmers from participating in competitive markets, restricting them to non-contestable markets dominated by a few powerful purchasers (World Bank, 2007).

These challenges are exacerbated by climate uncertainties, where most crops are susceptible to drought, which leads to severe crop losses, especially where irrigation is unavailable. Diminishing land sizes observed in high-potential agricultural areas such as Kiambu West District (which was the site for this study); hinder smallholders' ability to practice crop rotation or commercialize their production. Although previous studies on market orientation have been conducted in Kenya, they have focused on the relationship between market orientation and firm performance, with no study on small-scale farming. This study examines the factors that influence smallholder vegetable farmers in Kenya to make decision to be market oriented.

### **Justification of the Study**

Poverty reduction and development of sustainable livelihoods is crucially important in developing and emerging economies. Understanding the drivers of market oriented farming and the benefits of accessing sophisticated markets by smallholder farmers is an important activity for developing strategies because it creates a self-reliant growth pattern out of poverty. While some empirical studies have been conducted on the importance of a market orientation in agriculture, there does not seem to be any research studies where the market orientation of the smallholder farmers involved in vegetable value chains were empirically measured and tested. The reason for limited research on market orientation in production agriculture is the continued perception among firms of its limited applicability. Until recently, there has been little anecdotal evidence that becoming market oriented had any discernible impact on firm-level performance in agriculture. (Reukert, 1992; Chen, 1996) state that the nature of the pricing mechanism within agriculture may also limit the development of a market orientation attitude by farmers. Researchers have shown that the behaviour of firms and agri-food supply chains is influenced by the reward systems in place. Hence, this study adds to the existing literature on market orientation in agri-food supply chains by examining the factors that influence smallholder vegetable farmers in Kenya to make decision to be market oriented.

### **Literature Review**

While marketing academics and practitioners have argued for more than three decades that business performance is affected by market orientation, the study by Narver & Slater (1990) was the first systematic empirical analysis of the effect of a market orientation on business profitability. Following the study by Narver & Slater (1990), a number of studies examining the relationship between market orientation and business performance emerged, though mainly in the context of developed countries (Ruekert, 1992; Jaworski & Kohli 1993; Slater & Narver 1994). Although some of the results were mixed, there was an emerging consensus to suggest that market orientation did have a positive impact on business performance. The results of a



longitudinal study using panel data across a large number of industries by Kumar, Subramaniam, and Yauger (2011) state that market orientation has a positive effect on business performance in both the short and the long run. (Jawoski & Kohli 1993; Slater & Narver, 1994; Chang & Chen 1998) suggest that many studies supported the positive relationship between market orientation and organizational performance. Today the positive effect of market orientation on business performance in developed economies which have typically predictable environments is no longer in doubt. However, examining this relationship in emerging economies is still in its infancy. A study in China by Liu, Luo, and Shi (2003) state that high levels of market orientation may be associated with higher levels of learning, entrepreneurship and the potential to achieve higher performance. In contrast, studies in Ghana by Appiah-Adu & Singh (1998) failed to generate evidence for the market-orientation-performance link and question its generalizability to all contexts.

In Kenya, studies on market orientation have yielded mixed results. For example, Yabs & Awuor (2016) conducted a study investigating the relationship between market orientation and performance of fruit exporting firms. The results showed that market orientation influenced the performance of these firms. Another study by Langat, Frankwick and Sulo (2015) investigated the effects of market orientation on firm performance through innovation in an environment of emerging markets, competition, technological change and government regulations. Results indicated that market orientation affects firm performance in this environment. The aim of a study by Njeru & Kibera (2014) was to empirically assess the perceived direct effects of the three components of market orientation namely; customer orientation, competitor orientation and the inter-functional coordination on performance of Tour Firms in Kenya. The results revealed that the three components of market orientation affected the Tour Firms. Additionally, Langat, Chepkwony, and Kotut (2012) empirically tested the effect of the business environment in Kenya on the relationship between market orientation and firm performance, and found a positive relationship.

## **Methodology**

### *Data Types and Sources*

This study was based on primary data collected from smallholder farmers in six villages from Kenya's Kiambu West district, where a variety of vegetables are grown intensively. The district was selected mainly because of its proximity to the capital city, Nairobi, where there is a large and lucrative urban market for fresh horticultural produce (Ministry of State for Planning, 2009). The district covers an area of 958.2 km<sup>2</sup> and has a population of 493,158, with a density of 515 people per km<sup>2</sup>. Agriculture is the district's main economic activity and the highest income earner, and comprises both crops and livestock enterprises. The key food crops grown are maize, beans, Irish potatoes, and a variety of vegetables, while the major cash crops are coffee, tea,

pyrethrum, and horticultural export crops like flowers. The main livestock enterprises include dairy cattle, poultry, pigs, and sheep (Ministry of State for Planning, 2009). A household survey was conducted to gather farm-level data on the level of investment on farm equipment as well as socio-economic and demographic characteristics of the study sample. The sample was randomly selected using multistage random sampling method. A semi-structured questionnaire was administered to 200 household heads using face-to-face interviews. Both qualitative and quantitative data were collected.

### *Measurement of Variables*

A semi-structured questionnaire was developed that measured the determinants of market orientation among smallholder farmers. Before the questionnaire was finalized, it was pre-tested so that any weaknesses and problems in the questions, as they relate to the research setting, could be identified. To enable the pre-testing, 20 farmers were selected and 15 of them agreed to participate in the pre-test. The principal researcher then made appointments with each and interviewed them. They were also asked to make comments (if any) on the ambiguity of the questionnaire or any other issues that they believed were irrelevant or should be changed. As an outcome of this process, several questions were modified in order to better reflect the local socio-cultural situation. A final questionnaire was then prepared for data collection.

### *Calculation of Market Orientation Index (MOI<sub>i</sub>)*

To measure market orientation, ten (10) types of farm equipment commonly used by smallholder farmers were used and named as Market Orientation Index ( $MOI_i$ ). The total value of farm equipment each farmer had invested per acre of land was used to calculate the  $MOI_i$ .

Gebremedhin & Jaleta, (2010) state that in agricultural and development economics, market orientation is usually calculated based on the proportion of commodity sold to total amount produced in relation to the amount of land allocated to a particular crop to total land operated by a household. In this study, the definition for market Orientation in agriculture was adopted, i.e.- the degree of allocation of resources to the production of agricultural produce that are meant for exchange or sale. Hence the observed value of farm equipment that a farmer had invested in was used as a proxy for calculating market orientation. The equipment was allocated a monetary value based on the Kenya Shilling value as a way of examining its level of contribution toward improved productivity. Therefore, market orientation index ( $MOI_i$ ) indicating the degree of allocation of resources by each farmer was calculated as follows:

$$MOI_i = \sum_{k=1}^K V_{ik} / A_i$$

Where  $V_{ik}$  is the total value for all equipment  $k$  owned by farmer  $i$ , and  $A_i$  is the total land in acres owned by farmer  $i$ .

The dependent variable (DV) is the  $MOI_i$  which represents the farm capitalisation (FC) density, i.e. the amount of money invested per acre of land. It has a minimum value of zero and no theoretical maximum.

The independent variables (IVs) that condition the market orientation of smallholder farmers as adapted from literature are; age of household head, gender of household head, level of education, household size, household labour, farm size, average price for vegetables, produce loss during transportation, contractual agreement, membership in marketing group, distance to the nearest important market, distance to the nearest all weather road, ownership of vehicle, access to extension services and credit. These explanatory variables are specified in Table 1.

Table 1. Definition of explanatory variables

Variable Name	Variable Type	Variable definition and measurement	Hypothesized effect on market orientation
<b>Age of household head above 15 years' old</b>	Continuous	Age of the household head (years)	+
<b>Gender of household head above 15 years' old</b>	Dummy	1 if household head is male, otherwise 0	-
<b>Education of household head above 15 years' old</b>	Continuous	Formal education of the household head (years of schooling)	+
<b>Household size</b>	Continuous	Number of household members	-
<b>Household labour</b>	Continuous	Number of active family members working on the family farm (aged 15–60yrs)	+
<b>Farm size</b>	Continuous	Amount of land under cultivation of farm household (Acres)	+
<b>Average price for kale/bunch</b>	Continuous	Average selling price/bunch in Kshs	-
<b>Average price for tomatoes/small crate</b>	Continuous	Average selling price/small crate in Kshs	+
<b>Produce loss during transportation</b>	Dummy	1 if significant and 0 if not	+
<b>Contractual agreement</b>	Dummy	1 if signed a contract and 0 if not	+
<b>Membership in</b>	Dummy	1 if member of a group and 0	+

<b>marketing group</b>		if not	
<b>Distance to the nearest important market</b>	Continuous	Distance in kms	+
<b>Distance to the nearest all weather road</b>	Continuous	Distance in kms	+
<b>Ownership of vehicle</b>	Dummy	1 if vehicle owned, otherwise 0	-
<b>Access to extension services</b>	Dummy	1 if accessed services and 0 if not	+
<b>Access to credit</b>	Dummy	1 if accessed credit, otherwise 0	+

Source: Author's definitions

## Results and Discussion

The study used descriptive measures and Multiple Regression Models to analyse the data. In this section, descriptive statistics of the variables and the estimation results of the Multiple regression are presented. The results will facilitate the identification of the factors that influence a smallholder farmer to be market oriented.

### *Descriptive Statistics of the Variables*

The data collected from 200 smallholder farmers are analysed to show the relevant demographic, social-economic and farm specific features of the farmers. It was noted that the features of all farmers are not the same and there are significant variations across farmers. The key features of the variables used in the study are presented in Table 2. From the table, it is revealed that the average age of the household head is 46.6 years with maximum of 78 years and minimum of 24 years. The average level of education of farmers is 11 years of schooling with minimum of 0 years of education and maximum of 20 years of schooling.

**Table 2. Description of collected data**

Variables	Sample	Min	Max	Mean	Std Dev
Age of household head above 15 years' old (years)	200	24	78	46.6	9.44
Education of household head above 15 years' old (years)	200	0	20	11	3.77
Household size (number)	200	1	10	4.05	1.5
Persons involved in farming (number)	200	1	4	1.83	0.65
Farm size	200	0.25	10	1.23	1.27
Average price for kale / bunch (Kshs)	200	20	25	20.9	2.02
Average price for tomatoes / small crate (Kshs)	200	1000	2000	1341.8	242.42

Distance to the nearest important market (km)	200	6	45	32	7.77
Distance to the nearest all weather road (km)	200	0.25	8	2.29	1.5

Source: Author's calculations

From Table 2, it is observed that the average household size is 4.05, whereas the minimum is 1.5 and the maximum is 10 members. The number of persons involved in farm labour differed among the households. The average is 1.83, maximum of 4 and minimum of 1 person, but both family and hired labour is used. From the Table, the average farm size owned by the farmers is 1.25 acres indicating that most of the farmers in the study area are in the smallholder category. The maximum and minimum farm sizes are 10 and 0.25 acres respectively. The average price for kale/bunch in Kshs is 20.9, maximum of 25 Kshs and minimum of 20 Kshs; while the average price of tomatoes/small crate in Kshs is 1341.8, maximum of 2,000 Kshs and minimum of 1,000 Kshs. It is also observed that the average distance travelled by smallholder farmers to the nearest important market is 32 kms, maximum of 45 kms and minimum of 6 kms. The average distance travelled to the nearest all weather road is 2.29 kms and the maximum and minimum distance is 8 and 0.25 kms respectively.

#### *Market orientation of smallholder farmers*

The level of investment in farm equipment per acre by smallholder farmers is presented in Table 3. From the Table, it is observed that the average investment is 54,600 Kshs, the maximum is 197,400 Kshs and the minimum is 16,900 Kshs.

Table 3. Market orientation of smallholder farmers (value invested in farm equipment per acre (Kshs))

Dependent Variable	Sample	Min	Max	Mean	Std Dev
<b>Market Orientation Index (<math>MOI_i</math>)</b>	200	16900	197400	54600	42500

Source: Author's calculations

Data on market orientation were skewed; hence, they were transformed using the logarithmic (Log 10) method to improve the normality of errors. The transformed data was then used for analysis. The residual plots were checked and found to be good. Figure 1 presents histograms for the skewed and transformed data (Tabachnick & Fidell, 2007).

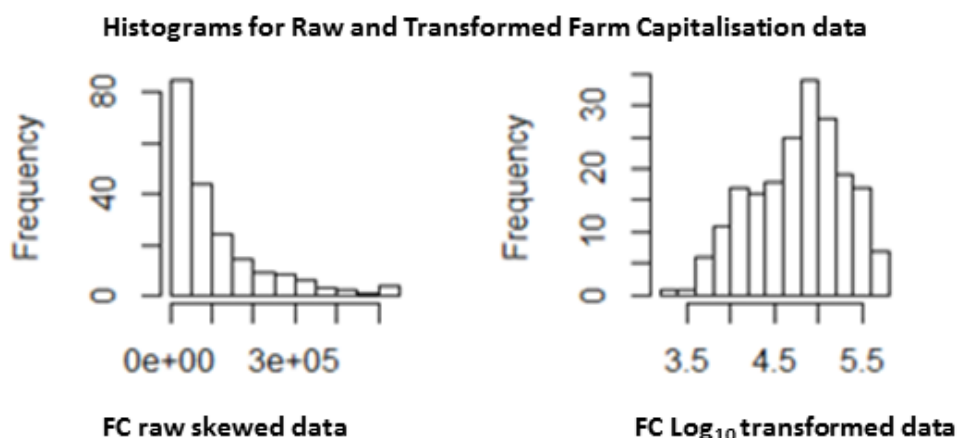


Figure 1: Histogram for market orientation raw skewed data (left) and market orientation Log10 transformed data (right)

#### *Regression Results on Market Orientation Decision*

In order to achieve the aim of the study, demographic and socio-economic variables are included in the multiple regression models. The models are used to predict the factors influencing the decision by smallholder farmers to be market oriented. To fit the multiple regression models, the model started by including all the explanatory variables presented in Table 1. Tabachnick & Fidell (2007) state that the first step in the analysis is to carry out a backward elimination process to remove the explanatory variables that were significant at probability level  $p > 0.05$  (i.e., a strong presumption against the null hypothesis or, in other words, that they were not involved in predicting the dependant variable). Next, a stepwise regression to fit the regression models for dependent variable using the remaining explanatory variables is carried out to select the explanatory variables that were significant at probability level  $p < .05$  and were involved in predicting the dependent variable. The estimation results are presented in Table 4.

Table 4. Multiple regression analysis of determinants of decision to be market oriented by smallholder farmers

Explanatory variable (P)	Coefficient estimate (CE)	Standard error	Factor=(Log <sub>10</sub> <sup>PCE</sup> )	t-statistic	p-value
Constant	4.6662	0.1495	-	31.22	0.001**
<b>Age</b>	0.010396	0.003247	1.02	3.20	0.002**
<b>Household size</b>	-0.06509	0.02078	0.86	-3.13	0.002**
<b>Farm size (acre)</b>	-0.25492	0.02384	0.556	-10.69	0.001**
<b>Vegetable price (Kshs X 1000s)</b>	0.10216	0.04211	1.27	2.43	0.016*
<b>Contracts</b>	0.16041	0.07368	1.45	2.18	0.031*
<b>Marketing group</b>	0.16041	0.05845	1.45	2.74	0.007**



**Number of observations=200**

**$R^2 = 0.476$ ,  $R^2(\text{adj})=0.46$ ,  $f\text{-statistic}=29.28$ ,  $\text{probability}(f\text{-statistic})=0.000$**

***p-value = \* significant at 5% level; \*\* significant at 1% level***

Source: Author's calculations

The model had a strong  $R^2$  of 47.6% and adjusted  $R^2$  of 46% suggesting strong predictive power.

The results in Table 4 show that the age of a household head significantly and positively influenced decision to be market oriented, with an increase in age by one year showing an increase in the decision to be market oriented by a factor of 1.02. This finding can be explained by the fact that older farmers usually have accumulated farm investments over the years, whereas their younger counterparts have not. This finding is similar to other studies that suggest that older farmers may make decision to be market orientation more easily than their younger counterparts because they might have accumulated capital. (Sall, Norman, and Featherstone 2000; Adegbola & Gardebreek 2007) suggest that older farmers may also have long-term relationships with their clients or preferential access to credit due to their age, availability of larger land sizes and larger family sizes that can provide cheap labour.

The price offered for vegetables significantly and positively influenced the decision to be market oriented. Farmers who get a high price for tomatoes have a higher likelihood to invest in farm equipment by a factor of 1.3. (Alene et al. 2008; Key, Sadoulet, De Janvry 2000) suggest that this finding can be explained by the fact that output price seems to be an incentive for farmers to produce surplus commodity for sale to the market, and when farmers receive high prices for their produce, they are able to generate adequate financial resources, which can be re-invested in farm equipment. Smallholder farmers who have signed contractual agreements have a higher likelihood of making the decision to be market oriented by a factor of 1.5 than farmers without contracts. Contractual agreements lower transaction costs by reducing the time used to search for markets and negotiations. Jari & Fraser (2009) state that the results of their study supports this finding and showed that there is an increase in formal market participation with contractual agreements. The finding suggests that a smallholder farmer's capacity to invest in farm equipment is enhanced by improved earnings from the markets via having ready markets for their produce and decreased transaction costs.

Joining a farmer marketing group significantly and positively influenced decision to be market oriented by a factor of 1.5. This finding can be explained by the fact that joining a marketing group has benefits such as shared information among members and the ability to market produce as a group when an individual cannot provide the quantity of produce demanded in the markets. This latter benefit enhances the sale of fresh produce, which generates financial resources that

can be re-invested in farm equipment. (Olwande & Mathenge, 2012; Kirsten & Vink, 2005) suggest that their studies support the findings and that they also found that being a member of a marketing group increases a household's access to market information, which is important when making production and marketing decisions. It also empowers farmers to bargain for better trading terms. However, household size significantly and negatively influenced decision to be market oriented. An increase in household size by one member decreased decision making towards being market oriented by a factor of 0.86. This finding is explainable by the fact that, apart from consuming more output, maintaining a large household requires larger amounts of financial resources, which diminishes the amount that can be re-invested as farm equipment. (Alene et al.2008 and Astewel 2010) suggest that their findings are similar to the finding in this study and state that a negative sign on household implies that a larger household is likely to consume more output, which leaves smaller proportions for sale.

Contrary to earlier expectations, size of land owned by a household significantly and negatively influenced decision to be market oriented. An increase by one acre of land decreased decision making to be market oriented by a factor of 0.56. This finding can be explained by the fact that larger per capita land size will result in low farm capitalisation density since the equipment will be spread out over a large farm size. Other studies support this finding. For example, although studies by (Lund & Hill 1979; Mishra & Morehart 2001; Purdy & Featherstone 1997) suggest that that larger farms have somewhat higher performance ratios and that performance is positively affected by firm size; a study Lund & Hill (1979) warns that an increase in farm size may not necessarily lead to an increase in efficiency. (Barney (1991; Peteraf 1993) also question the ability of farm size to provide superior competitive advantage in the long-run. Accordingly, the difficulty for farm size alone to provide the firm a superior competitive advantage rests in the inability of this resource (land) to provide ex-post limits to competition, barriers of substitution, and imperfect imitability. Additionally, Sonka, Hornbaker and Hudson (1989) state that within a sample of Illinois grain farms, farm size was not one of the significant drivers of firm performance.

## **Conclusions**

Smallholder farmers in Kenya possess the potential to contribute to economic growth and development of the country. Market orientation of smallholder farming is getting priority in the developing countries like Kenya. This study examined the factors that influence decision by smallholder farmers in Kenya to be market oriented. The calculation of household market orientation index reveals that on average, farm households allocate 54,600 Kshs of their income to the purchase of farm equipment per acre of land, which is relatively low. This is because of the slow substitution of subsistence farming system by commercialized farming for high value crops in which every farm decision depends on the market signals. Lack of full transformation to

market orientation prevents them from transiting into commercial farming and hence their low household income leading to poverty. Farmers are constrained by various factors in marketing, making it difficult for them to commercialize. The technical and socio-economic factors include; lack of timely information, poor infrastructure, limited contractual agreements, lack of suitable transport for fresh produce, poor institutional support and low access to agricultural extension services, resulting to less marketable surplus. Thus, majority of the farmers are still producing at subsistence level as they will only go to the market to sell the surplus after consuming enough at the household level.

The results of this study show that households in the study area are characterized by low market orientation despite the district's location in a high agricultural potential region. Additionally, there are both positive and negative significant relationships in the multiple regression models. The age of household head, vegetable prices, presence of contractual agreements and membership in a farmer marketing group are significantly and positively related to market orientation decision, while household size and farm size are significantly and negatively related to market orientation decision.

### **Recommendations**

To transform smallholder farmers from subsistence to commercial farming in Kenya, the government needs to formulate new policies or streamline the existing ones to support the agricultural sector and the actors involved. This study recommends the following potential policy developments:

- (a). Policy measures to reduce the intensity of land fragmentation especially in high agricultural potential areas such as Kiambu West District. This includes measures that support producers to farm sustainably and profitably to prevent further change of land use from agricultural to residential or commercial purposes.
- (b). Policy strategies to improve physical infrastructure especially the “feeder” roads connecting farms and villages to all-weather roads, to reduce transportation costs and post-harvest losses, hence encouraging farmers to participate in markets throughout the year. Establishment of more points of sales in farming areas in order to lower transportation costs should also be considered.
- (c). Policy developments that facilitate smallholder farmers' access to credit to purchase farm equipment. Since smallholder farmers are considered a risk factor by major lending institutions due to high default rate on loan repayment, joining a farmer group can improve their credit rating. This is due to the presence of peer mechanisms which has the capacity to enforce compliance to loan repayment schedule by individual members.
- (d). Policy strategies that facilitate contractual agreements between producers and buyers, which are critical in ensuring ready market for farmers' produce and reduced effects of market price fluctuations.

This study examined factors that influence decision by smallholder farmers in Kenya to be market oriented as a pathway towards transformation from subsistence to commercialised farming system. However, the study's findings are based on a short time span of data collection. Data used in this study were collected over a period of two lots of three months due to logistical constraints. This timeframe was not sufficient to observe changes in the rural society over an extended period of time. Therefore, a longitudinal study (in which data is gathered for the same subjects repeatedly over years) to examine transformation from subsistence to commercialised farming systems among smallholder farmers over time is suggested. In the study by Hynes (2008), it is suggested that this is important when studying development issues that have a long lifecycle.

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### **The Long run Effect of Balance of Payments on the Gross Domestic Product of Kenya**

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#### **Abstract**

*The study intended to investigate the long run effect of balance of payments on the Gross Domestic Product (GDP) of Kenya. The study was necessary since there is no other study of the same that has ever been done in Kenya given the fact that the country suffers from a deficit in her balance of payments in most of the years. While using time series data from 19991 to 2016, causal type of research design was employed and a multiple regression model was run using evIEWS statistical software. Ordinary Least Squares method was used to estimate the model. Other variables that were used as control variables include exchange rate, exports and imports. It was found out that in the long run, there is a significant and negative effect of balance of payments on the gross domestic product of Kenya. Imports were also found to have a significant effect on gross domestic product in the long run even though the effect is positive. Other variables, that is, exchange rate and exports were found to have a positive effect on gross domestic product of Kenya in the Long run even though the effect is not significant. It was recommended that the central bank devalue Kenyan currency to an optimal level so as to increase its exchange rate and in the long run make its exports cheap. This will lead to a surplus in its balance of payments and increase the GDP.*

**Key words:** *Gross Domestic Product and Balance of Payments.*

## Introduction

The extent to which Balance of Payments influences gross domestic product in the long run is a central theme in many theoretical traditions that are critical to mainstream economics. For instance there is no agreement between the Keynesian and Structural models on whether the supply side factors cause economic growth in the long term (Cimoli and Porcile, 2014). They also do not agree that economic agents are rational agents who can make their own decisions that have factored in the current economic situation. According to Lima et al., (2008), a significant role is played by aggregate demand in the determination of the long run economic growth since potential output accumulations are all demand-determined. This being the case, Lima et al. (2008) asserts that the demand-oriented approach for the Keynesian emphasizes that growth is influenced by external factors same as growth influenced by balance of payments.

Balance of Payments of a country is a systematic record of all economic transactions that have occurred between residents of that country and residents of the foreign country during a given period of time (Mohr, 1998). It consists of three main components, namely; current account, capital account and financial account. On the other hand Gross Domestic Product (GDP) is the total value of all finished goods and services produced within the geographic boundaries of a country in a particular period usually one year (Mohr,1998). GDP can be measured using income approach (adding all income stemming from production of the year's output such as compensation of employees, indirect taxes, interest and wages), expenditure approach (adding up all the spending on the final goods and services) or the value added approach (adding total revenue and subtracting total cost of intermediate goods).

In Kenya, the GDP trend has been varying as shown in Figure 1:

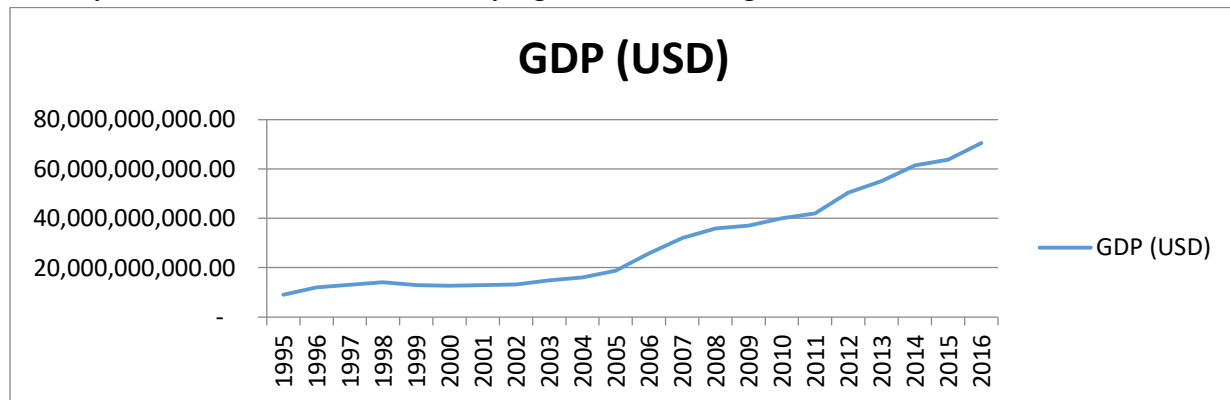


Figure 1: Gross Domestic Product trend from 1995 to 2016

Source: World Bank (2018)

Kenya has been showing an increasing trend in GDP since 1995 to 2016. For instance in 1995

the total GDP was \$9.046 billion, in 1996 the GDP was \$12.046. The GDP increased from \$13.11 billion in 1997 to \$14.09 billion in 1998 but decreased to \$13.14 billion in 2002. Come 2004, the gross domestic product was at \$16.095 billion, \$40 billion in 2010, \$55.097 billion in 2013 and it has continued to increase all through to 2016 where Kenya recorded a GDP of \$70.53 billion. This is attributed to increased production in Agriculture which is the back born of the country's economy as well as improvement in the manufacturing, service and tourism sectors.

On the other hand, Kenya's Balance of Payments trend has also been varying as shown in Figure 2.

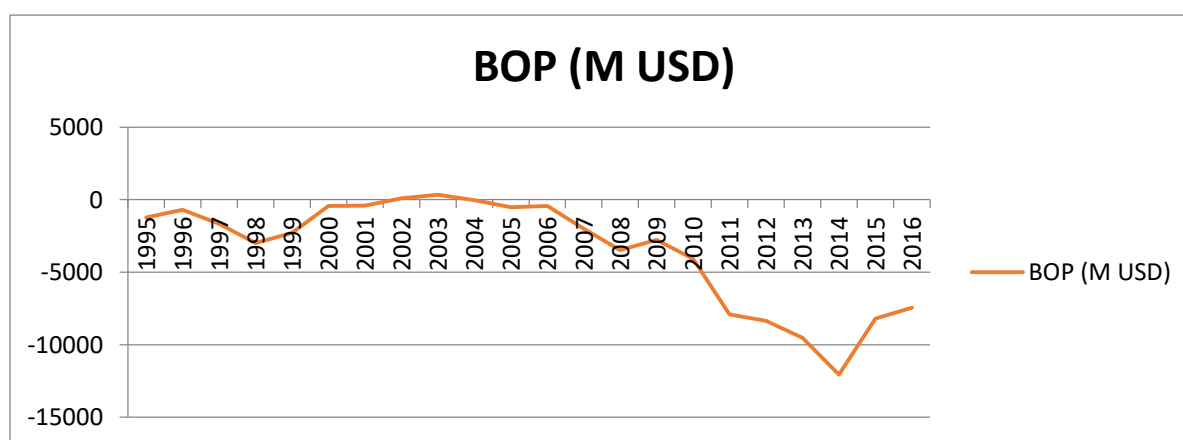


Figure 2: Balance of Payments trend from 1995 to 2016

Source: World Bank (2018)

Kenya has been experiencing a deficit in its Balance of Payments in most of the years from 1995 to 2016. In 1995 and 1996, Kenya had a BoP deficit of \$1,236 million and \$693 million in 1996 respectively. The deficit increased from \$1,670 million in 1997 to \$2982 million in 1998, it decreased to \$408 billion in 2001 and in 2002 Kenya recorded a surplus in its Bop of \$106. Come 2004 the BoP was again a deficit of \$42 million, in 2010 the deficit increased to \$4,082 million, \$9,518 million in 2013 and the situation has continued to be the same all through to 2016 where Kenya also recorded a BoP deficit of \$7,456 million. This is attributed to a continued deficit in Kenya's financial and current accounts. These deficits in the current and finance accounts are as a result of Kenya exports whose value is less than the value of imports. Even though Kenya registers a surplus in its capital account in most of the years, this is not enough to allow Kenya have a surplus in its overall balance.

From the above analysis, it is evident that Kenya's Gross Domestic Product continues to increase despite the fact that it suffers from Balance of Payment deficit in most of the years. On the same

note since Keynesian and Structural models are not in agreement on whether supply side factors causes growth in an economy, this study therefore intended to examine the effect of Balance of Payments on the economic growth of Kenya since balance of payments accommodates both supply and demand side factors. It is also a point to note that most of the studies that have been done on economic growth and balance of payments focus on balance of payments constrained growth and there is none which has ever been done in Kenya. This study therefore was necessary in Kenya and it aimed to find out the Long Run effect of balance of payments on the gross domestic product so as to fill the gap that has been in existence for long.

Other independent variables captured by the study included exports, imports and exchange rate since they also influence economic growth rate of any country.

## Literature Review

### *Thirlwall's growth model*

Economic growth in the long run is determined by the Harrod Foreign Trade Multiplier which is dynamic according to Thirlwall's growth model. The model emphasizes that it is the demand factors that stimulates growth in the economy. Balance of Payments is the demand's dominant constraint in any unclosed economy. The main idea of the approach of Thirlwall is to show how an economy's growth performance is influenced by the balance of payments. The model connects trade to economic growth since exports tend to pull demand more than any other factor. In case there are problems associated with balance of payments, trade represents only one major constraint as far as economic growth is concerned. That is not a major concern since other growth models like those of Grossman and Helpman (1992) also leave out constraints of balance of payments and focus only on trade and economic growth.

The Structuralists and Keynesians schools of thought confirm that there exist both supply and demand constraints in an unclosed economy. On the same note the approach of Thirlwall emphasizes that performance in economic growth can not be realized only through export promotion, financial liberalization or trade. Both capital and current accounts are taken into account by the Structuralists and Keynesians schools of thought and therefore it is advisable to not only consider export of goods and services but also income elasticity associated with import demand.

From Thirlwall (1979) model, its three equations namely; export demand function, import demand function and current account equilibrium can be represented as follows in equations 1, 2 and 3 respectively:

$$X = \beta(PD - PF) + PPZ \dots\dots\dots 1$$

$$M = \gamma(PD - PF) + \pi Y \dots\dots\dots 2$$

$$X + PD = M + PF \dots\dots\dots 3$$

Where;

$X$  is real export growth rate,  $M$  is real import growth rate,  $PP$  is exports' income elasticity,  $Z$  is rest of the world's real income growth rate,  $Y$  is domestic real income's growth rate,  $PD - PF$  is the relative prices' growth rate,  $\pi$  is imports' income elasticity,  $\beta$  is exports' price elasticity  $\gamma$  is imports' price elasticity,  $PD$  is domestic prices growth rate and  $PF$  is the rest of the world growth rate of prices.

By solving equation 3 for the real income growth rate equation 4 is realized as below:

$$Y^* = \left[ \frac{1+\beta-\gamma}{\pi} \right] ((PD - PF) + \left( \frac{PP}{\pi} \right) Z) \dots\dots\dots 4$$

Substituting for the world real income growth rate  $Z$  from equation 1 gives:

$$Y^* = \left[ \left( \frac{1}{\pi} \right) (1 - \gamma) \right] ((PD - PF) + \frac{1PP}{\pi}) X \dots\dots\dots 5$$

Assuming that Marshall-Lerner condition holds then  $(PD - PF) = 0$  and equation 5 can therefore be presented as:

$$Y^* = \left( \frac{1}{\pi} \right) X \dots\dots\dots 6$$

Equation 6 is therefore the balance of payments constrained growth equation.

### *Empirical Review*

An, P. S. (2007) did a study focusing on the question whether the balance of payments of Vietnam constrained its economic growth for a period between 1990 and 2004 used the model which was developed by Thirlwall. Using quarterly data as well as annual data from that given period, it was found out that economic growth was constrained by the balance of payments of the country. This happened despite the fact that there were deficits in both the trade and current account that were to some extent relieved by capital's external inflows like foreign direct investment, debt and official development assistance. The study therefore recommended the government of Vietnam to come up with policies that relieves balance of payments so as to stimulate growth in the economy.

A study by Felipe, J. et al. (2010) was conducted in Pakistan to find out how the economic growth of Pakistan is constrained by its BoP. It is evident that the maximum economic growth rate for Pakistan that is consistent with the equilibrium is about 5 percent per year. Comparing with the growth rate target in the long run, this rate is far below the target that ranges between 7 and 8 percent per year. It is also evident that this constrained economy growth rate approach of balance of payments also provides significant implications for the development policy of Pakistan. An improvement in the current account cannot be improved by depreciations of the real exchange rate. It is recommended that Pakistan has to lift those constraints that necessitate export growth. Specifically it has to shift the structure of exports towards products of higher income demand elasticity.

Rieber, A. et al. (2016) also did a study in Vietnam using data of between 1985 and 2010. A multi-country model of balance of payments constrained growth was used and it was found out that in the entire period considered, Vietnam's economic growth grew at a rate less than that given in the model with the exception of a certain period between 1998 and 2010. It was also found out that the effect of relative price is neutral and this allowed effects of the volume to dominate while setting the constraint of the balance of payments. Economic growth in developed countries is made to have a multiplier effect in the economy of Vietnam by exports' high income elasticity. The effect is interrupted by a huge volume of imports that come to the country from Asia.

Lélis, M. T. C. et al. (2017) carried out a study in Brazil to analyze the balance of payments constrained economic growth. Two models were used to estimate both import and export demand functions. These two models that were used include structural state space model and vector error correction model. The study employed data covering the period between 1995 and 2013. It was found out that in Brazil, the balance of payments is a constraint to its growth since exports seem to be sensitive to changes in prices of commodities than to real exchange rate changes. The outcome is also possible since there is also low exports sensitivity to real exchange rate changes.

### **Methodology**

The causal type of research of research design was used in this study since with this type of a research design it is possible to identify the cause and effect variables. There are many variables that affect economic growth but in this study, exchange rate, imports and exports were used in addition to balance of payments as the control variables. Ordinary least squares method of estimation was used since all the OLS assumptions were satisfied. Time series data was used covering the periods from 1991 to 2016.

Before the data was put into use, various tests were carried out on data of the variables to find out whether the results to be realized were viable. Diagnostic tests that were carried out include Augmented Dickey-Fuller (ADF) tests which was based on Schwarz Info Criterion (SIC) to test series stability, Descriptive statistics to test variable volatility, Wald test to test independent variables' significance as a group, normality test with the help of Jarque- Bera statistic, Breusch-Pagan-Godfrey test to test for heteroscedasticity, Ramsey Reset Test to test for specification errors, Chow Forecast Test to test coefficients' structural change, and Recursive Coefficient Estimates for variable stability test. The study assumed that the relationship between dependent and independent variables was linear.

Long run model was specified as follows:

$$GDP_t = \alpha_0 + \alpha_1 BoP_t + \alpha_2 Ex_t + \alpha_3 X_t + \alpha_4 M_t + \varepsilon_t \quad \varepsilon_t \sim N(0, \sigma^2_\varepsilon) \dots\dots\dots 7$$



Where;  $GDP_t$  is the current gross domestic product,  $BoP_t$  is the current Balance of Payments,  $Ex_t$  is the current exchange rate,  $X_t$  is the current exports and  $M_t$  is the current imports.  $\alpha_0, \alpha_1, \alpha_2, \alpha_3$  and  $\alpha_4$  are the coefficients of the corresponding independent variables.  $\varepsilon_t$  is the error term that is normally distributed with zero mean and constant variance.

The constant also referred to as the y-intercept gives the level of economic growth when all the other independent variables equals to zero. The coefficients measure the change in economic growth when a given independent variable changes by a unit while all other independent variables are kept constant. For example  $\alpha_1$  measures the change in gross domestic product in the long run when balance of payments growth rate changes by a unit given that exchange rate, exports and imports are kept constant.

The study targeted the Kenyan population from 1991 to 2016 since this is the period the data used in the study covered. Ordinary Least Squares method was used to estimate the model since all OLS assumptions were satisfied. Central bank was the source of data where the secondary data sheet was used to collect data. The data was modified to suit the model used in the study and finally analyzed using the eviews statistical software.

## Presentation and Analysis of Results

This section presents the results of the study whose objective was to examine the long run effect of balance of payments on the gross domestic product of Kenya. Other control variables that were used in the study include exchange rate, exports and imports. Various diagnostic tests have also been captured in this section.

### *Descriptive statistics*

Table 1: Descriptive Statistics Summary

	<b>GDP</b>	<b>BOP</b>	<b>EX</b>	<b>X</b>	<b>M</b>
<b>Mean</b>	2.67*10 <sup>10</sup>	-2.33*10 <sup>11</sup>	68.06	5.71*10 <sup>9</sup>	7.92*10 <sup>9</sup>
<b>Median</b>	1.55*10 <sup>10</sup>	-2.07*10 <sup>11</sup>	73.83	4.28*10 <sup>9</sup>	4.38*10 <sup>9</sup>
<b>Max</b>	7.05*10 <sup>10</sup>	-7.42*10 <sup>9</sup>	98.18	1.12*10 <sup>9</sup>	2.03*10 <sup>9</sup>
<b>Min</b>	5.75*10 <sup>9</sup>	-5.48*10 <sup>11</sup>	22.91	2.15*10 <sup>9</sup>	1.95*10 <sup>9</sup>
<b>Std Deviation</b>	1.99*10 <sup>10</sup>	1.45*10 <sup>11</sup>	18.82	3.10*10 <sup>9</sup>	6.00*10 <sup>9</sup>
<b>Skewness</b>	0.8547	-0.3403	-0.9353	0.6784	0.8273
<b>Kurtosis</b>	2.3886	2.1289	3.3388	1.9948	2.1719
<b>Jarque-Bera</b>	3.5707	1.3240	3.9150	3.0892	3.7088
<b>Propability</b>	0.1677	0.5158	0.1412	0.2134	0.1565

<b>Sum</b>	6.93*10 <sup>11</sup>	-6.06*10 <sup>12</sup>	1769.55	1.48*10 <sup>11</sup>	2.06*10 <sup>11</sup>
<b>Sum square dev</b>	9.95*10 <sup>21</sup>	5.23*10 <sup>23</sup>	8851.48	2.4*10 <sup>20</sup>	9.0*10 <sup>20</sup>
<b>Observations</b>	26	26	26	26	26

Table 1 presents various descriptive statistics of variables that were used in the study. It includes the mean, median, maximum value, minimum value, standard deviation, skewness, kurtosis, Jarque-Bera test, probability and sum square deviation of the study variables. The total number of observations that were used was 26. It is also evident from the table that GDP has a mean of 2.67\*10<sup>10</sup> US dollars but the average balance of payment is -2.33\*10<sup>11</sup> US dollars, meaning that Kenya experiences a deficit in its balance of payment every year. The GDP's maximum value is 7.05\*10<sup>10</sup> US dollars and minimum value is 5.75\*10<sup>9</sup> US dollars with a median and standard deviation of 1.55\*10<sup>10</sup> US dollars and 1.99\*10<sup>10</sup> US dollars respectively. The respective values for balance of payments are -7.42\*10<sup>9</sup> US dollars, -5.48\*10<sup>11</sup> US dollars, -2.07\*10<sup>11</sup> US dollars and 1.45\*10<sup>11</sup> US dollars. Other variables' descriptive are as shown in the Table 1 above.

### Granger Causality Tests

Granger causality test was run so as to show the direction of the relationship that exists between different variables that were used in the study. The test tests the null hypothesis that one of the variable does not granger cause another variable. This hypothesis is not accepted if the P-value for the effect of one of the variables on any other variable is not more than 5 percent. It is evident from Table 2 below that the null hypotheses that one of the said variables granger causes not another variable cannot be rejected since the P-value is more than 5 percent.

Table 2: Granger Causality Tests Summary

Null Hypothesis:	Obs	F-Statistic	Prob.
BOP Granger Causes not GDP	24	0.15911	0.8540
GDP Granger Causes not BOP		0.06843	0.9341
EX Granger Causes not GDP	24	1.22926	0.3147
GDP Granger Causes not EX		16.4906	7.E-05
X Granger Causes not GDP	24	2.82889	0.0841
GDP Granger Causes not X		4.29313	0.0289
M Granger Causes not GDP	24	1.81814	0.1895
GDP Granger Causes not M		7.39163	0.0042
EX Granger Causes not BOP	24	0.43798	0.6517
BOP Granger Causes not EX		0.70695	0.5057

X Granger Causes not BOP	24	1.15201	0.3371
BOP Granger Causes not X		0.21396	0.8093
M Granger Causes not BOP	24	0.09318	0.9114
BOP Granger Causes not M		0.31995	0.7300
X Granger Causes not EX	24	1.95094	0.1696
EX Granger Causes not X		0.05065	0.9507
M Granger Causes not EX	24	2.24541	0.1332
EX Granger Causes not M		0.60676	0.5553
M Granger Causes not X	24	1.26629	0.3046
X Granger Causes not M		0.96875	0.3975

### Correlation Tests

The dependent variable in this study was gross domestic product and the independent variables include; balance of payments, exchange rate, exports and imports. Correlation test is done to find out whether these variables correlate with each other.

Table 3: Correlation Matrix

	<b>GDP</b>	<b>BOP</b>	<b>EX</b>	<b>X</b>	<b>M</b>
<b>GDP</b>	1.00	0.14	0.72	0.97	0.98
<b>BOP</b>	0.14	1.00	-0.21	0.25	0.22
<b>XM</b>	0.72	-0.21	1.00	0.69	0.69
<b>X</b>	0.97	0.25	0.69	1.00	0.98
<b>M</b>	0.98	0.22	0.69	0.98	1.00

It is evident from Table 3 above that there is no perfect correlation between two different variables. It is only the relationship between balance of payments and exchange that is found to be negative but for the rest of other variables it is positive.

### Wald Test

Wald test is carried out to show whether the independent variables are significant in the study. If the variables are found to be significant, then their parameters are not zero and therefore need to be included in the model.

Table 4: Wald Test Summary

<b>Test statistic</b>	<b>Value</b>	<b>Df</b>	<b>Probability</b>
-----------------------	--------------	-----------	--------------------

<b>F-statistic</b>	609.0126	(5,21)	0.0000
<b>Chi-square</b>	3045.063	5	0.0000

Table 4 shows that the F-statistic probability and the Chi-square probability are all less than one percent. This means that all the independent variables that were used in the study are significant and therefore have to be included in the model.

#### Normality tests

Normality test is another diagnostic test that was carried out to so as to show whether there is normal distribution of the residuals. For the residuals to be normally distributed, the histogram has to be bell shaped and the p-value less than 5 percent.

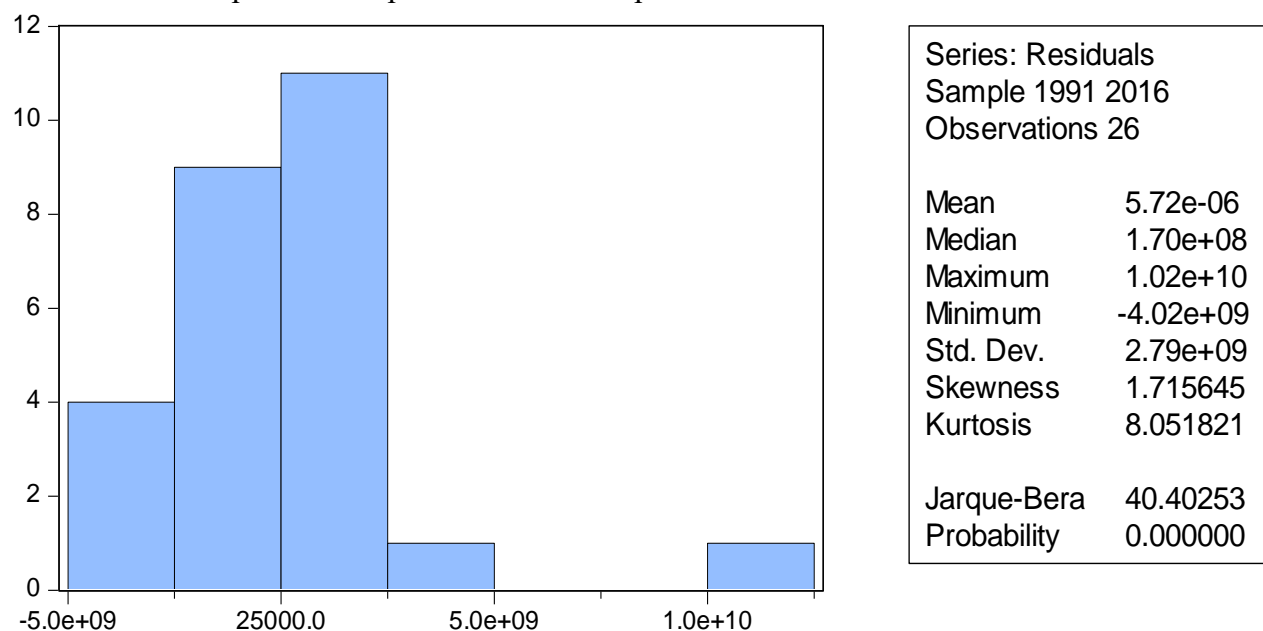


Figure 3: Bell-Shaped Histogram

It is concluded that the residuals are normally distributed since the histogram is bell-shaped and the p-value is less than 5 percent.

#### Heteroscedasticity: Breusch-Pagan-Godfrey Test.

Breusch-Pagan-Godfrey Test was used to test for heteroscedasticity. This test intends to find out whether error terms' variance that exists in the regression function is constant. There is no heteroscedasticity if the p-value is more than 5 percent.

Table 5: Heteroscedasticity Test Summary

<b>F-Statistic</b>	<b>1.7861</b>	<b>Probability. F(4,21)</b>	<b>0.1694</b>
<b>Obs*R-squared</b>	<b>6.6000</b>	<b>Probability. Chi-Square(4)</b>	<b>0.1586</b>

**Scaled explained SS** 15.1813      Probability. Chi-Square(4) 0.0043

Table 5 shows that there is no Heteroscedasticity since the p-value is more than 5 percent.

#### Chow forecast test

This test assesses the stability of the coefficients in a regression model which is multiple in nature. The data is split into break points and in this study the break point was introduced in the year 2000. In simple terms the test is used to test whether there are structural changes in the model. If p-value is less than 5 percent, the null hypothesis that there is no structural change is rejected but accepted if more than 5 percent.

Table 6: Chow Forecast Test Summary

	Value	df	Probability
<b>F-statistic</b>	14.3422	17,4	0.3183
<b>Likelihood ratio</b>	107.2864	17	0.0000

Table 6 shows that there is no structural change in the model since the p-value is more than 5 percent

#### Recursive coefficient estimates test

To test whether the variables used in the model are stable, recursive coefficient estimate test is used

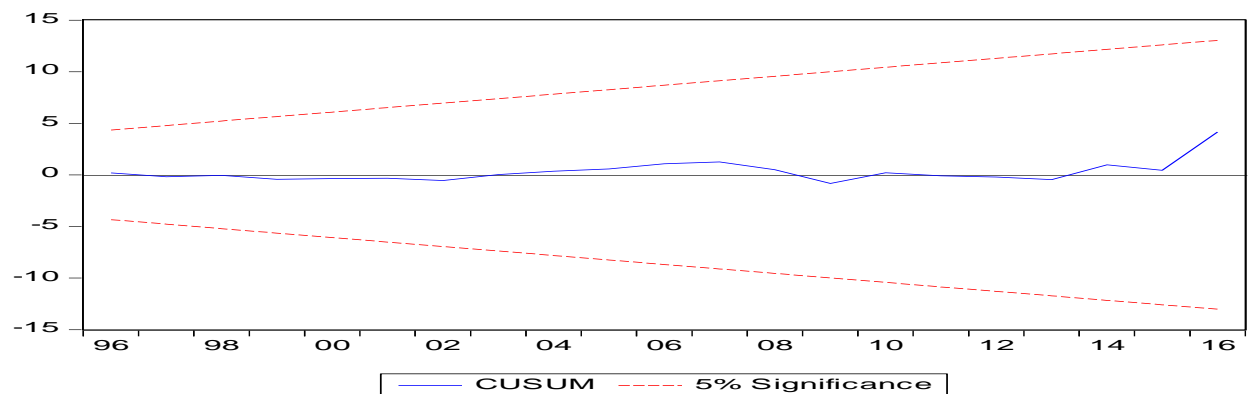


Figure 4: Stability of the model variables.

If the blue line lies between the two red lines, then the variables are stable. It is evident from Figure 4 that the variables used in the model are stable since the blue line lies between the two red lines.

#### Stationarity Tests

Augmented Dickey-Fuller tests with the selection of the lag based on Schwarz Info Criterion was used to carry out unit root tests for the variables. All variables showed the presence of a unit root and since all variables as indicated in Table 7 had a p-value of less than 5 percent and t-statistic

of more than two in absolute terms, then all of the variables were stationary.

Table 7: Stationarity Test Summary

Variable	t-statistic	Probability
<b>GDP</b>	2.9144	0.0093
<b>BOP</b>	2.5602	0.0172
<b>EX</b>	-4.7622	0.0001
<b>X</b>	-4.3427	0.0002
<b>M</b>	-3.6377	0.0014

### *Multiple Regression Results*

The multiple regression model was run using evIEWS statistical software and the results are as shown in Table 8, hence realizing the objective of this study which was to determine the long run effect of balance of payments on the economic growth of Kenya.

Table 8: Multiple Regression Results Summary

Variable	Coefficient	Standard Error	t-statistic	Probability
<b>BOB</b>	-0.011547	0.005362	-2.153347	0.0431
<b>EX</b>	2918601	55017200	0.053049	0.9582
<b>X</b>	0.942796	1.127542	0.836151	0.4125
<b>M</b>	2.857491	0.550893	5.187015	0.0000
<b>Constant</b>	-4.25*10 <sup>09</sup>	2.94*10 <sup>09</sup>	-1.443518	0.1636

Table 8 presents the coefficients of the independent variables namely; balance of payments, exchange rate, exports and imports. The value of the constant is also given. The standard deviation, t-statistic and probability of the respective variables are equally provided. The p-value for balance of payment and imports is less than 5 percent and their respective t-statistic is more than 2 in absolute terms. In the case for exchange rate and exports, the p-value is more than 5 percent and the t-statistic is less than two in absolute terms. The same applies to the constant value. This implies that the balance of payments and imports coefficients are statistically significant while those for exchange rate and exports are statistically insignificant.

In case balance of payments changes by a unit, gross domestic product changes by -0.011547 units if all other variables are kept constant, that is, while holding all other variables constant, an increase by one unit in the balance of payments causes a decrease of 0.011547 units in the gross domestic product. On the same note, while holding all other variables constant, increase by one unit in imports causes an increase of 2.857491 units in the gross domestic product. Increase of one unit in exchange rate and exports leads to an increase of 2918601 and 0.942796 units in gross domestic product respectively if all other variables are kept constant. Since these



coefficients for exchange rate and exports are insignificant, there change is also taken to be insignificant. In case all other variables equals to zero, the gross domestic product decreases by  $-4.25 \times 10^9$  units. It is also worth noting that 97.67 percent of the changes in the independent variables is explained by the dependent variable (gross domestic product) since adjusted  $r$ -squared is 0.976712.

### *Summary, Conclusion and Policy Implications*

This study intended to examine the long run effect of balance of payments on the gross domestic product of Kenya. Other control variables such as exchange rate, exports and imports were used alongside the balance of payments. From the analysis it is evident that in the long run, the effect of balance of payments on the gross domestic product is statistically significant and negative. This is because Kenya always experiences a deficit in its balance of payments. Any increase in this deficit calls for an increase in borrowing and this in the long run accumulates more interests which have to be repaid together with the principal amount. Less is therefore left for investment thus leading to a decrease in gross domestic product. The effect of imports also causes a significant and positive effect on the gross domestic product in the long run. This implies that the Kenyan imports are more valuable than exports since when well invested, in the long run they fetch more returns. It also implies that it is cheap for Kenya to import some materials other than producing them in the country. In the long run, the effect of exports and imports on the gross domestic product is not significant since most of the Kenyan exports are primary products that does not yield more returns as does the secondary products like machinery.

It is therefore concluded and recommended that for Kenya to improve its gross domestic product in the long run, it has to invest more on secondary products so as to increase the value of the exports. This will lead to a surplus in its balance of payment and in the long run increase its gross domestic product. It is also recommended that for Kenya to enhance growth in its gross domestic product, goods that are produced in the country expensively should be imported. Since increase in exchange rate leads to an increase in gross domestic product, is therefore advisable for central bank to consider devaluing Kenya's currency to an optimal level so as to make exports cheap and in the long run increase the gross domestic product.

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