

Provisional Findings on Linking Climate Information to Livelihood Strategies through ICTs among Rural Women in Kitui County, Kenya

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Abstract: This paper presents provisional findings on how ICT may be used to link climate information to livelihood strategies among rural women in Kitui County, Kenya. The paper is based on the results of a scoping study undertaken in the same place for an on-going PhD research that focuses on climate change awareness among rural Kenyans, while employing empirical methods of data collection and analysis. While the sample size for the scoping study was small (20 respondents), the relevance of the subject matter and the consistency of the findings collectively point to a gap in the general research area and offers provisional findings that we offer for scrutiny in this article. Both the PhD project and the scoping study were motivated by the increasing challenges of climate variability and change that affect Sub-Saharan Africa, creating problems such as food insecurity.

Keywords: ICTs Access and Usage, Climate Information, Kitui County, Kenya

1. Introduction

The extent to which ICTs can be employed in addressing challenges of livelihoods continues to be a rich research area the world over. In developing countries like Kenya, especially, the challenges of vulnerable livelihoods on the one hand, and the spread of ICTs access and usage on the other, make for an interesting mix that promises potentially rewarding research and outcomes. This is particularly so when we consider that the Kenyan population is largely poor and rural-based, relying on subsistence farming for their food and other needs. At the same time, harsh climatic conditions mean that only 30% [1] of the land in Kenya is arable, thus exerting undue pressure on a greater majority of inhabitants in the Arid and Semi-Arid Lands (ASALs) [2] like Kitui, to find innovative ways of getting the best out of their otherwise barren lands. Use of technologies to access information relevant for decision making, or mobilizing around women's groups to gain literacy that in turn is helpful in reaching out to the outer, more promising, spaces are examples of the range of innovations that are open to the people in such areas. When one considers socio-cultural and economic factors like patriarchy and unemployment, respectively, that affect more women than men [3] [4], they begin to appreciate a huge existential and academic research problem that needs urgent intervention.

Hence, the purpose of this research was to determine the extent to which women in rural Kitui County in Kenya access climate information to enhance their adaptation and resilience to climate-induced crises like variability and extreme events.

2. Objectives

Our main objective was to determine the extent to which rural women in Kitui County in Kenya appropriate technology to access and use climate information in order to mitigate against climate vulnerabilities. Specific objectives for the scoping study informing this paper were to:

1. Establish whether there are intersections of literacy levels, sources of income and access to ICTs and to climate information for women in rural Kitui County
2. Determine the role of ICTs on improved incomes and enhanced livelihoods among women in rural Kitui County, in Kenya

3. Methodology

3.1 Study Area

The scoping study was conducted in Kywangwithia East and Township sub-locations in Kitui County, Kenya.

3.2 Data Collection Methodology

The scoping study employed exploratory mixed methods to collect qualitative and quantitative data, followed by analysis. Qualitative data was collected using desk top and library research, while Key Informant Interviews (KIIs) with agricultural extension officers from the Ministry of Agriculture and the meteorological department officials provided quantitative data. This approach was influenced by our choice of the Sustainable Livelihoods Framework as the guiding principle.

3.3 Sampling Method

We deployed purposive and simple random sampling in identifying the respondents for the scoping study. The purposive approach was employed in identifying the key informants from the meteorological department and extension officers from the Ministry of Agriculture. Random sampling was used to identify the individuals among the women's self-help groups.

3.4 Sample Size

Since the preliminary research was a scoping study that was meant to lead to the larger PhD research, we settled on a sample size of 20 (twenty) respondents, of whom 16 (sixteen) were women while 4 (four) were men. This was done in November 2014.

In all, the scoping study was carried so as to understand the appropriate channels of communication (ICTs) in providing climate information and how rural women can adapt through the application of ICTs so as to access climate information. We conducted a study on a small cross-section of sixteen rural women and four rural men in Kitui County specifically in the sub-locations of Kyangwithia East and Township to assess the parameters of the study and the situation in Kitui County. These regions have a strong women's self-help groups that were targeted for sampling and data collection purposes. Because our key focus was on women's self help groups, our sample was predominantly women, at 80% (16) compared to the 20% (4) men.

3.5 Data Collection Instruments

In the scoping study, we employed a survey instrument with both open and closed ended questions. The instrument was meant to collect information on the respondents' access to climate information; awareness, access to and utilization of ICTs among women in rural Kitui County. The tool was also designed to determine the role of ICTs in improving incomes and enhancing livelihoods.

4. Technology Description

For a long time, ICT was a generic reference to the 'technologies' that transfer old and new information [5] [6]. Greenberg [7] also shares in this view that ICTs are often categorized based on how long they have been in common use and to some extent, the technology used for the transmission and storage of information. Yet, Greenberg further identifies three types of ICTs, based on how long they have been around: New ICTs (computers, satellites, wireless one-on-one communications, mobile phones, the Internet, e-mail and multimedia); Old ICTs (radio, television, landline telephones and telegraph), and Really Old ICTs (newspapers, books and libraries).

For our purpose, we focused exclusively on New Technology, specifically the mobile phone. The rapid expansion of access to and use of mobile phones and cellular service in Kenya of recent has provided a new entry point into communities and a new avenue for dissemination of information. Aker and Mbiti [8] report that cellular phone service in Kenya tripled in size between 2006 and 2009 with over 17 million people now connected to the cellular network. Furthermore, the number of mobile phone owners within Kenya increased by 74% in this same period, with 47% of the population owners [8]. In many ways, this recent boom in mobile phone usage has been due to the overall rapid growth of the industry, which recognized the need for telephone communication in rural areas of developing countries and a new opportunity to expand wireless networks. Where obstacles of infrastructure and geography have prevented expansive landline phone networks from reaching rural areas, cellular towers have provided a wireless opportunity to reach customers in rural communities [9]. With this new network, the rural villages and urban centres are connected in new ways that have provided new opportunities for development. Indeed mobile phones seem to be at the forefront of development outreach strategies. And although the telecommunications sector is subject to free market dynamics in Kenya, a few private players continue to dominate the playing field. Safaricom, Airtel, Orange and, more recently, Equitel, dominate the mobile telephony terrain. The brighter side to this reality, however, is that these service provider companies reach out to hitherto marginalized areas like rural Kitui County, where the scoping study was undertaken to ascertain the appropriation of mobile telephony in addressing communal and individual problems.

5. Results

From the study, literacy levels were captured as summarized in Table 1.

Table 1: Literacy Levels

| Attribute | Frequency | Percent | Cumulative Percentage |
|----------------------------|-----------|---------|-----------------------|
| Can read and write | 9 | 45.0 | 45.0 |
| Can neither read nor write | 11 | 55.0 | 100.00 |
| Total | 20 | 100.0 | 100.0 |

Source: Researcher

On education, only 45% of the respondents, a majority of whom were women, could read and write. Presumably, this percentage has a bearing on their access to and use of ICT

mediated climate information. The rest could only access such information on second hand basis.

5.1 Climate Change Awareness

When asked about climate change, 100% claimed that they understood the meaning of climate change and that the effects of climate change had occurred. In terms of its effects, 95% stated that climate change had contributed to increased temperatures, 85% stated that it had contributed to floods and droughts, 75% claimed that it had contributed to erratic rainfall patterns, and 30% claimed that it had contributed to an increase in the wind's velocity. In terms of the effects of climate change on agriculture, 95% of the women agreed that it had contributed to reduced crop yields, 95% again stated that it had occasioned a surge in pests and diseases; 65% argued that it had lowered the quality of produce, and 40% argued that contributed to land degradation.

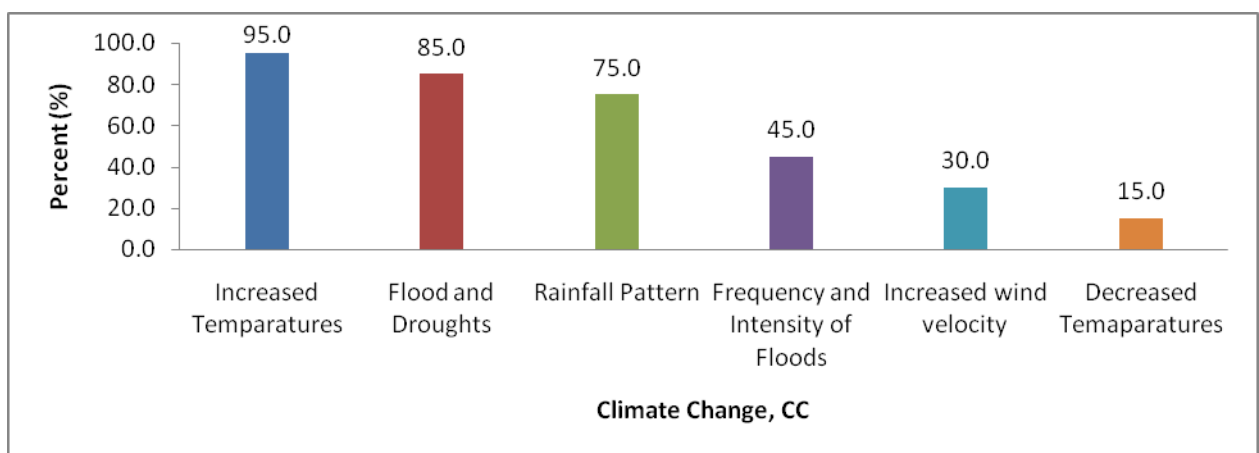


Figure 1: Climate Change Awareness

Asked about how they accessed this information, the respondents responded in ways that emphasized the powerful role that ICTs play in relaying climate change information. They were also asked how frequently they used the same sources. Details of their responses are respectively captured in Figure 3 and Figure 4, below.

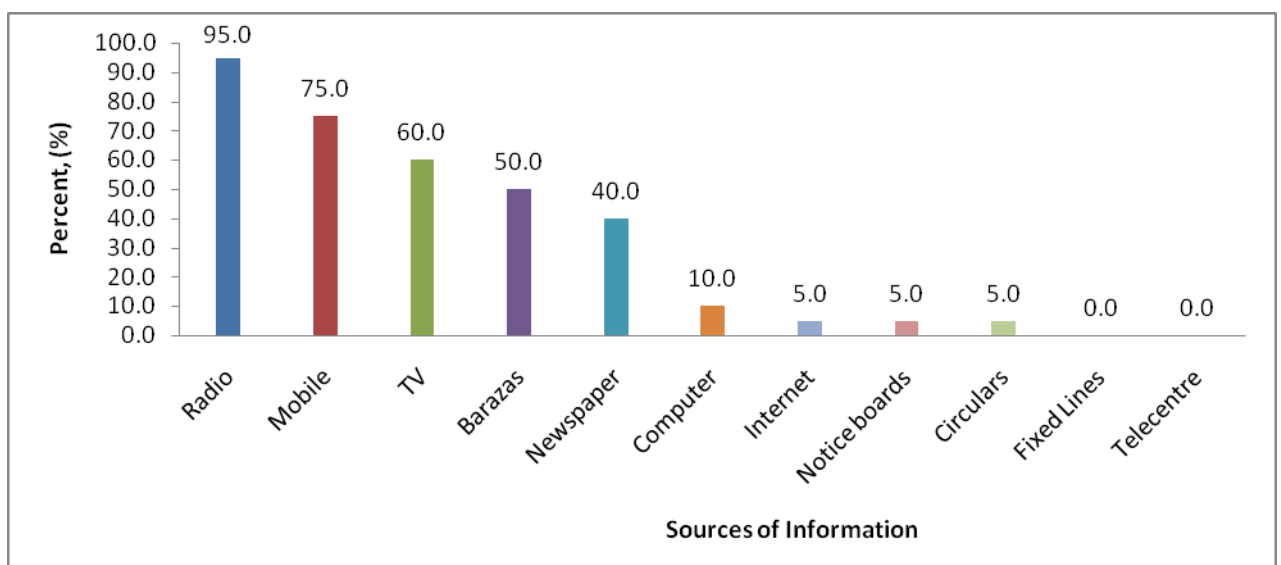


Figure 2: Sources of Information

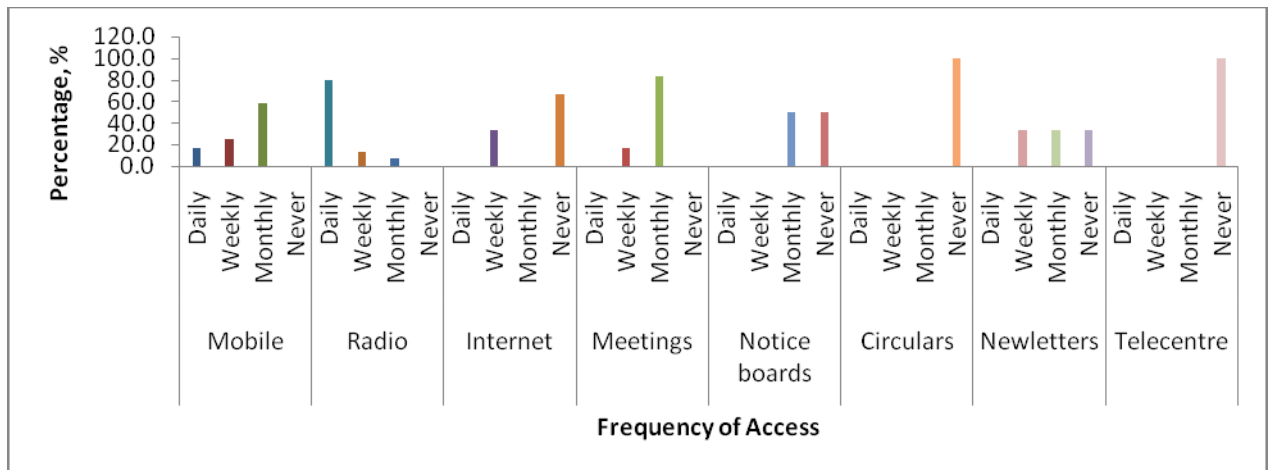


Figure 3: Frequency of Access

5.2 Interpretation and Discussion of Findings

While the sample size was quite small considering that ours was a scoping study, we find that the results can appropriately be scaled upwards. In a sense, access to useful information was considered in the case of those that had radio and mobile phones as their source. Those that had access to useful information on climate change were 2.16 times more likely to harvest a better yield in terms of quantity than those that did not have access to the information; keep healthier livestock and access cleaner water. Table 2 below captures the analytical details relating to radio and mobile phones:

Table 2: Access to Radio and Mobile Phones

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)

Coefficients:

| USEFUL INFORMATION ON CC | | | | |
|--------------------------|----------|------------|---------|----------|
| | Estimate | Std. Error | z value | Pr(> z) |
| (Intercept) | 1.233 | 1.766 | 1.261 | 0.0758 . |
| Access.radio | 1.504 | 3.023 | 1.444 | 0.0132 * |
| Access.mobile | 0.833 | 5.284 | 1.001 | 0.0422 * |

Source: Researcher

Those that had access to useful information on climate change are 7.12 times more likely to own livestock than those that do not have access to the information, all other factors held constant. Further, those that have access to useful information on CC are 1.08 times more likely to have skills that include modern farming methods and keeping savings than those that do not have access to the information, all other factors held constant. Those that have access to useful information on climate change are 1.21 times more likely to have access to water than those that do not have access to the information, all other factors held constant. Table 3 demonstrates this:

Table 3

| Coefficients: | | | | |
|---------------------|------------|---------|----------|----------|
| YIELD | | | | |
| Estimate | Std. Error | z value | Pr(> z) | |
| (Intercept) | 1.792 | 1.080 | 1.659 | 0.0971 . |
| Access.info.on.cc | 0.774 | 17.520 | 1.004 | 0.0970 . |
| LIVESTOCK | | | | |
| Estimate | Std. Error | z value | Pr(> z) | |
| (Intercept) | 16.653 | 672.003 | 1.736 | 0.9971 |
| Access.info.on.cc | 1.974 | 49.340 | 1.654 | 0.0532 . |
| SKILLS | | | | |
| Estimate | Std. Error | z value | Pr(> z) | |
| (Intercept) | 0.363 | 1.381 | 1.659 | 0.0198. |
| Access.info.on.cc | 0.074 | 32.927 | 1.078 | 0.0623. |
| WATER ACCESS | | | | |
| Estimate | Std. Error | z value | Pr(> z) | |
| (Intercept) | 11.637 | 1.199 | 1.835 | 0.0458 * |
| Access.info.on.cc | 0.193 | 11.923 | 1.172 | 0.0817. |

Source: Researcher

6. Business Benefits

From the foregoing findings, we establish that it may be possible to build closer partnerships between ICTs manufacturers and service providers to package information in formats and languages that resonate with the needs of rural communities. For instance, design of apps that can relay climate information on real time basis will go a long way in enhancing rural livelihoods, especially if such information from different stake-holders is digitized and made available on shared platforms. Secondly, our findings may form a basis for extended support for rural connectivity in the areas of wireless broadband connections or solar power systems. When this is done, improved livelihoods will be realized.

7. Conclusion

The researcher therefore concludes that since owning a radio or mobile phone significantly increases the likelihood of a person having access to useful information on climate change and having the information, one is significantly more likely to improve on their livelihood assets, ICTs helps in improvement of rural women's livelihood base. The lower significance levels can be attributed to the small sample size taken for the scoping study. This probes the researcher to go ahead with the study as it is known that increase in sample size increases precision.

The results of this scoping study demonstrates that the state of affairs of the women in the rural communities that inhabit Kitui County are illiterate and most lack access to ICTs and, as such, they engage in outmoded farming techniques that only serve to exacerbate the effects of climate change. The community have cut down trees and used them as firewood and the result has been the erosion of the top fertile soil. Continuous erosion of the top soil has not only led to the loss of nutrients, but also led to a significant drop in the capacity of the soil to retain water. As such, women in the community are reeling from the effects of famine-related food insecurity because the low water retention capacity has significantly reduced the crop growing season.

Lack of funds being the major cause of discontinuing with education indicates that the area is greatly affected by poverty.

Radio and mobile phones being the main sources of information, rural women will benefit more by having access to radio's and mobile phones so as to gain access to credible information on climate change, and hence improve their food, water security situation and increase their income

The rural communities in Kitui County have been relying on these traditional and unsustainable farming practices because they do not have access to information on sustainable farming techniques. More than 80% of the women in the rural areas have mobile phones, but they cannot access information on sustainable farming practices because of low literacy levels. Their only access to information on sustainable farming is through agriculture extension officers. However, most of them cannot access the agricultural extension officers whenever they are in need of advice because they do not have the wherewithal to visit their offices on a regular basis. Further, most of the women are not connected to the national electricity grid and, as such, they do not have televisions, internet, and computers. As such, they have been left to their own devices and are currently relying on outmoded and unsustainable farming techniques. The present study, therefore, will assess the role that ICT can play to counter the adverse effects of climate change on rural women in Kitui County focusing on mobile phones and radio technology.

The researcher hopes that the results of an in-depth study will be instrumental in marking a paradigm shift in the way rural farmers in other parts of Kenya tackle the issue of climate change. This paper, hence, should contribute to realizing enhanced productivity of climate sensitive livelihoods and competitiveness among rural women in Kenya towards enablement of sustainable access to livelihoods assets which to a large extent is constrained by the frequent recurrence of crises linked with climate variability.

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