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NOTE

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CONTENTS

Investigating tourists' satisfaction with infrastructures located proximal to attractions

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Abstract
There is limited information concerning relationship between tourists' satisfaction and awareness of infrastructure locations, particularly with regard to associated impacts to the Outstanding universal values (OUVs). The study was conducted in the Ngorongoro Conservation Area (NCA) World Heritage Site (WHS) in Tanzania employing a quantitative research approach. Theoretically, the study employed Expectancy-Disconfirmation model and Dissonance Theory on customer satisfactions. The study was guided by two null hypotheses: H01: Demographic characteristics (age, education, nationality and sex) do not influence tourist's satisfactions with infrastructures located proximal to attractions; and H02: Tourists' awareness of potential consequences of infrastructures located proximal to attractions do not influence their satisfactions. A multivariate logistic regression analysis was performed on the 210 responses to investigate the relationships between tourists' demographic characteristics and awareness of potential consequences and satisfactions. Both hypotheses (H01 and H02) were rejected, indicating that tourists are satisfied with infrastructures located proximal to attractions despite being aware of the potential consequences. In addition, tourists who were aware were twice as likely as those who were not to be satisfied. However, highly educated tourists (Masters and PhD) were less likely to be satisfied of infrastructures located proximal to attractions compared to tourists with lower education levels. This study recommends that infrastructure developers and NCA WHS conservators collaborate to develop monitoring and evaluation strategies to constantly balance conservation and tourism objectives because tourists are more satisfied with infrastructure proximal to attractions. Future research should focus on new construction materials, designs and technology to safeguards WHS OUVs.

Keywords: *Tourists, Satisfactions, OUV, Infrastructure, Impacts.*

INTRODUCTION

Tourism is one of the world's fastest growing and most important economic sectors in most countries. The number of international tourist arrivals was 25 million in the 1950s but increased to 1.18 billion in 2015 (International Tourist Arrivals, 2015). International tourist arrivals worldwide in 2019 reached 1.5 billion (UNWTO, 2020) and Tovmasyan (2016) predicts that there will be 1.87 billion tourists in the world by 2050. This worldwide increase in tourist's numbers is also reflected by those visiting the Ngorongoro Conservation Area World Heritage Site (NCA WHS) as shown in Table 1. Because of the economic potential of the tourism industry, the Tanzania ruling party's 2020-2025 Election Manifesto urges NCA to host more than 2.0 million tourists per year by 2025 (CCM, 2020). This is especially likely given the NCA's international recognition as a UNESCO Man and Biosphere Reserve, a UNESCO Mixed World Heritage Site Mixed-Natural and Cultural), a UNESCO Global Geopark, (WHC, 2023) and one of Africa's seven Natural Wonders (http://sevennaturalwonders.org/africa/). All of these distinctions elevate NCA to a world-class tourists' destination.

Nevertheless, the rise in tourist numbers and tourism-related endeavors predominantly have adverse impacts on the atmosphere, water, soil, geological features, flora, fauna, microorganisms, landscapes, and culture (Zhao and Li, 2018; Pratama and Mandaasari, 2020). Throughout the world, the rise in numbers of tourists has also necessitated an increase in the development of tourism infrastructures, particularly, in Protected Areas (PAs) and WHS. Various scholars have investigated the links between tourism and infrastructure development (Andrea et.al. 2012; Marion, 2019; Nguyen, 2021). These researchers have demonstrated the importance of infrastructures such as information centers, hotels, motels, campsites, restaurants, transportation, communications, water, and electricity in supporting tourism. Although infrastructure development is necessary for tourism, conservation and management activities; it remains a contentious issue, particularly in PAs and WHSs (Harris et al., 2021; Feiden and Jokilehto, 1998; Alberts and Brinda, 2005, as cited in Alberts and Hazen, 2010). These researchers emphasized the significance of infrastructures in the operations of WHS, increasing tourist's experiences and satisfaction and OUV protection. However, it should be noted that massive infrastructure development may have negative impacts on the intrinsic values of cultural and natural heritages (Harris et al., 2002;

Sharma et al., 2018) and Buckley (2002, 2003, 2005) observed that there has been little research on the effects of tourism infrastructures in Pas. As a result, PAs, including WHSs like NCA, are increasingly threatened by tourism and related infrastructure developments (Sharma et al., 2018).
Although conservators and developers have made significant efforts to promote tourism, including the construction of tourism infrastructures in NCA, there is limited knowledge regarding the relationship between tourists' contentment and their understanding of the effects of infrastructures located close to attractions. According to Bogoro et al. (2013), a major challenge faced by tourism managers is the task of ensuring customer satisfaction. Hence, understanding this subject is crucial for grasping the intricacies of safeguarding Outstanding Universal Values (OUVs) and carrying out tourist endeavors in PAs, including WHSs.

Thus, this study investigated how a) tourism infrastructures located proximal to attractions affected tourist satisfaction, as well as how b) awareness of potential repercussions of tourism infrastructures near attractions affected their satisfaction. This information is crucial for adopting a balanced approach to tourist infrastructure development that safeguards NCA's OUVs while also assuring tourist satisfactions. Therefore, this research hypothesized that:

H_{o1}: Demographic characteristics (age, education, nationality and sex) do not influence tourist's satisfactions of infrastructures located proximal to attractions and H_{o2}: Awareness of potential consequences of infrastructures located proximal to attractions do not influence tourists' satisfactions.

METHODOLOGY

Background to the study area

The NCA WHS is situated between 3.2279° S, 35.5075° E, in Arusha Region, Tanzania (Figure 1). It was established in 1959 by the NCA Ordinance as a multiple use with objectives of conserving natural heritage, promotion interests of the safeguard natural and cultural heritages, protect the interests of the local inhabitants and promote tourism (NCAA, 2021).

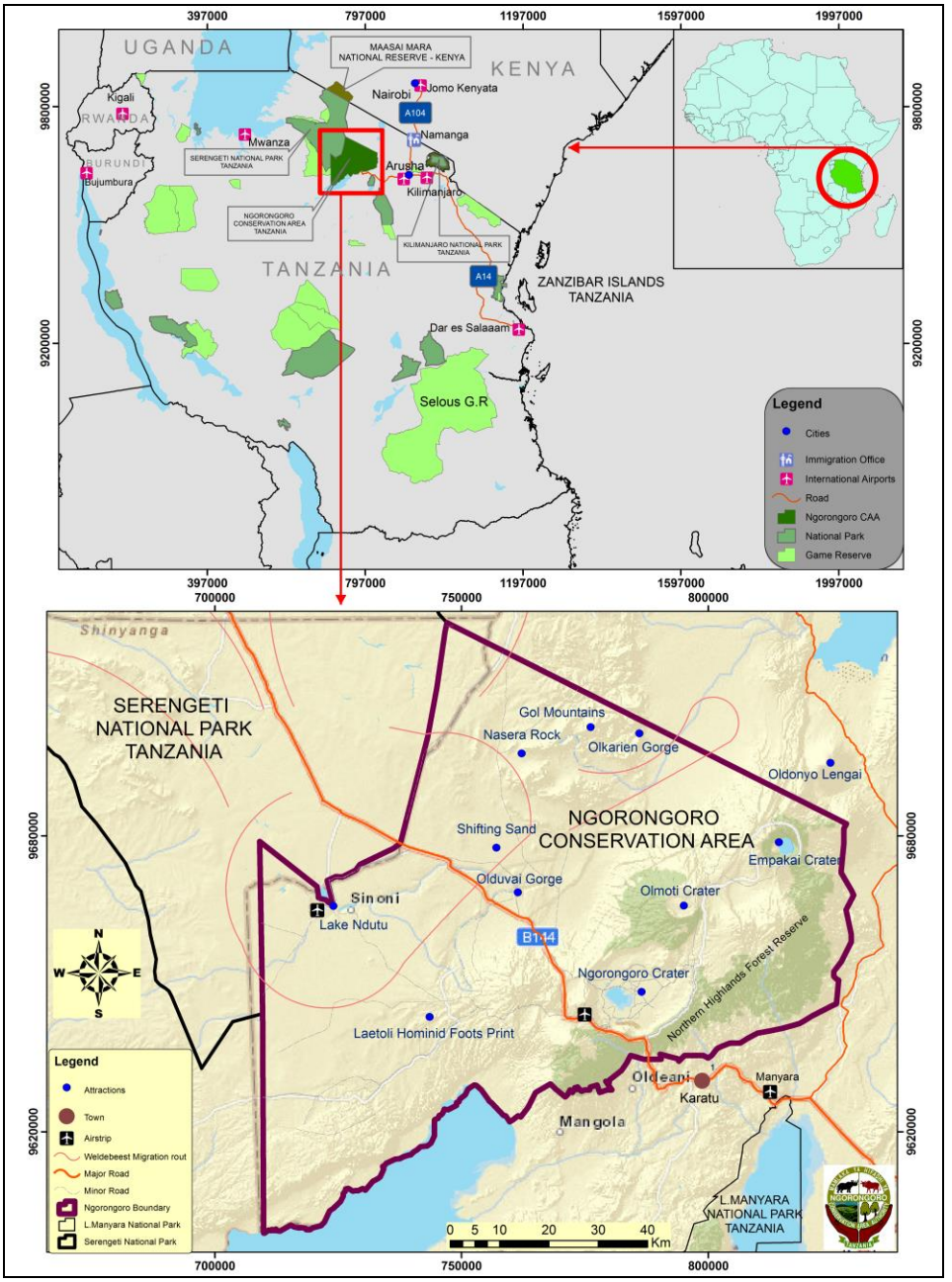

Figure 1: Location of NCAWHS *(Courtesy: NCAA, 2022).*

The NCA has an area of 8,292 km^2 and is home to 100,793 Maasai, Datoga, and Hadzabe communities (NBS, 2022). It includes highland plains, savannah, woodlands and forests (NCAA, 2021). It stretches from

the plains of the Serengeti National Park in the north to the Great Rift Valley's eastern arm (Hay, 1976). The NCA has many tourist attractions, such as craters (Ngorongoro, Olmoti, and Empakaai), about 25,000 large wild animals (including the big five: lion, leopard, black rhinoceros, African bush elephant, and African buffalo), significant paleoanthropological sites (such as the Olduvai Gorge and its museum, Laetoli and Ndutu), and cultural experiences of locals. Additionally, NCA is a gateway to famous Serengeti World Heritage Site (Figure 1).

Approximately 80% of developers in NCA seek to develop tourist infrastructure in ecological and paleoanthropological sensitive areas (MZP, 2021). These include the crater rims, the Ndutu wildebeest migration area, and the Olduvai Gorge (Figure 1). Developers and tourism companies believe that these places are crucial to satisfying and maintaining tourists (NCAA, 2021). According to Lache and Trifu (2011), customer satisfaction is crucial in the tourism sector. As a result, the development of tourism infrastructures in NCA has put NCA conservators and developers at loggerheads over where to build tourism infrastructures. On the one hand, developers want sensitive areas to locate their infrastructures because they want higher and faster returns, as well as to keep tourists in their respective infrastructures for longer periods of time. Conservators, on the other hand, want to preserve the ecological and paleoanthropological integrity of the areas, thereby, protecting the NCA WHS OUVs. Meanwhile, NCA management needs tourism revenue to support conservation and management activities. Yet, infrastructure development is critical in the operation of WHSs and when carefully planned and well designed, infrastructures can sustainably enhance the values and significance of WHSs (Pedersen, 2002).

Theoretical and conceptual frameworks

This study employed Expectancy-Disconfirmation model and Dissonance Theory on customer satisfactions. Expectancy-Disconfirmation model developed by Oliver (1977, 1980) generally suggests that there is a conscious comparison between a cognitive state prior to an event and a subsequent cognitive state that is experienced after the event. That is to say, customers' expectations will determine their satisfactions after consuming the product (Oliver, 1980; Yüksel and Yüksel, 2008). Dissonance Theory is based in the concept that a person who expected a high-value product but received a low-value product would notice the difference and suffer from cognitive dissonance (Cardozzo, 1965; Yi,

1990). According to this theory, the presence of dissonance creates pressures to reduce it, which could be accomplished by adjusting the perceived disparity (Yüksel and Yüksel, 2008). The theory assumes that, should there be any disparity between product expectations and the real product, the consumer may suffer psychological discomfort and therefore, change their attitude towards that product (Yi, 1990; Yüksel and Yüksel, 2008). Product developers always wishes to satisfy their customers by adding credibility to their brand and retain their customers. Dongkoo and Sungsoo (2016) affirm that tourists' future perceptions and attitudes are dependent to the outcome of their experiences with tourism products when measured versus the prior expected desires. These theories are relevant to this study since they may illustrate the influence of tourists' expectations as customers on the choice of tourism infrastructures. Studying the relationship between destination's products and tourists' preconceptions would enable us to determine tourists' perceptions of satisfaction, quality and value (tourism infrastructures proximity to attractions), as well as how these factors interact to influence future behavioral intentions (Opperman, 2000).

Methods

This study employed a quantitative research design. Data were collected at the Loduare and Naabi entry/exit gates, Olduvai Gorge Museum, Maasai cultural bomas and at tourists' lodgings (campsites, hotels, lodges). The Taro Yamane Formula (Yamane, 1970) was used to calculate the study sample size, n= N/(1+Ne2), where n= sample size, N= population under study, which in our case is 705,207 tourists (NCAA, 2019), and e= margin of error, which in our case is 7%. This formula is used because the population is finite, hence*: $n= 705,207/ (1+705,207*(0.07)^2); n=204.023$* and therefore, estimated to 205 respondents. However, 210 randomly selected participants completed the questionnaires, yielding a sample size of 210 for this study.

Study participants were guaranteed of anonymity and were requested to provide demographic information (sex, age, education and nationality) as well as to circle tourism infrastructures they have used or visited (such as roads, aerodromes, lodges, hotels, campsites, museums, and information centers). The data was collected during tourists' high season, from 10th to 20th December 2022. Collected data was then cleaned, coded and verified for completeness.

Tourists' satisfaction was measured using three different questions, including:1) are you satisfied with lodging infrastructures located proximal to wildlife areas?; 2) are you satisfied with roads/airstrips located proximal to wildlife areas?; 3) are you satisfied with museums and information centers located proximal to paleoanthropological sites or cultural heritage sites? Tourists were asked to answer whether they were satisfied, not satisfied, or not sure. Based on total responses, two cut-off points were used to determine tourists' satisfaction: if the tourist responded "Satisfied" to two or more of the three questions then he or she was rated "Satisfied," otherwise rated "Not satisfied."

Regarding tourists' awareness of potential consequences of infrastructures located proximal to NCA attractions and its effect to tourists' satisfactions, was firstly tested by asking five different questions: 1) do roads and airstrips prevent/disturb wildlife lifeways?2) do lodgings located proximal to attractions destructs the aesthetic of the area?3) do museums and information centers located proximal to paleoanthropological sites obstructs archaeological and other heritage research operations? Two cut-off points were used to determine tourist's awareness based on total responses. If tourist scored correctly to two out of three questions, then he/she rated to have "Awareness of the potential consequences of infrastructures located proximal to attractions" and otherwise, was rated "Not having awareness".

Then, a multivariate logistic regression, using tourists' demographic characteristics (sex, age, nationality and education) was performed to test the relationships between tourists' awareness of potential consequences of tourism infrastructures located proximal to attractions and their satisfactions on the use of those infrastructures; using the expression $TS = \beta 0 + \beta_1 D1 + \beta_2 D2 + ... + \mu$ where TS = tourists' satisfaction, βD= demographic characteristics and μ is the error term which represents the effect of the variables that were omitted from the regression equation (Freedman, 2005). Also, a Chi square was performed to test whether there are statistical relationships among tourists' demographic characteristics with tourists' satisfactions. Then for all tourists' demographic characteristics that were found to have significant relationships with satisfactions, a multivariate logistic regression was performed to further investigate how the relationships behave with each other. The expression $TS = \beta_0 + \beta_1 AI + \mu$ ... was used, where TS = tourists' satisfaction (dependent variable), βD= demographic characteristics (Independent

variable), β_0, *1*, *2*, *3* and *4* are predicting variables (Independent variables), and μ is the error term which represents the effect of the variables that were omitted from the regression equation (Freedman, 2005).

Conceptually, the study independent and dependent variables are presented in Figure. 2

Independent Variables

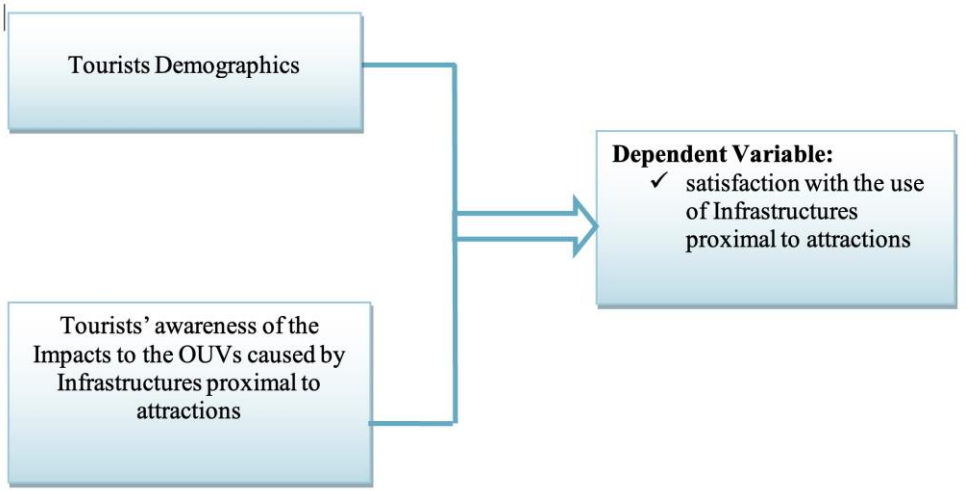

Figure 2: Conceptual Framework (Field data, 2023)

FINDINGS

Respondents' demographic characteristics

Males made up 61% of all respondents, while females made up 39%. Respondents aged 30 to 39 years had the highest proportion (32.4%). This was followed by those aged 20 to 29 years (22.4%), 50 to 59 years (19.1%), 40 to 49 years (13.8%) and those ≥60 years were 12.6%. The highest proportion of respondents had a high school diploma (27.1%). This was followed by those with a bachelor's degree (23.3%), a master's degree (21%), a doctorate degree (10%), a certificate (9.5%), and a secondary education (9.1%). In terms of nationality, Americans comprised the largest proportion (36.7%). This was followed by Britons (19.1%), Tanzanians (11.9%), Indians (5.2%), French (4.3%), Canadians (3.8%), Germans (3.8%) and Russians (1.1%). Nations with fewer tourists were categorized as "other nationalities," which cumulatively made up 7.1% of the population (Table 1).

Table 1: Respondents' demographic characteristics (n =210)

Characteristic		Frequency	Percentage
Sex	Male	128	61.0
	Female	82	39.0
Age	20–29	47	22.4
	30–39	68	32.4
	40–49	29	13.8
	50–59	40	19.1
	60 years and above	26	12.6
Education Level	Secondary school education	19	9.1
	Certificate	20	9.5
	Diploma	57	27.1
	Bachelor's degree	49	23.3
	Master's degree	44	21.0
	PhD	21	10.0
Nationality	American (USA)	77	36.7
	British (UK)	40	19.1
	Tanzanian	25	11.9
	Russian	17	8.1
	Indian	11	5.2
	French	9	4.3
	Canadian	8	3.8
	German	8	3.8
	Other nationalities	15	7.1

Tourists' satisfaction with the use of infrastructures located proximal to attractions

Out of 210 tourists, males were 81.3% and females were 57.3%. the study found that 71.9% were satisfied using infrastructures located proximal to attractions while 28.1% were not satisfied. This suggests that more males were satisfied with infrastructures located proximal to attractions (Figure 3)

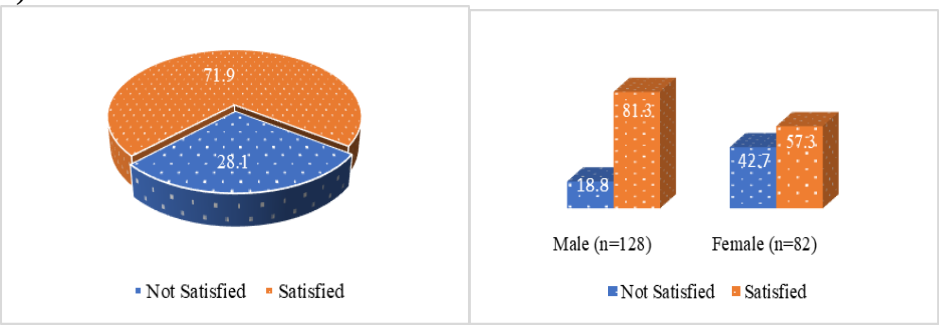

Figure 3: Tourists' satisfaction with the use of infrastructures located proximal to attractions

The study found significant proportions of tourists with various education levels were satisfied with infrastructures located proximal to attractions. These, include, diploma (91.2%), secondary education (89.5%), certificates (80.0%), a bachelor degree (67.4), master's (50.0%) and doctoral degrees (52.4%, Figure 4).

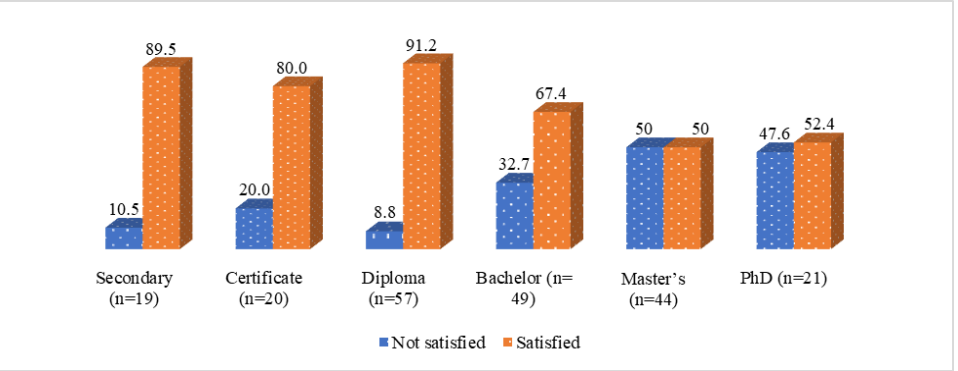

Figure 4: Tourists' satisfactions of infrastructures located proximal to attractions based on education levels.

As regards to age, significant proportions of tourists aged 20 to 29 years old (87.2%), 30 to 39 years (82.4%), 40 to 49 years (65.5%) and50 to 59 years (57.5%) were satisfied with infrastructures located proximal to attractions. However, a small proportion of tourists aged ≥60 years (46.2%) were also satisfied (Figure 5).

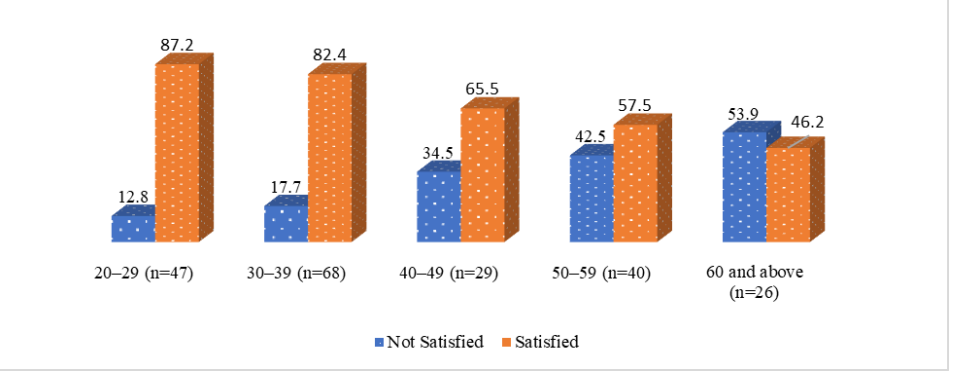

Figure 5: Tourists' satisfactions of infrastructures located proximal to attractions based on age

Large proportions of tourists from the United States (84.4%), Russia (82.4%), the United Kingdom (77.5%), "other nations" (73.3%), Canada

(62.5%), India (54.6%) and Germany (50.0%) were satisfied with infrastructure located proximal to attractions. However, a small proportion (36.0%) of Tanzanian tourists were satisfied (Figure 6).

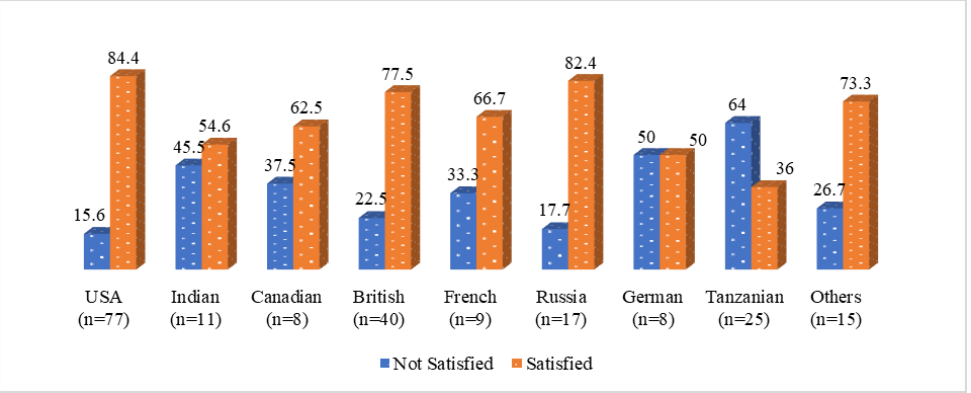

Figure 6: Tourists' satisfactions with infrastructures located proximal to attractions based on nationalities.

Tourists' Awareness of potential consequences of infrastructures located proximal to attractions

About 51.9% of 210 tourists were aware of the potential consequences of infrastructures located proximal to attractions. Of this, 50% were males and 54.9% were females. About 48.1% of tourists were not aware, of which 50% were males and 45.1% were females (Figure 7). This suggests that more females are aware of potential consequences of infrastructures located proximal to attractions.

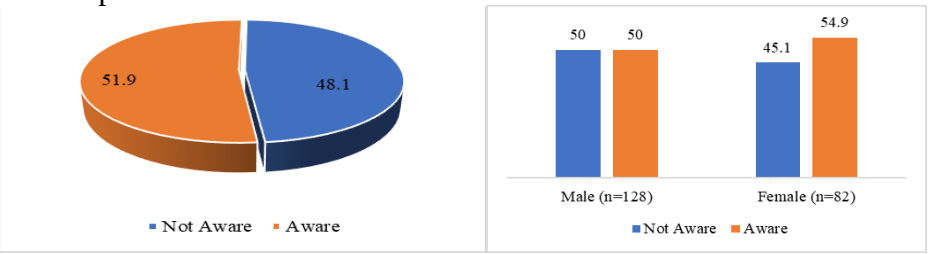

Figure 7:Tourists' awareness of potential consequences of infrastructures located proximal to attractions.

The study found that large proportions of tourists aged 50 to 59 years (62.5%), aged ≥ 60 years (53.9%) and 20 to 29 years (51.1%) were aware of potential consequences of infrastructures located proximal to attractions. However, small proportions of tourists aged 40 to 99 years (44.8%) and tourists aged 30 to 39 years (48.5%) are aware (Figure 8).

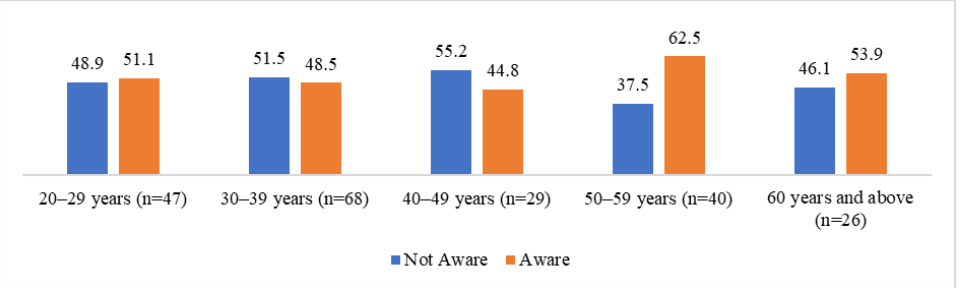

Figure 8: Tourist's awareness of the potential impacts of infrastructures located proximal to attractions based on age.

In general, all education levels of tourists are aware of the potential consequences of infrastructures located proximal to attractions. These include, master's degree (59.1%), certificates (55%), bachelor's degree (53.1%), secondary education (52.6%), PhD (47.6%), and diploma (45.6%: Figure 9).

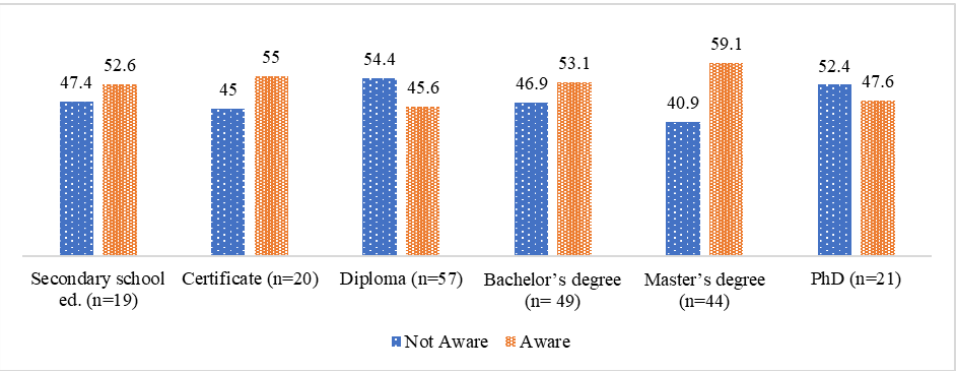

Figure 9: Tourist's awareness of potential consequences of infrastructures located proximal to attractions based on education.

Large proportions of tourists from all studied nationalities are aware of the potential consequences of infrastructures located proximal to attractions. These include Britons (75.0%), French (66.7%), Canadians (62.5%), Germans (62.5%), Russians (58.8%), Americans (57.1%) and Indians (54.6%). A small proportion (12.0%) of Tanzanian tourists are aware while all tourists from "other nationalities" were not aware (Figure 10).

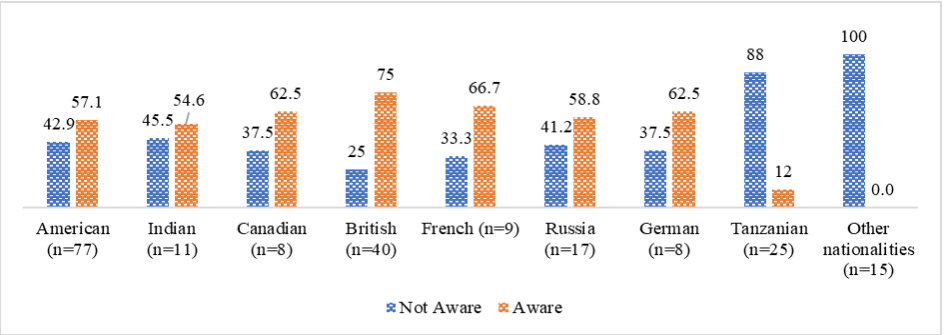

Figure 10:Tourist's awareness of potential consequences of infrastructures located proximal to attractions based on nationalities.

Hypothesis testing

This section tests the proposed null hypotheses in light of the field results that have been presented.

H_{o1}: *Demographic characteristics (age, education, nationality and sex) do not influence tourist's satisfactions of infrastructures located proximal to attractions.*

H_{o1} is tested using Pearson Chi-square by comparing the independent variables (sex, age, education and nationality) to the dependent variable (tourists' satisfactions). The results indicate that only education, nationality and sex have statistically significant relationship with tourists' satisfactions as their associated p-values are less than 0.05 (Table 2). This result rejects the H_{o1}null hypothesis and supports the H_1alternative hypothesis that *Demographic characteristics (sex, age, education and nationality) do influence tourist's satisfactions of infrastructures located proximal to attractions.*

Table 2: Pearson Chi-Square test of the relationship between tourists' demographic characteristics and satisfaction

Variable	Pearson Chi square	P value
Age group	2.055	0.363
Education	29.004	0.000
Nationality	27.4864	0.001
Sex	14.1712	0.000

H_{02}: *Tourists' awareness of potential consequences of infrastructures located proximal to attractions does not influence their satisfactions*

H_{02} is tested using Pearson Chi-square by comparing the independent variable (tourists' awareness of the potential consequences of infrastructures located proximal to attractions) to the dependent variable (tourist satisfaction). The result indicates that tourists' awareness of the potential consequences of infrastructures located proximal to attractions have statistically significant relationship with tourists' satisfaction as their associated p-values are less than 0.05 (Table 3). This result rejects the null H_{02} hypothesis and supports the alternative hypothesis H_2 that *Tourists' awareness of potential consequences of infrastructures located proximal to attractions do influence their satisfactions.*

Table 3: Pearson Chi-Square test of the relationship between tourists' awareness of the potential consequences of infrastructures located proximal to attractions on tourists'satisfactions

Variable	Pearson Chi-square	P value
Tourist's awareness of the potential consequences of infrastructures proximal to tourism attractions	4.1428	0.042

Evaluating the extent of relationships of the null H_{o1}hypothesis

Independent variables with statistically significant relationships are subjected to a multivariate logistic regression model to test the extent of relationships between tourists' demographic characteristics (sex, nationality, and education) and satisfactions of infrastructures located proximal to attractions (Table 4). The study found that, American tourists are about 18 times more satisfied of infrastructures located proximal to attractions than Tanzanian tourists ($p<0.05$). Furthermore, the study discovered that Russian and Briton tourists are about ten times more satisfied of infrastructures located proximal to attractions than Tanzanian tourists ($p<0.05$),while tourists from "other nationalities" are about 6 times more satisfied than Tanzanian tourists ($p<0.05$,Table 4).

Tourists with higher levels of education are less likely to be satisfied with infrastructures located proximal to attractions than those with lower levels of education. For example, tourists with Masters and PhDs degrees are about 0.03 times less likely to be satisfied than tourists with Secondary education($p<0.05$). Nonetheless, sex has no statistical significance to satisfaction ($p\geq0.05$), indicating that it has no influence on tourists' satisfactions (Table 4).

Table 4: Extent of relationships between tourists' demographic characteristics and satisfaction with infrastructures located proximal to attractions

	Odds Ratio	Std. Err	Z	P>|Z|	[95%Conf. Interval]	
Nationality						
Tanzanian	1.000					
Indian	1.8902	1.61805	0.74	0.457	0.3531	10.1193
Canadian	3.3782	3.28129	1.25	0.210	0.50337	22.6710
British	10.3470	6.93134	3.49	0.000	2.78360	38.4614
French	5.9233	5.5867	1.89	0.059	0.9327	37.6174
Russia	10.1730	8.7797	2.69	0.007	1.87425	40.2164
German	3.5501	3.5055	1.28	0.199	0.5125	24.5897
American	17.6198	11.0385	4.58	0.000	5.1610	46.1541
Other nationalities	6.0816	5.0905	2.16	0.031	1.17904	29.3694
Education level						
Secondary school ed.	1.000					
Certificate	0.4153	0.4213	-0.87	0.386	0.0568	3.0331
Diploma	1.3442	1.2713	0.31	0.754	0.2106	8.5803
Bachelor's degree	0.1463	0.1330	-2.11	0.055	0.0246	0.8699
Master's degree	0.0308	0.0365	-2.94	0.003	0.0030	0.3135
PhD	0.0308	0.0384	-2.80	0.005	0.0026	0.3536
Sex						
Male	1.000					
Female	2.6214	2.0010	1.26	0.207	0.5872	11.7025
Constant	1.5808	1.4068	0.51	0.607	0.2763	9.0448

Evaluating the extent of relationships of null Ho2hypothesis

From the logistic output in Table 6, the study found that there is statistically significant relationship between tourists' awareness of the potential consequences of infrastructures proximal to tourism attractions and satisfaction with the use of the infrastructure proximal to NCA tourism attractions. That is tourists who are aware of the potential consequences of infrastructures on tourism attractions are about 2 times more satisfied with the use of infrastructures proximal to the attractions than tourists who are not aware of the potential consequences of infrastructures to tourism attractions ($p<0.05$).

Further analysis using a multivariate logistic regression model shows that tourists who are aware of the potential consequences of infrastructures located proximal to attractions are about twice as much satisfied than tourists who are not aware ($p< 0.05$: Table 5).

Table 5: Extent of relationships between tourists' awareness of the potential consequences of infrastructures located proximal to attractions on tourists' satisfaction

	Odds Ratio	Std. Err	Z	P>|Z|	[95%Conf. Interval]	
Awareness of potential consequences						
Not Aware	1.0000					
Aware	1.8782	0.5854	2.02	0.043	1.0196	3.4598
Constant	1.8857	0.3943	3.03	0.002	1.2517	2.8409

DISCUSSION

This study has found that tourists are satisfied of infrastructures located proximal to attraction despite being aware of their potential consequences. In NCA WHS, large number of tourists desire and expect to lodge, camp, and do game driving proximal to attractions such as crater rims, Ndutu wildebeest migratory routes, scenic landscapes, wildlife habitats and the archaeological site of Olduvai Gorge and Laetoli hominid footprints. These infrastructures are located in most of the ecologically, geologically and paleoanthropological sensitive areas of NCA WHS. Yet, they are mostly favored by both tourists and infrastructure developers. Tourists would pay more to be in such infrastructures because their desires, expectations and experiences are satisfied. Infrastructure developers in NCA WHS always request to construct their facilities in such sensitive areas in order to attract and satisfy tourists and therefore, get a premium out it. Such findings have also been reported by Ramyar and Halim (2020) in Iran's Golestan National Park and Marion (2019) in his review and discussion of recreation impacts to wildlife in PAs. Similarly, de Oliveira et al. (2021) noted that tourists with positive environmental awareness had higher levels of satisfactions when they visited PAs.

However, the study found that highly educated tourists (Masters and PhDs degrees) are less likely to be satisfied of infrastructures located proximal to attractions when compared to tourists with lower education levels. This is possibly due to their increased knowledge about potential adverse impacts of infrastructures to the attractions and consequently OUVs. While proximity of infrastructures to attractions in PAs helps to satisfy tourists and provide them with the best experiences, yet, it is a contested issue from a conservation point of view as it threatens the

OUVs of sites, particularly, those with World Heritage status (Buckley, 2004; Marion, 2019). Because of these two competing interests in PAs, such as the NCA WHS; conservators and infrastructure developers should work together to find ways to reduce the negative effects of tourism infrastructures located proximal to attractions while attaining tourists' satisfaction (Pedersen, 2002). One way is to restrict tourism activities and infrastructure development to areas with minimal negative impacts (Pickering and Hill, 2007; Worboys et al., 2005).

CONCLUSION AND RECOMMENDATIONS

Tourists' preferences for using infrastructures located proximal to attractions influence developers' requests to build tourist infrastructures in ecologically and culturally sensitive areas within NCA WHS and other PAs. This is done, among other things, to satisfy tourists and sustain the tourism industry. This is an ongoing conflict in NCA WHS between conservation and the tourism industry in terms of locating tourist infrastructure proximal to attractions. At some point, the requests made by infrastructure developers go beyond what is allowed under the Management Plan's conservation guidelines, endangering the NCA OUVs.

This study recommends that tourism infrastructure developers and NCA conservators to work together in order to achieve a balance of conservation and tourism objectives. This balance can be achieved through candid collaborations between tourism infrastructure developers and conservators by conceiving the best strategies for constructing the most environmentally friendly infrastructures. Along with this, monitoring and evaluation tools that continuously strike a balance between tourism-related activities and PAs conservation should be developed. The primary goal should be to protect all of the values that attract tourists (OUVs) in order to provide long-term tourist satisfaction and experience, while also assisting PAs in obtaining financial resources to protect and preserve OUVs. Furthermore, education programs should be integrated into tourist itineraries and activities to remind tourists of the importance of preserving the values that drew them to PAs and WHS. Need to provide direction for future research.

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Challenges of Tourism Business Partnerships in Wildlife Management Areas around Selous Game Reserve in Tanzania

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Abstract
This article analyses how tourism development in Tanzanians' Wildlife Management Areas (WMA) is structured based on the political-ecological factors governing African countries. The article seeks to ascertain the variables that have triggered conflicts among stakeholders in tourism business partnerships. A total of 133 household heads and 74 key informants were examined, utilising a semi-structured questionnaire and an interview guide, respectively, to gather data. The findings indicate that tourism business partnerships provide challenges to local community. Their participation in business is undermined in the WMAs due to the deprivation of the benefits from wildlife resources. It is therefore important to integrate specific community-based business strategies in the policies, which can facilitate the development of tourism and provide mutual help in Wildlife Management Areas in Tanzania.

Keywords*: Tourism, political ecology, consumptive and non-consumptive utilisation, Wildlife Management Areas*

INTRODUCTION

Tourism business partnerships are expected to promote socio-economic growth for local populations living near protected areas around the globe. Various countries have overstated tourism business partnerships as a global economic driver of human development (Noe et al., 2017).Tourism business partnerships in various regions of the world are complicated, just like the biodiversity they seek to preserve, and are influenced by the socio-political environment in which they operate (Samal & Dash, 2023; Bruyere et al., 2009). Biodiversity protection is linked to economic development through tourism business collaborations (Samal & Dash, 2023). Thus, tourism business collaborations become an important aspect of neoliberal conservation

expansion since they address both conservation and human development (Müller et al., 2023). Tourism sectors are tied to the global economy and operate in areas where residents continue to live on less than $2 per day (WTTC, 2021; Boer, 2016). The local community's inability to access financial assets from tourism industry partnerships has exacerbated revenue conflicts, and the benefit-sharing system is unclear.

The World Tourism Organisation (UNWTO), through its regional program for Africa, has supported its member states and other organisations from the region to strengthen member relations. It reinforces public-private partnerships in tourism business partnerships (UNWTO, 2016). The UNWTO works closely with the World Bank (WB), UNDP, and other international organisations to finance different projects elaborated in the tourism management master plans (UNWTO, 2016). The UNWTO has received international appreciation of tourism as a fundamental sector in global development (UNWTO, 2016). Tourism is the world's largest economic sector, generating almost 10% of the worldwide GDP and 284 million jobs in 2015 (Rasool et al., 2021; Tai et al., 2022). Tourism business partnership is pointed out as one of the important institutions to achieve Sustainable Development Goals (SDG) in developing countries, Tanzania included.

Tanzania's tourism business is based on its forests, wildlife, mountains, and minerals. Tanzanian tourism industry collaborations are drawn to the country's 32.5% of land set aside as national parks, conservation zones, and wildlife reserves to safeguard biodiversity (MNRT, 2022). Tourism business collaborations have been formed in Wildlife Management Areas, which are located near national parks and wildlife reserves. Tanzania's 28 game (including marine) reserves, 16 national parks, marine parks, forest reserves, and 44 game-controlled areas are home to the world's biodiversity and distinctive ecosystems (MNRT, 2022). Tanzania depends on tourism for its coastline, islands, Mount Kilimanjaro, and wildlife safaris. In 2018, tourist business connections brought in $2.43 billion in revenue, up from $2.19 billion in 2017 (National Bureau of Statistics & Bank of Tanzania, 2018). Tourist arrivals were 1.49 million, up from 1.33 million in 2017(National Bureau of Statistics & Bank of Tanzania, 2018). The government's goal for 2020 was to receive more than two million tourists, but a global pandemic rendered that dubious.

There is a growing body of work on critical political ecology and tourism development. Political ecology is defined by Blaikie and Brookfield (1987) and Blaikie (2008) as the linkages between humans and the environment. Political ecology has been researching politics and the environment since the 1970s. Political ecology examines how politics and natural resource power struggles interact. Critical scholars have also argued that biodiversity preservation regimes are ultimately political (Bryant and Bailey, 1997; Adams & Hutton, 2007; Forsyth, 2003), and that developing countries' environmental concerns are primarily political and economic. Political ecology investigates how WMA tourism commercial connections work or fail. As a result, local politics and biodiversity conservation collaborations can profit from both successes and failures.

Much tourism research in Tanzania has focused on the Northern region, which is known for sustainable photographic tourism (Ponte et al., 2022; Bluwstein, 2017; Sulle et al., 2011; Burns and Novelli, 2007), whereas the Southern region is known for hunting in Selous Game Reserve and photographic tourism at Nyerere National Park, a UNESCO world heritage site with large groups of wild animals. According to Boer (2016), there are 1,200 formal tourist company partnerships in or near national parks for photographic tourism, with offshore private corporations owning 70%. Many of the world's most luxurious hotels, resorts, and camps are located in the north, where Western business meets Tanzania's impoverished populations (Boer, 2016). Tourism business partnerships in WMAs in Southern Tanzania have had challenges, resulting in locals not receiving the expected money.

Early efforts to involve locals in tourism business partnerships and conservation yielded different results (Bruyere et al., 2009; Boer, 2016; Ponte et al., 2022). Other actors around the world struggle to prevent local conflicts. They are looking for socio-political solutions to better regulate tourism in developing countries (Boer, 2016). Fewer studies have studied whether tourism company partnerships have caused income conflicts, or whether village land committees are structured according to the political-ecological setting.

Consequently, the aim of this article was to evaluate the origins of difficulties in professional collaborations within the tourism industry and propose various strategies for managing disputes. Five primary sections

comprise this document. The subsequent segment addresses the frameworks that were implemented and the political-ecological impact on the advancement of tourism following the introduction. The study location, research methods, data collection, and analysis are all described in the third section. Local community participation in discussions and results presented in section four demonstrated that agriculture is the primary economic activity in these WMAs. Insecurities arising from disputes between local communities and their business partnerships, as well as between the government and such partnerships regarding revenue share, warrant significant consideration. A conclusion and suggestions for future research were included in the fifth and final section.

Conceptual Framework

The conceptual framework for this study was modified from (John, 2021) suggestions on the conservation partnerships in wildlife management areas and their implications on wildlife utilisation and livelihood sustainability. The latter source expounds further that the conceptual framework in Figure 1 illustrates an understanding of partnerships, struggles for decision-making, and their impacts on wildlife utilisation and livelihood sustainability. It explores how tourism business partnerships have increased conflicts between different stakeholders. Furthermore, the conceptual framework investigates the influence of business partners on wildlife management and tourism enterprises. With this, the study presents an assessment of the extent to which tourism business partnerships have increased conflicts and misunderstandings between local communities and tour operators and between local communities and government officials.

The conceptual framework elaborates on how the challenges that occurred due to tourism business partnerships could be solved. Besides, it suggests that local communities should be involved in decision-making concerning revenue corrections and sharing. Also, the government should influence future regulations on crop damage compensation and the incorporation of traditional knowledge in the management of wildlife resources.

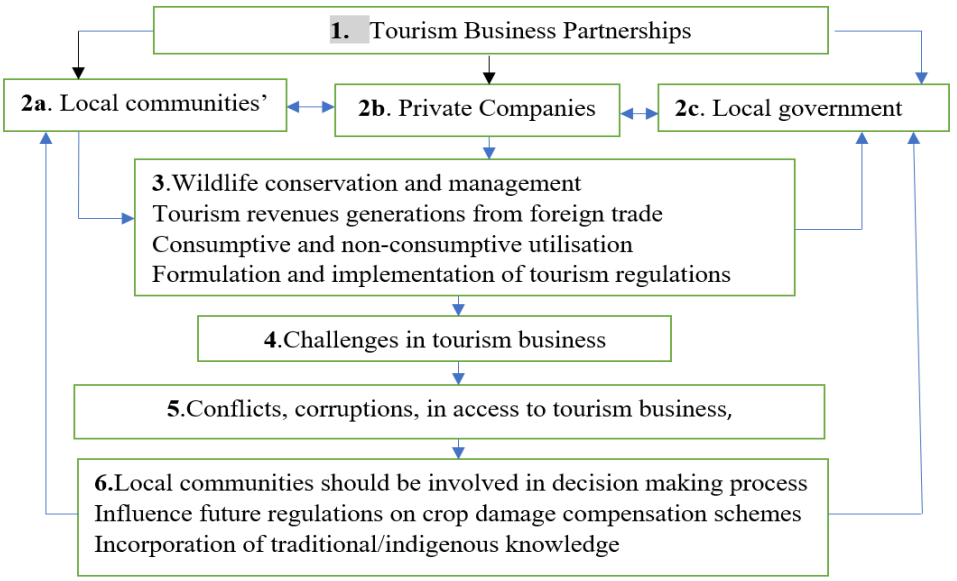

Figure 1: Tourism Business Partnerships
Source: Modified from (John, 2021)

RESEARCH METHODS

Area of Study

The Rufiji district is located in the coastal region of Tanzania, at coordinates 38.62° and 39.17°E and 7.47° to 8.03°S latitude (Haller et al., 2008). The research was conducted with a specific focus on the Northeastern sector of the Rufiji District's Selous Game Reserve. Two WMAs in the Selous were intentionally chosen to facilitate the comparison of tourism business partnerships whose revenue access has been impacted by the conflicts. The localities depicted in Figure 2 are Ngarambe and Mloka. They are symbolic of the localities located within the WMAs. Muungano wa Ngarambe na Tapika (MUNGATA WMA) encompasses Ngarambe, whereas Jumuiya ya Hifadhi ya Wanyamapori Ngorongo, Utete na Mwaseni (JUHIWANGUMWA WMA) contains Mloka.

The Selous Game Reserve generally, and the Northeastern ecosystem in particular, has some of the largest and most important populations of elephants, antelopes, cats, crocodiles, buffaloes, cheaters, lions, hippopotami, leopards, and wild dogs (Baldus et al., 2003). Nevertheless, the main livelihood activity for people in the Rufiji district is agriculture (Kibola, 2010). According to the 2012 Census, the

population of Rufiji District is 217,274 persons, with 91,661 males and 99,083 females (URT, 2013).

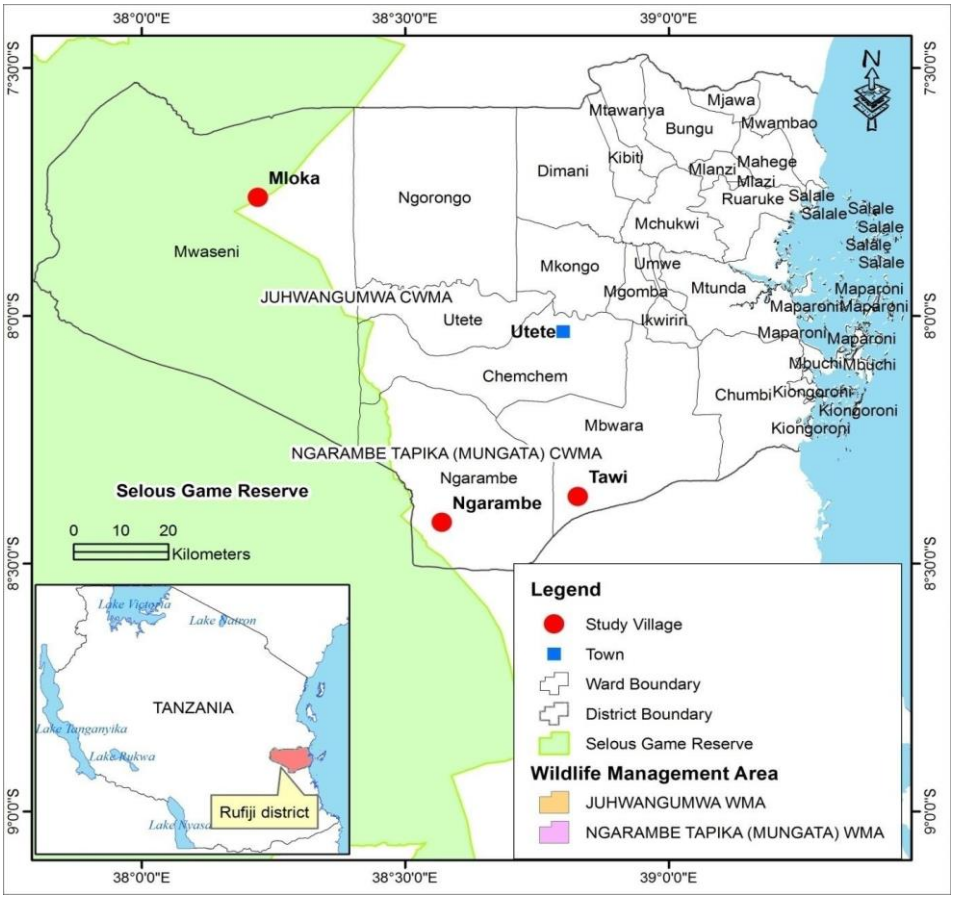

Figure 2: Location of Study Village
Source: Modified from UDSM-IRA GIS LAB

RESEARCH DESIGN

Tourism business partnership disputes were investigated in a comparative case study. This is a qualitative and quantitative. The study focused on Rufiji District settlements near Selous Game Reserve (now Nyerere National Park). Focus Group Discussions (FGDs), household surveys, key informant interviews, and participant observations collected data from February 2017 to August 2018. The household survey interviewed 44 Ngarambe, 42 Mloka, and 47 Tawi heads of household. Village Executive Officers, Ward Executive Officers, District Game Officers, Conservation

Officers, tour lodge and hotel managers, and directors were interviewed in 74 semi-structured interviews. Interviews were anonymous and confidential due to informed permission. Analysis of qualitative sources such as in-depth interviews, focus groups, and observation was done. WMA tourism business partnership theories and frameworks and selected quotations were compared. After loading the software-assisted codebook into Nvivo v.12, themes were located, sorted, and organised to grade complex relationships. Excel developed a mother-child codebook, and SPSS analysed quantitative questionnaire survey data.

FINDINGS AND DISCUSSIONS

Main Livelihood activities

Crop farming was the main occupation in the area, and most of the surveyed households were crop farmers (Figure 3). Crop farming is also discussed in Hall & Shivji (2021), that most of the people who live in rural areas in Tanzania depend on agriculture as the main economic activity. They grow both food and cash crops; food crops are maize, sorghum, cassava, and sweet potatoes, while cash crops are sesame and cashew nuts. Sesame was the major cash crop grown due to less impact by elephants. Also, the majority of households do not keep livestock due to being attacked by wild animals, and the presence of tsetse flies in the area. Although there were more farmers than livestock keepers, annual income from farming was higher than that from livestock keeping. Small businesses such as kiosks were also conducted in the study villages, where local communities sold souvenir gifts and food in small hotels to tourists in Mloka village.

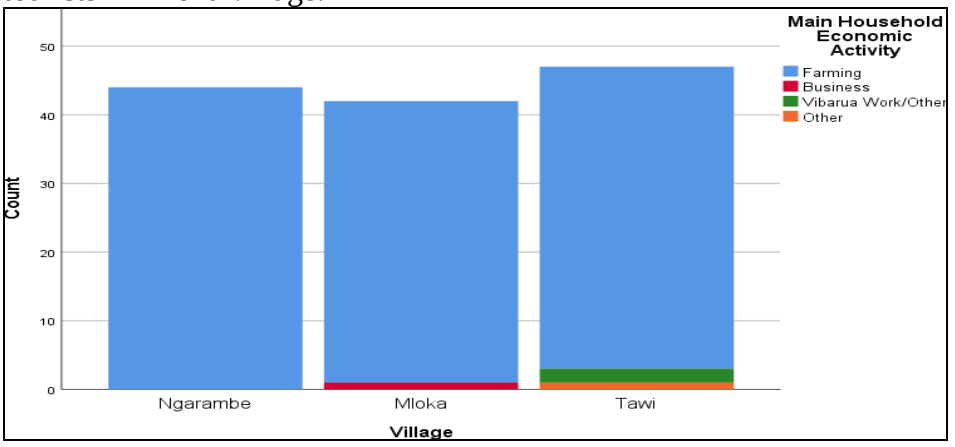

Figure 3: Main economic activity
Source: Fieldwork data (2018)

Tourism business partnerships in WMAs

The Tanzanian government is devoted to effectively controlling wildlife resources for the benefit of its people. In 1998, the Government implemented the National Wildlife Policy of Tanzania (WPT), which identified the number of challenges and emphasized the implementation of best practices for wildlife management in Tanzania (URT,1998). The challenges addressed were related to the protection of areas with large biological biodiversity, encouraging participation of local communities in wildlife protection in and outside protected areas, ensuring that wildlife management competes with other forms of land use, and incorporating wildlife with local livelihoods improvement (URT,1998).

The Tanzania Wildlife Policy of 1998 called for decentralisation of wildlife management to the local communities through shared natural resources management (URT, 1998). Decentralization was done through the establishment of WMAs on the village lands, whereby the central government maintains authority and control over wildlife decisions, management, and benefit sharing (Roe et al., 2009). Local communities were promised that they would benefit from wildlife resources on their village lands. Since the 1980s, fortress conservation and state control have been accompanied by policies and legislation that put communities in focus on conserving natural resources in the Global South (Roe et al., 2009).

The development of tourism business partnerships in WMAs was also implemented in Tanzania through the wildlife policy of 1998, where local communities were involved in wildlife management. The WMAs consist of a piece of village land set aside for the intention of wildlife conservation and the development of tourism business partnerships such as photography and hunting (Sulle et al., 2011). In addition, among the procedures in the establishment of the WMA is for the villages to develop land use plans and by-laws, as well as establish Community-Based Organisations (CBOs) that are granted user rights to wildlife by the Wildlife Division of the Ministryof Natural Resources and Tourism (Sulle et al., 2011). This study found that the development of MUNGATA and JUHIWANGUMWA WMAs followed the same procedures of setting aside the areas of land for tourism-related enterprises and conservation. In return, local communities are expected to get benefits. This study revealed that there are a lot of politics

involved in developing the land use plan to suit the interests of the government and business partners.

Changes in tourism business regulations

Selous Game Reserve has a long history of involvement in tourist hunting dating back to the end of the 19th century (Baldus et al., 2003). The tourist hunting blocks were allocated to private companies for varying lengths of time. Historically, tourist hunting was banned from 1973 to 1978 due to the malpractices of foreigners who did it without ethics regarding both conservation and finance (Leader-Williams, 2000). Most of them hunted more animals than approved on permits. In 1978, the government opened hunting tourism, which was managed by Tanzania Wildlife Corporation (TAWICO). TAWICO was vested with the power to oversee all tourist-hunting activities, while the Wildlife Department was left to decide hunting quotas and collect game fees (Leader-Williams et al., 1993). After the failure of TAWICO in 1988, the regulatory functions of the tourist hunting industry were moved from TAWICO to the Department of Wildlife in the Ministry of Tourism, Natural Resources and Environment. Therefore, TAWICO lost its monopoly in the industry.

This study found that changes that are happening concerning the tourist hunting business are an example of how political leaders use their power to implement a lot of changes without considering the effects of their changes on the community's livelihoods. Local communities who live near the game reserve receive 25% of the hunting block fee paid by the Ministry of Natural Resources and Tourism. This money came from the hunting companies operating a business inside the game reserve. The communities are also affected when the tourist hunting business goes down because they cannot get enough from 25% of the hunting block fee.

According to TAWA interviews, these changes have touched more than just local communities. Tourist hunting business operators are also affected by changes in hunting business regulations. Politically motivated ministerial changes have made natural resource management in Tanzania harder (Director of Hunting Company, 08/11/2018). On November 6, 2017, the Minister for Natural Resources and Tourism suspended the Wildlife Division director, CITIZEN reported. He revoked all hunting licences from his predecessor. In order to promote

openness, the minister ordered an auction for the hunting blocks (CITIZEN, 06/11/2017). According to Matinyi et al., (2015), Ministry of Natural Resources and Tourism and other important government departments' frequent leadership changes have caused planning gaps and shifting objectives. Ministry officials stated"

> "When the recent minister was appointed, he started by cancelling the hunting permits and re-issuing the block by claiming that some of the hunting companies are related to the illegal trade of ivory. Another major change by the minister is the proposal to use the auction for managing the hunting blocks, which is not friendly to business operators and the division of hunting blocks to increase the number (Director of Hunting company, 08/11/2018).

Other changes in tourist hunting regulations that have caused the business to go down include the changes in wildlife regulations, which were discussed by one of the key informants from TAWA. He explained that"

> "Changes in wildlife conservation of 2009 that 85% of the hunting companies' owners must be Tanzanian citizens and 15% foreigners. The locals have failed to operate the business because of a lack of experience and knowledge. The question is if the citizens are knowledgeable of the company. The firm is not doing well because many hunting blocks in Selous are empty. The investors have withdrawn from the business. Also, new restrictions under Wildlife Conservation (tourist hunting) of 2015 regulations to hunt lions over six years old are very difficult for the hunters (Director of Hunting company, 08/11/2018).

Problems with Partnerships in the Tourism Industry

Local communities residing in close proximity to the Selous game reserve have entered into various contracts or agreements with private tour operators and hunting companies to conduct business on their village land, according to this study. The majority of the local people has failed to abide by the terms of these contracts and agreements, which has prevented any progress towards a better standard of living. The unfulfilled commitments resulting from the business partnership exacerbated tensions between the local communities and tour operators or hunting companies. Neef Neef & Grayman, (2018) contend that contributions towards the enhancement of health provisions, water supply, electrification, and education funds benefits that extend to the entire community are also among these requirements. However, local

communities do not perceive the fulfilment of these requirements in their entirety.

MUNGATA WMA- Hamis Said Kibola (HSK) Safaris Company conflicts

The disputes arose in 2013, subsequent to the Wildlife Conservation Regulations of 2012 authorising the Wildlife Management Authority to engage in a commercial agreement with investors via the district advisory board and Community Wildlife Management Authority Consortium (CWMAC). The tender for the hunting block previously managed by Game Frontiers of Tanzania (GFT) was issued by the WMA authority. HSK Company applied and was awarded the contract. At that juncture, the initial investor, GFT, was obligated to maintain an open hunting block in order to accommodate the incoming business partner. The HSK safari company then proceeded to the hunting location, where it discovered GFT-owned cottages. The GFT failed to withdraw their hunting block in a timely. The HSK failed to remit the mandatory payment of the hunting block charge for that particular year. The WMA, realising they were not receiving any revenue from HSK Safari, proceeded with the second announcement of the hunting block tender without resolving the disputes with the company with whom they had a legal contract.

This study revealed that the director of HSK Safaris Company decided to put a court injunction as it was defamatory to announce the tender. At the same time, they had a former contract with HSK Safari. The case started between the WMA and HSK Safari Company. The case went on for another three years without any income to the villagers. The WMA survived three years without conducting any business at their hunting block. In 2016, the WMA decided to ask for reconciliation with HSK Safaris outside the court as the WMA leaders did not have any legal background to compete at the court with HSK Safaris Company (NGO coordinator, 08/11/2018). The HSK Safaris Company agreed to settle the conflicts and start afresh to conduct the business, which began officially in 2017 and continued until 2022 (CWMAC officials, 08/11/2018).

This study contends that the conflicts arising from partnerships between local communities and hunting tourism investors exemplify the detrimental impact of tourism businesses on local communities, which cannot compete with business operators effectively. Furthermore, these

communities lack legal recourse in the event of disputes. For instance, the local communities residing in MUNGATA WMA endured three years without receiving any income from hunting tourism, which constitutes their primary source of revenue.

Tour operator -Mloka Village disputes

Mloka is one of the villages that have formed business partnerships with Tour Operators. The inception of these corporate relationships took place in Mloka throughout the 2000s, prior to its integration into the WMA. Mloka village has just become a member of a Wildlife Management Area (WMA) that consists of 12 other villages, resulting in a total of 13 villages in the WMA. JUHIWANGUMWA is one of the newly formed Wildlife Management Areas (WMAs) in the Rufiji district. JUHIWANGUMWA WMA was founded on July 1, 2016, and was granted user rights. JUHIWANGUMWA is an abbreviation for the Kiswahili phrase "Jumuiya ya Hifadhi ya Wanyamapori Ngorongo, Utete na Mwaseni." Mloka village engages in business relations with neighbouring villages within the same Wildlife Management Area (WMA) due to its proximity to Mtemere gate, the entry to the photographic block in the Selous Game Reserve.

This study found out that the Mloka village council struggles to run a tourism business on their communal lands. The village councils lack enough power and knowledge of the tourism business, which has caused a lot of conflicts and understanding between tour operators and villagers. These conflicts arise due to bad contracts that the village leaders, through their council, have set with tour operators. The villagers are asking if this is because of corruption or ignorance. Mloka village has more than 15 camps and lodges operating on the village lands, but the income from these businesses is not sufficient or relevant to the kind of business. The village council has three different groups of investors within the same village. They pay land rent differently depending on which time they started business on the village lands (Manager of the tourist lodge, 14/03/2018).

The conflict between WMAs and the Wildlife Division

These conflicts resulted from the failure of the Wildlife Division to grade the hunting block owned by JUHIWANGUMWA CBO. Since its establishment, the CBO has not started any business in their areas. The central government promised them that they would benefit from tourism

businesses in their WMA areas. The grading of the hunting block in this new WMA has not yet been done. Wildlife Management Area Consortium (CWMAC) assumed that the hunting block is grade B because of the nearest grade on the other side of the Game reserve. The WMAC, in collaboration with the WMA, announced the tender of this hunting block, which was later not approved by the Wildlife Division. The local communities have no money to pay for the grading of their hunting block. The study corroborates with this study that different actors in Zimbabwe, Kenya and Tanzania are playing different roles in establishing and increasing the coverage of protected areas to attract tourism business (Keane et al., 2020; Oduor, 2020; Kiondo et al., 2019).

Villagers have limited information on how their conservation partners, including the central government, district council, TAWA, and Belgian Technical Corporation, implement their objectives. Their understanding is mostly focused on the influence and power held by these other players. The villagers perceive the central government as possessing greater power in decision-making compared to other entities. The tendering processes and company operations in the WMA land are characterised by a high degree of transparency. However, the Wildlife Division poses a significant obstacle when it comes to advancing these corporate endeavours. The wildlife division states that the WMA block has not yet been evaluated for grading. The cost of grading the hunting block is prohibitively high, and local communities are uncertain about the party responsible for covering these expenses in order to initiate the hunting business in their block (Male informants 14/03/2018).

Many villages in JUHIWANGUMWA WMA have no access to photographic tourism due to the location of their villages and poor infrastructure development. These villages were waiting for tourist hunting businesses to start in their WMA so that they can get income from tourism. But, due to the failure of the Wildlife Division to give them permission to continue with the business and do animal census they are now not interested in the WMA. According to Matinyi et al., (2015), southern attractions in Tanzania are poorly linked to each other and major cities; they require long drives on poor-quality roads.

The results from the survey, however, do not support the idea that the WMA establishment has positive effects. There is a clear local view that the local communities do not get enough employment in tourism-related

businesses, and few locals are employed. For example, Mloka village has a lot of tourism activities. Still, the tourism companies, use more people from Northern Tanzania than from the Southern part of Tanzania (For women and men in 2017 and a collective feedback meeting in 2018) as well as discussions with local leaders. These findings concur with (Mutanga et al., 2017) that locals are only employed as casual labour. This type of employment is not reliable because they are seasonal. The local communities were asked about the cost and benefits of Partnership involvement to individuals, and very few respondents, however, in Ngarambe and Mloka confirmed that they were very satisfied with community involvement in the partnerships (Figure 4).

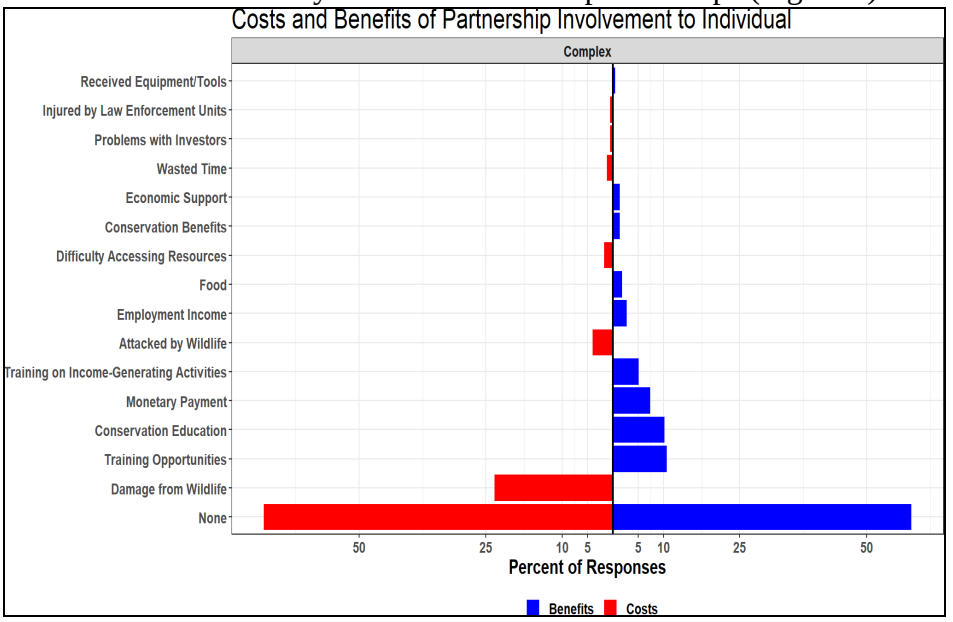

Figure 4: Cost and benefits of Partnerships involvement to individual
Source: Fieldwork data (2018)

Respondents in the Ngarambe and Mloka villages said that they are neither satisfied nor unsatisfied because the benefits received are related to conservation benefits, training opportunities, and somehow economic support. Other respondents said that the law enforcement unit injured them, had problems with investors, and were attacked by wildlife. The survey data reveal that few people in Ngarambe and Mloka villages are satisfied with community involvement in the partnerships. Contrarily, and as expected, more people are unsatisfied with community involvement in associations. A study by Green (2016) also supports the

findings that community involvement in partnerships has increased the accumulation of land in protected areas. In doing so, local communities are not able to access the benefits as most of their lands are set aside for tourism business.

CONCLUSION AND RECOMMENDATIONS

Tourism business partnerships were established in the country following the land use plan and zonal management plans. These plans are set depending on the political and economic situations of the country. In other cases, tourism business partnerships are established following the political stability and interest of actors involved in the business. Since the WMA was established in the 2000s, more village land has been set aside for wildlife on village lands. Despite this potential WMA's ability to generate revenues, the challenges remain, especially in the failures of Authorised Associations to develop investment agreements with all the investors operating in theWMAs (Sulle et al., 2011).

This article demonstrated how local communities living in WMAs bordering protected areas depend on tourism business partnerships for their development and well-being. At the same time, the central government, which owns the wildlife resources, has all the powers to make decisions on their benefit-sharing obtained from tourism business partnerships conducted on the village lands. The main dispute emerging from this tourism business partnership in WMAs as a new form of wildlife management is the failure of business partners to respect the contracts and agreements. As a result, a lot of conflicts occurred between local communities and private companies or the government. This article reveals that although WMAs function at the regional scale, they are not local originalities and their foundation is mostly top-down.

These conservation partnerships use the powers to make changes in the rules and regulations governing lands, resource utilisation and institutions. As Brechin et al., (2003) suggest, these actors and their powers have as much influence in decision-making in natural resources management and utilisation. According to local perceptions, increased conflicts between private companies and local communities have resulted in losses in the tourism business. The article suggests, therefore that the evaluation of the tourism business partnership conflicts should consider the broader ecological and economic contexts in which they are established.

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Does Election Observation Matter? Examining the Implementation of Election Observation Recommendations in Tanzania and Uganda

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Abstract
Electoral observation has become an integral part of the democratic and electoral processes in Africa. In the short term, international and local election observers enhance the transparency and credibility of elections and the acceptance of results in the continent. Moreover, in the long term, proposals issued by observers are critical in improving the quality of future elections. This paper is concerned with the long-term goal of election observation. Focusing on Tanzania and Uganda, it examines the extent to which reforms that observers propose are considered in improving subsequent elections. The paper relied on a desk review of documentary sources. The review paid particular attention to the recommendations issued in each election, focusing on how often they have been repeated across elections. The paper notes that the proposed reforms in the two countries are, by design, not adequately implemented. Addressing the lapses identified by election observers is uninteresting among political actors since it threatens the electoral advantage and the status quo. The paper recommends the formation of inclusive coalitions and networks that will strategically push for implementing election observers' recommendations.

Keywords: *Election Observation, Election, Democracy, Tanzania, Uganda*

INTRODUCTION

Election observation is an essential pillar of democracy promotion. In the short term, election observation deters fraud, intimidation, and violence while ensuring public confidence and adherence to international election standards (Daxecker, 2012; 2014; Smidt, 2016). Nevertheless, the roles mentioned above contribute little to the quality of elections over the long term (Kelley, 2012). The focus of this paper is the long-term goal of

election observation. It centres on election observation recommendations and their lasting impact on the quality of elections. The undertaking is more linked to the democratisation aspect of election observation. The paper builds on Lindberg's (2006) view that elections not only signify democracy in Africa but are also the vehicles of the continent's democratisation. As election observation intends to improve the quality of future elections, it is therefore critical to the consolidation of democracy in Africa (van Cranenburgh, 2000; Laakso, 2002).

The long-term goal of election observation is to improve the quality and integrity of elections over a long period (Kelley, 2009; Hyde, 2011). After observing various aspects of the election, observers issue comprehensive reports on the conduct and management of the election. The report's comprehensiveness is owed to the corroboration of sources, analysis of the legal frameworks, and contextual analysis of the election and democracy (OSCE, 2016). Contrary to the preliminary statements, final election observers' reports contain recommendations to address institutional and organisational gaps holistically. The proposals are directed to actors such as EMBs, government, political parties, civil society, law enforcement, and security apparatuses. A survey of issued proposals depicts a quest for broader and far-reaching reforms on electoral laws, management of elections, civic and voter education, gender inclusion, voter registration and election playing field (Roussias & Ruz-Rufino, 2013). Apart from the proposals on inclusiveness, other recommendations have remained the same for the past 30 years of multiparty African elections (Dodsworth et al., 2020). The nature of respective proposals corresponds to the long-term goal of election observation, which ultimately leads to quality elections and consolidation of democracy (Obi, 2007).

Ideally, there must be a follow-up on implementing observers' recommendations (Bjornlund, 2004). The actors may work individually or through a coalition comprising international organisations, development partners, regional groupings, individual states and domestic actors, including civil societies (EU, 2008). The nature and gravity of proposals determine the type of follow-up mechanisms to be deployed (Lynge-Mangueira, 2012). However, monitoring the implementation of observers' recommendations is challenging (Kelley, 2012). Local actors, including domestic observation missions, lack substantial leverage to influence actors' consideration of their proposals (George & Kimber, 2011). In the

same vein, although research has shown that international observers' sending states and organisations have more influence than local actors (Dexcker, 2012), economic and political interests may dent their resolve to propose or influence the changes proposed (Henry, 2017).

Nevertheless, conducting an election is a matter of sovereign states' domestic affairs, giving them the right to refuse or limit the extent of implementation of observers' recommendations (Kelley, 2010). Most importantly, democratic reforms take time and need buy-in and support from multiple actors, including the incumbents (Huntington, 1991; Bratton & van de Walle, 1997; Bakari, 2001). Experience from elections in sub-Saharan Africa indicates that institutional and organisational flaws, whether by design or default, are primarily advantageous to the incumbents (Collier, 2009; Levtsky & Way, 2010; Lynch & Crawford, 2011; Makulilo, 2016). The research further shows that observers' recommendations, likely to alter the political status quo, receive little attention (Kelley, 2012). That enlightens why observers' recommendations remain the same in subsequent elections.

The short-term impact of election observation and observers is relatively well studied, whereby the focus has been on the behaviour of international observers (Carothers,1997; Kelley, 2010), the role of election observers in preventing electoral violence and fraud (Hyde, 2011; Dexcker, 2012) and the conduct of domestic observers (Makulilo, 2011). On the contrary, the long-term impact has yet to receive deserved attention. Little is known about the lasting effect of election observation despite its theoretical potential for consolidating democracy. Except for Kelley (2012), Comma and colleagues (2015), and Dodsworth and colleagues (2020), the research on institutional and organisational reforms and behavioural changes among actors attributed to observers' recommendations needs further attention.

The existing literature indicates an unconvincing trend in implementing election observation recommendations. The study by Dodsworth and her colleagues on implementing election observation recommendations in Kenya, Ghana, Uganda, Nigeria and Sierra Leone revealed that only 14% of the recommendations were fully implemented in particular countries. Further, the study established a "significant variation in the implementation of election observation recommendations across sub-Saharan Africa, with implementation varying both between countries and between different types of recommendations" (Dodsworth et al., 2020: 4).

The implementation of recommendations takes time, and when it is done, it is partial. Election observation recommendations are implemented after being made in several elections, albeit inadequately (Comma et al., 2015). Actors, particularly incumbents, carefully work on observers' proposals to avoid weakening their position (Bjornlund, 2004).

Against this backdrop, this paper examines the implementation of election observation recommendations. It focuses on the recommendations issued by domestic and international election observation missions. Based on the case studies of Tanzania and Uganda, the paper analyses the extent of implementing the reforms proposed by observers to improve the quality of elections. The paper argues that the proposed reforms in Tanzania and Uganda are yet to be adequately implemented. The paper holds that political actors deliberately avoid election observation recommendations to maintain electoral advantage and the status quo.

METHODOLOGY

This paper is based on a desk review of documentary sources. The method involved the analysis of election observation reports by international and domestic election observation missions from 1995 to 2021 and 2006 to 2021 in Tanzania and Uganda, respectively. The review paid particular attention to the recommendations issued in each election, focusing on how often they are repeated in different elections. A total of 26 observers' reports were thoroughly analysed. Also, the reports by election management bodies in the two countries were examined to understand the implementation of the reforms. As most election observation recommendations require legal reforms, the legal documents or specific legal provisions guiding the conduct of elections were revisited. Lastly, election observers' entry and exit reports, embassy assessments, political context reports, and other relevant documents on related topics were examined and corroborated with data from observers and EMB reports. The triangulation method guided the analysis of data obtained from various sources and the discussion of findings in this paper.

Details of the Case Studies

The paper focuses on Tanzania and Uganda as its case studies. Since the return of multiparty democracy, every election in the two countries has featured election observers. International observers have included the Commonwealth, East Africa Community, European Union, and African Union observers. Local observers include the Tanzania Election Monitoring Committee (TEMCO), the Tanzania Civil Society

Consortium for Election Observation (TACCEO) for Tanzania and the Democracy Monitoring Group (DEMGroup) for Uganda. The two countries are the founding members of the East African Community (EAC). The Freedom House ranks Tanzania and Uganda as partly free (36 scores) and not free (35 scores), respectively. Based on a one-point score difference, the ranking corresponds to the 'electoral democracy' and 'dominant party-system' description assigned to the two countries. Both countries have highly disputed elections because of fraud and manipulation claims. However, Uganda's elections are relatively competitive as compared to Tanzania. Also, Tanzania and Uganda maintain sound diplomatic and economic ties with the Western 'democracies' and 'autocratic' regimes. Lastly, the ruling parties in the two countries have won every election since the return of multiparty politics.

Specific to individual case studies, Tanzania was considered because the proposals by the Presidential Commission on the change from a single to a multiparty system had been unattained upon the first multiparty election of 1995. Also, Tanzania is among the African countries with institutionalised and vibrant domestic election observation. Uganda was considered because it was among African countries, which delayed the return of a multiparty system. Secondly, Uganda has the experience of coups and armed rebellions. Theoretically, such experience poses a challenge to democratic institutions, including elections. Lastly, unlike Tanzania, election observation by domestic observers is relatively weak and underdeveloped in Uganda.

Implementation of Election Observers Recommendations

Election observers have issued proposals on several areas in Tanzania and Uganda. The quest for reforms to the legal framework of election management has featured in both countries. Similarly, there are country-specific election observation recommendations. In the following sections, we analyse each recommendation, focusing on the issues that have been proposed, the extent of reforms attained so far and the explanations on the state of implementation. The joint proposals and those specific to the two cases are analysed, commencing with Tanzania and finalising with Uganda.

Tanzania

Tanzania re-introduced multiparty politics in 1992. Since then, it has conducted six uninterrupted elections in 1995, 2000, 2005, 2010, 2015 and 2020. Tanzania has a dominant party system, whereby the ruling

party has been in power since independence. Although Tanzania is described as 'partly free', electoral results and civil and political rights situation indicate a rising authoritarian trend (Tanzania Election Watch, 2021). For instance, from 2010, Tanzania elections were progressively becoming competitive. However, the trend was halted in 2020 as the ruling party garnered over 84% of presidential votes and 89% of seats in the parliament. Election observers have observed every general election in Tanzania and issued recommendations on improving the quality of elections and political institutions. Table 1 summarises the election observation main recommendations for Tanzania and shows the implementation status. The 'tick' (✓) mark indicates the issuance of the recommendation, while the 'X' mark denotes the non-issuance of the recommendation. Where the recommendation is issued in three successive elections, it indicates the lack of implementation.

Table 1: Summary of Election Observers Recommendations in Tanzania

N/A	Area	Specific Recommendation	Election Year						Status
			1995	2000	2005	2010	2015	2020	
1	Electoral Administration and Legal Framework	*Reform the appointment of the Electoral Commission.*	✓	✓	✓	✓	✓	✓	No implementation
		The commission employs its staff to administer elections.	✓	✓	✓	✓	✓	✓	
		The commission to have its law	✓	✓	✓	✓	✓	✓	
		Allow petitioning of presidential election results.	✓	✓	✓	✓	✓	✓	
2	Inclusivity and Representation	*Enhance women's electoral participation*	X	X	✓	✓	✓	✓	No implementation
		Ensure the participation of youth and people with disabilities.	X	X	X	X	✓	✓	
3	Balanced Media Coverage	*Enhance equal access to media among all political parties and candidates during elections.*	✓	✓	✓	✓	X	✓	Partially implemented
		Adopt a media code of conduct.	✓	✓	✓	X	X	X	
4	Election campaign	*Adopt a law to monitor and regulate campaign finances.*	X	✓	✓	X	X	X	Fairly implemented
		Adopt an election code of conduct.	X	✓	✓	X	X	X	
5	Civic Education	*Conduct a national civic education campaign*	✓	✓	✓	✓	✓	✓	No implementation
6	Voting, Counting and Tabulation	*Update and improve the accuracy of the voters' register periodically*	✓	✓	✓	X	X	X	Fairly Implemented
		Ensure the secrecy of polling stations and locate them in public buildings.	✓	✓	✓	X	X	X	

Source: *Compiled from Election Observation reports*

In Tanzania, as shown in Table 1, the recommendations concerning electoral administration and legal framework, inclusivity and representation, and civic education are inadequately implemented despite being repeatedly issued over several elections. These areas' specific proposal and their implementation are discussed in the forthcoming sections.

Electoral Administration and legal framework

Management of elections is critical to the quality of elections and strengthening democratic institutions. Election observers have consistently highlighted the shortcomings concerning electoral administration and legal framework in Tanzania. The issues of concern include the appointment powers, composition and staffing of the electoral commission, and petitioning presidential results (TEMCO, 1997 – 2016; Commonwealth, 1995 – 2020; TACCEO, 2010 & 2016; EU, 2010 -2020). Observers, in light of these areas, propose that the powers to appoint the electoral commission should be inclusive, members of the commission should have security of tenure, the commission should have its staff, and restrictions on litigation of presidential results should be lifted. The following sections discuss specific issues.

The appointment of the electoral commission is the sole prerogative of the President. There is no requirement to consult any other authority in making the appointment.[1] Similarly, the Constitution bestows the President with powers to remove commissioners. The grounds for the removal of a commissioner are provided in the Constitution.[2] Principally, the President cannot be questioned for exercising that power (Makulilo, 2015). Election observers have consistently recommended the amendment of such provisions on two grounds. First, the provision is inimical to democracy and "does not reflect good practice because it does not adequately provide for consultation and political confidence in a vital body which needs to be impartial and inclusive" (Commonwealth, 2010, 14-15). Secondly, it curtails the commission's independence as the President may appoint party members to the commission. Two cases suffice this concern. In 1995, Judge Mark Bomani, who served as commissioner, resigned from the commission and sought presidential nomination through the ruling party, CCM. Also, Justice Augustino Ramadhani, who had served as the commission's Vice-Chairman for ten

[1] Article 74 of the Constitution and Section 4(1) of the National Elections Act, Chapter 343.
[2] Article 74(1&2) of the Constitution of the United Republic of Tanzania, 1977

years, from 1993 to 2003, sought presidential candidate nomination through CCM in the 2015 election. The two incidents raise concerns about potential conflict of interest among the commission's members. Partisan members of the commission are unlikely to work against an incumbent candidate who is also a party chairperson and their appointing authority. The state of affairs affects political actors' perception of free and fair elections in Tanzania.

Second, observers have raised concerns about the staffing and composition of the electoral commission. Staffing of the commission at the national and local levels attracts complaints of real and perceived bias. The Chairperson, Vice-Chairperson, and Commissioners are part-time commission staff at the national level. A domestic observation mission report held that the "absence of full-time commissioners, who are senior advisers of the NEC, obviously makes operation of NEC to be ineffective as it would have been if all staff could have been engaged on a permanent basis" (TACCEO, 2010: 149). The commission's day-to-day activities are overseen by the Director of Elections, appointed by the President amongst civil servants following the commission's recommendation.[3] However, the tenure of the director is unsecured. The setting gives the President overwhelming powers over the electoral commission, curtailing its independence (TEMCO, 1997). Observers have recommended the full-time commission and security of tenure for the director of elections.

Similarly, apart from the national office, the electoral commission has no permanent staff at other levels. The commission relies on public officers as election coordinators and returning officers at regional, district or ward levels. The law automatically makes local government directors, including City, Municipal, Town and District Directors, as election returning officers at the constituency level where they are located.[4] The electoral commission also relies on the Village Executive Officer (VEO) and Ward Executive Officer (WEO) for village and ward levels. However, the officers are appointees of political leaders. The President appoints the local government directors, whilst the Minister appoints the WEO and VEO in charge of local government authorities. The officers are answerable to their appointing authorities first before the commission as a domestic observation mission held: "The independence of NEC is obviously at stake. Naturally, the NEC staff would not avoid favouritism

[3] Section 6(1) of the National Elections Act, Cap 343 [R.E. 2015]
[4] Section 7(1) of the National Elections Act, Cap 343 [R.E. 2015]

on the part of the person or government in that case which appointed them into the current positions" (TACCEO, 2010:149). The concerns become even more appealing when the appointing leaders are active party leaders or candidates in the election. To be sure, in its reports on the management of elections, the Electoral Commission acknowledged that the government exerted pressure on appointing some regional elections coordinators and retuning officers (NEC, 1997).

In 2016, President John Magufuli appointed new local government directors. Contrary to the long-held practices of appointing local government directors from among senior public servants, most of the appointees were ruling party cadres who were aspirants, candidates or members of campaign teams during the 2015 general election for CCM (Henry, 2021). Contrary to the Public Service Act, a number of the local government directors remained active in party politics even after their appointments. The state of affairs prompted Bob Chacha Wangwe, an activist, to file a petition at the High Court in 2018, demanding that it declare the use of City, Municipal, Town, and District directors as returning officers unlawful.[5] The petitioner's ground was Article 74 (14) of the Constitution, which prohibits any election presiding officer from being a political party member.[6] The petitioner successfully submitted the evidence that the ruling party cadres had been appointed as election presiding officers because the provision in the Elections Act makes them the Returning Officers automatically by their positions as Directors of the respective local government authorities. The petitioner argued that since local government directors are appointees of the President, the ruling party's Chairperson and a potential electoral candidate, they can be easily trapped to protect the interest of their party.

The High Court ruled in favour of the petitioner. It declared that sections 7 (1) and 7 (3) of the Elections Act were repugnant to Articles 21(1), 21(2) and 26(1) of the Constitution[7] because they violate the constitutional requirement of an independent electoral commission. The Court held that there were no mechanisms in the Elections Act to ensure adherence to the prohibition of the political party affiliation of electoral commission officials involved in managing elections. Furthermore, the Judges were satisfied with the evidence submitted by the petitioner that

[5] Miscellaneous Civil Cause No.17 of 2018, High Court of Tanzania (Main Registry) at Dar es Salaam, Ngwala, J., Matogolo, J., and Masoud, J.).
[6] Constitution of the United Republic of Tanzania, 1977
[7] Constitution of the United Republic of Tanzania, 1977

74 Directors were still active CCM members – upon filing the petition. The government appealed against the ruling at the Court of Appeal. Among other grounds, the government argued that local government directors take oaths to pledge impartiality before assuming duties, making them execute their roles impartially. Similarly, the government cited the Public Service Act, which prohibits civil servants from being leaders of political parties but permits membership in such parties. The Court of Appeal overturned the High Court ruling, allowing local government directors to continue serving as returning officers. However, the Appeal Court ruling does not insulate the Directors from suspicion of bias. The fact that the High Court ascertained that several City, Municipal, Town and District directors were still active ruling party members confirms the worries of election observers on the commission's independence. Similarly, the appeal by the government proves the extent to which election observation recommendations for an independent and impartial electoral commission are deliberately avoided to prolong the status quo.

Lastly, observers have proposed rescinding the limitation on petitioning of presidential election results. The existing Constitution does not provide for judicial inquiry of the presidential election results once declared by the electoral commission.[8] The prohibition is contrary to the principles of democracy, which require the judicial review of all matters related to governance (Eylon & Harel, 2006). Also, it downplays the separation of powers among tiers of the government, which, among other things, aims to guarantee that no branch of the government commits ultra-vires. As a result, it denies contenders the right to clear doubts in electoral processes. To be sure, the provision conflicts with Article 13 (6) (a) of the same Constitution that states: "When the rights and duties of any person are being determined by the court or any other agency, that person shall be entitled to a fair hearing and to the right of appeal or other legal remedy against the decision of the court or of the other agency concerned."[9] The limitation is, therefore, contrary to the Constitution, which grants every civilian the right to approach the Court whenever that person considers being in his best interests.

The restriction of petitioning of presidential results aggravates the potential to use violence as aggrieved parties cannot seek judiciary remedy when they have complaints against results. Since the commission

[8] Article 41 (7) of the Constitution of the United Republic of Tanzania, 1977
[9] Constitution of the United Republic of Tanzania, 1977

is perceived as unfair, prohibiting judicial review is considered a politically engineered decision. For instance, in 2010, the CHADEMA presidential candidate Wilbroad Slaa refused to accept the results, citing rigging allegations. Slaa vowed to make the country ungovernable. On 5 January 2011, just two months after the general election, the riots involving CHADEMA and the police led to two fatalities and scores of causalities, including Slaa's wife. The riots resulted from demonstrations by CHADEMA party leaders, led by Slaa, over a dispute concerning the election of the Arusha City Council Mayor, despite ongoing negotiations to resolve the matter. The riots were partly attributed to CHADEMA's disgruntlement towards election results (Henry, 2021). Also, in 2015, CHADEMA and its presidential candidate, Edward Lowassa, denounced the presidential results. They claimed that the results were rigged in favour of the ruling party. CHADEMA had submitted a petition, albeit in vain, demanding NEC to halt the announcement of results. Subsequently, they boycotted the presidential winner declaration ceremony, the swearing-in of the presidential elect and the inauguration of the 11th parliament (TEMCO, 2016). The moves, although peaceful, daunted the country's democratic consolidation and culture.

Civic Education

Democracy thrives when the people in a polity embrace a democratic political culture. Citizen needs to be inculcated on their civic rights and duties as well as the values of a democratic political system (Riutta, 2007). Civic education programmes are the most important means to achieve these ends. To be sure, the African Conference on Democracy, Elections and Governance of 2003 called on the continent's Election Management Bodies (EMBs) to develop education programmes on democratic values, good governance and constitutionalism with a specific emphasis on electoral democracy in rural areas, considering cultural and linguistic diversity. It further argued that the EMBs should work closely with civil societies and ensure adequate resources for the effective delivery of civic education. Election observers have repeatedly recommended civic education programs to impact the conduct of electoral actors (TEMCO, 1997-2016; Commonwealth, 1995-2015; EU, 2005-2015; TACCEO, 2010 & 2015).

On the eve of the multiparty system in Tanzania, the Presidential Commission on Multipartism proposed massive civic education countrywide to inculcate multiparty values and usher in a democratic political system against the background of single-party values. Kapepwa

Tambila summarises the purpose of civic education as to instil "the political culture of expressing differences without fighting, the inculcation in students and pupils of the ideas on the constitution and Human Rights" (Tambila, 1995: 480). Notwithstanding, the government rejected the proposal. Most Tanzanians, including politicians, are inept in democratic values and political culture. Tanzania's political culture is "characterised by frequent tradeoffs between these values; none reigns supreme. Liberal democratic values may be compromised if they are seen to threaten social harmony or civic peace...Tanzanians still often tend to be deferential and prefer to keep quiet rather than challenge authority in public" (Hyden, 1999:151).

The study by REDET described Tanzanians as unveiling essentially "subjects" culture. That was due to the values so well imparted to them by the party order (1965 – 1992) and "Ujamaa", a form of socialism. Similarly, Afrobarometer survey results (2002 and 2013) consolidate this observation when it was found that Tanzanians are not actively demanding their rights. Observers missions have noted that a lack of civic education impacts voters' and political parties' effective election participation. For instance, low voter turnout in the 2010 general election resulted from a shortfall in civic education (Commonwealth, 2010). In the same vein, the conduct of law enforcement agencies during elections has been affected by such a deficit (TEMCO, 2011; TACCEO, 2010; 2016; Tanzania Elections Watch, 2021). Despite the recommendations made by election observers, a countrywide civic education campaign is yet to be realised after 31 years of multiparty democracy.

Women Electoral Participation

The participation of women in elections, as aspirants and candidates, remains low in Tanzania. Women comprise most of the population, so their marginalisation in elections negates inclusive democracy principles. Election observers have consistently recommended to political parties, EMBs and the government to increase the participation of women in elections as candidates (TEMCO, 2006-2016; Commonwealth, 2005-2015; EU, 2005-2015; TACCEO, 2010 & 2016). The data of general elections, held every five years since 1995, show the magnitude of the problem. Tanzania had its first female presidential candidate in 2005. There was none in 2010, one in 2015 and two in 2020. The percentage of women parliamentary candidates was 13%, 18%, 19% and 23% in the 2005, 2010, 2015 and 2020 general elections respectively. The figures for the councillorship election reveal a rather unconvincing trend. Their

percentage of female candidates was 6%, 7%, 6% and 8% in respective elections, as shown in Table 1 below.

Table 2: Distribution of Women and Men Candidates (2005-20)

	Parliament			Councillor			Percentage of Women	
Election	Women	Men	Total	Women	Men	Total	Parliament	Councillor
2005	159	1,063	1,222	441	7,120	7,561	13%	6%
2010	191	845	1,036	559	7,375	7,934	18%	7%
2015	233	976	1,209	670	10,046	10,716	19%	6%
2020	293	964	1,257	669	7,893	8,562	23%	8%

Source: NEC reports (2006; 2011; 2016 & 2021)

Political parties, although not the only ones, are the critical factor for women's low participation in elections in Tanzania (Makulilo, 2009; TEMCO, 2016). Political parties are gatekeepers of electoral participation, as candidates must vie through a political party.[10] However, the decision-making structures and norms within political parties affect the participation of women in decision-making and, subsequently, their electoral participation. It is held that "most of existing political parties are male dominated in decision-making positions…Male-dominated political parties will only support some quotas or affirmative action which favour their position, rather than those which will substantially transform party politics and finally have a larger impact on the political play field" (Meena, 2009:14-5). Despite repeated proposals by observers, the law does not set a mandatory quota of women nominated as electoral candidates by political parties or women member constituencies as in neighbouring states of Kenya and Uganda.

On the contrary, Tanzania implements a quota system known as special seats.[11] Here, women do not seek direct election. Instead, they are nominated by political parties into decision-making bodies subject to the performance of their parties in the election. Although the system has been a significant channel for women into decision-making bodies, it has equally attracted criticism. It is patriarchy-controlled and subjected; leaders from the system lack power and status vis-à-vis those directly elected, and it is marred by corruption (Makulilo, 2009; Makulilo &

[10] Article 38 (1) (c) of the Constitution of the United Republic of Tanzania, 1977
[11] Article 66 (1) (b) of the Constitution of the United Republic of Tanzania, 1977 & The Local Government (District and Urban) Authorities CAP 287 and 288

Henry, 2021). In the light of observers' recommendations, the quota system does not enhance women's electoral participation. Special seat candidates do not seek the mandate of voters but that of their political parties. Hence, the proposal to increase the number of female candidates seeking direct electoral tickets remains pertinent.

Uganda

Uganda re-introduced a multiparty system in 2005. Political parties had been banned from 1986 after President Yoweri Museveni came into power. Since the return of multiparty politics, it has conducted four successive general elections in 2006, 2011, 2016 and 2021. Uganda is described as a dominant party system with overtly military involvement in politics (Tangri & Mwenda, 2013). Despite being categorised as 'not free' by Freedom House, Uganda's elections are relatively competitive. For instance, in the 2021 election, the share of the ruling party's and the opposition's presidential votes was 58% and 42%, respectively. Elections observers have monitored elections in Uganda since 2006 and issued proposals on reform areas to improve the quality of elections. Table 3 summarises election observers' main recommendations for Uganda and shows the implementation status. As in Table 1, The 'tick' (✓) mark indicates the issuance of the recommendation, while the 'X' mark denotes the recommendation was not issued. Where the recommendation is issued in three successive elections indicates inadequate implementation.

Table 3: Summary of Election Observers Recommendations in Uganda

N/A	Area	Specific Recommendation	Election Year				Status
			2006	2011	2016	2021	
1	Electoral framework and administration	*Reform the appointment of the Electoral Commission to make it independent.*	✓	✓	✓	✓	No implementation
2	Inclusivity and Representation	*Ensure the participation of women, youth and people with disabilities.*	✓	X	X	X	Fairly implemented
3	Media Environment	*Enhance equal access to media among all political parties and candidates during elections.*	✓	✓	✓	✓	No implementation
		Uganda Broadcasting Corporation will transform into an independent public broadcaster.	✓	✓	✓	✓	
		Ensure unrestricted internet and social media during elections.	X	X	✓	✓	
4	Campaign Finances	*Adopt a law to monitor and regulate campaign finances.*	✓	✓	✓	✓	No implementation
		Public resources should not be used to the advantage of any one political party.	✓	✓	✓	✓	
		Regulate the use of state resources for campaign purposes.	✓	✓	✓	✓	
		Enforce the current legislation against vote buying.	X	✓	✓	✓	
5	Observance of Human Rights and Electoral Freedoms	*Protect fundamental liberties in the entire electoral cycle.*	✓	✓	✓	✓	Partially implemented
		Create a new National Voter Register.	✓	✓	X	X	
		Security forces to avoid undue displays of power and exercise restraint	X	✓	✓	✓	

Source: Compiled from Election Observation reports

Research shows that in Uganda, only 5% of election observers' recommendations have been fully implemented, and 17% partially implemented despite being issued after every election (Dodworth et al., 2020). Specifically, critical unimplemented proposals, as shown in Table 3, concern electoral framework and administration, campaign finances, and the media environment. The specific proposal and their implementation are discussed in the forthcoming sections.

Electoral Framework and Administration

The Uganda electoral commission has been described as not independent. The basis for such a view mainly rests on the legal framework guiding the appointment of the commission. The Constitution and Electoral Commission Act mandates that the President appoint the electoral commission.[12] The parliament should approve the appointment.[13] The President is also vested with powers to remove commissioners due to incapacity or incompetence to hold the position.[14] Election observers have consistently proposed the reform of the commission's appointment mechanism to ensure inclusiveness, a broad-based process, protection of members from any vested interest, and credibility and security of tenure for commissioners (DEMGroup, 2006; HRW, 2006; AU, 2016; Commonwealth, 2011 & 2016; EU, 2011 & 2016). Also, in 2009, the African Peer Review Mechanism (APRM) panel of eminent persons recommended reforming "a system of appointing electoral commissioners so that only non-partisan, independent and professional people with a high reputation are selected" (APRM, 2009: 284).

The provisions mandating the President to appoint the commission give the executive the power to appoint loyal individuals to uphold its interests (HRW, 2006; Abrahamsen & Bareebe, 2016). Although the parliament must approve the appointment, the parliament has always been dominated by the ruling party, the National Resistance Movement (NRM). The opposition, activists, election observers and researchers have pointed to the commission's lack of independence and impartiality (Tangri & Mwenda, 2013). The commission's decisions and conduct favour the ruling party in several elections. For instance, in the 2006 general elections, the local election observer group noted that 1500,000 eligible voters were denied the right to vote. It further projected that the total

[12] Section 60 of the Constitution of Uganda, 1995
[13] Article 60(1) of the Constitution of Uganda, 1995
[14] Article 60(8) of the Constitution of Uganda, 1995

number of such cases nationwide could reach over 400,000 voters. Most victims were from opposition strongholds, exacerbating allegations that the move was deliberate (DEMGroup, 2006).

In the presidential results petition, filed after the election, the Court established that the 2006 elections were significantly marred by voter bribery, intimidation, multiple voting, ballot stuffing and disenfranchisement of voters, and inaccuracies in the counting and tallying of results.[15] A significant number of these malpractices were attributed to electoral officials. However, the commissioners were re-appointed by the President and subsequently approved by the parliament. That was despite poor performance and accusations of bias, as shown in the court ruling and reported by election observers. The anomalies were advantageous to the incumbent, making the commission competent for the task in the eyes of the President and the parliament. As a response, the opposition threatened to withdraw from electoral processes and called for the disbandment of the electoral commission towards the 2011 general elections. They claimed the commission lacked independence and impartiality to deliver free and fair elections (Sekaggya, 2015).

The 2016 election was described as the most rigged in Uganda (Cheeseman et al., 2016). The electoral commission and its officials were heavily involved in election manipulation and fraud in favour of the ruling party (Henry, 2017). Nevertheless, This was expected as in the time heading to the election, "the President had the EC [electoral commission] more or less in the palm of his hand" (Abrahamsen & Bareebe, 2016: 752). The statement by the Commonwealth Observer mission Chairperson on the election read: “Uganda has fallen well short of meeting many of the key democratic benchmarks for the conduct of credible elections” (Commonwealth, 2016: iv). Election observers reiterated their call for reforming the appointment of the commission to make it independent and impartial. However, the proposals were ignored. The ruling party, NRM and its presidential candidate were the beneficiaries of such lapses, making the recommended reforms unfeasible. As a result, the EU and USA observation missions declined to deploy observers in the 2021 general elections, citing a lack of implementation of previous recommendations and the credibility of elections, respectively.

[15] Col. Rtd Kizza Besigye vs Yoweri Museveni and the Electoral Commission (Election Petition No. 1 of 2007).

Monitoring of Campaign Finance

There are no effective mechanisms to oversee the campaign finances in Uganda. The NRM and its candidates are the primary beneficiaries of this opaqueness. That gives the ruling party an advantage vis-à-vis the opposition. Even the Electoral Commission acknowledges its weakness in the oversight of campaign finance (Sekaggya, 2015). Against this backdrop, election observers have recommended regulating political parties spending during campaigns to create a levelled playing field, enhancing the electoral commission's capacity to oversight campaign finance and change the law to enable eligible political parties to receive State contributions for the election campaign on an equitable basis (EU, 2011 & 2016; Commonwealth, 2011 & 2016). However, there has not been a will to implement the recommendations. The ruling party and other actors have been reluctant to accept and implement the proposal as they will weaken their key electoral advantage.

Using public resources for electoral campaigns remains a critical problem in Uganda. The government and ruling party rely on public resources for campaigns. In the 2011 election, observers noted widespread vote buying and voter bribery, mostly involving NRM candidates and officials (DEMGroup, 2011). For instance, in the Mbale district, EU observers directly observed two NRM rallies where money believed to have been obtained from public funds was given to supporters (notes of USh 1,000 together with a specimen ballot paper with a tick mark for the incumbent President). Also, in Kapchorwa, observers witnessed the delivery of two combined harvesters valued at US$ 1 billion during the rally of the NRM parliamentary candidate. In Masaka, the meetings of the NRM Entrepreneurs League at the regional level, attended by five entrepreneurs from every district, each participant received USh 50,000 for mobilisation of the voters in their district (EU, 2011:13). Similarly, in the run towards 2016 election, President Museveni spent over USD 4 million in donations between January and August 2015. It was estimated that Museveni spent at least 773 billion Ugandan shillings (about £170 million) in his 2016 presidential campaign. The funds were obtained from public coffers (Commonwealth, 2016).

Lack of campaign finances monitoring mechanisms induces corruption in Uganda's elections. Elections are when candidates compete to buy support by exchanging money and materials to win the election (Abrahamsen & Bareebe, 2016). In 2005, the domestic judicial commission of Inquiry into misuse of money from the U.N. Global Fund to Fight AIDS, Tuberculosis

and Malaria disclosed that Ministers had borrowed funds from the Ministry of Health to campaign during the 2005 referendum (HRW, 2006:18). In the same vein, unregulated spending has resulted into the entry of dirty money into politics. For instance, there were reports of undisclosed sums of money from various sources during the 2016 election (Commonwealth, 2016). That raises the danger of money laundering, insecurity and impediments to democracy. Therefore, election observation recommendations on monitoring campaign finances remain relevant for a functioning democracy in Uganda despite the lack of implementation.

Media Environment

In Uganda, the media environment has been severely restricted. In 2023, Uganda is ranked 102th out of 180 countries in the Reporters Without Boarder press-freedom index. Journalists in Uganda face restrictions on what to cover, arrests, proprietor influence and acts of violence (HRW, 2005). For instance, from October 2015 to the 2016 general election, more than 40 journalists had been arrested, beaten, prevented from working or deprived of their equipment by police (Commonwealth, 2016). The media environment significantly affects elections in Uganda. The media openly favours the ruling party and grants the opposition minimal access. Election observers have proposed reforms to the environment and conduct. Specifically, election observation missions recommend that the media ensure equal coverage and access by all political parties and provide voters with relevant and adequate information (Commonwealth, 2011 & 2016; EU, 2011 & 2016; DEMGroup, 2006; 2011). However, the recommendations remain inadequately implemented.

The public media is required to exercise fairness in elections. The requirement is enshrined in the Constitution, which states, "All presidential candidates shall be given equal time and space on the state-owned media to present their programmes to the people."[16] The Uganda Broadcasting Corporation (UBC) has failed to comply with this requirement. It has repeatedly given the incumbent President and the ruling party more coverage than the opposition. For instance, in the 2011 election, UBC broadcasted the NRM and President Museveni's campaigns for fourteen hours a day while allocating only 56 minutes for all opposition parties and candidates (EU, 2011). Also, issues concerning the opposition are often reported negatively. UBC enjoys more coverage than

[16] Article 67 of the Constitution of Uganda, 1995

other private media, so its conduct unfairly benefits the ruling party and its candidates. Thus, the demands for UBC's fairness and balance in reporting election issues according to the law are yet to be seriously addressed.

The media environment in Uganda has impelled the opposition to turn to internet-based platforms for political and election activities. Increasingly, opposition political parties and candidates use social media accounts and other internet-based channels to reach voters and deliver information (Abrahamsen & Bareebe, 2016). However, the government has frequently interfered with the internet to restrict the use of social media to curtail the opposition. In the 2016 election, the government blocked access to social media platforms at the order of President Museveni, an NRM presidential candidate. President Museveni justified the ban as a security measure to curb lies that incite violence and illegal declaration of results (EU, 2016). The ban lasted for five days. It affected the opposition's ability to monitor voting and report illegalities and the media's ability to report election day events. It restricted the freedom of speech and access to information among Ugandans.

Election observers voiced against blocking the internet and social media as they were the viable information channels during elections amid a restricted and repressive media environment. In its recommendations, the Commonwealth observation mission held that "government authorities should refrain from blocking social media during future elections, as this represents an unwarranted infringement on freedom of expression and freedom of the press" (Commonwealth, 2016: 29). Yet, the proposal was neglected. In the following election, held in 2021, the government imposed a five-day internet blackout. This time, President Museveni, a presidential candidate, justified the ban by accusing Facebook and other platforms of taking sides against his political party (AlJazeera, 12 January 2021). The ban on social media in the 2016 and 2021 elections shows how much the ruling party benefits from the existing media environment. Unsurprisingly, the ruling party presidential candidate jubilantly justified such an undemocratic endeavour in 2016 and 2021. Interfering with the internet suppresses alternative channels of freedom of expression and getting information and confines the opposition to a restrictive environment against election observers' recommendations.

Explaining Non-Implementation of Observation Recommendations

This section explains the state of implementation of election observation recommendations in Tanzania and Uganda. First, the nature of the Third Wave of democratic regimes is inimical to free and fair elections. Political institutions in these regimes retain their previous role of serving certain actors at the expense of others, as during the pre-transition period (Carothers, 2002). The executive branch of government is under a strong president whose powers exceed those stated in the Constitution (Basedau, 2011). Levitsky and Way (2010) categorise these regimes as competitive authoritarianism, characterised by abuse of state powers, biased media coverage and harassment of opposition candidates and activists. These traits are paramount for the life and survival of the regime (van de Walle, 2003). Against this backdrop, the election observation recommendations to improve the quality of elections are contradictory to the regimes' typical features and, therefore, unwelcome. However, the implementation is partial or selective even when observation proposals are accepted. For instance, as shown in this paper, there is unequal treatment of opposition candidates by the state-owned media public contrary to the Constitutional requirement. Similarly, in Tanzania, the government appealed the Court's decision that barred the use of DEDs as returning officers despite reiterated concerns about how their use dents the independence and impartiality of the electoral commission.

Secondly, Africa's raison d'etre of political power is adverse to election observation recommendations. Regimes are to stay in power by any means possible (Lynch & Crawford, 2011; Kovacs & Bjarnesen, 2018). That is well captured by Kwame Nkrumah's assertion that "Seek ye first the political kingdom, and all else shall be added unto you." Political power is a window of economic opportunities and resource access in Africa, translating to more political power (Bates, 1983; van de Welle, 2003). Nevertheless, the ultimate goal of election observation recommendations is to create a level playing field favourable for free and fair elections (Kelley, 2012). The goal is paradoxical to the African regime's raison d'etre. While the improved quality of elections gives credit to incumbents in the eyes of 'democracies' and at home, it potentially threatens their stay in power or erodes their dominance (Huntington, 1991; Bratton & van de Walle, 1997). Incumbents are thus forced to choose between being in good books or maintaining a grip on power. Since the cost of democratisation outweighs the benefits to the incumbent, holding onto power becomes an overriding objective (i.e. a necessary evil) above democratising.

Lastly, election and governance are primarily domestic affairs of sovereign states. States may use sovereignty as a pretext to refuse to implement the election observation recommendations (Laakso, 2002). International election observers rely on their parent states, agencies, or organisations to influence the implementation of their recommendations (Hyde, 2007). The international community apply various political and economic measures to ensure the implementation of the recommendations (Marinov, 2005). However, compliance mechanisms have become less effective with the rise of a multipolar world, which encourages equality and respect for sovereignty among states (Kelley, 2012). As such, the Western 'democracies' leverage over African states has diminished. Certainly, the rise of China and Russia has provided Africa with an alternative to economic and security affairs. These emerging powers exhibit little concern for domestic governance as their 'modus operandi' is based on non-interference doctrine. That contributes to democratic backsliding (Hess & Aidoo, 2019). The Freedom House's 2022 notes that the world, particularly Africa, has experienced 16 consecutive years of democratic decline. Thus, since 2006, the countries backsliding to authoritarianism have outnumbered those with democratic gains (Freedom House, 2022).

CONCLUSION

This paper was set to examine the implementation of election observation recommendations to improve the quality of subsequent elections. Focusing on Tanzania and Uganda, the paper has argued that implementing observers' recommendations is inadequate. Further, it has established that, in the two countries, actors deliberately shun observers' recommendations to avoid weakening their position. Where reforms have been adopted and even put into law, the paper has shown that they are often disregarded or selectively implemented in favour of the incumbent. The accounts of hesitancy to implement election observation recommendations include the nature of regimes, Africa's raison d'etre of political power and assertiveness to state sovereignty in an increasingly multipolar world.

RECOMMENDATIONS

This study recommends the formation of inclusive coalitions and networks that will strategically drive the implementation of election observers' recommendations. However, as democracy and elections are primarily domestic affairs, domestic stakeholders should play a sizable

role through advocacy, activism, cooperation, lobbying, litigation, and oversight of implementing election observation recommendations. As shown in the paper, the government's involvement is equally paramount in implementing election observation recommendations. As for further research, there is a need for a comparative study dealing with many cases. Also, future studies can employ quantitative methods as well as primary sources of data collection such as surveys and interviews.

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Experiences of Academic Staff Towards Promotion and Professional Development in Selected Public Universities in Tanzania: A Situational Analysis

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Abstract
There has been a constant debate regarding fairness during the promotion process and academic growth among the academic staff in higher education around the world. In the context of Tanzania, higher education depends on the academic qualifications, ranks, experience and level of job satisfaction among their academic staff for quality teaching, research and consultancy works. This mixed study focused on the experiences and attitudes of 85 staff on promotion and motivation from a selected public university in Tanzania. Quantitative data were collected from 74 academic staff, 1 professor, 4 senior lecturers, 30 lecturers, 25 assistant lecturers and 14 tutorial assistants. Moreover, 3 staff from the human resources directorate and 8 heads of academic departments were interviewed. The results demonstrated that the majority of the academic staff (82%) were satisfied with the sponsorship process in local and overseas trainings (N = 61) and the duration of three years for new promotions (N = 65 and 88%). On the other hand, the majority of the academic staff were dissatisfied with being involved in decision-making for in-service training opportunities (N = 65, 88%). Similarly, academic staff were dissatisfied with the promotion criteria and promotion process (N = 60, 81%) and (N = 45, 60%) respectively. The qualitative data revealed the dissatisfaction of academic staff on awareness of the current institutional promotion criteria and standards that may open loopholes for rude administrations. It was concluded that promotion in various universities has been associated with some micro politics and hullabaloos. Since academic staff qualifications are global, criteria for promotions should remain homogeneous, fair and equal to all staff.

K**eywords:** *Promotion, Job Satisfaction, Motivation, Job Dissatisfaction, Public Universities, Tanzania;*

INTRODUCTION

The quality of higher learning institutions is linked with the academic qualifications of the available staff. The seniority of academic ranks of the teaching staff can be used to determine strengths of teaching, research and consultancy of any university. Globally, the core functions of any higher education institution are teaching, conducting research and providing consultancy services to the community (URT, 2005). Kumar and Kannappa (2016) argue that academic growth is linked with work benefits like salary, promotion, professional growth and other monetary benefits. Struggles for academic growth appear to take a centre stage in various higher education institutions as many academic staff are beginning to realize its potential to individual career growth and seniority. Msuya (2016) views promotion as the clear path towards academic career growth and seniority in academic institutions. Furthermore, Msuya and Loisulie (2017) contend that when academic staff are satisfied with promotion criteria and promotion process, their job satisfaction level within the organization improves. There is a consensus (Jawabri, 2017; Masanja, 2018, Msuya, 2016) that the satisfied academic staff will improve the quality of work, work commitment, creativity and organization citizenship. Hence, job satisfaction is the real predictor of happy workers and productive staff who will attain the organizational goals in higher educations.

In contrast, the job of dissatisfied academic staff may remain detrimental to the institutions. Studies (Robbins, 2001; Chung, 1997 & Tomey, 1996; Msuya, 2016 & Oshagbemi 2000) have propounded that job dissatisfied academic staff may leave (exit) an organization, create conflicts in their organization, complain, may become insubordinate, steal organizational property, absent themselves, shirk (dodge) part of their responsibilities, divide their loyalty, and neglect responsibilities. Specifically, studies (Mkumbo 2014 & Masanja 2018) have identified a job dissatisfaction syndrome among academic staff in Tanzania caused by narrow opportunity for academic growth and work benefits. Despite the core functions that are attached to higher education institutions, these institutions are also the gastronomy of intellectuals and home of braved people that should nurture for high quality human resources to be used in different developmental sectors.

Since 2005, the higher education sector in Tanzania has experienced drastic changes in the establishment of both new and upgrading of public

and private universities. The establishment of Tanzania Commission for Universities (TCU) in 2005 accelerated the mushrooming of higher learning institutions in Tanzania. Rapid growth of tertiary education from a single institution with 14 students in 1961 to 58 institutions of higher education in 2019 with 206,305 students has raised a critical question of staffing, quality and job satisfaction among the academic staff (URT, 2019). Teaching in higher learning education institutions has its own tradition and culture. University teaching is very hierarchical (Omari, 2013). Quality of teaching, research and consultancy activities in any higher learning institution depends on the availability of qualified academic staff with higher educational ranks (TCU, 2019). Similarly, job performance among academic staff may depend on their skills and qualifications obtained through academic professional growth and job satisfaction. Hence, the promotion of academic staff from one academic rank to another stirs up the level of skills, seniority and work benefits. Any impediment during the process of promotion may hinder the attainment of job satisfaction and subsequent work performance of an individual staff.

As earlier observed by Mitchell (1978) in Sedarmayanti (2004), employee performance includes several aspects, namely: (1) quality of work, (2) promptness, (3) initiative, (4) capability and (5) communication. Dissatisfied academic staff tend to become detrimental to the attainment of the organizational goals and students' performance (Msuya, 2016). In addition, there have been numerous complaints on the process of promotion and the desired work benefits among academic staff in Africa, Tanzania included. For instance, Tettey (2006) perpetuates that in African universities, there are growing allegations of delays in promotion. These delays are reported to result from long procedures and high demands on productivity of an individual academic staff. Tettey (2006) also reports the cases of lack of transparency in some universities and some academic staff in need of being promoted based on teaching and grading students alone. Further, studies (Msuya, 2016; Mkumbo 2014 & Omari 2013) have revealed the dark path towards academic promotion in various higher learning institutions in Tanzania. It is on this aspect that the present study explored the perceptions of academic staff on the promotion process and work performance in public universities in Tanzania.

Undeniably, the prospect of public universities in Tanzania requires early warning to the administrators on the satisfaction of academic staff on the

promotion process and work benefits among their academic staff. Additionally, contemporary sustainable strategies to curb any existing challenges related to promotion and work benefits is a wise and prompt decision. Hence, it was necessary to illuminate these matters through a careful study guided by three research objectives:

i) To explore the perceptions of academic staff towards promotion process and academic growth in public universities in Tanzania.
ii) To assess the role of academic staff in the promotion and professional development process in public universities in Tanzania.
iii) To propose the organized strategies to improve the promotion process and academic growth among academic staff in public universities in Tanzania.

METHODOLOGY

This cross-sectional study used mixed research methods with multiple research techniques that brought rich information for an in-depth understanding of the perceptions of academic staff on promotion and work benefits in higher education institutions in Tanzania. As pointed earlier by Creswell & Plano (2011) and Creswell (2014) cross-sectional studies involve collecting and analysing data from two or more locations or groups of people at a particular point of time. In this study, simple random sampling and purposive sampling were used to get 85 participants from the selected public university in Tanzania. Out of 85 participants, 74 were academic staff with different academic ranks and education level sampled through simple random technique. Three (3) staff in the directorate of human resource and eight (8) heads of academic departments were sampled through purposive sampling technique.

Various data collection methods and instruments were employed. To be specific, self-administered (in presence of the researchers) questionnaires were distributed. Academic staff were required to fill the questionnaires and return them physically to researchers. This technique was employed based on its efficiency in collecting data and providing immediate feedback when clarification is required by the respondents (Ary, Jacobs, Sorensen, & Razavieh, 2010). Apart from questionnaires, heads of departments and staff from the human resource directorate were subjected to face-to-face interviews for collecting their views about promotion process at this university.

On documentary analysis, the researcher used recruitment and promotion policy for academic staff and harmonized scheme of service for academic staff. The researcher obtained a copy of the harmonized scheme of service for academic staff and the used criteria for promoting academic staff to various academic ranks in public universities in Tanzania. This helped in obtaining general information on the criteria for academic staff promotion and the expected salary scale after promotion. A review of documents was done and an analysis through coding and theme development was conducted as maintained by Creswell (2015).

Validity, reliability and trustworthiness were properly considered. For the case of face validity, questionnaire items were validated by a panel of three researchers (authors of this article) and some of the questionnaires' items were revised for content and context reasons. For internal consistency reliability, Cronbach's alpha of coefficient was calculated and the value obtained was interpreted using Nunnaly (1978) guideline that considers a statistical value equal to or above 0.7 as reliable (Nunnaly, 1978). Early familiarity with the participants was done to clarify the purpose of the study before the actual data collection, as recommended by Shenton (2004) to improve credibility. There was no ethical violation, as the participants of this study were contacted for their consent and their names were kept anonymous. The researcher used a pseudo name (a selected university) to refer to the public university which was involved in this study.

FINDINGS AND DISCUSSION

Socio-demographic Data of the Academic Staff

The study involved various academic staff, including tutorial assistants (TA) to professors with different characteristics as presented in table 1.

Table 1: Participants' Socio-demographic Characteristics

Variables		Frequency (N)	Percentages (%)
Sex	Males	43	58.2
	Females	31	41.8
	Total	**74**	**100.0**
Academic rank	Professors	1	1.4
	Senior Lecturers	4	5.4
	Lecturers	30	40.5
	Ass. Lecturer	25	33.8
	TA	14	19.0
	Total	**74**	**100.0**

Source: Field Data, 2021

The respondents for this study were academic staff from the rank of Tutorial Assistants (TAs) to professors. As shown in Table1, out of 74 respondents who filled in the questionnaires, 43 (58.2%) were males while 31 (41.8%) were females. The analysis strongly suggests that numerous of the respondents 30 (40.5%) were lecturers, followed by assistant lecturers 25 (33.8%) while professors were the least 1 (1.4 %) followed by senior lecturers 4 (5.4%) of the total respondents.

Perceptions of academic staff towards promotion process in public higher education in Tanzania

This objective sought to understand the perceptions of university academic staff towards the promotion process. Data were collected through a questionnaire and interviews from the respondents. As presented in Table 2, the quantitative data from questionnaires revealed that most of the respondents were dissatisfied with most aspects of the promotion process. Among the seven variables that the respondents were requested to depict their satisfaction or dissatisfaction level, only two of them were reported to be satisfied with them while they were dissatisfied with five of them. See Table 2.

Table 2: Academic Staff's Opinion on Promotion and Professional Growth in Public Higher Learning Institutions (N=74)

S/N	STATEMENT	DISSATISFACTION LEVEL						SATISFACTION LEVEL					
		VD		D		Total	Total	S		VS		Total	Total
		N	%	N	%	N	%	N	%	N	%	N	%
1.	Satisfaction with promotion criteria	24	32	36	49	**60**	**81**	10	14	4	5	**14**	**19**
2.	Satisfaction with promotion process	25	34	20	21	**45**	**60.8**	18	24	11	15	**29**	**39**
3.	Satisfaction with involvement in decisions making for in-service trainings	29	39	36	49	**65**	**88**	5	8	4	5	**9**	**12**
4.	Satisfaction with university sponsorship process in local and overseas trainings	7	9	11	15	**18**	**24.3**	21	28	40	54	**61**	**82**
5.	Satisfied with the interval of three years (duration) for new promotions	5	8	4	5	**9**	**12.2**	36	49	29	39	**65**	**88**
6.	Satisfied with feedback on promotion decisions	43	58	25	34	**67**	**90.5**	4	5	2	3	**14**	**19**
7.	Satisfied with the duration between date of promotion and salary increment	62	84	11	15	**72**	**97.3**	1	1	0	0	**1**	**1**

KEY: VD = Very Dissatisfied, D = Dissatisfied, S = Satisfied, VS = Very Satisfied
Source: Field Data, 2021

Satisfaction Level

As presented in Table 2 above, most of the academic staff were satisfied with two aspects of the promotion and professional development in higher education institutions in Tanzania. Data indicate that academic staff were more satisfied with opportunities for academic growth in the aspect of university sponsorship process in local and overseas trainings. This is because 61 (82%) academic staff were satisfied, while only 13 academic staff were dissatisfied with the sponsorship process in local and overseas trainings. Second, most of the academic staff were satisfied with the interval of three years (duration) for new promotions (88%) in higher education institutions.

Likewise, qualitative data from in-depth interview revealed different feelings among academic staff on satisfaction with the university sponsorship in local and overseas trainings, as well as promotion duration and criteria for promotion. The interview with informants revealed that most of the academic staff who were satisfied with the sponsorship given by the university included the tutorial assistants as well as assistant lecturers. It was noted that the tutorial assistants as well as assistant lecturers were the most beneficiaries of the sponsorship given by the university, unlike the lecturers and senior lecturers as well as professors. Informants reported that they were provided an opportunity to study in local universities and international universities where the university engages itself in paying the tuition fee as well as meals and accommodation costs for any sponsored student to undertake their master and doctorate degrees. However, respondents reported of the limited opportunities for oversees sponsorship by the University compared with local sponsorship.

On this regard, one of the respondents said:

> *I applied for my PhD studies at one local University in Tanzania, and then I informed my employer (the University) of my admission to that University. The employer (the University) sponsored my studies from the beginning to the end. I was given all the requirements to further my studies. These included tuition fees, meals and accommodation, research fund and thesis production costs. After graduation, I submitted my academic certificate, and I was promoted to the rank of lecturer (Interview with the lecturer)*

On the other hand, informants who were not satisfied with the sponsorship provided by the university included those who were seeking

sponsorship for their post-doctoral studies. It was noted from the informants that most of the Universities had no procedures for sponsorship for the academic staff who wished to do their post-doctoral studies outside the country. The interview with one senior lecturer revealed that the university could not support a person who wanted to do his/her post-doctoral studies. Regarding this, one informant reported that he got an opportunity to do post-doctoral studies that were partially funded by the hosting University in terms of research costs, while the meals and accommodation costs were self-funded. With this opportunity, the home university was requested to offer the sponsorship for meals and accommodation cost. However, the informant reported that the university failed to offer such sponsorship because it was not stipulated in the university policies.

Similarly, data in table 2 above indicate that the academic staff were satisfied with the interval of three years (duration) for new promotions. Eighty-eight percent of the respondents reported being satisfied with the interval rate of three years. However, the in-depth interview with the academic staff noted different views regarding the three-year interval for academic promotion. Most of the interviewed academic staff believed that the three years were effective if one met the necessary conditions to be promoted. The necessary conditions mentioned included training (professional development), doing research and publication and consultancy activities. Further, academic staff explained of their dissatisfaction regarding the contribution of teaching towards promotion of which is the main activity they reported focusing on. Academic staff reported that they were filling in open performance appraisal system forms (OPRAS) every year. However, they were not seeing the contribution of these forms to their promotion despite their executing all duties and meeting the agreed performance. Instead, they complained that they were instead required to make publications for being promoted. On this, one lecturer said:

> *Three years are sufficient for promotion, but I think this does not apply very much to academic staff. This is because for an academic staff to be promoted, you need to do more than what is stipulated in the three stipulated years. Mostly, you will need to publish, attend conferences, and have book chapters or consultancy report. Therefore, no matter what you will do in terms of teaching and other university responsibilities, if you do not have sufficient publications the three years for promotion are not in your favour.*

On the other hand, the interview with senior lecturers and professors revealed that they were very satisfied with the three years' interval for academic promotion. It was argued that for the growth of the university, including being ranked high, it depended on the seniority of the academic staff found within the university. Therefore, having a few years for academic promotion was a merit for the aspiring academicians to work tirelessly and make sure they achieved the university goals by doing substantial research. Therefore, the three years to them would provide an opportunity for an academic staff to grow academically within a short time and make the university have sufficient senior members of the academy. Further, the interview showed that the prosperity of the university relied on senior members of the university who were considered to be trusted by different local and international organizations for conducting research and consultancies. Therefore, the three years for promotion, as it was found, were satisfying for ensuring personal professional growth and the university growth.

Dissatisfaction Level

As pointed in table 2, available data show that most of the respondents were not satisfied with different procedures regarding the promotion and professional development among academic staff within the universities. For instance, the findings show that the respondents (academic staff) were dissatisfied with the promotion criteria (81%), promotion process (60.8%), involvement in decisions making for in-service trainings (88%), feedback for promotion decisions (90.5%) and duration between date of promotion and salary increment (97.3%) as presented in table 2.

The qualitative data also revealed the informants' dissatisfaction in different aspects. The data collected through the interview with the respondents showed that the respondents were dissatisfied with the promotion criteria. The respondents thought that the criteria set for promotion included three main objectives of the member of the academic staff at the University that reflected the core functions of the University including teaching, research and consultancy. On this, the informants stated that the weight given to the core activities differed from one another. Among the three, research activities were mentioned to have big weight compared to others, followed by consultancy and then teaching being the last one. Informants further reported that teaching, which is the core activity, was consuming more of the instructors' time, but it was not being given due weight. On this aspect, informants believed that teaching

as one of the core activities of the university should be given more weight compared to other activities. During the interview, one lecturer had these to say:

> *As a lecturer, I am supposed to have three teaching courses. At the same time, I must prepare the manuscripts for research publications and search for consultancies. Having three courses entails nine teaching hours in a week. This needs time for preparation, time for constructing assignments, providing and marking students' assessment works and providing feedback. With this, much time is spent on teaching. These results in lecturers having limited time for concentrating on other activities such as publications. However, the promotion criteria do not acknowledge the much amount of time spent on teaching. Instead, they focus on other activities involving research.*

Another lecturer added:

> *There is a problem with promotion criteria. First, the required journals for publications are not much clearer. It is said that you should publish in international journals, and you should not publish in journals requesting payment while there are credible open access journals that require payment for article processing charges (APC) like Springer open and other Scopus Indexed journals. Secondly, the weighting of the book chapter is not given the required number of points on promotion criteria even though much effort is put in writing it compared to published papers in a journal.*

The arguments as revealed by the two informants is the evident that some of them are not satisfied with promotion criteria because of different reasons, including the criteria for journals in which publish their papers in, as well as the weight given to different works. Therefore, it is important to discuss together with the academic members of the staff to see and agree together on the clear criteria for promotion. This should reflect the core functions of the university as stipulated in the university charter.

Apart from the promotion criteria, informants also were not satisfied with the promotion process. One of the highly claimed aspects by the informants was the process of reviewing the published articles. It was reported that the process, which involves internal and external review process, was taking too long time to be accomplished. Further, informants reported that even the review process was not very much fair. On this basis, one of the informants reported of the university undergoing the review to papers published from the high reputable journals with high-impact factor. It was noted that this was against the regulations given by

the Tanzania Commission for Universities (TCU), which stipulates, "articles published in highly reputable journals with significant impact factors (IF) and listed under Scientific Citation Index (SCI) or indexed in well-known databases should not be reviewed based on quality of the paper. This is because it is evident that such papers would have gone through rigorous review before being accepted for publication" (TCU, 2019).

Informants reported that they were using much of their time, energy and resources to strive for publishing in reputable journals, then the reviewers give them very few points that do not resemble the journal used for publication.
On this regard, one of the respondents said:

> *The review process is not fair; however, it is not a blind review because it is easier to access the published article from the search engines. Therefore, the reviewer may review the paper based on personal interest or the relationship with the person whose articles are under review. This happens mostly to external examinations of the submitted articles.*

Others reported that because the reviewers are not paid for the process of reviewing the articles submitted, it is difficult for a person reviewing a paper to concentrate on reading and providing feedback timely. The interview with the heads of academic department revealed that one of the difficult tasks was to find the right person to review the articles submitted for academic promotion. They reported that they needed to find the person qualified to read the academic papers, very specifically the senior member of the academic staff. However, the senior members were reported to be very busy. The HoDs were also of the view that after identifying them, it might take a long time for them to bring the feedback to the department. This was making the process to take a long time, thus making a given academic staff member think that the right was not granted timely.

Further, the respondents reported of not being satisfied with the duration of effecting the salary after new promotion. The discussion with the respondents revealed that the essence of new promotion was also reflected in receiving the new salary because the promotion go hand on hand with the increase in responsibilities. Respondents reported that they were being given the promotion letter without salary increase while effecting the responsibilities stipulated on the promotion letter. The

respondents reported that the effect on salary could sometimes take place after six months or one year. Such kind of delay was reported not being friendly and discouraging to members of academics because they were given more responsibilities without being paid the actual amount of salary. For instance, one had these to say:

> *I was promoted since last year, but I have not yet been paid the new salary up to this year. It is almost eight months now since I was promoted. From the time I was promoted, I have been doing all duties regarding the new promotion. However, this is not reflected in my salary. It is better that when you are promoted, your salary should be effected immediately.*

Based on the findings from the respondents regarding the academic staff promotions, it can be argued that when promotions are given, it is essential to ensure that the academic staff receives the salary for the respective promotion. This will enable the one being promoted to work with motivation towards achieving personal and institution goals. If this is not considered, there is a likelihood of continued dissatisfactions among academic staff, which subsequently results into compromising of the academic activities.

The Role of Academic Staff in the Professional Development Process in Public Higher Education in Tanzania

Data for this objective aimed at exploring the role of academic staff in the professional development process. To achieve this objective, the researcher ascertained the knowledge of academic staff regarding the process of professional development and promotion. Two categories of the respondents were included in the collection of data, involving the academic staff and heads of academic department who had the direct role to ensure their academic staff were growing academically and were promoted accordingly. The interview with the academic staff wanted to know whether they knew the guidelines used to assess academic promotions in their institutions, and when they were required to apply for the promotion. Further, they were asked the promotion criteria for different levels; such as assistant lecturers, lecturers, senior lecturers to professor, as well as points, required, the forms required to be filled for application for promotion and the approving organ for promotion.

Table 3: The Qualitative Responses of the Academic Staff (N = 18)

Question	Responses
Which guidelines are used to assess academic promotion in your institution? (criteria)	Government guidelines on public servants' promotion The recruitment, promotion and retention criteria 2017 Open performance review appraisal system Standing order Harmonized scheme of service for public Universities Upon successful completion of a particular level of studies Acquired due credits through, teachings, publications and consultancy
When to apply for a new promotion?	When one has acquired the required qualification and submitted an application Any time you feel you are eligible Commencement of the employee new year After three years, if you have qualifications Four years after the last promotion, provided you have required publications or have completed Master's or PhD studies Six-months before the decision of the organs' meeting (HRMC and Senate meeting)
Which forms should be filled during application for promotion in your institution?	OPRAS Forms, not aware about other forms Request forms for promotion, OPRAS forms I don't know Required forms for promotion None, i.e. you submit certificates or publications with a covering letter
Which organs approve promotion in your institution?	The University Council Starts at Department promotion Committee, College Board, HRMC and Senate College board Departmental examiners Boards, college boards and Universities.

Source: Field data (2021)

Assessment guidelines for academic promotion

The analysis of the data gathered from participants revealed that most of the participants had limited knowledge of the guidelines and procedures for assessment of academic promotion in their institutions. For instance, most of the respondents believed that the Open Performance Review Appraisal System (OPRAS) was the guideline that was used for assessing academic promotion. Further, a significant number of the respondents revealed several assessment guidelines including acquiring due credits through teaching, publications and consultancy, successful completion of particular level of studies and harmonized scheme of service for public Universities. On the other hand, few respondents had the knowledge regarding the guidelines guiding the assessment of academic promotion.

The respondents reported the recruitment, promotion and retention criteria 2017 as the guideline responsible for academic promotion. In this aspect, most of the respondents who seemed to have limited understanding of the assessment guidelines used for academic promotion included the tutorial assistants and assistant lecturers while lecturers and senior lecturers seemed to have understanding of the assessment guidelines for promotion. For instance, one assistant lecturer said:

> *I think when you complete a particular level of education, say master's or PhD, you need not fill the form, instead you write a letter and submit your academic certificates then you are promoted.*

Another lecturer added that:

> *We currently have a harmonized scheme of service that shows the rank and the required promotion criteria. As you earn the required points either in publications supported by teaching, you will be required to fill in the form for applying for a new promotion.*

Regarding the responses given by the academic staff, it can be said that most of the junior staff, such as tutorial assistants and assistant lecturers were not clearly aware of the promotion process, whereas lecturers had some knowledge on the promotion criteria. Based on the findings, it is difficult for the academic staff to understand their role within the promotion process if they do not even understand the guidelines used for assessing their academic promotions.

Application of new promotion

The interview with the respondents also wanted to elicit the understanding and role of academic staff on the specific time of applying for the new promotion. The responses of the participants showed that they were not sure of the specific time for applying for the new promotion. Participants had varied views regarding the time for applying the new promotion. For instance, respondents differed on the terms of specific time for promotion. Whereas some reported three years to four years after one promotion, others reported six months. Further, other respondents believed that the application time was the time when a person had acquired the required criteria for promotion. This could be in terms of the academic progression such as attainment of Master's education and Doctor of Philosophy or attainment of sufficient points from publications. Similarly, some respondents reported of application being done at every beginning of the academic year, while others reported that the application could be done at any time. From the analysis of the reported views by the

respondents, it is shown that few (17%) respondents knew the right time for applying for the new academic promotion, while most of them (83%) did not know the right time for application of the new promotion. This entails that it is difficult for the academic staff to plan effectively for academic promotion if they do not exactly know the right time to apply for the academic promotion. This may result in the academic staff not making enough publications, therefore, failing to reach the required criteria due for promotion.

Promotion application forms

Furthermore, the participants were requested to mention the application forms required for applying for the new promotion. The findings revealed that all the interviewed participants were not aware of the required forms to fill in for application for the new promotion. Among the mentioned forms for application for the new promotion included OPRAS forms (72%), request forms for promotion (50%). Other respondents (17%) reported that they were not aware about promotion request forms while others (11%) reported that there were no required forms for application for new promotion, instead, it included the submission of certificates accompanied by a covering letter. Such responses are the evident that academic staff had insufficient knowledge regarding the way for applying for new promotion. During the interview with one assistant lecturer, the following was reported:

> *I do not think whether there are forms special for requesting a new promotion. What I know is that as you finish studies, you do submit your certificates and letter to the employer to notify him that you have completed studies. Thereafter, the employer will promote you automatically.*

Promotion approval organs

Respondents were also requested to describe the approving organs for academic promotions. The findings revealed that 61% of the respondents reported the University Council as the approving organ of the new promotion. Further, 39% believed that promotion approval started from Department Promotion Committee, College Board, HRMC and Senate. On the other hand, 22% of the respondents reported that the promotion approval organs included the Departmental examiners' Boards and College Boards. The responses from the participants are the evidence that most of the respondents were not aware of the approving organs. Instead, they were aware of some of the committees responsible for the discussion

of the promotion request such as department committee, College Board, HRMC and senate. However, few of them were aware of the approving organ, which is the University Council. In such a situation, it can be viewed that if the academic staff do not know exactly the approving organ, then it is difficult for them to understand their role for academic promotion.

From the qualitative data obtained during the interview, academic staff, regardless of their academic ranks and level, agreed that they had the obligation to understand and use the available promotion criteria in their specific institutions. However, most of the junior academic staff with the rank of tutorial assistant and assistant lecturers had little understanding of the available promotion criteria in their institutions. For instance, during the interview one tutorial assistant said:

> *"Actually, I do not know the promotion criteria for any level in this university, even though I have stayed for two years in this university. All the same, the promotion issues are important for the potential academic staff who are about to apply for that level. I am struggling to complete my Master' degree on time".*

Organized Strategies to Improve Involvement of the Academic Staff in the Promotion and In-service Training in Higher Education

Data on this objective were from twelve (12) participants collected through in-depth interview. The interview was conducted among the academic staff with different academic ranks and work experience. The researcher involved professors, senior lecturers, lecturers, assistant lecturers and tutorial assistants with the working experience ranging from 2 to 21 years in higher learning institutions in Tanzania. Respondents were asked to reveal the best strategies that could be adopted to improve the promotion process among the academic staff in Higher Learning Institutions in Tanzania as well as the key methods that could be adopted to improve effective involvement of the academic staff in their promotion process in higher learning institutions.

Awareness programmes to academic staff

The interview with heads of department (HoDs) and Human resource officers showed that there was the need to provide education to academic staff members on issues regarding academic promotions. HoDs reported that most of the academic staff did not know the procedures for academic promotions. Therefore, when the time reached, they failed to follow the

right procedures instead; they started blaming others for the delay of their process without understanding the process that was to be followed. Further, human resource officers reported that the process of academic promotion was a procedural action. Therefore, all procedures must be observed. However, it was reported that academic staff were not aware of the required procedures, and therefore they were thinking that they were being delayed in the process of the promotion. It is on this aspect that they requested for education provision for academic staff. The education could be in forms of awareness programmes, workshops and trainings. During the interview, the respondents had these to say:

> *The university management should establish special awareness programs on promotion criteria and its traditions among the academic staff from the departmental level to develop an understanding of the required criteria for promotion and procedures taken for promotion (HoD)*

Another head of department suggested that:

> *There is a need to develop a documentary video or any other ICT-based materials for enhancing skills and knowledge of promotion among the academic staff.*

One Human resource officer believed that:

> *We are planning to ensure that academic staff promotion criteria and other related guidelines are accustomed to all academic staff during the orientation and probation period.*

The findings by the head of the departments and human resource officers show that for effective understanding of promotion criteria and process, academic staff must be aware of the procedures and this can only be done by providing awareness programmes to them. If the academic staff are conversant with the procedures and criteria, it is expected that they would be at the best position to adhere to the required standards and therefore make necessary efforts for being promoted for self-welfare and that of the University.

Developing a standard criterion for evaluating journal articles

The respondents believed that there is a need to review the criteria for evaluating journal articles. The interview with the senior lecturers reported that the criteria for evaluating the journal article should be reviewed on the essence that all papers published in highly reputable journals with significant impact factors (IF) and listed under Scientific Citation Index (SCI) or indexed in well-known databases should not be

reviewed based on quality of the paper. Respondents reported that such papers go under a rigour process of review, therefore; they do not need to be reviewed any more. In contrary, it was noted that such published papers also needed to be reviewed. It is on this notion that academic staff members requested of developing a new standard criterion for evaluating a journal article.

On this aspect, one of the lecturers had these to say:

> *The university should adopt a standard criterion for valuing and rewarding papers published in credible, indexed International Referred Journals with an excellent and rigor editorial and screening process. These may include journals such as Elsevier, Scopus, Springer, and the Nature.*

Developing a mechanism for internal and external assessment

Heads of department reported of establishing a mechanism that would ease the process of internal and external assessment of papers. Heads of departments reported that they were the ones at the level of departments who were required to seek for internal and external reviewers. However, they further reported that the process was not friendly because the reviewers were not paid anything. Therefore, it would be difficult to give them the period for reviewing and submitting their assessment outputs/report. On this aspect, the heads of department maintained that the university should see the mechanism of paying the reviewers to motivate them to timely read and review the work provided. This could help the heads of department to supervise them and ensure timely feedback. During the interview, one of the respondents had these to say:

> *For successful promotion, there must be a time framework for both internal and external reviewers to guide them. There must have a time interval from the initial stages for promotion to final decision. To ensure this, both internal and external reviewers need to be remunerated.*

Another respondent added:

> *There is a need to establish Fair Internal Assessment Criteria for papers and book chapters for fair scrutiny and selection of internal reviewers. Likewise, the rigor review process should back the assessment criteria for published journals for internal and external reviewers, regardless of the charges paid during the publication.*

Based on the views by the academic staff and heads of department, it can be viewed that the process of delay may be due to lack of ability by the heads of department to supervise the internal and external reviewers because they do not have any formal agreement that can be supervised.

Therefore, if the reviewers will be remunerated/paid, the heads of department will be able to supervise them and therefore, make necessary and timely follow up to ensure that the process of review does not take much time.

Establishment of promotion unit in universities

Respondents were also of the view that for an effective promotion process in the University, there was a need to establish an independent unit under the office of human resource responsible for promotion issues. Respondents reported that at the time, there was no specific office where a person could go to ask about the promotion progress after one had applied for the promotion. On this issue, respondents argued that having a specific office dealing with promotion issues could ease the process of follow-up in case of delays, as well as make the academic staff understand what is supposed to be done for promotion to be successful. During the interview, the following views were noted:

> *The University should think of establishing an independent unit to handle all promotion issues and other related academic professional development matters. This will help to have a point of reference on all matters regarding promotions and professional development of the academic staff.*

Furthermore, the respondents believed that the University should establish an online system of applying for the promotion. Respondents reported that when there is an online application system, it is easy to make follow-up and trace the development/progress of the application. They further reported that online system would help in encouraging transparency and accountability because it would show the office in which the promotion process has been delayed and therefore, make it easy to trace the reason behind that delay and address it immediately. Again, one of the respondents had these to say:

> *University institutions should adopt the use of online/ICT-based applications to handle promotion activities. This will encourage transparency and accountability.*

Low level of academic staff satisfaction on the process of staff promotion in higher education institutions in Tanzania may have immeasurable implications on staff turnover and poor job productivity. Regular academic staff exit syndrome to other private institutions and in political activities may have been geared by dissatisfaction with the promotion process, late promotion or lack of in-service training. Earlier study by

Kumar & Kannappa (2016) confirms that late promotion is associated with poor level of staff job satisfaction, which has implicates to poor job performance level and low productivity in an organisation. According to Fredericksen, (2011) employees who have a perceived probability of being promoted based on their valued efforts and productivity (output), tend to exert more efforts and yield to higher outputs to the organisation than the dissatisfied ones. It is now worth urging that public universities and other higher education organisations in Tanzania require an effective promotion process to curb the perceived growth of 'production starvation' just due to failure to maintain and promote the best staff for sustainable organization.

Undeniably, if the current situation remains unattended and unimproved, there are all possibilities that public universities will experience poor productivity due to rampant growth of staff counter-productive behaviours (Msuya, 2022). The study findings on objective one have indicated low level of staff job satisfaction and high level of dissatisfaction. Under such an intricate situation, both less satisfied and dissatisfied staff are at high risk of dropping their employment for open vacancies in other organisations (Fredericksen, 2011; Vance, 2006). Employees' turnover is expensive for an organisation as it will trigger new staff selection, recruitment and train. Similarly, Al-Suraihi, et al., (2021) viewed turnover negatively as it affects the performance and profitability of the organization. In the same line Noor, et al. (2018), contend that, every time an employee leaves the company, productivity is reduced due to the learning curve involved in working and understanding the organization, which impacts the organization's profitability. On a serious note, public universities in Tanzania could not afford to get double effects of losing qualified and experienced academic staff and incurring cost for hiring new academic staff.

Generally, results have shown that, factors such as delay of change in salaries after promotion, involvement of staff in the promotion process, late or lack of feedback on promotion decisions and promotion criteria are among the variables that elevated to high levels of dissatisfaction. Studies (Malik, Danish & Munir, 2012) have to emphasize that all work organisation to ensure that they consider control of factors leading to dissatisfaction to avoid employee turnover. The complexity of staff promotion and professional development procedures as presented in the results may, on the other hand, be a hindering factor for higher education

academic staff to exert efforts towards seeking for promotion. This is because, career progression itself comes with increased job complexity as workers are promoted to higher level positions (Russo, 2016) and hence the process should be more enabling than restricting.

The other findings in this section are the roles of academic staff in the promotion process. The benefits of high effort (on the left-hand side) must exceed the cost of effort (e) on the right-hand side (Fredericksen, 2011). Moreover, the longevity of the promotion process may also be a discouraging factor that leads to feelings of dissatisfaction among academic staff. For instance, academic staff are expected to comprehend all about assessment guidelines for academic promotion, send application for new promotion, fill in the promotion application forms and wait decisions throughout promotion approval organs. Complexity of process leads to stress over the employee who, as a result, with prolonged feelings of dissatisfactory decide to leave the organisation (Al-Suraihi, et al., 2021). Different from other institutions, promotion in higher education involves publications and consultancies, which are highly demanding tasks to go through and therefore having other complex promotion processes may be highly contributing to exerting stress on staff that consequently leads to turnover.

Fairness and justice in the promotion process and opportunities for further training are vital for employees and organizational development. In situations where organizations are not taking efforts to minimize biases and favouring in the promotion and training opportunities, such organization will ditch. Saharuddin and Sulaiman (2016) presented findings about promotion scenarios of less-fair promotions practiced by the institution where the employee who deserved to be promoted do not receive promotion while employees that should not be promoted are promoted. In such scenarios, the seeds for staff job dissatisfaction are propagated and consequently retard staff on aligning their efforts towards accomplishing university core functions. Chabaya (2015) revealed that most South African higher education promotion processes lack a fair and equitable academic promotion practice, leading to promotion of undeserved staff. Responsively, Teymouri, et al. (2007) while emphasizing on fair staff promotion, insisted on the maintaining objectivity and consistent by promoting impartiality and neutrality to ensured fairness of the promotion decisions. These arguments commonly

consider fairness in the process of promotion as a major factor to be considered by higher education institutions.

On the effective strategies for employee promotion in public universities, it is important to employ inclusive and open promotion and staff development strategies in higher learning institutions to raise the academic staff trust and fairness of the processes. In this matter, Vance (2006) asserts that employees who are engaged in the promotion process and their work are well committed to their organizations, hence ensure the competitive advantage of their companies or organizations. In the same view, Mampane, (2020) emphasizes on vast advantages of involving academic staff in the process of promotion in higher education institutions in South Africa. Involvement is a strategy for awareness building and improved learning of the process of promotion and promoting the academic staff to fulfill their roles in the process.

Moreover, for effective promotion and staff development in public universities, the use of formal and stable framed promotion procedures is mandatory. The promotion procedures ought to be clear, well followed and well known to all academic staff of higher education institutions. Prasad, (2012) argues that if procedures are followed and promotion conducted fairly, employees in an organization may become comfortable. Thus, in the procedures, there is a need for establishing a special unit for promotion at the higher education institutions. Studies strongly suggest that most higher education institutions have a promotion committee which sits to hear the promotion applications and deliberate on them (Gilavand, 2016, Mampane, 2020). The perceived advantages of a special promotion and staff development unit over a committee is that, the promotion unit would be fully engaged with staff development activities as their core function. The promotion unit may acquire the physical facilities such as an office, may have qualified staff to provide training to all academic staff to strengthen their knowledge of promotion and staff development. The same unit may remind, identify and sensitize staff who are potential or have overdue for promotion. Most importantly, this unit may reduce some levels of prolonged hierarchies during the promotion process and may encourage staff-organization relationship and organization citizenship.

CONCLUSION AND RECOMMENDATIONS

This study revealed that most of the academic staff were not satisfied with the promotion process in different aspects including promotion criteria,

involvement in decision-making for in-service training, feedback for promotion decision and date of promotion and salary increment. However, they were satisfied with few aspects, including university sponsorship in local and overseas trainings and a three-year (duration) interval for new promotions. Despite this positive gesture, the academic staff were dissatisfied with different aspects of promotion. It was also noted that most of them, especially junior academic staff, had limited knowledge of the process of promotions including the required time for applying for new promotion, promotion criteria and the approving organs for the new promotion.

It is on this aspect that the study recommends different measures to improve about academic promotions in higher learning institutions, including the provision of awareness programmes to academic staff to equip them with relevant knowledge on academic promotions. Further, the Universities need to develop a standard criterion for evaluating journal articles as well as to improve the internal and external assessment procedures through remunerating the reviewers to mitigate about review delay, thus creating fairness to publishers. Lastly, the study recommends for the establishment of promotion units in universities to enable those applying for promotions to seek relevant information regarding the promotion process and progress towards their promotion applications.

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Does Post-Harvest Losses Matter on Farmers Profitability? Evidence From Smallholder Grape Farmer's in Dodoma, Tanzania

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Abstract
This study analysed post-harvest losses of grapes and their effects on profitability of smallholder grape farmers in Dodoma. Cross section survey using structured questionnaire was used to collect primary data from 240 grape farmers who were selected through a random sampling procedure. Descriptive statistics, paired t-test, gross margin and multiple regression analysis were used to achieve the objectives of this study. Results show that, the average quantity of grape yields by smallholder grape farmers' in Dodoma was 7.7 tonnes/ha. Out of these, 1.65 tonnes/ha equivalent to 20.9% of the total grape harvested were lost. Based on multiple regression model, results showed that post-harvest losses have significant effect on the profit of smallholder grape farmers in Dodoma ($p<0.01$) by 13.9%. The observation is implied by a lower profit with loss (1.8 million/ha) compared to profit without loss (2.9 million /ha) received by farmers' from the gross margin analysis. The study concludes that a substantial proportion of grapes produced did not reach the final consumers due to post-harvest losses which had significant effect on farmers' profitability. It is recommended that reduction in post-harvest losses in grape farming should be of utmost priority in any efforts of improving farmers' profit. These efforts may entail provision of adequate training to farmers on post-harvest losses and handling techniques to create awareness among actors and investing in post-harvest technologies to prolong grapes' shelf life, reduce post-harvest losses and increase profit of smallholder grape farmers.

Keywords: *Grape, Post-harvest losses, Profitability, Smallholder Farmers', Dodoma, Tanzania.*

INTRODUCTION

Small scale production of fruits and vegetables plays an important role in income generation, poverty alleviation and in improving the nutrition and food security of the rural population (Hena and Soni, 2013; Honja, 2014;

food security of the rural population (Hena and Soni, 2013; Honja, 2014; Musasa *et al.*, 2015; Travis *et al.*, 2020; Camillus *et al.*, 2023). Grape (*Vitis vinifera*) belonging to the *Vitaceae* family is one of the world's most important economic fruit crop consumed both fresh and used in wine production (Creasy and Creasy, 2009; Senthil *et al.*, 2011, FAO, 2021). Although grapevine is adapted to a wide range of climates, it generally performed better in tropical climatic conditions (Jogaiah *et al.*, 2013). Countries such as Brazil, India, Thailand, and Venezuela play a leading role in the tropical grape production. Other countries include Bolivia, Colombia, Peru, Guatemala, Madagascar, Namibia, Tanzania, Vietnam, and China (Jogaiah *et al.*, 2013). Globally, grapes are grown in an area of about 7.5 million hectares with the production of about 75.8 million tonnes contributing to about 16% of the total fruit production (FAOSTAT, 2016; OIV, 2017; FAO, 2021; FAO, 2022). In productivity, India ranks the first with 21.7 tonnes/ha, followed by USA 17.6 tonnes/ha, China 17.1 tonnes/ha, and Chile 14.60 tonnes/ha in the year 2016 (FAOSTAT, 2016; OIV, 2017).

Dodoma region, particularly Dodoma Municipality and Chamwino District, is a key grape-growing area in Tanzania (DCR, 2014). Grape production is largely carried out by smallholder farmers and local Makutopora red is the common grape variety grown in Dodoma which is used in wine making and consumed as fresh fruit (Hussein, 2010; Njovu *et al.*, 2018). Despite the region's immense potential for grape cultivation due to its unique tropical climate and the ability to harvest grapes twice or even thrice a year with proper irrigation (MAFS, 2006), the grape industry in Dodoma has not reached its maximum potential in terms of yields (Budotela, 2006; Hussein, 2010; Safari *et al.*, 2015). According to Detry (1986 cited in Hussein 2010), 25 tonnes of grapes can be harvested in one hectare under good crop management. Currently, the average yield of grape fruit by smallholder farmers in Dodoma is estimated to be 7 tonnes/ha (RAS, 2014; TIC, 2020). This yield is lower than the yields in other tropical climate conditions of grape producing countries. For example, in China, grape yield is estimated to be 17.1 tonnes/ha, India 21.7 tonnes/ha, Brazil 12.9 tonnes/ha, and in South Africa 14.6 tonnes/ha (OIV, 2017).

According to scholars (e.g., Ogundari, 2006; Ojo *et al.*, 2009; Saysay *et al.*, 2016), low level of productivity in crop production reflects low profitability and inefficient use of resources. However, Bala *et al.* (2016)

argue that, efficient resource allocation is a necessary condition for increased crop productivity, but not sufficient for a firm to be profitable. Profit can be increased by increasing efficiency of the crop production system and by increasing efficiency in post-harvest operations in other words, reducing the post-harvest losses of the crop (Bala *et al.,* 2016; Hengsdijk and de Boer2017; Assane and Komarek, 2020). This is because food production system consists of two sub-systems, that is, crop production and post-harvest operations systems, which have significant effects on profitability, food security, environment, and economic development (Bala *et al.,* 20l0, FAO, 2019; Pera *et al.,* 2023).

Being among the perishable fruit commodities, grapes undergo huge post-harvest losses which usually occur as the fruit is transferred from the vineyard to the final consumer (Wanjari, 2005; Yaldiz *et al.,* 2008; Vilas *et al.,* 2011; FAO, 2021). Grape losses vary across countries and are estimated to be 53% in Iran at various stages of the post-harvest chain (Rajabi *et al.,* 2015), 16-23% in Pakistan (Aujla *et al.,* 2011) and 14-27% in India (Murthy *et al.,* 2009). These losses have adverse effect on profit because they tend to affect output resulting into a scenario where marginal revenue is less than marginal cost, hence causing low profitability (Goldsmith *et al.,* 2015). This means that smallholder farmers' who are faced with post-harvest losses and low productivity are both inefficient in crop production and post-harvest management. To achieve profit maximization goal, farmers need to be more efficient not only in their production activities but also in post-harvest management practices.

Many studies have examined profit of agricultural produce (e.g., Nyekanyeka, 2011; Mlote *et al.,* 2013; Acharya and Shiva, 2014; Noonari *et al.,* 2015; Katema *et al.,* 2017; Kispal, 2018) and post-harvest losses mainly on grains at the global level (e.g. Amantae *et al.,* 2016; Sebeko, 2015; FAO, 2014; Hodges *et al.,* 2011; Muyengi *et al.,* 2014; Kereth *et al.,* 2013; Msogoya and Kimaro, 2011; Travis *et al.,* 2020; Strecker *et al.,* 2021;Chikez *et al.,* 2023; Camillus et al., 2023; Pera *et al.,* 2023). Limited attention has been given to measuring post-harvest losses and their effects on profit of agricultural produce at the national level and particularly to a specific crop like grapes among smallholder farmers'. The few studies which exist have examined technical efficiency of grape production (Changyang *et al.,* 2012; Lwelamira *et al.,* 2016), grape value chain (Hussein, 2010), profitability (Kamble *et al.,* 2014; Appasmandril *et al.,*

2017) and determinants of post-harvest losses (Kulwijila, 2021). While these studies have contributed to the understanding of the importance of grapes, the aspects of post-harvest losses are not known. In this regard, the study aims to address this research gap by examining the extent of PHLs and their effects on the profitability of smallholder grape farmers in Dodoma.

Basing on the fact that studies that provide background on post-harvest losses of grapes and their effects on profit are scanty, this research seeks to provide valuable insights for policy decision-makers, grape value chain actors, and the government to formulate effective post-harvest loss management policies/strategies and interventions that can help smallholder farmers improve their post-harvest management practices, enhance profitability, and contribute to sustainable economic development in the region. Additionally, this study aims to contribute to the existing literature by providing a comprehensive analysis of the economic implications of PHLs in the grape industry, which has received limited attention in previous studies. Finally, the study is in line with Sustainable Development Goal (SDG) 12.3 that seeks to reduce food loss and waste along the entire food value chain for improved productivity, profitability and food security.

THEORETICAL MODEL

This section describes the theoretical model for analysis which assumes profit maximization as the farmer's objective; and thus, profit maximization model was used in this study. According to de Janvry and Sadoulet (1991), Salazar (2006) and Saysay (2016), the restricted profit maximization function subject to production technology constraint can be expressed as follows:

$$Max\ \pi = py - \sum_{i=1}^{n} w_i x_i \quad \text{s.t. } h(y,x,z) = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: π is the profit received, *p* represents price of output, w_i is the cost of inputs, x_i is the variable inputs used and z is the fixed inputs.

The profit function and the constraint in equation (1) were further combined to obtain Lagrangian equation as presented in equation 2.

$$L = py - \sum_{i=1}^{n} w_i x_i + \lambda h(y,x,z) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where λ is the Lagrange multiplier associated with production technology constraint.

The derivative of equation 2 (first order condition) gives the output supply and input demand functions as presented in equation 3 and 4.

$$y = y^*(p, w_i, z_i) \qquad (3)$$
$$x_i = x_i^*(p, w_i, z_i) \qquad (4)$$

Where y represents yield per hectare and x_i inputs used in grape production (i.e., labour/ha, farm yard manure/ha and pesticides/ha in this study).

Since the output supply (3) and input demand (4) functions give profit maximizing choices as functions of the parameters, substituting these equations into equation 1 gives the indirect profit function (equation 5) that gives us maximal profit as function of the parameters.

$$\pi^*(p, w_i\, z_i) = py^* - \sum_{i=1}^{n} w_i x_i^* \qquad (5)$$

However, output supply is affected by how much post-harvest losses a firm is faced with. Losses reduce the output that reaches the market even though cost was incurred. This makes loss a cost that has to be considered when deciding the quantity to supply if an individual has an objective of maximizing profit (Rutten, 2013, Godsmith *et al.,* 2015; Somanje 2016). Thus, the cost of loss in this study was taken into consideration to see their effects on farmer's profitability.

METHODOLOGY

The study was conducted in Dodoma Municipality and Chamwino District in Dodoma city, in the Central Zone of Tanzania. The two districts were purposively selected because they are the leading areas in respect of grape production in Dodoma region. The population of interest constituted smallholder grape farmers in the study area while the sampling unit was farmers engaged in the production of red grapes. A two stage random sampling was adopted in this study. At the first stage, six villages were sampled randomly from a list consisting of villages cultivating grapes obtained from District Agricultural Irrigation and Cooperative Officers (DAICOs) of Dodoma Municipality and Chamwino

District namely: Mpunguzi, Mbabala, and Hombolo in Dodoma Municipality and Mvumi Mission, Mvumi Makulu, and Makang'wa in Chamwino District. These villages were selected based on high proportion of farmers and their potentials in grape production. In the second stage, 41 respondents from each village were then randomly selected making a total of 246 respondents. Only 240 respondents were included in the analysis because other questionnaires missed important information.

Cross-sectional survey was used to collect data from grape farmers using pre-tested structured questionnaires. The questionnaire collected information on quantity of grapes produced, inputs used, prices of inputs and output, socio-economic characteristics of respondents and post-harvest losses (quantity of grapes lost) by each farmer at various stages. Personal observation, key informants interview and focus group discussion were also used to supplement the questionnaire data.

Descriptive and quantitative analyses were employed in this study to analyse the data collected. For descriptive analysis: percentages, means and frequencies and standard deviation were used in analysing post-harvest loss and the variables entered into the model. Profitability analysis was employed in this study to calculate the profit made by grape farmers per hectare. Paired sample t-test was used to compare the mean revenues with and without losses .Profit was determined by subtracting the total cost (variable costs and fixed costs) from the revenue for each individual farmer as presented in equation 5. The total variable cost (TVC) consisted of expenses or costs of farm yard manure (tonnes), pesticides (litres), trailing system, cost of loss (monetary value of quantity of grapes lost), and labour (man-days) which were calculated on per hectare basis.

To enable calculation of labour costs, number of person (labour unit) required to perform a particular amount of work was estimated as well as the number of days spent on doing a particular activity in the field. Labour (family and hired) costs were quantified from grape production activities of trailing, pruning, pesticides application (spraying), manuring, and weeding. For family labour, the wage rate paid to hired labour was used. That is, the income the family member would lose by not hiring himself/herself out of an activity on someone else's farm and instead doing the same activity on his/her own farm. The total cost of labour was

obtained by taking the average cost of labour multiplied by the total number of labourers for all activities.

Fixed costs included the value of fixed assets such as land, tools, machinery and buildings. Farmers in the study area did not have machinery and building as assets for production. Smallholder farmers in the study used small basic farm implements as fixed equipment (e.g. hoes, solo pumps), which was not only used for grape production but also for other crops production. These small tools were used until they were worn out. As such, the final value for such type of fixed equipment is valued at zero (Omotesha *et al.*, 2010; Mulie, 2014). Therefore, they were not included in the analysis for this study.

Furthermore, for the case of land under grape, farmers were the owners of land and were not paying taxes for farm land. Following this, land was not included in the quantification of the costs. From the above mentioned reasons, fixed cost was not included in the analysis and it has been noted as a negligible portion of farming enterprise, especially in the case of small scale subsistence farming (Abdullahi, 2012; Ohen and Ajah 2015).

On the revenue side, grape production revenue is the amount that a farm receives from the sales of output. To obtain the total revenue, the quantity of grape produced was multiplied by the average market price per kilogram of grape. From equation 1 and the reasons explained above on fixed costs, profitability of grape production among farmers was determined using equation 6. Similar model was used by Katema *et al.* (2017) which is the difference between the total revenue (TR) and the total variable cost (TVC) that is:

$$\pi_i = TR_i - TVC_i$$

…….……..……...…….. (6)

Where: π_i is the profit from grape by ith respondent (TZS), TR_i = represents total revenue from sale of grapes by i^{th} respondent (TZS) obtained by multiplying the quantity of grapes (Y_i) in kg by their corresponding unit price (P_i) in TZS/kg. Total revenue (TR) was categorized as actual and potential total revenues. The actual total revenue (ATR) and potential total revenue (PTR) were differentiated using the physical quantity of grapes produced/harvested as potential output

without taking into account PHLs and the quantity sold as actual output when PHLs were taken care off in order to obtain gross margin with and without post-harvest losses. TVC_i = Total variable costs spent on grape production (TZS) by i^{th} respondent and was computed as presented in equation 7.

$$VC_i = Lab_i * P_l + Man_i * P_m + Pest_i * P_p \quad \text{..... (7)}$$

Where: Lab_i = Quantity of labour used by i^{th} respondent (man-days/ha), P_l = wage of labour per man-day, Man_i = quantity of farm yard manure used by i^{th} respondent (tonne/ha), P_m = price of manure (TZS/tonne), $Pest_i$ = Quantity of pesticides used by i^{th} respondent (litre/ ha) and P_p = Price of pesticides (TZS/litre).

Moreover, from equation 5, multiple linear regression model was used to assess the effect of PHLs and other variable which were considered to influence farmers profit as presented in equation 8 and 9, respectively. The variables are as presented in section 1.4 (Table 1). Similar model was used by Mlote *et al.* (2013) to assess different variables which are considered to affect profit of cattle fattening in Lake Zone, Tanzania. Saysay (2016) employed multiple regressions to determine the effect of agroecology and technology on farmers' profit in Liberia. The model was specified as follows:

$$\pi_i = \beta_0 + \beta_i x_i + \cdots + \beta_n x_n + \varepsilon \quad \text{..... (8)}$$

Where:
π_i = profit of i^{th} respondent; X_i - X_n = variables considered to affect profit for i^{th} respondent, $\beta_0 = \text{constant}$ and $\beta_i - \beta_n$ are parameters to be estimated.

To achieve the objective of this study, equation 8 was expanded to include all variables entered in the model as specified in equation 9.

$$\pi_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon \quad \text{..... (9)}$$

Where
π_i = profit (TZS/ha) for i^{th} respondent, X_1 = cost of pesticides (TZS/ha), X_2 = Cost of trailing (TZS/ha), X_3 = farm size (ha), X_4 = Costs of labour (TZS/ha), X_5 = Cost of manure (TZS/ ha), X_6 = Cost of loss (PHLs)

(TZS/ ha), X_7 = grape selling price (TZS/ kg), β_0 = constant, $\beta_1 - \beta_6$ are parameters to be estimated and ε is the error term.

Description of variables entered in regression model and their effects on profit

Variables affecting grapes profit of farmers and their expected effects are as defined in Table 1.

Table 1: Definition of Variables Used in the Model

Variable	Definition	Measurement	Expected sign and explanation
X_1	Pesticides	TZS/ha, expressed in natural logarithm (Ln)	(+) Pesticides control pest and diseases in grapes thus, farmers who use pesticides on their farms are expected to increase their profit due to good grape quality.
X_2	Trailing	TZS/ha, expressed in natural logarithm (Ln)	(+) Good trailing system improves the quality of grape hence higher profit
X_3	Farm size	ha	(+) Farmers with large area under grape are expected to get higher output and increase profit
X_4	Labour	TZS/ha, expressed in natural logarithm (Ln)	(+) Labour was expected to increase grape output and hence higher farmers profit
X_5	Manure	TZS/ha, expressed in natural logarithm (Ln)	(+) Farmers who use farm yard manure are expected to produce more and increase their profit.
X_6	PHLs	TZS/ha, expressed in natural logarithm (Ln)	(-) PHLs reduce the quantity of grapes produced thus lowering farmers profit from grape sales
X_7	Grape selling price	TZS/kg, expressed in natural logarithm (Ln)	(+) Farmers who sell their grapes at a higher price are expected to get more profit

FINDINGS AND DISCUSSION

Distribution of grapes output and post-harvest losses at farm level

The average quantities of grapes produced, sold, and lost at farm level per hectare in the study area are presented in Figure 1. The results show that 1.35 out of 7.5 tonnes of grapes produced per hectare in Dodoma Municipality were lost and did not reach the final consumer. Similarly, 1.95 out of 7.9 tonnes per hectare of grapes produced per hectare in Chamwino District were lost and did not reach the final consumer. This translates to a loss of 17.9 and 24.8% of the total yield in Dodoma Municipality and Chamwino District respectively (Figure 1).

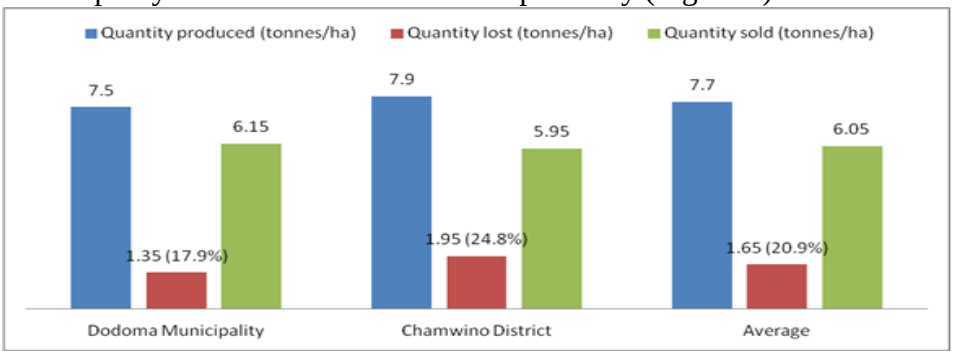

Figure 1: Average quantity of grapes produced, sold and lost at farm level per hectare

Moreover, the average grape yield by smallholder farmers in both areas was estimated at 7.7 tonnes/ha. The average quantity of grapes lost per hectare was 1.65 tonnes/ha, which translates to a loss of 20.9% of the total yield. This implies that, 1650 kg of grapes out of 7 700 kg produced per hectare did not reach the final consumer due to post-harvest losses (Figure 1). This loss of grapes implies a loss of profit to farmers and all the scarce resources that contributed to producing the crop. These findings are in line with the findings by other studies such as Somanje, (2016); Goldsmith *et al.* (2015); Rutten (2013); Sebeko (2014); Gustavsson *et al.* (2011); Lipinski *et al.* (2013a); Lundqvist *et al.* (2008b) who reported that post-harvest losses reduced farmers profit.

Analysis of production costs in grape farming

Before analysing the profits accrued by farmers from grapes, descriptive statistics of the production costs in grapes and other variables entered into the model was done as presented in Table 2.

Table 2: Grape farming production costs per hectare (TZS)

Variable	n	Min	Max	Mean	SD
Farm size (ha)	240	0.1	3.2	1.0046	0.7704
Selling price	240	500	1500	700	182. 9270
Cost of loss	240	287 000	1 400 000	1 155 000	234 031.52
Variable costs					
Farm yard manure	240	100 000	550 000	360 385	105 317.90
Pesticides	240	150 000	750 000	474 000	98 100.12
Labour	240	508 000	2 700 000	1 270 974	536 438.87
Trailing	240	75 000	490 000	300 000	92 167.64
Total production costs	240	833 000	4 490 000	2 405 359	

The results in Table 2 showed that the total production costs per hectare was TZS 2.4 million/ha during dry season. Compared to other costs, the biggest share of the costs were labour cost (52.8%), followed by pesticides (19.7%), farm yard manure (15%) and trailing system (12.5%) as indicated in Table 2. However, these figures could change depending on the climate conditions and variation in input prices each season.

Profitability analysis of grapes

Gross margin analysis with and without loss was carried out to assess the profitability of grape farming per hectare as presented in Table 3.

Table 3: Costs, revenues and profit for grape farming with and without loss between grape farmers (n= 240)

Variables	Amount (TZS/ha)	% Costs
Gross margin without loss		
Gross revenue		
Average grape harvested = 7700kg - A		
Average price/kg = 700/= - B		
Total Revenue without loss (TR) – C	5 390 000	
Variable costs		
Trailing – a	300 000	12.5
Labour costs – b	1 270 974	52.8
Farm yard manure - c	360 385	15.0
Pesticides – d	474 000	19.7
Total variable costs –D = (a + b + c + d)	2 405 359	100.0
Gross Margin without loss = C - D	2 984 641	
Gross margin with loss		
Gross revenue		
Average grape sold = 6050kg - B		
Average price/kg = 700/= - C		
Total Revenue with loss (TR) – E = B* C	4 235 000	
Variable costs		
Trailing – a	300 000	12.5
Labour costs - b	1 270 974	52.8
Farm yard manure - c	360 385	15.0
Pesticides – d	474 000	19.7
Total variable costs –F = (a + b + c +d)	2 405 359	100.0
Gross Margin with loss = E - F	1 829 641	

The results reveal that grape farmers received a total revenues of TZS 5.4 million/ha without taking into consideration post-harvest loss during dry season. The profit received was TZS 2.98 million without loss in the study area (Table 3).This indicates that grape production is a profitable venture despite higher production costs in the study area. This finding is consistent with the findings of many studies that subsistence grape production is a profitable enterprise (Kamble *al.*, 2014; Kalimang'asi *et al.*, 2014; Lwelamira *et al.*, 2015).

On the other hand, results revealed that grape farmers received actual total revenues with loss of TZS 4.2 million/ha during dry season. The profit received when loss was taken into consideration was TZS 1.83 million per hectare. This profit was lower than the profit of TZS 2.98 million when PHLs were not taken into consideration (Table 3). This implies that post-harvest loss is a cost to grape farmers as it reduces their profit. Thus, PHLS need to be reduced for grape farmers to attain higher profit. These findings are in agreement with the findings in a study by Somanje (2016), Assane and Komareck (2020) and Tadesse (2022) who found that post-harvest losses lower farmer's profits.

Moreover, the mean revenues with and without losses were compared using paired sample t-test. The results revealed that gross margin accrued by farmers with and without loss from grape sales were statistically significant ($p<0.05$), implying that the gross margin with and without losses differs significantly in the study area (Table 4).

Table 4: Means comparison results of gross margins with and without loss between grape farmers

Variables	Average Gross margin	Mean difference	SD	t-value
Gross margin without loss	2 984 641	1 155 000	2 330 027.4	7.679*
Gross margin with loss	1 829 641			

*Significant at $p<0.05$

Effects of post-harvest losses on profit generated from grape Sales

The gross margin (a proxy for profitability) was used as a dependent variable in the multiple regression model to determine the effect of PHLs on farmers profit. However, prior to the estimation of the model, multicollinearity and autocorrelation test was conducted. Durbin-Watson test was found to be 1.872 indicating absence of autocorrelation and the Variance Inflation Factor (VIF) was found to be 1.637 and 2.152 in Dodoma municipality and Chamwino district, respectively which was less than 10 confirming the absence of multi-collinearity among the independent variables and the dependent variable (Gujarati, 2004) as indicated in Table 5.

Table 5: Regression results on the effect of PHLs on grape farmers profit in Dodoma Municipality and Chamwino District (n = 120)

Variables	Dodoma Municipality			Chamwino District		
	Coefficients	SE	t	Coefficients	SE	t
Constant	8.198***	1.503	5.455	7.516***	1.499	5.014
Pesticides	0.419*	0.239	1.750	0.405*	0.245	1.654
Trailing	0.010	0.049	0.200	0.019	0.050	0.386
Farm size	-0.070	0.097	-0.714	-0.006	0.053	-0.109
Labour	-0.222***	0.027	-8.198	-0.172***	0.026	-6.660
Manure	-0.054*	0.032	-1.662	-0.044	0.033	-1.348
Post-harvest losses	-0.135***	0.051	-2.633	-0.263**	0.100	-2.623
Price	0.020	0.052	0.391	0.147*	0.076	1.940
R-square	0.600			0.754		
Durbin-Watson	1.449			1.861		
VIF	1.637			2.152		

*, ** and *** denotes significant levels at (p<0.10, 0.05 and 0.01) respectively.
Dependent variable: Profit (TZS/ha)

The result in Table 5 and 6 show that the cost of loss (PHLs), manure, labour and pesticides were found to have significant effects on grape farmers profit in both areas of the study. These findings are supported by the findings from the FGD where participants reported lower profit from grape production due to higher input costs and post-harvest losses.

The cost of loss (PHLs) was negative and statistically significant at p<0.01 indicating that a one percentage decrease in the cost of loss (PHLs) would increase the mean profit of grape farmers, holding other factors constant. This implied that reducing grape losses would increase farmers' profit by 13.5% in Dodoma municipality and 26.3% in Chamwino district (Table 5). In addition, farmers profit in both districts would be increased by 13.9% when PHLs are minimized (Table 6). The results are in agreement with the results in a study by Rutten (2013) in Netherland, Goldsmith *et al.* (2015) in Brazil on soy bean, and Somanje (2016) in Ethiopia on fish who revealed that PHLs had significant effect on farmers' profit and thus, reducing PHLs could improve farmers profit (Chikez *et al.*, 2023; Pera *et al.*, 203). These results were however in contrast to the findings of Alidu *et al.* (2016) who reported that PHLs

increased mean profit of tomato farmers in Ghana, holding other factors constant. This could be due to geographical differences and the crop under study.

Table 6: Combined Regression results on the effect of PHLs on grape farmers profit in (n = 240)

Variables	Coefficients	SE	t	Sig	VIF
Constant	6.369	1.857	3.430	0.001	
Pesticides	0.983	0.291	3.383	0.001	1.061
Trailing	0.038	0.061	0.622	0.534	1.063
Farm size	0.069	0.040	1.709	0.089	1.026
Labour	-0.360	0.050	-7.141	0.000	1.385
Manure	-0.256	0.119	-2.146	0.033	1.051
PHLs	-0.139	0.045	-3.084	0.002	1.333
Price	0.006	0.062	0.101	0.919	1.029
R-square			0.590		
Durbin-Watson			1.872		

Dependent variable: Profit (TZS/ha)

Moreover, the coefficients for farm yard manure and labour were negative, indicating that these variables influence grape farmer's profit. The cost of farm yard manure was statistically significant at 5% level in both district implying that holding all factors constant (ceteris paribus), a one percentage decrease (increase) in the cost of manure would increase (decrease) the mean profit of grape farmers. Labour cost was negative and statistically significant ($p<0.01$) implying that a one percentage decrease in the cost of labour would increase the mean profit for grape farmers, other factors held constant (Table 6). The results concur with of the results in a study by Kamble *et al.* (2014) who reported labour cost as one of the cost reducing farmers' profit in grape production in Marathwada region in India.

The coefficient for area cultivated with grape is positive and significant at 10% when both districts were combined (Table 6). The positive coefficient implies that an increase in the area cultivated with grape increases farmers' mean profit by 0.069 percent. Similar results were reported by Hyuha (2006) and Jude (2012) that an expansion of the land area cultivated under rice can achieve higher output (yield) and increase profit. Furthermore, the coefficient of pesticide costs was positive and

statistically significant ($p<0.01$). This means that a one percentage increase in the cost of pesticides increased grape farmers' mean profit. This was due to the reason that pesticides are important variables in grape production for protecting grapes from diseases and pests. Thus, other factors remaining constant, as more pesticides are used by farmers' in grape production, output will increase, which in turn would increase farmers mean profit. Similarly, farmers' who make effective use of pesticides are in a position of receiving higher profit from grapes because pesticides improve the quality of grapes by controlling pests and diseases, which affect the crop and hence reduce post-harvest losses (Table 6). This finding agreed with the findings by Tanko *et al.* (2015) on yam production, Ojo *et al.* (2009) on rice production in Nigeria, and Alidu *et al.* (2016) on tomato in Ghana, who affirmed that an increase in pesticides usage increase profit of farmers.

Hypothesis testing

The study tested the hypothesis that post-harvest losses have no significant effects on the profit of smallholder grape farmers. To achieve this, the calculated t-value from Ordinary Least Square (OLS) regression estimate for the cost of loss in Table 6 was compared with tabulated t-value at 5% level in order to make the right decision. The decision rule was that: if the calculated t-value (Tc) is greater than the tabulated one (Tt), the null hypothesis is rejected (Ho) and the alternative hypothesis is retained (Ha). The results show that the calculated t-value for PHLs was 3.084 and the tabulated one was 1.895 which was less than the calculated one. Basing on this finding, the study rejected the null hypothesis and accepted the alternative hypothesis that ''PHLs have significant effect on farmers' profit in the study area.

CONCLUSION AND RECOMMENDATIONS

A substantial proportion of grapes produced did not reach the final consumers in Dodoma Municipality and Chamwino District due to post-harvest losses. The analysis of the effect of PHLs on profit using multiple regression model showed that the cost of the loss (PHLs) has significant effect on the profit of grape farmers and that the reduction of these losses could increase farmers' profit. This observation is based on the lower profit with loss compared to the average profit without loss which was received by farmers in the study area. The cost of labour, pesticides, and farm yard manure also contributed to lower profit among grape farmers.

Based on these conclusions, the following recommendations are put forward for policy decisions in order to guarantee economic prosperity among grape farmers: the reduction of post-harvest losses in grape farming should be given top priority in any effort of improving farmers' profit in the study area. The reduction of post-harvest loss can be achieved through adequate training on post-harvest handling techniques. In addition, interventions on post-harvest technologies including packaging, processing, and storage technologies to increase grape shelf life and reduce post-harvest losses are also vital in increasing farmers' profitability. Furthermore, programs aiming at reducing other costs such as use of farm yard manure, labour and pesticides in grape production, and provision of subsidies to grape farmers could also improve farmers' profit, improve grape quality and encourage more farmers' involvement in grape production to increase productivity.

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Application of Mann Kendal Sen's Slope Estimator in Trend Analysis of Historical And Future Precipitation and Temperature in the Kilombero River Basin

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Abstract
This study examines historical (1981-2020) and future (2020-2070) trends in rainfall and temperature in the Kilombero Basin using the Mann-Kendall method with Sen's slope estimator. Data were obtained from the Tanzania Meteorological Agency and from simulated historical and future climate data sourced from the Coupled Model Intercomparison Project 6 (CMIP6). The CMIP6 datasets were downscaled and bias-corrected using the CMhyd tool. The basin exhibited a bimodal rainfall pattern with an average of 1400 mm, peaking around April. The CMIP6 models successfully simulated monthly rainfall, Tmax, and Tmin at most stations. No definitive trends in rainfall were observed, but Tmax and Tmin showed significant increases under both SSP2-4.5 and SSP5-8.5 scenarios. More warming is predicted under SSP5-8.5 by the mid-21st century, raising Tmax and Tmin at all stations. This rise in temperature could potentially increase evapotranspiration demand, negatively impacting freshwater availability. The average annual rainfall showed a slightly increasing trend post-2000, from 1403.96mm/year (1981-1999) to 1433.38mm/year (2000-2020), an increase of 2.05%. Sen's slope analysis, however, revealed varying trends across stations, with most showing a decreasing trend. Notably, only Ulanga Met Station showed a significant increasing trend with a slope value of 14.70 and a p-value below 0.05.

The study concluded that both temperature and precipitation in the Kilombero Basin are on the rise.

Keywords: *Kilombero basin, Mann Kendall, Precipitation, Sen's Slope Estimator, Temperature.*

INTRODUCTION

Analyzing historical and future precipitation and temperature trends is crucial for understanding climate change impacts on water resources, agriculture, and ecosystems within river basins (Islam and Kamruzzaman, 2023). The Kilombero River Basin in southeastern Tanzania exemplifies a region where such assessment is crucial for sustainable water management, land use planning, and climate adaptation strategies. This study uses the Mann-Kendall test and Sen's slope estimator to analyze historical and projected precipitation and temperature data in the basin, providing valuable insights for policymakers, researchers, and stakeholders.

The Kilombero River Basin, featuring diverse ecosystems including wetlands, forests, and agricultural land, supports rich biodiversity and essential services to local communities such as water supply, flood, and climate regulation (Seki, 2018; Mombo, 2018; Monga et al., 2018; Mtega, 2017). The regional economy primarily depends on agriculture and tourism, highlighting the importance of understanding climate-induced changes and their potential impacts on the basin's ecosystems, economy, and communities.

The Mann-Kendall test, a non-parametric statistical method extensively used in hydrology, climatology, and environmental research (Hussain and Mahmud, 2019), also detects monotonic trends in time series data without assuming a specific distribution for the underlying data, thus suitable for analyzing hydrological and meteorological datasets (Curiac and Micea,2023). Sen's slope estimator quantifies the observed trend's magnitude, enabling the quantification of changes in precipitation and temperature over time (Yunfei et al., 2023).

Rainfall is critical in defining the Kilombero Basin's water resources availability (Djan’na et al., 2023). While most parts of Tanzania receive significant rainfall and unsteady temperatures, human activities and local

patterns cause annual, monthly, and extreme rainfall intensity variation (Okwir et al., 2023). Studies on rainfall and temperature trends have examined climate change and variability's impact on various sectors (Ayugi and Tan, 2018). However, a declining trend of annual and monthly rainfall has been noticed due to shifts in rainfall and temperature patterns (Sigalla et al., 2023).

Recent rainfall and temperature trends significantly affect agricultural production due to variations in rainy seasons (Alexander, 2016). Both the Mann-Kendall test and Sen's Slope Estimator revealed a downward trend in rainfall and temperature in some locations (Geressu, 2020; Deka, Mahanta, and Nath, 2019). This study aims to analyze daily, monthly, and annual rainfall and temperature trends in the Kilombero River Basin, setting the foundation for a practicable climate change adaptation and mitigation framework and management plan.

METHODS

The Study Area

The Kilombero River Basin, one of four sub-basins in the Rufiji River Basin, is situated between latitudes 7.70 and 10.10 south and longitudes 34.60 and 37.80 east. The river is replenished by multiple rivers, including Lumemo, Luipa, Mngeta, Kihansi, Mpanga, Mnyela, Ruhudji, and Furua (Koutsouris, 2016). The basin area, spanning about 40,330 square kilometers, is home to over 3 million people. Of this total area, 38,000 hectares are developed for agriculture (Näschen, 2018).

The region experiences semi-arid climatic conditions, receiving heavy annual rainfall of approximately 1400 mm. The temperature averages around 21 degrees Celsius. Given the stable rainfall, the area is primarily characterized by agricultural activities and features dense forests in the Mahenge and Udzungwa mountains (Munishi, 2013). This significant rainfall and temperate climate make the basin conducive for farming and forestry, playing a pivotal role in the region's economy and biodiversity (Kato, 2017).

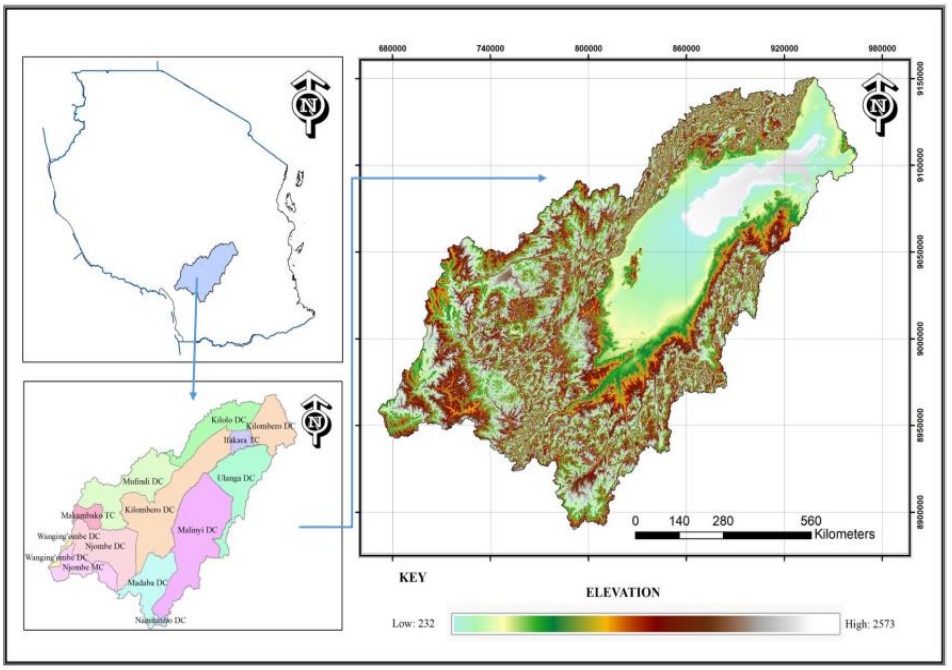


Figure 1: Location of Kilombero River Basin in Tanzania

Data Acquisition

Trend analysis requires extensive time-series data to discern changes in climate patterns and accurately identify rainfall and temperature trends. For this study, daily rainfall data spanning from 1981-2020 were sourced from six Tanzania Meteorological Agency stations within the Kilombero River Basin. For temperature analysis, data from the Iringa Meteorological Station, covering the period from 1981 to 2022, was used. In addition to monthly analysis, annual accumulation of rainfall and temperature data was also analyzed to determine trends. The specific locations of the rain and temperature stations are detailed in Table 1.

A homogeneity test was conducted on the rainfall data from each site using the Climatol package in R, a tool designed for climate analysis. This test, called the Standard Normal Homogeneity Test (SNHT), determined whether the selected rainfall data was randomly distributed or exhibited a specific pattern (Burghof, 2018). The SNHT test revealed no breakpoints in the data series, indicating that they were randomly distributed and homogeneous. This met the requirements for further tests and analyses in the study.

Table 1: Rain and Temperature Stations in the Study area

S/n	Name	Latitude	Longitude	Elevation	Parameter
1	Ifakara	36.68	-8.13	261	Rainfall
2	Malinyi	36.13	-8.93	912	Rainfall
3	Kidatu	36.95	-7.7	274	Rainfall
4	Mlimba	35.81	-8.79	997	Rainfall
5	Ulanga	36.92	-7.29	2509	Rainfall
6	Iringa Station	35.77	-7.633	1428	Temperature

Projection of Rainfall and Temperature Variables from 2020-2070

The Coupled Model Intercomparison Project 6 (CMIP6) is a global climate modeling initiative aimed at improving our understanding of Earth's climate system, evaluating the impacts of human-induced climate change, and informing the development of climate policies and adaptation strategies. Established in 1995 by the World Climate Research Program's (WCRP) Working Group on Coupled Modelling (WGCM), CMIP6 is the latest iteration of the project. Its predecessors, CMIP3 and CMIP5, provided crucial inputs for the Intergovernmental Panel on Climate Change (IPCC) assessment reports (IPCC, 2019).

CMIP6 involves numerous international climate modeling centers that contribute simulations using their advanced Earth System Models (ESMs), adhering to a common experimental protocol. These models represent complex interactions among the atmosphere, ocean, land surface, and cryosphere, incorporating cutting-edge climate science and computing resources. The experimental design of CMIP6 includes core experiments, known as the Diagnostic, Evaluation, and Characterization of Klima (DECK) experiments, and various Model Intercomparison Projects (MIPs) targeting specific research questions and climate phenomena (Luhunga, 2018).

The Shared Socioeconomic Pathways (SSPs) are scenario sets employed in climate change research to explore potential future developments in society, economy, and environment under varying conditions. Designed to facilitate understanding of potential challenges and opportunities related to climate change mitigation, adaptation, and impact assessment, each SSP describes a possible future in terms of demographics, economic growth, technology, energy consumption, land use, and governance.

SSP2-4.5 and SSP5-8.5, two specific SSP scenarios used in this study, are characterized by distinct socioeconomic assumptions and associated greenhouse gas (GHG) concentration pathways, known as Representative Concentration Pathways (RCPs). RCPs describe different levels of radiative forcing, reflecting the change in Earth's energy balance due to human activities, predominantly GHG emissions. In the SSP-RCP notation, the numbers 4.5 and 8.5 represent the radiative forcing in watts per square meter (W/m^2) by the end of the 21st century relative to preindustrial levels.

SSP2-4.5:
SSP2-4.5 is a "middle-of-the-road" scenario, characterized by moderate socioeconomic development and intermediate levels of greenhouse gas (GHG) emissions. This pathway envisions a world undergoing gradual changes in demographics, economic growth, and technological progress, largely following historical trends. The implementation of policies to reduce GHG emissions and adapt to climate change happens at a moderate pace, and international cooperation on climate issues remains relatively stable.

The corresponding Representative Concentration Pathway (RCP) for SSP2-4.5 is RCP4.5. This assumes a stabilization of GHG concentrations by the end of the century, achieved through the execution of moderate mitigation policies. Consequently, this scenario leads to a radiative forcing of 4.5 W/m^2 by 2100. Under the SSP2-4.5 scenario, the projected global mean temperature increase is around 2-3°C above preindustrial levels by the year 2100, although the exact value is dependent on the climate model used and the assumed level of climate sensitivity.

SSP5-8.5:
SSP5-8.5 represents a scenario of high economic growth and rapid technological development, leading to increased energy consumption and a strong reliance on fossil fuels. In this pathway, the world experiences significant improvements in living standards, especially in developing countries, but also faces high levels of income inequality and environmental degradation.

The associated RCP for SSP5-8.5 is RCP8.5, which assumes a continued increase in GHG emissions throughout the century, primarily driven by

the extensive use of fossil fuels and the absence of strong climate policies. This scenario results in a radiative forcing of 8.5 W/m² by 2100. Under SSP5-8.5, global mean temperature increase is projected to be around 4-6°C above preindustrial levels by 2100, depending on the climate model used and the level of climate sensitivity assumed. This pathway is often referred to as the "business-as-usual" scenario and represents a high-risk future in terms of climate change impacts, adaptation challenges, and mitigation costs.

The SSP-RCP scenarios, including SSP2-4.5 and SSP5-8.5
These are widely used in climate change research to study the potential consequences of different socioeconomic trajectories and GHG emission levels. By exploring a range of possible futures, researchers can assess the effectiveness of various mitigation and adaptation strategies and inform the design of climate policies to reduce risks and promote sustainable development.

Two datasets are required to forecast the influence of climate change on hydrology: one for developing climate change scenarios and the other for hydrological simulation. Historical daily precipitation (P), maximum and minimum temperatures (Tmax and Tmin), solar radiation, wind speed, and relative humidity from 6 meteorological stations for the period 1985–2018, as well as projected daily precipitation (P), maximum and minimum temperatures (Tmax and Tmin), solar radiation, wind speed, and relative humidity for the period 1985–2018, were used in this study (for both RCP 4.5 and RCP 8.5). However, due to their coarse spatial resolution, the GCM results available for various global areas are inappropriate for assessing watershed-level hydrological consequences (Goyal & Ojha, 2012). Researchers have used weather generators in climate change impact studies to get around this constraint (e.g. to construct time series of climate variables, the delta change methodology with a weather generator is widely employed. Regional climate models' large-scale climatic data from GCMs is reduced to a smaller scale, closer to the catchment scale, by RCMs. Using the output of a global climate model, the regional model simulates data on a basin scale. The weather-producing model, on the other hand, can replicate climatic data from several stations throughout a basin.

Mann-Kendall Test

The purpose of the trend analysis was to evaluate if there has been a significant change in daily rainfall and temperature over the last 40 years and if the chosen timeframe represents the country's historic climatic regime. The Mann Kendall and Sen's slope tests were used to look for a pattern in each rainfall and temperature station's time series record (Nyembo *et al*., 2021). The data were pre-processed to an annual time series to represent annual climatological and hydrological characteristics. Graphical plots were then created as a quick way to spot patterns, each with its own trend line. The research used R software and Sen's slope estimator for the Mann-Kendall test for trend analysis.

The trend in the time series data was examined using the Mann-Kendall test. According to Salmi et al., 2002, stated that the non-parametric rank-based method is the most frequently used approach for the determination of the monotonic trends in climatic time series. Because it does not assume that data is disseminated in any way, it has the same clout as its competitors. The test works as follows: the null hypothesis test H_0 proposed by Mann assumed that the data come from a set of independent variables with equal distributions. Assuming X1, X2, and Xn are a series of data spanning a time period. The data from the H1 alternative hypothesis follows a monotonic pattern over time. The Mann–Kendall test statistic for H_0 is,

$$S = \sum_{i=j}^{n-1} \sum_{j=i+1}^{n} sgn(X_j - X_i) \quad \text{.....(2.1)}$$

Where:

$$sgn(\theta) = \begin{cases} +1 \; if \; \theta > 0 \\ 0 \; if \; \theta = 0 \\ -1 \; if \; \theta < 0 \end{cases} \quad \text{..... (2.2)}$$

Under H_o When n is less than 8, the statistic is roughly normal, and both the mean and variance are zero, as illustrated below:

$$\sigma^2 = \frac{n(n-1)(2n+5)}{18} \quad \text{..... (2.3)}$$

As a result, standardized Z statistics seek to approximate a normal distribution:

$$z = \begin{cases} \frac{S-1}{\sigma} & if\ S > 0 \\ 0 & if\ S = 0 \\ \frac{S+1}{\sigma} & if\ S < 0 \end{cases} \quad \text{..... (2.4)}$$

There is a trend when the computed Z value is bigger than the crucial. A positive Z number indicates an upward tendency, whereas a negative number indicates a downward trend (Salmi et al., 2002). The significance criterion for statistical trends is usually set at a 5% confidence level.

Sen's Slope Estimator

To confirm and map trends found by the Mann-Kendall approach, the Theil-Sen Approach (TSA) was used to calculate trend magnitudes. The TSA is preferred over other parametric tests like linear regression because it is more resistant to outliers (Salmi et al., 2002). The median of all pairs of points in the time series is used as the slope estimator (β).

$$\beta = \begin{pmatrix} Yj - Yi \\ Xj - Xi \end{pmatrix} \text{..... (2.5)}$$

For all i < j and i = 1, 2...(n-1)……..…. (2.6)
j = 2, 3… n

Areal Rainfall

The average rainfall received by the entire catchment was calculated using Thiessen polygons method. The optimal approach to utilize was determined by the data type. Because there are few rainfall stations, the Thiessen polygon methodology was employed to calculate the areal rainfall. Rainfall is not consistently distributed all over the Kilombero basin, and its intensity and duration vary. As a result, using the equation area (2.7) below, the recorded rainfall from each rain gauge is weighted in respect to the polygon;

$$P = \sum_{n=1}^{n} \left(\frac{A_i}{A_T}\right) P_i \text{ ..... (2.7)}$$

Where:

- P - areal rainfall (mm),
- P_i - rainfall gauging station data (mm),
- A_i - an area corresponding to the particular rainfall gauging station (Km^2)

- A_T - total area of the sub-basin (Km^2)
- n - the number of Thiessen polygons.

FINDINGS AND DISCUSSION

Aerial precipitation Analysis

Aerial precipitation analysis is a method used to estimate the spatial distribution of precipitation over a geographical area. This method combines various data sources, such as rain gauge observations, remote sensing, and numerical weather prediction models, to provide a comprehensive understanding of precipitation patterns in a region. The aerial precipitation analysis is essential for a wide range of applications, including hydrological modeling, flood forecasting, drought monitoring, water resources management, and climate studies. In this section, the key components of aerial precipitation analysis was discussed including data sources, interpolation techniques, and validation methods.

Annual rainfall data from 1981 to 2020 for the Kilombero areal rainfall, Ifakara, Kidatu, Kilombero, Malinyi, Mlimba and Ulanga rainfall stations using Mann-Kendall and Sen's slope estimators, to examined the presence of a long trend in the basin and its magnitude. The trend tests were carried out at a 5% significant level. The areal rainfall was then generated based on the Thiessen polygons method (Figure 2).

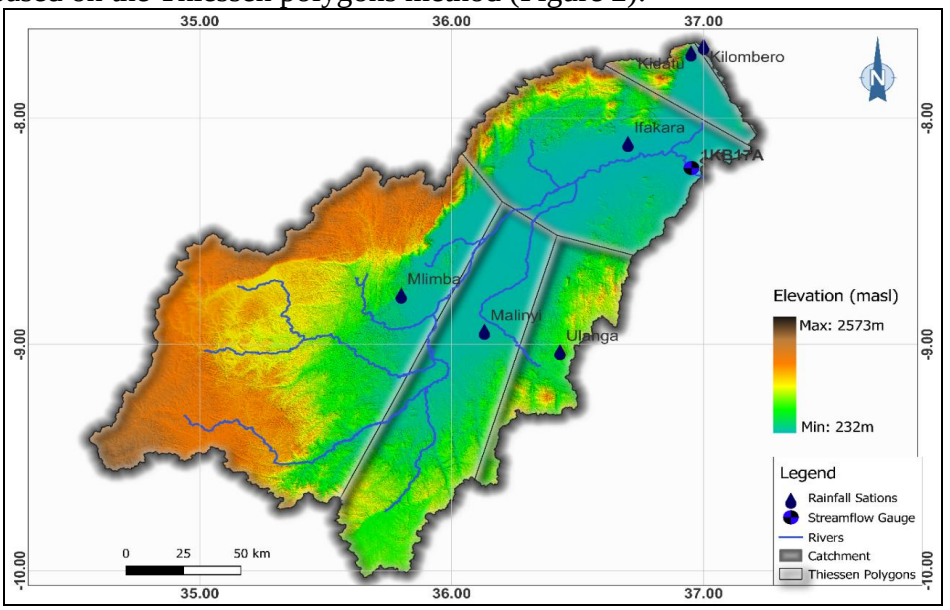


Figure 2: Hydro-climatic Stations and Thiessen polygons

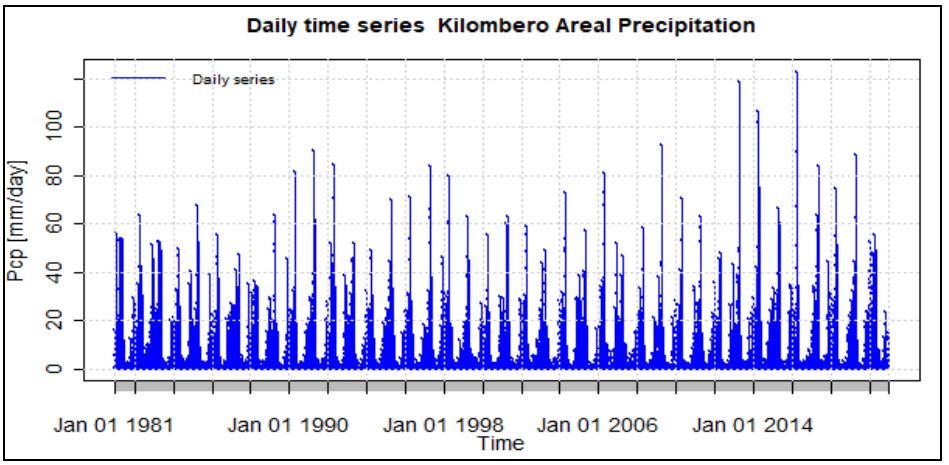


Figure 3: Daily time series of aerial precipitation

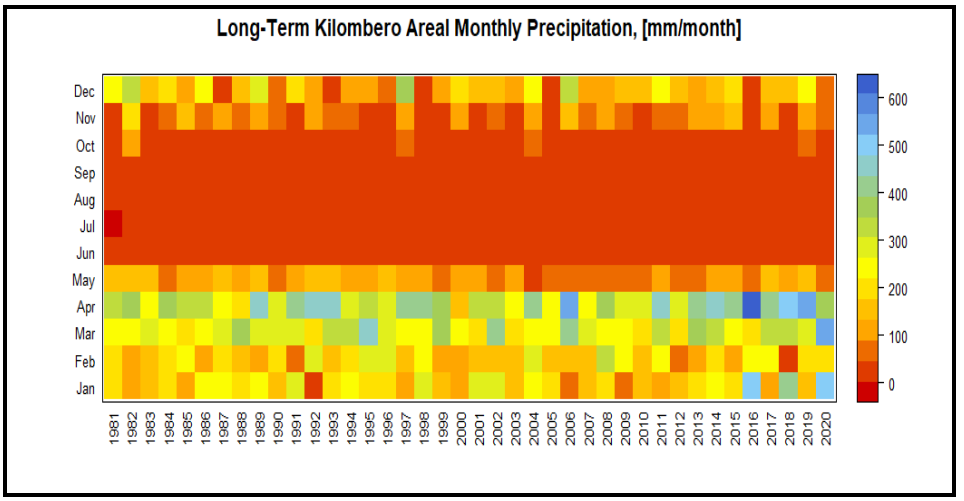


Figure 4: Monthly long term aerial precipitation

Results on the aerial rainfall showed the basin shows a bimodal rainfall pattern, with a mean aerial rainfall of roughly 1400 mm, while the peak rainfall was observed around the month of April Figure 4. The long rains fall between Januarys to May, whereas the short rains fall between Octobers to December. Similarly, Sigalla *et al*., (2023) and Kangalawe and Liwenga, (2015), showed the average rainfall within Kilombero basin range between 1000mm to 1400mm where the reported month of high rainfall intensity is April. It was only the month of April that showed the

peak flow from 1989 to 2020. Commonly, rainfall was seen to be decreasing during the months of May, June, July and September while there was an increase in rainfall for the months of March, August, April, December, November and October for extended time (Smith, 2016). The results agreed with Senkondo, (2020) and Sigalla *et al*., (2023) which indicated that rainfall had shown a steady decrease in past ten years. Further, the aerial rainfall varies by more than 200mm in an analysis done for 40 years in areas.

Historical and Future Trend of precipitation

The trend tests were carried out at a 5% significant level. The results showed the Kilombero areal rainfall, Ifakara, Kidatu, Malinyi, and Mlimba stations have a significant increasing trend while Kilombero rainfall station shows a significant decreasing trend. There is significant increasing trend was observed in Ulanga Meteorological Station. Figure 4 and Table 2 shows the graphical trend for the yearly precipitation. Kilombero, Ifakara and Malinyi stations shows no increasing trend in precipitation and according to Sigalla *et al*., (2023), the possible reasons is that these stations located in the area where a lot of human activities which alter the hydrological systems conducted such as agriculture and built-up areas Figure 5. Since the basin plays a vital role in the country's water resources and supports agriculture and wildlife habitats, precipitation trends in the basin are essential to monitor, as they can impact water availability, agricultural productivity, and biodiversity. In Kilombero Basin is, climate models project increased variability in precipitation, with more intense rainfall events and prolonged dry spells in some areas. This may lead to more frequent flooding and droughts, with potential negative impacts on the environment and local communities (Chen, 2017).

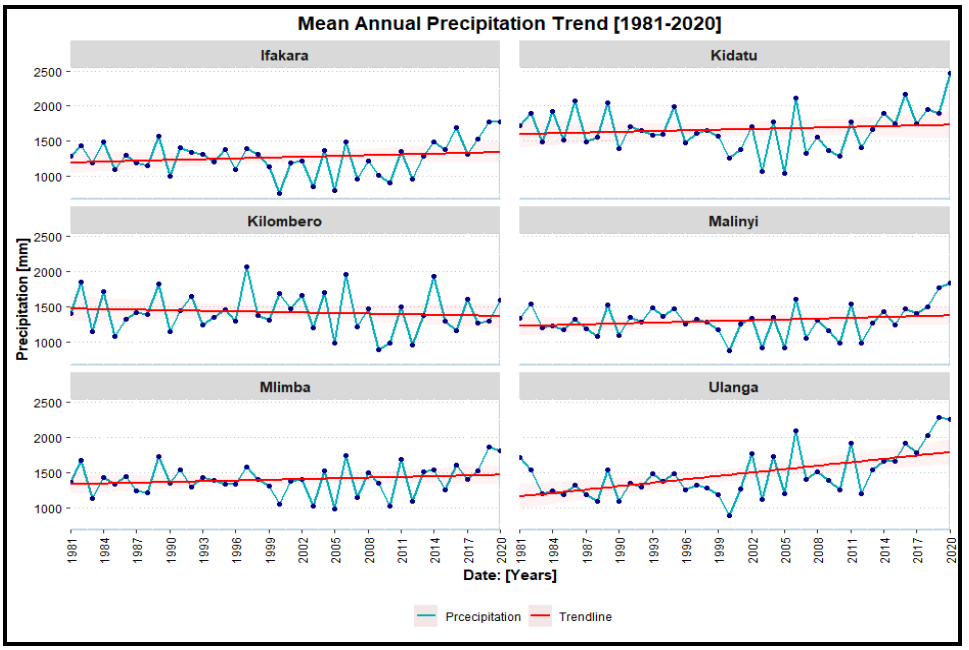


Figure 5: Precipitation trend in different meteorological stations

Table 2: Precipitation and temperature trend in Kilombero Basin Stations

Variable	Sen's Slope	Z	P-Value	Trend
Ifakara	3.68	0.99	0.3220	No Trend
Kidatu	4.44	0.76	0.4489	No Trend
Kilombero	-2.70	-0.55	0.5840	No Trend
Malinyi	3.89	1.04	0.2998	No Trend
Mlimba	4.16	1.20	0.2301	No Trend
Ulanga	14.70	3.23	0.0012	Trend
Areal Precipitation	5.13	1.34	0.1803	No Trend
Areal Max Temperature	0	0.36	0.7162	No Trend
Arael Min Temperature	0.02	1.59	0.11	No Trend
Areal Ave Temperature	0.02	3.55	0.00038	Trend

Note: Z=Mann-Kendall test statistic, β=Sen's slope (Kendall Slope), S=significant at P > 0.05, NS=insignificant at P < 0.05, Positive values of Z indicate an increasing trend, and Negative values indicate a decreasing trend.

On the contrary, according to an analysis done by Sigalla *et al*., 2023; Näschen, *et al*., (2018) and Makingi *et al*., (2017), on rainfall in individual stations from 1980 to 2020 has revealed a decreasing trend in

the total precipitation in the Kilombero Basin. In addition, a study by Seki, (2018), which was done in the Kilombero Basin has shown a decreasing trend in annual rainfall with high variability within seasons, which affects farmers in decision making and agro production. Moreover, in Kilombero Basin, according to Senkondo, (2020) has been depicted that there have been variations of rainfall in different seasons which may results to affect the water resources. This also agrees with a study by Borhara, (2020) which found out the variations of rainfall in the country.

The mean annual rainfall in the catchment shows an increasing trend (Figure 5), with the change point being in 2000 where the average value in the period of 1981-1999 being 1403.96mm/year while for the 2000-2020 is 1433.38mm/year (2.05% increase) Figure 6. According to Sen's slope analysis, there are variations of trends in the basin where some of the station reveal the increase while most of them showed decreasing trend (Table 2). The results depict that only significant increasing trend manifested in Ulanga Met Station with the slope value of 14.70 and p-value less than 0.05.

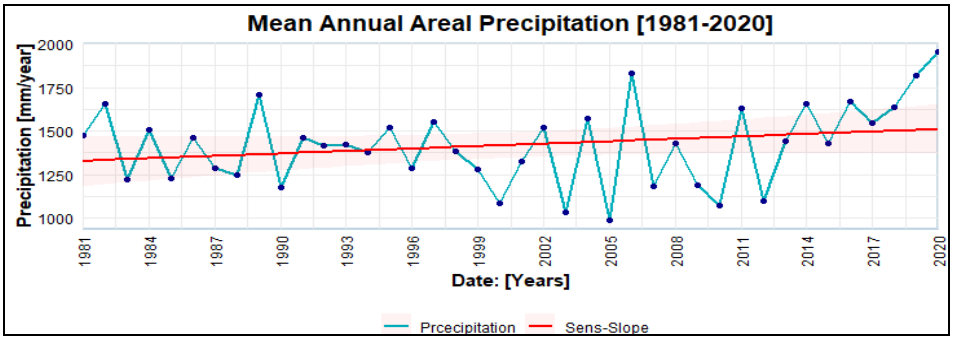
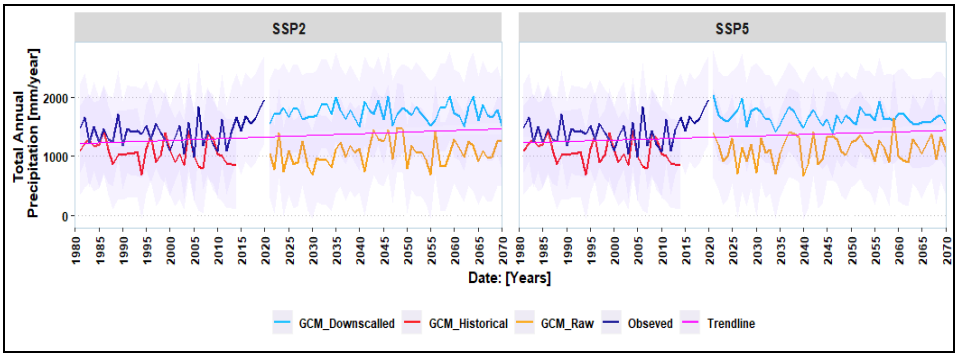


Figure 6: The Mean Areal Rainfall (1981-2020) fitted with a trend line



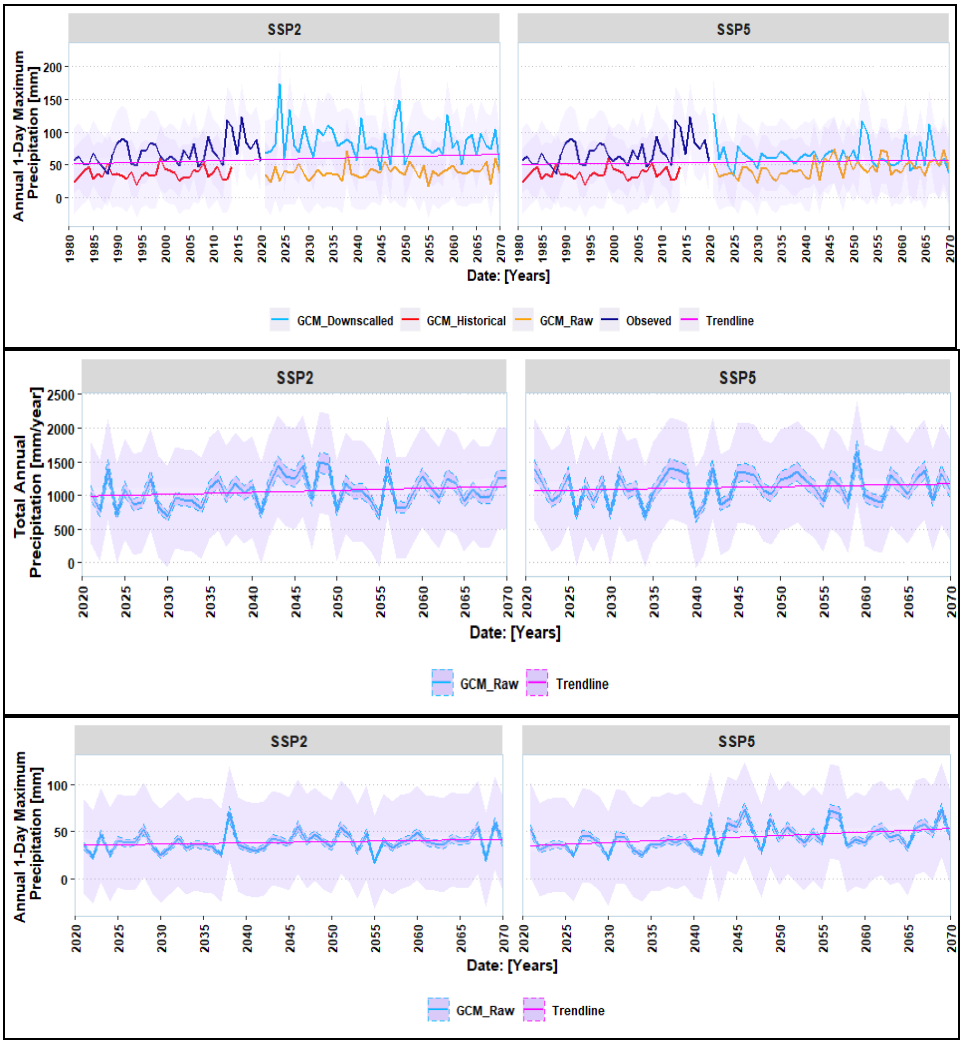


Figure 7: Historical and Future precipitation trends in different scenarios

Historical and Future Trend of Temperature

Trends of temperature was tested the t over time by the null hypothesis stated that there was is no trend in the series and alternative hypothesis that there is a trend in the series. When the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis and accept the alternative hypothesis. Trend analysis by Mann Kendall's compared the temperature data from 1981 to 2022 from the Iringa. The results show that there were temperature trends detected for most months with an exception of December, January and May. This was

informed by the significant p-values (greater than the alpha value of 0.05). Also, the results showed that temperature has been increasing over time (positive Z) except for November and December where they have been decreasing.

Sen's slope

For the significant temperature trends in December, January and May, Sen's plots were as illustrated below. Generally, Sen's slope shows the magnitude of the trend.

Table 3: Sen's Slope Analysis for Temperature

	Value	Lower bound (95%)	Upper bound (95%)
Slope	0.37	0.021	0.083

The gradient of the Sen's slope shows that in the month of January, temperature levels have been increasing by 0.037 points from one year to the other. From the figure below, it was evident that there was a positive trend with varying temperature levels for the different years studied. For instance, the lowest temperatures recorded for were in the year 2001 where an average of 22^0Cwas recorded while the highest temperatures were experienced in 2016 is 31^oC.

The slope value of 0.37 indicates the estimated coefficient for the predictor variable in the linear regression model. This means that for every one-unit increase in the predictor variable, the outcome variable is estimated to increase by 0.37 units on average. The lower and upper bounds represent the 95% confidence interval for the slope coefficient. This means that the 95% confident that the true slope coefficient falls between the lower and upper bounds and the data could be interpreted accordingly.

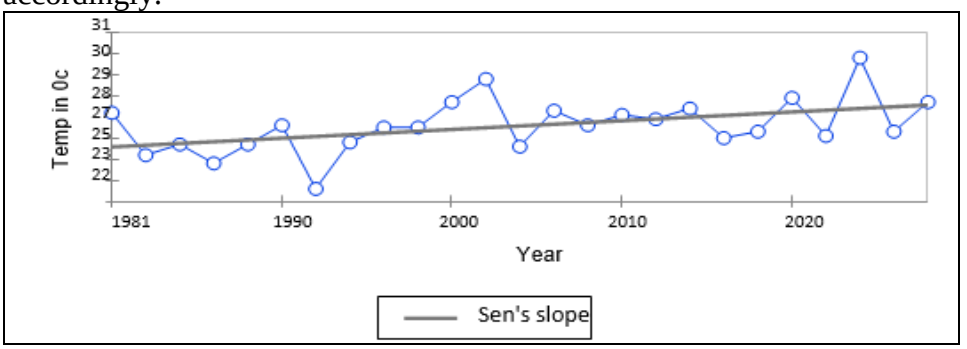
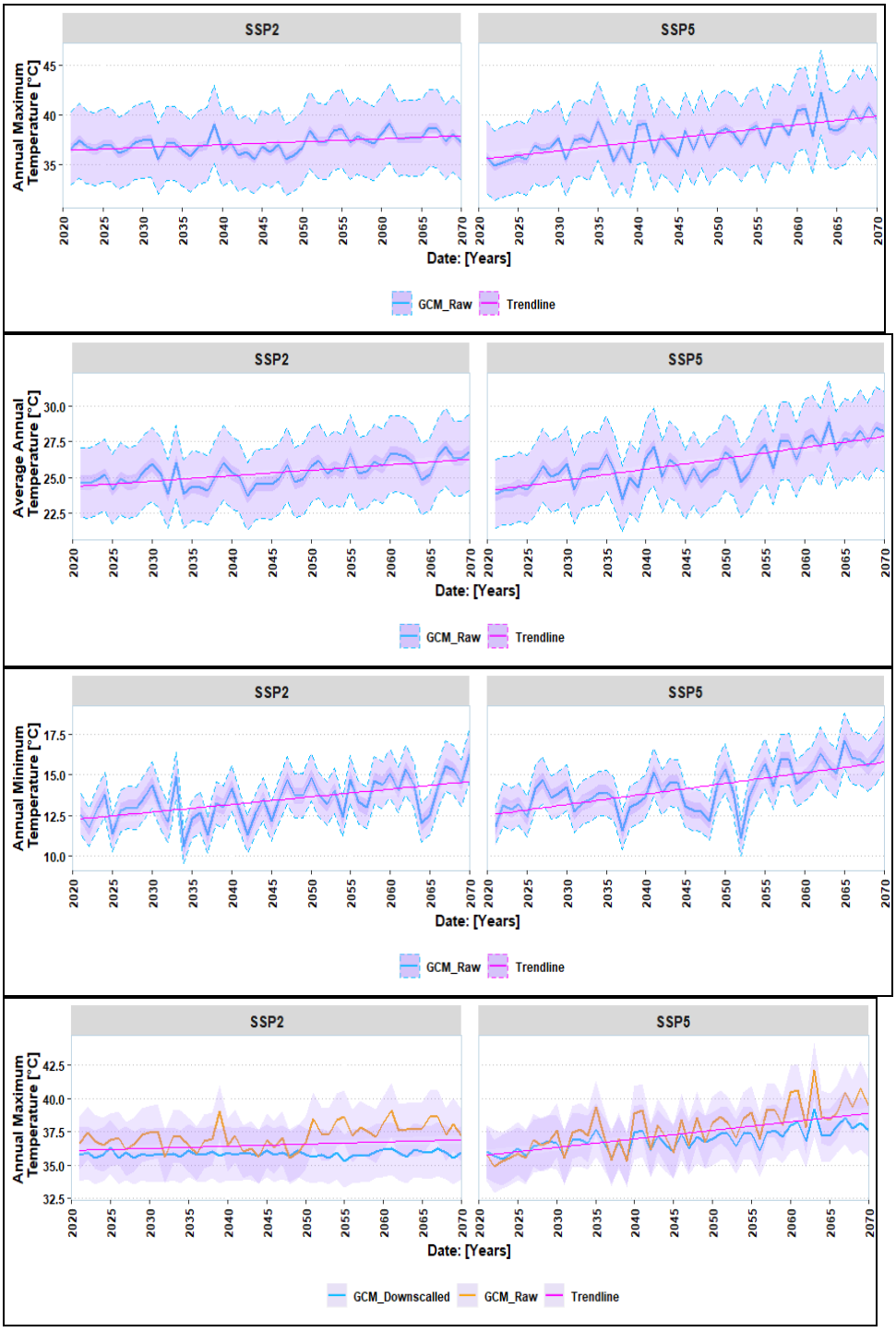
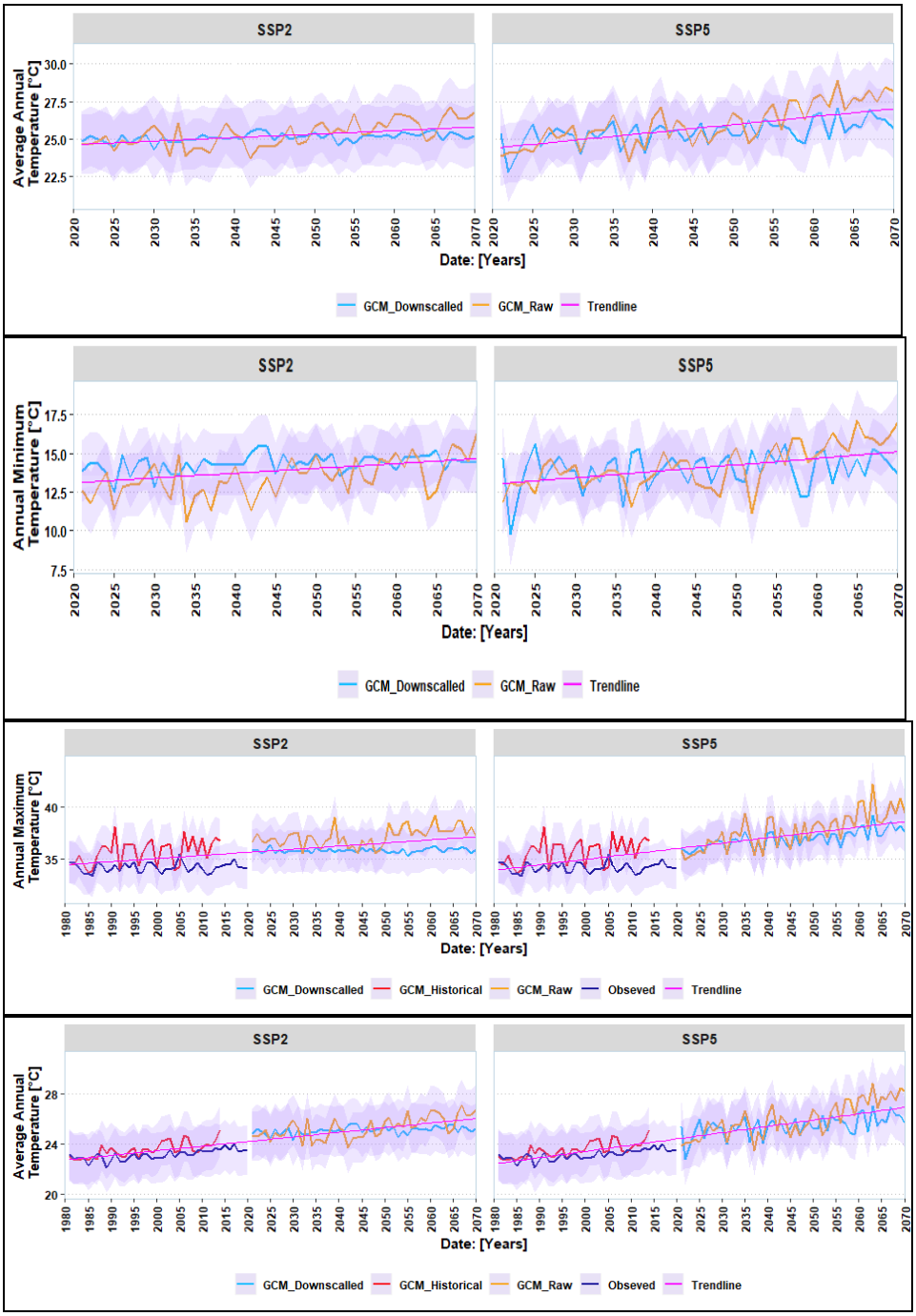


Figure 8: Sen's slope for temperature in Kilombero Basin


SSP2
SSP5
Annual Maximum Temperature [°C]
Average Annual Temperature [°C]
Annual Minimum Temperature [°C]
Date: [Years]
GCM_Raw
Trendline
GCM_Downscalled


SSP2
SSP5
Average Annual Temperature [°C]
Annual Minimum Temperature [°C]
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GCM_Downscalled
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Trendline
GCM_Historical
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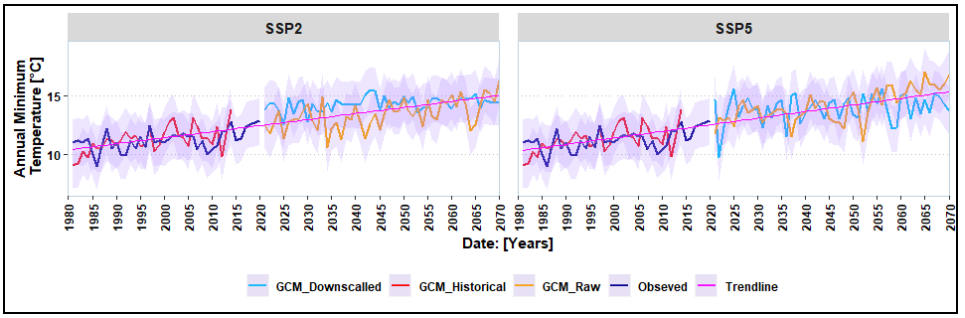

Figure 9: Historical and future temperature trend in different scenarios

Trend Influence of Downscaling to the GCM data.

Although bias correction reduces the statistical error in raw climate model datasets, this does not indicate that users should have increased confidence in the data's integrity. The goal of employing bias correction in this study was to see how it affected climate model downscaling and to account for the uncertainty it introduced. Figures 4.10 and 4.11 show the results of precipitation and temperature over the training period (2006-2018) using the eQM method contained in the climat4R software for bias correction.

Table 0: Influence of Downscaling to the GCM data

Variable	Sen's Slope	Z	P-Value	Trend
Mean Annual Precipitation-SSP2-4.5- Raw	1.24	1.32	0.188	S
Mean Annual Precipitation-SSP2-4.5- Downscaled	-0.12	-0.09	0.929	S
Mean Annual Precipitation-SSP5-8.5- Raw	-0.67	-0.63	0.526	S
Mean Annual Precipitation-SSP5-8.5- Downscaled	-1.22	-1.48	0.138	S
Average Annual Temperature-SSP2-4.5- Raw	0.033	10.205	0.000	NS
Average Annual Temperature-SSP2-4.5- Downscaled	0.000	1.234	0.217	S
Average Annual Temperature-SSP5-8.5- Raw	0.087	11.190	0.000	NS
Average Annual Temperature-SSP5-8.5- Downscaled	0.001	1.616	0.106	S
Annual Maximum Temperature-SSP2-4.5- Raw	0.035	7.564	0.000	NS
Annual Maximum Temperature-SSP2-4.5- Downscaled	0.001	0.659	0.510	S
Annual Maximum Temperature-SSP5-8.5- Raw	0.082	9.817	0.000	NS
Annual Maximum Temperature-SSP5-8.5- Downscaled	-0.004	-1.910	0.056	S
Annual Minimum Temperature-SSP2-4.5- Raw	0.038	7.094	0.000	NS
Annual Minimum Temperature-SSP2-4.5- Downscaled	0.006	1.583	0.113	S
Annual Minimum Temperature-SSP5-8.5- Raw	0.088	10.321	0.000	NS
Annual Minimum Temperature-SSP5-8.5- Downscaled	0.008	0.947	0.344	S

The table above shows the Sen's slope, Z-value, P-value, and Trend for each variable. The Sen's slope is a measure of the trend of the variable over time, the Z-value is a test statistic for the slope, the P-value is the probability of getting a Z-value as extreme as observed, and the Trend indicates whether the variable has a significant increasing (NS - Non-Stationary) or decreasing (S - Stationary) trend.

For example, the first row shows that the mean annual precipitation under SSP2-4.5 Raw scenario has a positive trend (S) with a Sen's slope of 1.24 and a Z-value of 1.32, but the trend is not statistically significant (P-value of 0.188). On the other hand, the mean annual precipitation under SSP2-4.5 Downscaled scenario has a negative trend (S) with a Sen's slope of -0.12 and a non-significant Z-value of -0.09. Similarly, the other rows show the trends for different climate variables, scenarios, and methods.

CONCLUSION

In conclusion, this study focused on the analysis of historical and future rainfall and temperature trends in the Kilombero Basin using the Mann-Kendall test with Sen's slope estimator method. The analysis relied on observed data from the Tanzania Meteorological Agency and simulated data from the CMIP6 project under SSP2-4.5 and SSP5-8.5 scenarios. The results highlighted the basin's bimodal rainfall pattern and the reasonable performance of the selected CMIP6 models in simulating rainfall, Tmax, and Tmin. The findings showed that while there were no clear trends in rainfall, Tmax and Tmin exhibited consistently significant increasing trends under both SSP2-4.5 and SSP5-8.5 scenarios. The potential impacts of these trends include intensified evapotranspiration demands, which may negatively affect freshwater availability in the basin. The analysis also revealed a slight increase in mean annual rainfall from 1981-1999 to 2000-2020.

Trend analysis at individual stations showed variations across the basin, with some stations indicating increasing trends and others showing decreasing trends. The Ulanga Met Station exhibited a significant increasing trend in precipitation.

Overall, the study highlights the importance of understanding rainfall and temperature trends in the Kilombero Basin for the effective management and monitoring of water resources systems. These findings can be crucial

for informing adaptation and mitigation strategies in response to climate change and its potential impacts on the basin's water resources.

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The Influence of the National E-Procurement System on Employees' Performance in Selected Public Institutions in Tanzania

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Abstract
This study evaluates how the Tanzania National E-Procurement System (TANePS) affects worker productivity in a country's public institutions. The Government Procurement Services Agency (GPSA) and the Public Procurement Regulatory Authority (PPRA) were the two organizations where the study specifically investigated the adoption of TANePS and its impact on employee performance. With 200 employees from the chosen institutions participating in the sttudy's self-administered questionnaire survey, 66 percent of the respondents responded. According to the study, 84% of the respondents frequently used TANePS for e-tendering and e-payment, but only a small percentage utilized it for user registration and e-contract administration. While internal resistance negatively impacted management policies and system adoption, good software design and IT readiness promoted TANePS deployment. The introduction of TANePS was successful due to supportive policies and IT, increased performance, and enhanced procurement efficiency.

Keywords: *E-Procurement System, Tanzanian National e-Procurement System, Government Procurement Services Agency, technology implementation, readiness*

INTRODUCTION
The development of Information and Communication Technology (ICT) has resulted in numerous technological breakthroughs that have turned the wheel. Every industry has experienced a paradigm shift recently.

Governments and private organizations worldwide are struggling to provide electronic services. Procurement is a common activity undertaken by both private and public organizations. This entails buying and selling goods and services to and from customers. This activity has been conducted manually for many years (Motaung & Sifolo, 2023). The advancement of ICT has extended to the procurement sector and e-procurement has come into being. E-procurement has numerous advantages such as simplifying the procurement process, shortening the time spent in the tendering processes, and reducing the costs involved in tendering standardized commodities and services that can be specified and evaluated in terms of price (Chan & Owusu, 2022). Other institutions prefer the online tendering process because it reduces barriers to entry. Participants can submit an offer in the absence of a physical presence (Alke & Hassel, 2023; Asare & Prempeh, 2017).

The European Union, through its Pan European Public Procurement Online (PEPPOL) project has made notable contributions to the usage of e-procurement across the globe (Pedersen, Thomassen, Hoddevik, & Ciciriello, 2012; van Donge, Bharosa, & Janssen, 2022). This union has resulted in the adoption and advancement of public e-procurement systems in various countries including Chile, Guatemala, India, Italy, Panama, the Philippines, Romania, South Korea, and Thailand (Bulut & Yen, 2013). Considering the success of e-procurement systems in these areas, international organizations, such as the World Bank, Asia Pacific Economic Cooperation (APEC), Asian Development Bank (ADB), Inter-American Development Bank (IDB), and African Development Bank (ADB), have begun to encourage developing countries to adopt and implement e-procurement systems. These Organizations offer financial and technological assistance and guidance to countries that desire to adopt e-procurement systems (IEG, 2014; Pedersen et al., 2012).

Since the enactment of the Public Procurement Act (PPA) in 2001, Tanzania has seen an increased use of e-procurement (Ernest, 2022; Mwangosi, 2021). Establishing the Tanzania National e-Procurement System (TANePS) in June 2018 was a long-awaited effort to improve the system. TANEPS is a fully fledged e-procurement system that supports the entire public procurement cycle in Tanzania, from planning, user registration, e-tendering, and e-payments, to e-contract management. It is based on Tanzanian public procurement laws, particularly Part XI of the Government Notice (GN) No. 446, which provides regulations governing

procedures for electronic procurement in Tanzania (Shatta, Shayo, & Layaa, 2020). Many studies have examined the general factors that influence e-procurement, with most focusing on developed countries (Afolabi et al., 2022; Ernest, 2022; Mwangosi, 2021; Shatta, Shayo, Mchopa, & Layaa, 2020). In Tanzania, research indicates that the adoption of the e-procurement process is influenced by many factors, including the organization's size, top management attitudes and support characteristics, relative advantage characteristics, and user involvement characteristics (Shatta, Shayo, & Layaa, 2020). Consequently, other studies have found that the legal framework, employee competency, technological infrastructure, and security of data are challenges in e-procurement implementation in the public sector (Hamma-adama & Ahmad, 2021; Rowell et al., 2023; Wahsh & Dhillon, 2006).

According to Maepa et al. (2023), organizations can be ready to embark on e-procurement if they have existing in-house IT infrastructure, expertise, management willingness, and skills. Despite these studies on the adoption of e-procurement, there is limited evidence of the influence of e-procurement on employment performance. Therefore, this study assessed the adoption and influence of TANePS on employee performance at the following institutions in Tanzania: Government Procurement Services Agency (GPSA) and Public Procurement Regulatory Authority (PPRA).

Theoretical Framework

The study utilizes the technological diffusion theory to analyze the implementation of the Tanzanian National e-Procurement System (TANePS) and the performance of public-sector officials. This theory highlights the significance of technology adoption based on its ease of use and effectiveness in influencing the decision-making processes of organizations. The performance of employees is essential for the success of an organization, as growth in productivity contributes to economic stability and societal well-being. The model created by Padhi and Mohapatra (2010) is employed to assess the implementation of TANePS, focusing on the role of user-friendly software design, IT readiness, and management policies in reducing internal resistance and facilitating the adoption of technology. Ultimately, the adoption of e-procurement is anticipated to enhance procurement efficiency and reduce flaws, demonstrating the interconnection between technology adoption and organizational performance.

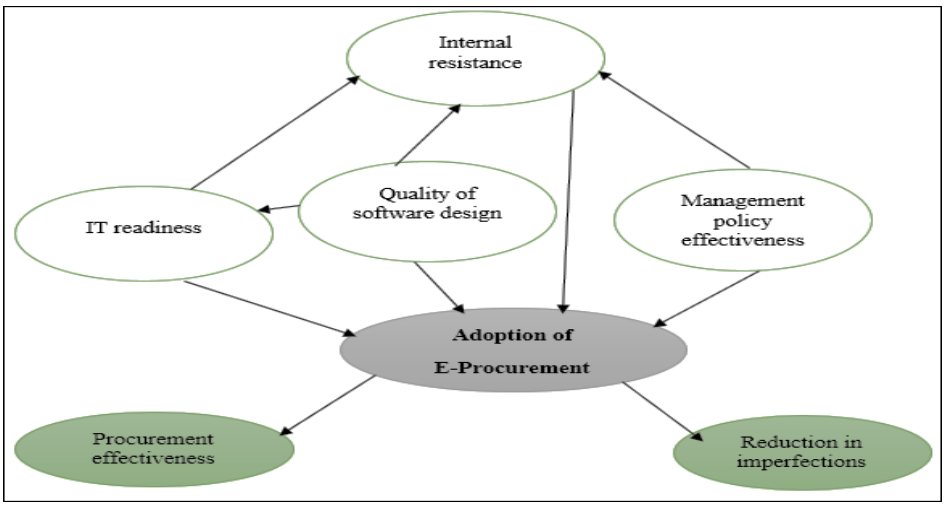

Figure 1: Research model adapted from Padhi and Mohapatra, (2010)

METHODOLOGY

The research utilized a case study design approach, gathering information from the GPSA and PPRA by means of a questionnaire survey administered to 200 employees from different departments. A five-point Likert scale was used to assess four independent variables: internal resistance (IR), quality of software design (QSD), IT readiness (IT-R), and management policy effectiveness (MPE). Measurement items for each variable were obtained from Padhi and Mohapatra (2010) to ensure a comprehensive evaluation. The research incorporated Likert scales and multiple-choice questions to evaluate the dependent variables, which included the adoption of TANePS, reduction in imperfections, and procurement effectiveness. To ensure the reliability of the data, the questionnaire was reviewed by senior researchers and underwent reliability tests using Cronbach's alpha. To validate the data, Exploratory Factor Analysis (EFA) was utilized to simplify the data and examine underlying theoretical structures, while Confirmatory Factor Analysis (CFA) was conducted to assess the validity of the measurement model. Descriptive and inferential statistics were employed for data analysis, and the measurement model demonstrated a reasonable fit to the data. The research established convergent and discriminant validity, with values surpassing established thresholds. Overall, the methodology employed rigorous procedures to guarantee the reliability and validity of the research's findings (Hair Jr., Gabriel, & Patel, 2014).

Table 1: The measurement model

Model fitting parameters	Recommended value	Model result
Chi-square ($\chi 2$)		714.48*
Degree of freedom (DF)		186
Chi-square ($\chi 2$)/df	≤ 3.00	3.841
Goodness of fit index (GFI)	≥ 0.90	0.945
Normalized fit index (NFI)	≥ 0.90	0.906
Root mean square error of approximation (RMSEA)	≤ 0.08	0.084

The structural equation modelling (SEM) approach was used to validate the research model (see Figure 1). AMOS version 26.0 was used to analyze the hypothesized relationships generated from the research model (see Figure 1). Descriptive and inferential statistics were used to analyze the data. ANOVA tests were used to assess the degree of agreement on how TANePS improved employee performance in both organizations. The ANOVA determines whether there is a significant difference between the means.

FINDIGS

Adoption of TANEPS

The findings indicated that most respondents (67%, n=168) frequently completed their daily tasks easily using the TANePS in the categories of often, mostly, and always. This study assessed the use of various services in TANEPS, including user registration, e-tendering, e-payments, and e-contract management. Regarding user registration, the study found that almost half of the respondents in the GPSA (47%, n=47) and PPRA (48.5%, n=47) used TANePS for registration in the often and very often categories, respectively. Regarding e-tendering, findings indicated that two-thirds of the respondents agreed that they used TANePS for e-tendering both at PPRA and GPSA (88%, n=176) in the often and very often categories (See Table 2). Regarding e-contract management, more than half of the respondents did not use GPSA (60%, n=60) or PPRA (59%, n= 60) services (Table 3). Regarding the use of TANePS for e-payment services, the results indicate the often and very often categories, as illustrated in Table 4.

Table 2: TANePS use for E-Tendering

E-tendering		Frequency	Percent	Mean	Std. Deviation	Mode
Valid	Very Rarely	24	12	2.89	0.61	3.00
	Often	46	24			
	Very Often	130	64			
	Total	200	100			
Missing	System	0	0			
Total		200	100			

Table 3: TANePS use for e-Contract management.

	E-contract Management		Frequency	Percent	Mean	Std. Deviation	Mode
GPSA	Valid	Never	60	60	1.62	0..97	1.00
		Very Rarely	19	19			
		Often	11	10.5			
		Very Often	10	10			
		Total	100	99.5			
	Missing	System	1	0.5			
	Total		101	100			
PPRA	Valid	Never	60	59			
		Very Rarely	11	20	1.62	0.97	1.01
		Often	19	10			
		Very Often	10	10.5			
		Total	100	99.5			
	Missing	System	1	0.5			
	Total		101	100			

Table 4: Use of TANePS for e-payment service

			GPSA			
TANePS for e-payment		**Frequency**	**Percent**	**Mean**	**Std. Deviation**	**Mode**
Valid	Never	18	9	3.50	1.01	3.00
	Rarely	22	11			
	Often	20	10			
	Very Often	40	70			
	Total	100	100			
Missing	System	0	0			
Total		100	100			
			PPRA			
Valid	Never	18	9	3.50	1.01	3.00
	Rarely	22	11			
	Often	30	20			
	Very Often	30	60			
	Total	100	100			
Missing	System	0	0			
Total		100	100			

Factors influencing the adoption of TANePS

BM, SPSS and AMOS 26 were used to perform SEM for speculation testing. Table 5 lists the computed values for the different lists. Row1, 2, and 3 provided the chi-squared (χ^2), Degree of Flexibility (DF), and their proportions, respectively. Pushes 4, 5, and 6 show the goodness of fit (GFI), normalized fit (NFI), and root mean square error of estimation (RMSEA), respectively. The parameters indicate that the demonstration is solid and can be utilized to predict the connections among the builds (Shatta, Layaa, & Shayo, 2020).

Table 5: Model fitting parameters for SEM

Model fitting parameters	**Recommended value**	**Model result**
Chi-square (χ^2)		714.48*
Degree of freedom (DF)		186
Chi-square (χ^2)/df	≤ 3.00	2.84
Goodness of fit index (GFI)	≥ 0.90	0.945
Normalized fit index (NFI)	≥ 0.90	0.906
Root mean square error of approximation (RMSEA)	≤ 0.08	0.084

Note: N=200, p<0.05*

The path investigation displayed in Table 6 indicates that software design has a positive impact on the IT readiness of the divisions (b=0.696,

p=0.042). Furthermore, management policies had negative effects on the internal resistance of the division (b= -0.517, p=0.002), and internal resistance had a negative effect on the adoption of TANePS (b= -0.506, p=0.002). Two factors had positive effects on e-procurement adoption: IT readiness (b= 506, p=0.002) and management policies (b= 0.474, p=0.002). Consequently, the adoption of TANePS had a positive effect on effective procurement (b=0.674, p=0.007) and the reduction of imperfections (b=0.721, p=0.001).

IT readiness had no significant effect on inner resistance of divisions (b=0.689, p=0.106). Software design also had no positive effect on the inner resistance of the organization's offices (b= -0.732, p=0.301) or the adoption of TANEPS (b=-0.707, p=0.596).

Influence of TANePS on employee performance

The results of the one-way ANOVA, grouped by the outcome of TANePS on employee performance, indicated that there were statistically significant differences between the grouped means on the following: performance was better when using TANePS than before the use of TANePS, p>0.045 [F (2, 183=26.737, p=0.045]; TANePS increased the accuracy of production capacity, p>0.045 [F (2, 183=3.190, p=0.045], and TANePS shortened process cycle times, p>0.024 [F (2, 183=17.347, p=0.024].

Table 6: Result of path tests with a regression weight

Hypothesis	*Path*	*Critical Ratio*	*Sig. level*	*Standardized Estimate*	*Comment*
Ha	SD → ITR	1.567	0.042	0.696	Sig.
Hb	SD → IR	-2.056	0.301	-0.732	Not Sig.
Hc	ITR → IR	5.266	0.106	0.689	Not Sig.
Hd	MP → IR	4.592	0.002	-0.517	Sig.
He	MP → aTANePS	2.142	0.002	0.474	Sig.
Hf	ITR → aTANePS	0.947	0.002	0.506	Sig.
Hg	IR → aTANePS	5.383	0.002	-0.315	Sig.
Hh	SD → aTANePS	7.027	0.596	-0.707	Not Sig.
Hi	aTANePS → EP	7.843	0.007	0.674	Sig.
Hj	aTANePS → RI	6.573	0.001	0.721	Sig.

Note: b is the standardized estimate

Key*: SD= Software design, ITR= IT-readiness, IR= Internal Resistance, MP= Management Policies, aTANePS= Adoption of TANePS, EP= Effective Procurement and RI= Reduction of Imperfections*

DISCUSSION

This study found that a sizable proportion of respondents from both entities used TANEPS for e-tendering and e-payments. However, user registration and e-contract management experienced relatively low adoption rates, with nearly 50% of the respondents indicating that they had hardly ever used these services. The tendering procedure requires registered users; hence, the repercussions of low user registration utilization are substantial. Furthermore, the technical and semantic problems encountered during the registration process have been attributed to the difficulties in fully implementing e-registration. Registration questions are occasionally unclear, and some users do not fully comprehend how the system works. Additionally, ineffective registration is hampered by the sluggish performance of the system and user complacency. These findings are consistent with earlier studies conducted by academics, such as (Afolabi et al., 2022; Nurdin, 2021; Shatta, Layaa, et al., 2020) who also noted a similar trend in the use of e-procurement systems. Despite the deployment of this system, its full potential has not yet been realized.

Furthermore, this study showed that some questions in the tendering process were vague, necessitating more explicit responses. Owing to this ambiguity, users are reluctant to adopt this system. This conclusion is consistent with that of another study, which contends that successful program planning and solid software design are key factors in reducing end-user resistance to implementing e-tendering. Poor planning and design, on the other hand, heighten resistance and reliance on conventional paper-based approaches (Gihozo, 2020; Nyokabi, Biraori, & Wacera, 2023).

The findings indicated that the high use of e-payments was in line with other studies, which indicated that e-payments eliminate human errors and are always transparent, thereby improving efficiency throughout the procurement process. However, even though the system requires e-payments, it cannot be safe with regard to cyber security-related challenges (Kilay, Simamora, & Putra, 2022).

In this study, e-contract management services in TANePS are used at a low rate. Although the system was deployed to manage all procurement activities, the sampled entities used e-procurement for contract management at a relatively low rate. This implies that even though the system was deployed, not all its functionalities were used. These findings are in line with those of (Shatta, Shayo, & Layaa, 2020), who clearly stated that a reasonable number of procuring entities have not been fully using the system, and some have not deployed the system at all. This provided them the opportunity to use an old-fashioned procurement system. On factors enabling adoption of TANEPS, the software design had a positive impact on the IT readiness (b=0.696, p=0.042). Hence, the quality of software design in terms of user friendliness, security, and compatibility enable employees' IT readiness to effectively learn and embrace e-procurement.

Management policies negatively affected internal resistance (b= -0.517, p=0.002). Resistance to change is an impediment to the successful implementation of a new idea because end users believe that the change will harm their interests. However, when the management has a concrete plan, the amount of resistance decreases. This finding is in line with (Afolabi et al., 2022) who suggested that management initiatives aimed at exposing employees to new technology and dispelling their fears of adoption would enhance adoption rates. Thus, management policies need to be restructured to promote the benefits of using TANePS among employees to change their mindset towards using e-procurement.

The study found that internal resistance negatively affected the adoption of the TANePS (b= -0.506, p=0.002). Where there is internal resistance in the organization, it is impossible to deploy a system (e-procurement) because people will not use it. These results are in line with other findings (Biazzin & Cardoso, 2020; Opoku-Fofie, Asare-Bediako, & Asamoah, 2022) the finding also emphasized that organizations need to motivate their staff to cooperate and work together to adopt the new system. Furthermore, there is a need to promote the benefits of using the new system to change their mindsets. IT readiness (b= 474, p=0.002)) has a positive effect on the adoption of TANePS. This indicates that because individuals were prepared for an IT-related computer program, they would effectively embrace it. This finding is consistent with those of other studies (Marei, Daoud, Ibrahim, & Al-Jabaly, 2021; Masudin, Aprilia, Nugraha, & Restuputri, 2021).

At the same time, management policies (b= 0.649, p=0.002) had a positive effect on the adoption of TANePS. These findings are in line with other studies showing that top management policies and directives have a greater association with the deployment of e-procurement systems (Masudin et al., 2021; Shatta, Shayo, & Layaa, 2020). This finding suggests that top management leadership and smart policy design play vital roles in TANePS implementation. Consequently, TANePS adoption has a positive effect on effective procurement (b=0.674, p=0.007). This result highlights that TANePS has the potential to accelerate the achievement of higher process efficiencies such as reduced staff, reduced costs, reduced time, and increased process efficiency. This result is consistent with those of Afolabi et al. (2022) and Nani and Ali (2020), who reported that, in most cases, organizations adopt e-procurement to achieve the perceived results of the system. These results include improved effective procurement activities and reduced procurement shortfalls across organizations.

Furthermore, the adoption of TANePS has a positive effect on the reduction in imperfections (b=0.721, p=0.001). This means that TANePS makes it easier to attract many suppliers, increases competition among bidders, and reduces errors and imperfections in the procurement cycles. The results were consistent with those of (Ángeles López-Cabarcos et al., 2022) who observed that the use of e-procurement facilitates access to many bidders, and that increased competition among bidders leads to a reduction in shortcomings in the procurement process.

On the influence of TANePS on employee's performance, the study found that the use of TANePS led to better performance, increased accuracy of production capacity, and shortened process cycle times. The use of TANePS has led to a tremendous improvement in worker performance compared with the manual system that was previously used. It is also interesting to note that the system reduced the amount of time that the procurement processes took to complete the cycle. Similarly, Shatta et al. (2020) noted that the increasing use of the Internet and information technology has modified and encouraged businesses to transition from a traditional procurement and supply chain philosophy to a virtual e-procurement and an automated supply chain philosophy. Hence, the e-procurement system added speed and value to all avenues and activities of business and employee performance in the surveyed institutions.

The study presents valuable findings concerning the implementation and impact of TANePS, highlighting both successful outcomes and challenges. Although e-payments are widely appreciated for their efficiency and transparency benefits, the registration process for users and management of e-contracts face significant obstacles, including unclear procedures and resistance from users. The study reveals that management policies and software design play a crucial role in influencing the adoption of TANePS, with support from top-level management and user-friendly interfaces being key drivers for acceptance. The study emphasizes the importance of analyzing the specific context and provides practical recommendations for improving the utilization of TANePS, such as addressing internal resistance and enhancing system design. Furthermore, the study calls for future research to explore strategies for overcoming barriers to adoption and to evaluate the long-term effects of e-procurement on organizational performance. By doing so, it contributes to the ongoing discussions in this field.

CONCLUSION AND RECOMMENDATIONS

The study's findings lead to the following conclusions: An important development aimed at improving procurement processes in public organizations is the automation of procurement. However, in this situation, if some functions such as user registration and e-contract management services are not completely utilized, the stated goals of TANePS may not be achieved. Institutions must place a high prioritize essential components to facilitate the successful implementation of an e-procurement system, such as the supply of user-friendly software design, encouraging IT readiness among staff members for system use, and establishing supportive management policies. Additionally, the establishment of clear policies and instructions can be extremely important for reducing internal and external resistance, which if ignored, could undermine the system for selfish reasons. In this study, the use of TANePS significantly improved the efficiency in the procurement cycle, improved worker performance, increased the accuracy of production capacity, and shortened the process cycle times. Thus, for the continuous enjoyment of such benefits nationwide, it is necessary to ensure the following.

Firstly, to address resistance to the system, government procurement authorities should prioritize periodic reviews and maintenance, focusing

on revising difficult, ambiguous, and contested segments. Secondly, continuous training programs should be conducted by a team of PPRA technicians from various regions to ensure nationwide awareness of system usage. Thirdly, to support users facing technical challenges, government procurement authorities should strengthen a 24/7 call center with active IT technicians, providing unlimited technical support to vendors and thereby increasing competition. Fourthly, continuous monitoring and evaluation of management policies are essential to ensure the achievement of desired objectives, with a focus on fostering a culture of continuous learning and improvement within the TANePS framework. Additionally, fifthly, regular reinforcement of network security and stability is crucial to ensuring effective utilization of the nationwide procurement system. Moreover, sixthly, recognizing the importance of employee participation, stakeholders should prioritize involving users in the planning and design stages of system implementation to preempt internal resistance. Lastly, based on the study's findings, additional research should examine the impact of unutilized TANePS modules, such as e-auctions and e-catalogues, on employee performance, thus providing a comprehensive understanding of the system's potential benefits.

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Friedrich Froebel's Philosophy of Education and its Implications for Secondary School Education in Nigeria

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Abstract

This study analysed Friedrich Froebel's philosophy of education and its implications for secondary school education in Nigeria. The objectives of the study were to analyse Friedrich Froebel's philosophy of education and its implications to secondary school education in Nigeria. Data were collected through the use of philosophical literature and interview schedule. The study sample was made up of executive selected from two associations namely; Nigerian Union of Teachers (NUT) and All Nigerian Conference of Principals of Secondary Schools (ANCOPSS). The data were analysed using philosophical analysis. The findings of the study revealed that Friedrich Froebel's philosophy of education emphasises self-realisation, child's natural abilities, child-centred approach, motivation for learning and discovery; Furthermore, Friedrich Froebel's philosophy of education is relevant to Nigerian secondary education in policy and in practice; The implications of Friedrich Froebel's philosophy of education on the Nigerian secondary education places emphasis on moral, social and spiritual developments, self-realisation, motivation for learning, education for unity of man and its relation with God. The study concluded that certain amount of emphasis on Friedrich Froebel's philosophy of education is essential for secondary education and societal development in Nigeria. It is therefore recommended that Nigerian secondary education should pursue to a greater extent child-centered education that focuses on moral, social, spiritual developments and education for unity of man and its relationship with God.

Keywords: *Friedrich Froebel, Philosophy, Implications, self-realisation, Secondary Education*

INTRODUCTION

There is no nation in the world today, be it developed, developing or underdeveloped, without philosophy guiding its lifestyles. This is because a nation's philosophy serves as a blueprint for achieving the overall goals of a nation. Among its components are philosophies of politics, laws, sport, education, among others. The philosophy of education serves as thinking about worthwhile education of a nation and it is expected to emerge from the overall philosophy of a nation. The philosophy of education in Nigeria, according to the National Policy on Education (Federal Republic of Nigeria (FRN), 2014) is based on the development of the individual into a sound and effective citizen and the provision of equal opportunities for all citizens of the nation at the basic, secondary and tertiary levels both inside and outside the formal school system (FRN, 2014).

It is worthy of note that a nation's philosophies are most of the time determined by individuals' philosophical thoughts. Plato, Aristotle and Rousseau are some of the renowned thinkers whose thoughts have influence on education and other important sectors in their respective societies (Adesanya, 2015). Akinpelu, Fafunwa and Awolowo are some of the known indigenous thinkers whose thoughts influence Nigeria and Africa in terms of national and educational development (Akinsanya, 2015). On this note, it would be worthwhile to examine the thoughts of Friedrich Froebel national lifestyle and particularly on education for national development, and the implications of his thoughts for Nigeria secondary Education.

In this regard, the thinking of President Muhammadu Buhari about reviewing the educational system could be gathered from this statement "… we shall continue to invest in education, health, water and sanitation, as well as food security to ensure that basic needs are met, while providing learners with every opportunity to live peaceful, prosperous and prospective lives" (Buhari, 2020). Friedrich Froebel's philosophy is derived from his thinking about religion. According to Akinpelu (1981), Froebel's philosophy is simple and is coloured by religion; he was known to be a deeply religious man. Froebel saw the whole universe as a Unity, with God at its heart and its moving spirit.

All things have an element of the divine in them, and it is this element that unites all things. This type of religious thinking is known as

pantheism. The divine element in all things is the inner principle or law according to which all things necessarily grow. Froebel thinks about the means through which education is acquired. Froebel takes a sustained interest in natural scientific knowledge. To him, man is only educated if he practices science. Man, practices science when he is aware of the fact that the human conscience is the point at which man and external reality meet and is understood. Man, practices science when he penetrates his own living world and the practice of his everyday existence, with the wealth of phenomena in the living world, to arrive at the underlying structures and laws.

By recognising the characteristics of an object, one also comes to understand that human being is capable of knowing all things that exist in his/her environment as it links with certain characteristics. Science, as knowledge of the structure of (internal and external) things, defines man's ability to know. Froebel's philosophy suggests that there is a unity of man, nature and God. He thinks that "nature and man" seem to be a "mutual development". Man", he said, "received from knowledge of natural objects, despite their immense deep-seated diversity, a foundation for and guidance towards the knowledge of himself and life and preparation for the manifestation of that knowledge" (Taneja, 2008).

Moreover, Froebel prescribes that man should become conscious of the Absolute Unity of the universe. He should also know more about the diversity of things and appearances which are perpetually unfolding within that unity (Taneja, 2008). Each object, in Froebel's view, is progressive and the basic power of the progress is inherent within it which grows on the basis of certain fundamental principles. According to Froebel, to familiarise oneself with the progressive development of matter and beings is knowledge, and to realise that God is the basic cause of their development is true knowledge. In his view, morality is not relative to individual, society or country, time and place, but it is determined by God and it is eternal, universal and perennial. In his view, truth, beauty and goodness are external values; and man should continue to learn about them (Akinpelu, 1981).

According to Froebel (1826), ''education consists in leading man, as a thinking, intelligent being…. into self-consciousness…. conscious and free representation of the inner law of Divine Unity, and teaching him ways and means there to (p. 2)''. The belief that ''God is present in all-

natural things'' influences Froebel's thinking. He believes that man is endowed with spiritual goodness and enjoys unlimited unity with the Devine. He thinks that if the purpose of existence is to reveal God, then education should aim at leading man to be more conscious of God (Aladejana, 2009, p. 61). Froebel thinks about the child as an agent for the realisation of God's will in human nature. He thinks that spirit of the child can be linked with the Absolute through education. To him, education is a development by which the individual realises that he is one unit of the all-encompassing unity (Taneja, 2008).

The aim of Froebel is to introduce the spirit of play in educational institutions. He believes and advocates that the best way for a child to learn is through the medium of a guided play in a friendly natural, environment. Nigerian education features Froebel's philosophy of education as the country's system of education encourages development of the child's personality, total development of the child, unity in diversity, child-centred education, discovery method of learning and so on. Also, the country's system of education encourages provision for basic education, free and universal basic education for every Nigerian child.

However, despite the fact that the Nigerian education emphasises the total development of the child, which is in line with Froebel's philosophy of education, the extent to which his idea is reflected in Nigerian education is limited. For instance, Nigerian education still gives preference to science and vocational education over and above moral and religious education. This brings about moral and religious problems in our society whereas training capable of instilling the fear of God and high-level moral standards in children should be given preference. Moreover, many teachers restrict freedom of the child by making their teaching more theoretical. Such practice results in their failure to relate their teachings to the practical needs of the child.

From the above, education at all levels (primary, secondary, and tertiary) are not properly funded by the government of Nigeria. This and many more have caused Nigeria's failure to accommodate fully Froebel's philosophy of education into Nigerian education system. To find out more about these challenges, the researcher would examine Friedrich Froebel's philosophy of education and its implications for Nigerian education especially the secondary school education system.

Many developed nations of the globe develop rapidly because of the great value placed on the education of children. The overall inspirations in the socio-political and cultural systems of these nations have considerable impact on their educational setup in terms of providing the kind of education that is aimed at developing human personality. For instance, Froebel's philosophy of education features in the education system of Germany where the existence of good governance and better socio-economic system have created conducive learning environment for education. The Nigerian government has also made numerous policies towards ensuring qualitative education at all levels. It is, however, saddening that, in reality, much has not been achieved in Nigerian society as compared to other countries.

Froebel's philosophical thought also features in the Nigerian education, as evident in the National Policy on Education. It has been stated in the National Policy on Education (NPE) that education is designed to develop the individual child into a morally sound, patriotic and effective citizen (FGN, 2014). Also, it is indicated in the policy that the Federal Government instituted a Universal Basic Education (UBE) which is, by law, made compulsory for all children of school age in Nigeria. It is also stated in the constitution of the Federal Republic of Nigeria (1999,) that Government shall strive to eradicate illiteracy; and to this end, Government shall as and when practicable provide free, compulsory and universal primary education.

However, the goals of Nigerian education, as stated in the national policy and other documents, have not been fully achieved due to the fact that the necessary measures to facilitate such achievements have not been fully implemented. As a result, education in Nigeria, which is expected to be free and compulsory for each child, is now unaffordable. Many children who are of school age are running errands for their parents, family and relatives due to lack of parental and government responsibilities. Also, those in school are faced with many problems in the areas of teaching and learning. These and many other problems in Nigerian education could be solved if proper attention is given to Froebel's philosophy of education.

Various researchers have conducted studies on Froebel's philosophy of education. For instance, Brehony (2001) focused on 'the origin of nursery education, Friedrich Froebel and the English system. Bowlby (2016) studied Froebel Education in practice, while Watts (2021) worked on

'Friedrich Froebel: interpolation, extrapolation, mother songs. To the best of these researchers, none of the previous studies have conducted research on analysis of Friedrich Froebel's philosophy of education and its implications for Nigerian secondary school education. Thus, this is the gap this study intends to fill.

It is on this note, that the following questions are formulated to guide this study. That's what is Friedrich Froebel's philosophy of education? What is the relevance of Friedrich Froebel's philosophy of education to Nigerian secondary education?

METHODOLOGY

This research focuses on analysis of Friedrich Froebel's philosophy of education and its implications for Nigerian secondary education. The study is interested in analysing Friedrich Froebel's philosophy of education; the extent to which Friedrich Froebel's philosophy of education is reflected in Nigerian secondary school education and the implications of Friedrich Froebel's philosophy of education for Nigerian secondary school education. The population of this research consists of Heads of all Basic Education Schools and Post Basic Schools in Nigeria who are members of Nigerian Union of Teachers (NUT) and All Nigerian Confederation of Principals of Secondary Schools (ANCOPSS). Meanwhile, the target population would comprise all executives of NUT and ANCOPPS. An executive from each of NUT and ANCOPPS was interviewed to collect relevant data. Interview schedule and philosophical analysis were used in the study. The data gathered in this study were analysed through the use of philosophical analysis. This includes: logical, linguistic, expository and critical analyses.

FINDINGS

Analysis of Friedrich Froebel's Philosophy of Education and its Implications for secondary education in Nigeria were analysed based on the interview conducted on some people involved in the policy and practice of secondary education in Nigeria. These people include executive members of Nigerian Union of Teachers (NUT) and All Nigerian Conference of Principals of Secondary Schools (ANCOPSS). Their responses helped in the analyses of the policy and practice of education in Nigeria, whereby the implications of Friedrich Froebel's philosophy of education for the policy and practice of secondary school education in Nigeria were seen more realistically.

Analysis of Statements by NUT Executive

In the interview conducted with the NUT executive, it was gathered that education at this level emphasises development of child's natural abilities to a very large extent in terms of physical development. It was revealed that the school physical activities such as games and sport enable the child to interact with others which in turn bring about development of child's physical abilities. It was also revealed that education at this level emphasizes development of child's physical abilities in terms of development of the senses to a very large extent. It was gathered that some subjects educate a child about his natural growth with respect to sense of development, -for instance, sense of touch, of taste, and of sight.

It was also revealed from the interview that the curriculum at this level of education emphasizes development of the child's sense of coordination to a very large extent. Almost all the subjects offered emphasizes child's development of senses of coordination in terms of handling materials for the purpose of writing. Also, it was revealed that the curriculum enables the teacher at this level of education to build on the child's habits and encourage externalizing the child's internal dispositions to a very large extent. For instance, most of the classroom activities are structured in such a way that enable the child in pronouncement of certain words habitually, singing certain songs habitually, handling certain objects habitually; all these under the guidance of the teacher.

From the responses, it was gathered that at primary school level, education takes the form of play-way to a little extent. It was revealed that the play-way method of teaching is more peculiar to nursery pupils. That is, most of the subjects offered do not require the play-way method. It was also gathered that at the primary school, the children are given very close guidance by the teachers to a little extent because of unhealthy interference of some parents. It was revealed that some parents do not give the teachers freedom to fully guide the children due to fear and lack of awareness of the evil their interference can cause.

It was gathered from the respondents that education at this level encourages child-centered learning to a very large extent because priority is given to the learners. In primary schools, some subjects require play-way method and some discussion method. These methods encourage child-centered learning. From the responses, it was also gathered that education encourages cooperation among children in their play-way activities to a very large extent. The play-way activities in the school

create an enabling environment for the children to cooperate and interact freely among themselves.

It was also gathered that at primary school level, education emphasizes recognition of the child's development of speech process and helps the child to pronounce letters and words clearly to a great extent. An aspect of English studies such as pronunciation develops the child's speech process. It teaches the child how letters and words are being clearly pronounced. It was revealed that the subjects taught are largely according to the level of the child's mental development. The curriculum at primary school, as it is in other levels of education, is planned and implemented in such a way that the developmental stages of the learners are put into consideration. It was added that subjects taken at this level is in accordance to what they can comprehend.

Moreover, it was revealed that education at this level encourages the development of the child's natural virtues to a little extent because some of these qualities may be hiding and difficult to develop at this level of education. At this level, teaching and learning processes focus more on teaching general basic knowledge while less attention is given to the latent development. Education encourages engagement of children in basic / fundamental educational activities in terms of basic literacy, numeracy, civic and spiritual activities to a very large extent.

Finally, the interview revealed that at the Primary school level, the children are taught subjects that help them to have all-round development (the arts, the social sciences and the sciences) without hindrance. It was revealed that the subjects offered at this level help the children to have basic knowledge and skills in the fields of arts, social sciences and sciences. Examples of these subjects are Basic Science and Technology, Religion and National Values, Pre-vocational Studies and Cultural and Creative Arts.

Analysis of Statements by ANCOPSS Executive

In the interview with ANCOPSS executive, it was gathered that education at the secondary school level is child-centered. The natural abilities of the child are taken into consideration. Also, it was revealed that education at the secondary school level is curriculum-centered to some extent because what the child needs to know is also gradually emphasised.

According to the respondent, subjects that are taught at the secondary school level do not help children to have detail occupational dispositions. Majority of students who graduated from secondary schools hardly use the knowledge acquired to find themselves jobs. It was gathered that the subjects are taught by qualified teachers who can expose the students to definite learning activities in systematic manner to a large extent. It was however revealed that due to lack of enough teachers in some schools, teachers who studied related course(s) are asked to teach related subject(s).

It was discovered that students are taught religious studies in the secondary schools to a very large extent. Students at this level offer either Islamic Studies or Christian studies as general subject. It is however noted that only those that wish to study one of these subjects register it in the external examination. It was also revealed from the interview that students in the secondary schools are taught language acquisition to a large extent. While one of the Nigerian major languages is made compulsory, Arabic and French (as foreign languages) are optional. It is however gathered that none of the external examination bodies makes either of these language subjects compulsory during the registration.

From the interview, it was gathered that students are taught natural sciences in the secondary schools to a very large extent. The respondent, however, mentioned that the natural sciences such as physics and chemistry are offered only by a group of students (science students) in the senior secondary schools. Also, it was revealed that students in the secondary schools are taught mathematics to a very large extent as it is made compulsory for all students.

According to the respondent, students are taught technical/vocational subjects in the secondary schools to a little extent. It was revealed that although the aim is to educate students to think and transform knowledge through technological processes into wealth and a broader economic base, resources that will facilitate the achievement of this aim are inadequate. In the secondary schools, according to the information gathered from the interview, students are taught subjects that help them to have all-round development to a very little extent. This is because, some of the secondary schools are structured to have three categories of class: arts, social sciences and sciences. A student can only belong to one of these

three and not the three at a time. This makes it impossible to have all-round development.

Finally, it was gathered that the secondary schools have the required facilities to help the teachers teach the subjects very well to a large extent. For instance, classrooms, library and laboratory among others are in place to help the teaching and learning process. According to the respondents, however, the schools have been provided with equipment to help the teachers teach the subjects very well to a little extent. It was gathered that the secondary schools encourage the students to have self-realisation (to attain the realisation of their potentials.) to a little extent because emphasis is not made on subjects that promote self-realisation in the secondary school students.

DISCUSSION

Friedrich Froebel's philosophy of education emphasises that education should be characterised by respecting child's individuality and freedom, having his/her own opinions and needs. He advocated that the children should be allowed to live out their lives in freedom, gain strength for mind and soul. He therefore protested that both indoor and outdoor environments must fulfil children's basic needs for freedom. This means that since Froebel's philosophy emphasises on child's freedom, the curriculum should be child-centred. In line with this, FRN (2014) states that "educational activities shall be learner-centred for maximum self-development and self-fulfilment" (p. 3).

Another important aspect of Friedrich Froebel's educational idea to the Nigerian educational system is the division of child's education into four stages. Akinpelu (1981) maintained that of the four stages of education envisaged by Froebel, the infancy and childhood stages are, by far the most important. This may be as a result of the fact that the infancy "prepares the child for the primary level of education" (FGN, 2014:7); while the childhood is to "lay a sound basis for scientific, critical and reflective thinking" (FGN, 2014:10).

Moreover, the implementation of Froebel's philosophy of education in the Nigerian education system varied due to the fact that some schools in Nigeria have incorporated some elements of Froebel's ideas, such as play-based learning and child-centered approaches, there are challenges in fully integrating his philosophy across the entire education system. Some

of these challenges are cultural differences; resource constraints; curriculum and policy and so on as identified in the course of this research

Despite these challenges, Froebel's philosophy has positively influence Nigerian education by providing a more nurturing and supportive learning environment for children. Some schools and educators in Nigeria are already experimenting with integrating play-based learning and other Froebelian methods into their teaching practices. Expanding these efforts and providing the necessary support could lead to a more widespread adoption of Froebel's philosophy in Nigerian education.

Finally, the implications of all these are that Nigeria needs to lay more emphasis on moral development, spiritual development, religious development, self-realisation, motivation for learning, discovery all-round development and education for unity of man and nature with God.

CONCLUSION AND RECOMMENDATIONS

Based on the discussion of findings, certain amount of emphasis on Friedrich Froebel's philosophy of education is essential for individual, educational and societal development in Nigeria. Nigerian secondary school system of education needs to accommodate to a greater extent, Friedrich Froebel's philosophy of education with emphasis on physical development, religious/spiritual development, moral development, social development, technical/ technological development, vocational development and education for unity of man and nature with God.

Based on the findings and conclusion in this study, it was recommended among others that:

i) Nigerian secondary school education system should pursue Friedrich Froebel's philosophy of education more by laying greater emphasis on moral development, religious/ spiritual development, education for self-realisation, vocational education, technical/ technological development, education according to the natural ability of the learner and education for unity of man and nature with God.

ii) In order to attain better performance of teachers in the Nigerian secondary schools, there is urgent need for the Nigerian Government to fund all-round education especially the basic and secondary levels of education. It is established that for better

performance of the teachers as Froebel suggest, more of the needs such as; provision of improved facilities, modern equipment and increment in the salaries and allowances of teachers are non-negotiable.

iii) The teachers are thereby ensured to be more committed to the attainment of students' quality academic performance in all ramifications of education.

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