The Usage of social media in Creating Land Degradation Awareness in Rombo District, Kilimanjaro Region - Tanzania

Hendry Hermenegild[1] and Nima Shidende[2]
[1]Corresponding author, E-mail: temuhendry@gmail.com

Abstract
The environment is the fundamental for all living things, and land conservation is of greater apprehension for the sustainable economic development. To attain higher level of land conservation there should be greater effort in creating awareness to people on land degradation conservation. The study aimed to find out the usage of social media in creating land degradation awareness. Specifically, the study intended to: find out the causes of land degradation, identify the status on the usage of social media for land degradation awareness, likely determine the type of social media frequently used for land degradation awareness. The field work covered Rombo district in the Kilimanjaro region Tanzania, where five administrative wards were scrutinized, to mention: Tarakea, Motamburu, Olele, Mahida, and Ngoyoni. Data was collected employing household survey and interview and analysed using descriptive and thematic analysis techniques. The results show that the usage of social media that can be used in creating land degradation awareness includes providing education through media for peoples to understand relationship between human activities and land quality, providing user-friendly tools for knowledge sharing, enabling users to create, edit and add online contents, engaging discussions through social media on environmental issues as well as reporting on land degradation. Further, social media can be used to create land degradation awareness to peoples in Rombo district by 59%. It was concluded that, public campaign program to enhance awareness on land degradation should be strengthened through the usage of social media for sustainable land usage.

Keywords: *Land degradation, Land degradation awareness, social media, Rombo district, Kilimanjaro region-Tanzania.*

INTRODUCTION

It is well recognized that environment is fundamental for all living things because every resource necessary for them is interrelated to the environment (Anderson, 2017). Unless the environment is protected, the existence of life on earth would eventually be impossible. That is why environmental protection specifically land degradation safety have become so sensitive and globally important (Ashe, & Poberezhskaya, 2021). According to Schuberth, (2020) land degradation has global aspects that require action at the global level due to serious land degradation results from developments taking place in developed as well as developing countries (Abdul-Razak & Kruse, 2017). Therefore, all people need to have a common understanding of the role that have to be played by human beings to reduce the worsening of land (Anderson, 2017).

There are various ways that has been introduced to lessen the worsening of land involving, the use of energy more efficiently, the use of electricity and natural gas as like as the use of social media to create awareness (Nyahunda and Tirivangasi, 2021). The use of social media has a big role to play in making people aware of land degradation issues and taking actions to protect the environment (Saikia, 2017). Zhang *et al., (*2018) point out that over 2600 global media channels operate with the support of about 3000 satellites, reaching nearly 1.5 billion people across the globe. It can be argued that the majority of global Citizens learn about Environmental issues, beyond their immediate Surroundings, through the global Media and technology (Abdullah, and Ward, 2016).

The spread of land degradation awareness to alert and inform the entire public has been successful in developed Countries. One of the techniques used is social media. The use of social Media has big role to play in making people aware of land degradation and taking actions to protect the land. For example, Dumpit, and Fernandez, (2017) used social media to outline land policies, campaigns and agendas on land degradation management, Abdullah, and Ward, (2016) stated that architecture students Used social media platforms (Facebook, Twitter, and WhatsApp) to create land usage consciousness that involved the built of land to the site context, creating spaces for the community and using building materials for new Ways of sustainable living, also Roma, (2016) successful used Instagram social media platform to enable awareness to people on local and global Land degradation issues.

Tanzania as one of the developing countries land degradation awareness is increasingly a challenge due to the increase in human activities (Mohamed and Dominic, (2021). The utilization of the environment in an unfriendly manner has been increasing as a result of lack of information and knowledge about the conservation strategy (ibid). Several initiatives have been taken by the government to increase citizen's land degradation awareness (Antwi-agyei *et al.,* 2017). For example, the country has enacted the Environmental Policy of 1992, which aimed to prevent land degradation and informing stakeholders to protect land beauty (Kilagwa *et al.,*2020). Furthermore, different strategies have been undertaken by the government and civil societies to address the land degradation to the public by provision of knowledge through newspapers, radio, and using bylaws in every district and town to protect and conserve the land, sadly the initiatives have not been successful (Antwi-agyei *et al.*, 2017).

Mohamed and Dominic, (2021), argue that in Tanzania there are lack of new emerging technologies of sharing information and instructional materials. Also, Kilagwa *et al.,*(2020) added that, the social media is increasingly recognized as accessible technology fostering public participation and effectiveness to spread Land. information to the entire social spectrum. The challenges are still overwhelming in the developing countries including Tanzania, specifically in Rombo district. The use of social media to raise land degradation

awareness to the entire public (Kilagwa *et al.*, 2020). In order to address the gap, this study aimed to find out the utilization of social media in providing environmental awareness to reduce degradation of the land.

METHODOLOGY

This study employed a cross sectional survey research design of which the target respondents were studied at a single point in time for the researcher to find out the utilization of social media to provide land awareness in reducing degradation. Davis & Newstrom, (2015) affirms that the design provides a snapshot of the outcome and associated characteristics at a specified point in time also it save time during the data collection process.

Further, a qualitative research approach was involved. The approach concerned with valuation of traits, opinions and actions which help to analyze, explain, and build arguments to understanding content of the study (Bickman *et al.*, 2014). The approach was used in this study as it enables to get necessary information for the study, also the nature of objective in this study requires qualitative data.

The study was conducted in Rombo district in the Kilimanjaro region – Tanzania. Five administrative wards in the district were selected including Tarakea, Motamburu, Olele, Mahida and Ngoyoni. The area offers an ideal geographic location for the research as the area precisely represents a population of 260,963 within the area of 1,471 Km^2 where land tensions are played out. Also, the other factors motivated to select the area under study include: the district is faced with land threats including adjacent land use, high temperature causing fire, and climate change along Kilimanjaro Mountain which play a crucial role in livelihood and national income (Munishi *et al.*,, 2019).

The study used simple and purposive sampling techniques. First, the list of sampling frame or target population (household heads) was identified and prepared in the proper list manner with a totality of all household available in the Rombo district which is about 1200. Yamane (1967) formula was used to identify sample size which was 92. Thereafter, each household of 1200 were assigned numbers then, 92 households were selected using simple random sampling and head of households were assigned as focal persons for responding the questions. The technique was used since it gives equal chance of each member in a population to be selected also avoid bias in sample selection (Coughlan *et al.*, 2017).

Using purposive sampling technique 16 respondents were selected proportionally for further studies; involving, one (1) IT staff, one (1) planning officer, one (1) District Director, four (4) Ward executive officer (WEO), four (4) village executive officer (VEO), two (2) Tanzania Forest Services Agency (TFS) Staff, one (1) Kilimanjaro National Park (KINAPA) staff, and two (2) National Environment Management Council (NEMC) staff. The mentioned respondents were selected basing on their official positions since they have notable access of information regarding the usage of social media in creating land degradation awareness. Purposive sampling technique

method allows to include respondents with required features therefore get valuable information and data (Davis, & Newstrom, (2015).

The methods of data collection were categorized regarding the sources of data. Primary data was collected by using a questionnaire and interview while secondary data was collected by the use of the documentary review method.

In line with data analysis, data collected was analyzed by the use of descriptive analysis, such as frequency and percentage; also, thematic analysis were employed where unit of analysis was defined, categories developed, consistency of categories on relevance to the themes was assessed then the results were generalized and presented. Further, some of respondents' arguments were presented through direct verbatim quotations.

RESULTS

The study aimed to identify the usage of social media in creating land degradation. Awareness in Rombo district council. In identifying the usage of social media in creating environmental awareness, 14 questions items from household survey were asked to respondents for valuation and the results are given in Table 1.

Table 1: Usage of social media in Creating Land Degradation Awareness

Household survey items	**Strongly disagree**		**Disagree**		**Cumulative %**	**Neutral**		**Agree**		**Strongly agree**		**Cumulative %**
	F	%	F	%		F	%	F	%	F	%	
1. Creating conversation through social media on air, water, and waste deprivation as like as ozone layer depletion and protection	4	4.3	8	8.7	13	8	8.7	66	71.7	6	6.5	78.2
2. Sharing materials with peers related to land degradation and conservation	10	10.9	32	34.8	45.7	0	0	41	44.6	9	9.8	54.4
3. Posting or introducing various campaign regarding Urban Sprawl and economic/trade related activities	5	5.4	15	16.3	21.7	2	2.2	54	58.7	16	17.4	76.1
4. Allotment of problem-solving skills on land harms	1	1.1	6	6.5	7.6	3	3.3	46	50	36	39.1	89.1
5. Advertise ways to keep the land sustainable for years to come	14	15.2	16	17.4	32.6	11	11.9	41	44.5	10	10.9	55.4
6. Sharing land humiliation problems and solutions	8	8.7	12	13.0	21.7	8	8.7	42	45.6	22	23.9	69.5
7. Making people aware about the economic importance of the plants in the form of ethno botanical and ethno medicinal importance	1	1.1	8	8.7	9.8	2	2.2	58	63.0	21	22.8	85.8
8. Telling story through social media about intensive farming activities and management	12	13	21	22.8	35.8	12	13	38	41.3	10	10.9	52.2
9. Development of platform providing information about natural disasters, destruction of biodiversity and land protection	2	2.2	25	27.2	29.4	15	16.3	30	32.6	20	21.7	54.3
10. Leverage peoples' lifestyles and waste related problems on trends and breaking news	0	0	2	2.2	2.2	0	0	71	77.2	19	20.6	97.8
11. Encourage audiences to share environment contents on agriculture chemical contamination, global warming, and government land protection policy	22	23.9	31	33.7	57.6	10	10.9	20	21.7	9	9.8	31.5
12. Use social media to post hash tags for environmental education	3	3.3	9	9.8	13.1	28	30.4	30	32.6	22	23.9	56.5
13. Sending message to keep people aware on water humiliation and shortages, loss of biodiversity and waste management	4	4.3	15	16.3	20.6	13	14.1	42	45.7	18	19.6	65.3
14. Publicize knowledge on greenhouse gas prevention measure, genetic modification of crops and hydrology	4	4.3	32	34.8	39.1	5	5.4	41	44.6	10	10.9	55.5

Source: Researcher, (2021)

Table 1 above shows that on item, creating conversation through social media on air, water, and waste disposal as like as ozone layer depletion and protection 13% of respondents disagreed and strongly disagreed, 8.7% were neutral and 78.2% agreed and strongly agreed; as regards to item sharing materials with peers related to land degradation and conservation 45.7% disagreed and strongly disagreed, 0% were neutral and 54.4% agreed and strongly agreed; for item posting or introducing various campaign regarding Urban Sprawl and economic/trade related activities 21.7% disagreed and strongly disagreed, 2.2% were neutral and 76.1% agreed and strongly agreed; allotment of problem-solving skills on land harms was another variable involved in this study the results show that 7.6% disagreed and strongly disagreed, 3.3% were neutral and 89.1% agreed and strongly agreed; and for item advertise ways to keep the land sustainable for years to come32.6% disagreed and strongly disagreed, 11.9% were neutral and 55.4% agreed and strongly agreed; on item sharing land deprivation problems and solutions 21.7% disagreed and strongly disagreed, 8.7% were neutral and 69.5% agreed and strongly agreed; and under item making people aware about the economic importance of the plants in the form of ethno botanical and ethno medicinal importance 9.8% disagreed and strongly disagreed, 2.2% were neutral and 85.8% agreed and strongly agreed.

In parallel with the findings for item, telling story through social media about intensive farming activities and management35.8% disagreed and strongly disagreed, 13% were neutral and 52.2% agreed and strongly agreed; the findings on item development of platform providing information about natural disasters, destruction of biodiversity and land protection29.4% disagreed and strongly disagreed, 16.3% were neutral and 54.3% agreed and strongly agreed and on item leverage peoples' lifestyles and waste related problems on trends and breaking news 2.2% of respondents disagreed and strongly disagreed, 0% were neutral and 97.8% agreed and strongly agree; on item encourage audiences to share environment contents on agriculture chemical contamination, global warming, and government environmental protection policy57.6% disagreed and strongly disagreed, 10.9% were neutral and 31.5% agreed and strongly agreed; for item using social media to post hash tags for land degradation education 13.1% disagreed and strongly disagreed, 30.4% were neutral and56.5% agreed and strongly agreed; the findings on item sending message to keep people aware on water dilapidation and shortages, loss of biodiversity and waste management show that 20.6% disagreed and strongly disagreed, 14.1% were neutral and65.3%agreed and strongly agreed and finally on item publicize knowledge on greenhouse gas prevention measure, genetic modification of crops and hydrology 39.1% disagreed and strongly disagreed, 5.4% were neutral, and 55.5% agreed and strongly agreed.

To summarize the findings, the following are the usage of social media in creating land degradation awareness at Rombo district council identified by respondents since more

than 50% of respondents agreed and strongly agreed on the items, to mention: creating conversation through social media on air, water, and waste litters as like as ozone layer depletion and protection, sharing materials with peers related to land degradation and conservation, posting or introducing various campaign regarding Urban Sprawl and economic/trade related activities, allotment of problem-solving skills on land harms, advertise ways to keep the land sustainable for years to come, sharing land dilapidation problems and solutions, making people aware about the economic importance of the plants in the form of ethno botanical and ethno medicinal importance, telling story through social media about, intensive farming activities and management, development of platform providing information about natural disasters, destruction of biodiversity and land protection, leverage peoples' lifestyles and waste related problems on trends and breaking news, use social media to post hash tags for environmental education, sending message to keep people aware on water disposal and shortages, loss of biodiversity and waste management as like as publicize knowledge on greenhouse gas prevention measure, genetic modification of crops and hydrology.

Out of that, the results from open ended questions show that, the other usage of social media that can be used in Rombo district to create land degradation awareness involves: capacity building on use of social media in creating land degradation awareness, environmental stake holders should infer size on use of social media for environmental sustainability, government should establish rules on use of social media to enhance land degradation awareness and community education should be provided on social media to keep citizens more informed on the need to conserve their environment. Also, the type of social media frequently used to acquire environmental education is Instagram for about 59.4% followed by Whats App media 22.3%, 12% by YouTube, 4.1% by Twitter while 2.2% by Facebook. To add, the time that social media used mostly is night where 48% of the respondents agreed, followed by 25% during the evening, then 16% during the morning and 11% during the afternoon.

The results from interview show that, 59% of respondents said that social media can be used to create land degradation awareness to peoples in Rombo district. In addition, the usage of social media that can be used to create sustainable development include: community involvement through social media in solving land dilapidation effects such as global warming, bunning fossils and deforestation, providing education through media for peoples to understand relationship between human activities and land quality, providing user-friendly tools for knowledge sharing, enabling users to create, edit and add online contents without any professional training, engaging discussions through social media on environmental issues as well as reporting on land dilapidation.

The results also show that the ways that can be used to enhance people usage on social media include reducing tax on social media usage, providing education to promote effective use of social media, improve internet accessibility, providing bonuses to

mostly using social media to access various matters, providing important governmental and nongovernmental services through social media, seek relationships on social media usage and not only followers, also internet should be active all the time. Not only that, when respondents were asked on the current usage of social media for land degradation awareness in the district the following were the outputs, 51% of respondents said its good, 28% said its poor, 15% its fair, and 6% said it's excellent.

Moreover, the extent to which land deprivation affect healthy of people was among the variable observed important to this study, the results show 64% of respondents said deprivation affect healthy of people Greatly, 22% said Considerably, 13% Not much and 1% Not at all. To add, respondent's views on the people's altitude with regard to environmental conservation show that: 48% are Considerably, 27% are Greatly, 15% Not much and 10% Not at all. Finally, respondents' suggestions on the social media pace to avoid environmental damage are well described under.

Respondent 1 said that: "*Rules and regulation concerning land protection should be made more effective to avoid people spoiling the land by burning and throwing plastics to protect our environment"* (Interview, 2021).

Respondent 3 said that*: "Using renewable energy systems, such as solar and wind, reduce impact on the land significantly while lowering energy bill. Further, a variety of local incentives are available to make installing renewable energy more affordable"* (Interview, 2021).

Respondent 4 said that: "*Energy is used (and emissions generated) to heat the water used in facility and process wastewater, reduce water heater temperatures and repair leaks. Also, install low-flow showerheads and aerated faucets to reduce the amount of water used; this can be especially effective in lodging and multi-family facilities*" (Interview, 2021).

Respondent 6 said that: "*All of the materials and equipment produced should not be disposed to the environment rather than being reused and recycled whenever Possible or brought to the company for recycling*" (Interview, 2021).

Respondent 7 said that: "*Peoples driving to and from work produce a substantial amount of air. They should be encouraged (or subsidize) to use public transportation or smog organize carpools and allow employees to work from home whenever possible*" (Interview, 2021).

Respondent 11 said that: "*Use energy more efficiently such as producing electricity and Natural gas and delivering it to door generates greenhouse gas emissions. Also, installing energy-efficient building systems and equipment can save energy and reduce land footprint"* (Interview, 2021).

DISCUSSION

The study describes that, the explosion of social media usage such as Instagram, WhatsApp, and YouTube among peoples in Rombo district is deemed to have

great potential in widely disseminating land sustainability awareness. Usage of social media plays an active role in creating land sustainability among peoples such that, any development on the land degradation and its attributed activities is minimized. Furthermore, social media has become a part and parcel of present-day lifestyle with the advancement in industrialization, science, technology, and globalization, various environmental issues are taking place locally and globally. People are using social media now days to support land degradation campaigns and to connect people locally and globally on minor to major environmental issues. It also provides ordinary people with the ability to track the quality of the air, water, climate around them, and then discuss likewise share data with others. Thus, social media can be utilized in Rombo district as a tool to promote awareness regarding various current environmental issues in a much faster way and to a large mass within a very short span of time.

The findings was found similar to: Omar, Nyahunda, and Tirivangasi, (2021); Rahim and Adeen (2016) and Kichatov, (2010) who stated that social media is a powerful technological tool that allows users to create content, share ideas, express opinions, disseminate information, share knowledge and exchange user-generated content regarding land degradation and conservation. Notably, (Chan *et al*, 2017) specified that prevailing lifestyles, technological advancement, land degradation and educational changes can be credited to unprecedented growth in the use of the internet and its allied social networking tools and platforms of interest to improve awareness. Also, Zhang and Skoric (2018) provide user-friendly social media tools for knowledge sharing, enabling users to create, edit and add online contents on land humiliation problems and solutions without any professional training. It is now possible to create, edit, add and share multimedia content through videos, photos and other formats through instantaneous posts. Likewise, Tobey and Manore, 2014; (Munishi *et al,* 2019) argued that social media is used to activate and build up a rally for community support in advocating or fighting for various causes of land degradation around the world.

CONCLUSION

Land degradation is due mainly to non-sustainable human activities, such as over cultivation, overgrazing, deforestation and poor irrigation practices. The status on the usage of social media for land degradation awareness is at 59% and is mainly through Instagram followed by Whats App media.

Thus, enhancing land degradation awareness through the use of social media has been proposed as a roadmap in tackling the complexity of this phenomenon. Therefore, public campaign program to enhance awareness on land degradation should be strengthened through the usage of social media for sustainable land usage/economic production considering the social media usages identified.

ACKNOWLEDGEMENT

I would love to spread my great heartfelt appreciation to my supervisor Dr. Nima Shidende for her great support, encouragement, guidance, and coaching. I

am also grateful to all staff at the UDOM College of Informatics and Virtual Education for their relentless support, guidance, and advice throughout my study period.

I am also grateful to the government of the United Republic of Tanzania and the Ministry of Minerals for the full sponsorship awarded for my studies and thesis writing. Finally, I would like to give thanks to my friends and colleagues at UDOM College of Informatics and Virtual Education with whom we have regularly engage in conversation about my study.

CONTRIBUTION OF CO – AUTHORS

First author: **Hendry Hermenegild** Conceived the idea and wrote the paper
P.O.Box 1696, Dodoma - Tanzania
E-mail: temuhendry@gmail.com

Second author: **Nima Shidende** Provided technical information on methods and materials
P.O.Box 259, Dodoma - Tanzania
E - mail: shidende@gmail.com

REFERENCES

Abdullah, F., and Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Extended Technology Paper*, 1(5), 12-58.

Anderson, A. A. (2017). Effects of social media use on climate change opinion, knowledge, and behavior. *Oxford Research Encyclopedia of Climate Science*, 1–20.

Antwi-agyei, P., Benkenstein, A., and Ojoyi, M. M. (2017). *Improving Forest Governance in East Africa S*. JN print, Kenya.

Ashe, T., & Poberezhskaya, M. (2021). climate scepticism: An understudied case. *Climatic Change, 2*(3), 1–20.

Bickman, L., Rog, D., Tashakkori, A., and Teddlie, C. (2014). Integrating Qualitative and Quantitative Approaches to Research. *Handbook of Applied Social Research Methods*, 2(4), 21-45.

Chan, E. S. W., Hon, A. H. Y., Okumus, F., and Chan, W. (2017). An Empirical Study of Environmental Practices and Employee Ecological Behavior in the Hotel Industry. *Journal of Hospitality and Tourism Research*, 41(5), 585–608.

Coughlan, *F., Danlan, Q*. and Huang, H. (2017). Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *Journal of Business Research, 69*(6), 2206–221

Davis, M., & Newstrom, H. (2015). *Research Methods, Quantitative and Qualitative Approaches.* Centre for Technology Studies.

Dumpit, D. Z., and Fernandez, C. J. (2017). Analysis of the use of social media in Higher Education Institutions (HEIs) using the Technology Acceptance Model. *International*

Journal of Educational Technology in Higher Education, 2(4), 17-45.

Han, R., and Xu, J. (2020). A comparative study of the role of interpersonal communication, traditional media and social media in pro-environmental behavior: A China-based study. *International Journal of Environmental Research and Public Health*, 17(6), 3-66

Kilagwa, R. T., Wok, S., and Ahmad, Z. A. (2020). Level of Participation in Domestic Solid Waste Management Among Radio Listeners in Dar Es Salaam City, Tanzania. *International Journal of Politics, Public Policy and Social Works*, *2*(7), 62–78.

Khang, H., Ki, E. J., and Ye, L. (2012). Social media research in advertising, communication, marketing, and public relations, 1997-2010. *Journalism and Mass Communication Quarterly*, 89(2), 279–298.

Munishi, P. K. T., Hermegast, A. M., and Mbilinyi, B. P. (2019). The impacts of changes in vegetation cover on dry season flow in the Kikuletwa River, northern Tanzania. *African Journal of Ecology*, 47(1), 84–92.

Mohammed, A. A., and Dominic,D. D. (2021). Social Influence on the Use of Social Media Towards Environmental Sustainability Awareness. International Conference on Computer and Information Sciences (ICCOINS) Print, HEI.

Nyahunda, L., and Tirivangasi, H. M. (2021). Barriers to Effective Climate Change Management in Zimbabwe's Rural Communities. *African Handbook of Climate Change Adaptation*, 10(2), 2405–2431.

Rahim, M., and Adeen, J. (2016). The Role of Social Media on Environmental Awareness of Undergraduate Students in the University of Sulaimani. *Environmental Awareness*, 7(2), 56-205.

Romer, D. (2016). *Advanced Macroeconomics* (2nd Ed.). Springer, Nigeria.

Saikia, R. (2017). Role of Mass Media in Promoting of environmental awareness. *National Journal of Multidisciplinary Research and Development*, 2(1), 264–268.

Severo, E. A., De Guimarães, J. C. F., Dellarmelin, M. L., and Ribeiro, R. P. (2019). The influence of social networks on environmental awareness and the social responsibility of generations. *Brazilian Business Review*,16,50–58.

Schuberth, F. (2020). Confirmatory composite analysis using partial least squares: setting the record straight. *Review of Managerial Science,*1(5), 2-178.

Tlebere, T., Scholtz, B., and Calitz, A.P. (2016). Using Social Media to Improve Environmental Awareness in Higher Education Institutions. *Environmental Joutrnal*, 5(3),101–111.

Tobey, L. N., and Manore, M. M. (2014).

Viewpoint Social Media and Nutrition Education : The Food Hero Experience. *Journal of Nutrition Education and Behavior*, 46(2), 128–133.

Zhang, R. G., Billi, M., & Urquiza, A. (2018). Climate change perception, vulnerability, and readiness: Inter-country variability and emerging patterns. *Journal of Environmental Studies and Sciences, 11(1), 2–30.*