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Strategic Women Empowerment through ICT Innovation Adoption: Case of Smallholder Rice Farmers in Nigeria

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Abstract

This paper summarizes the experiences of rice women farmers in Nigeria who were directly and indirectly affected by the bio-fuel and solar energy system projects under the much touted agricultural transformation agenda (ATA) initiated by the current Nigerian government. However, some of these women suffered displacement because their rice farms were converted to the government's green energy project sites. Others were humiliated by flood that washed away their farm land. Although the flood issue was attributed to climate change impact, a gender issue was still raised because these rural poor women could not raise their voice even to express their opinion and neither were they compensated for their farm land. The study capitalized on the economic, social, political and cultural implication of such displacement and conducted a situational analysis of how these women rice farmers whom some of them are not even formally educated are using mobile phones and some who are literate enough were signing up on the internet for email communication and social networking. This was done in order to demonstrate how such technologies can be used to facilitate wider audience communication and also registering their opinion in the public domain. Findings of this study support the result of similar studies in other countries where gender issues were raised towards unfriendly government policies. It shows that adoption of such ICT components was not only part of women empowerment strategy; rather it further opened a window for capacity building towards green economy

Keywords- Gender, ICT adoption, Smallholder farmers, Communication, Empowerment.

1.0 Introduction

Information and Communication Technologies are capable of providing the knowledge-base, technical platform and resources upon which women can be empowered (Umrani and

Ghadially, 2003). The use of ICT components either for skill enhancement or adaptive strategy represents adoption of technological innovation, especially for smallholder farmers operating in developing countries that have been using paper-based or face-to-face communication facilities (Filho et al., 1999; Weick, 2001; Rao, 2007). ICT adoption has, for example, driven significant changes by transforming the agricultural industries in developing countries which traditionally has not been innovative (Sassenrath et al., 2008). The reality, however, is that recognition of capabilities of ICTs does not equate its adoption or application.

ICTs and the constituent telecommunication facilities provide good information sharing platform through the provision of technical support for effective communication (Labell et al, 2008). Several studies have prescribed ICT adoption and application as the therapy that can heal communication inefficiency in a system be it a value chain, an organization, economic sector or even among individuals. It provides structure for empowerment, and support the provision of broader access and connectivity in rural areas, particularly in marginalized regions (ITU, 2007). Seeing ICT applications as adaptive strategy, Ospima and Heeks (2010) argued that its adoption should form the basis of capacity building especially when the users are developing copping strategies against policies or natural hazards. Umrani and Ghadially (2003) were very objective on the potentials of ICT application especially in agricultural sector. The authors argued that ICT adoption promotes gender equality and strengthen communication and networking among the less privileged. The authors went further to argue that adoption of ICT is one of the ways women develop resilience when they feel marginalized because it will enable them to come out from their shells.

Recognizing the link that exists between gender vulnerability, climate change and the achievement of government's developmental projects (Nhamo, 2014), the aim of this paper is to set out a conceptual foundation that links capacity building, women empowerment, copping strategy and ICT adoption. This is within a context of smallholder women rice farmers in a developing economy trying to transit to green economy, still characterized by poverty and marginalization, subject to the effect of both unfriendly policies and imminent climate change events.

Agreeing that empowerment and adaptive strategies can take different shapes and approaches, this study explored two dimensions of ICT integration in the farmers' livelihood and rice production value chain under climate change and the ATA. First and foremost the emphasis was on effective networking and communication opportunities offered to those women through ICT adoption and secondly, the climate change adaptation and coping mechanism acquired by them as a result of ICT adoption.

2.0 Background and Industry Context

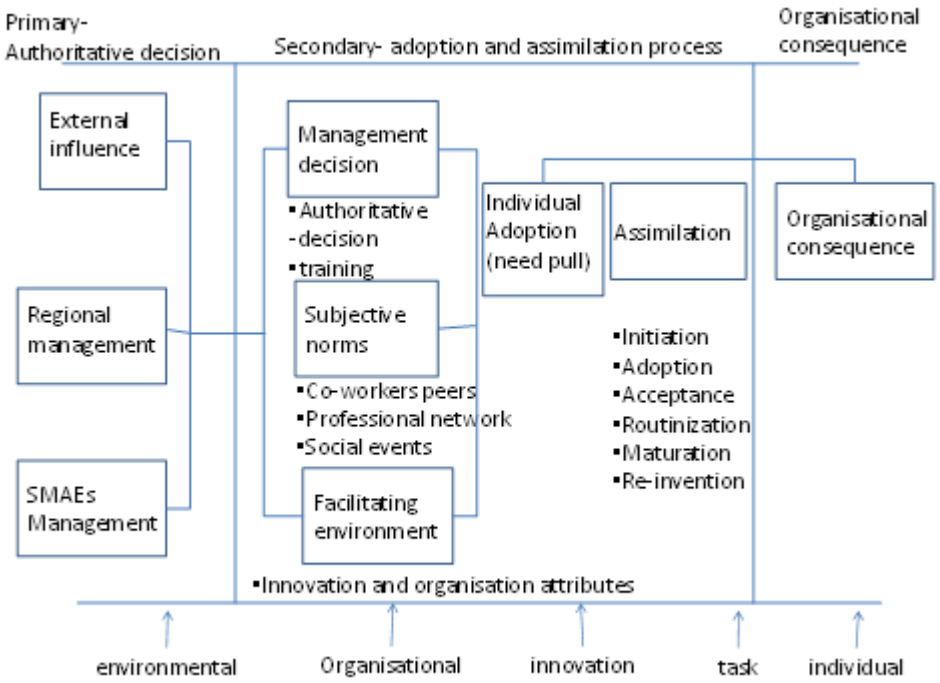
Confronted with the challenges and threats posed by climate change to biodiversity, the entire natural resources sector and, especially the agricultural sector and food chain, several

governments have initiated climate change mitigating and adaptive policies and projects to fight back (Nhamo, 2014). Such initiatives include: empowerment, capacity building, re-skilling, technological advancements, process and product innovation and so on. Conspicuous in some of those adaptive measures is the decision to transit to green economy. This is backed by several projects like bio-fuel production, feedstock production, solar energy systems, and wind farms. It is upon this premise that the Nigerian government having recognized the prevailing threats of climate change and associated risks to agriculture and food security initiated the bio-fuel and solar energy alternative project. This is under the much touted ATA of the current government. (Min. of Agriculture 2012) No matter how juicy and lofty the project was meant to sound, it was not void of criticisms. The people whose farm land was displaced could not help but to raise issues of marginalization and gender insensitivity on the side of the government, particularly in those areas where women farmers were mostly affected.

3.0 Underpinning Framework

This study is underpinned by a framework adapted from Wainwright and Waring (2007). The framework proposes that diffusion of innovation theory (Rogers, 1995) is not without its critics. Scholars such as Wainwright and Waring (2007), for example, claim that diffusion of innovation theories put forward heterogeneous statements that are vague and therefore needs to be addressed. The authors claim that enhancement to the theory appear only to produce a list of diffusion factors, which at times conflict with each other. We, however, consider this framework adequate within the present research context for two reasons. In the first place, this study tends to address ICT innovation adoption by women rice farmers in Nigeria as both women empowerment and as an adaptation strategy. Secondly, the original diffusion of innovation framework was based on the study of improved hybrid innovation within agricultural sector. For this reason, the framework represents a starting point for our research. The framework has social elements adaptable within the context of this particular research.

The framework presents (figure 1) a three-staged adoption process. It commences with the adoption decision stage. However, the third stage is the main focus of this study. It is at this stage that we want to gain an understanding on how ICT innovation adoption can possibly translate to women empowerment



Source: Adapted from Wainwright and Waring (2007).

Figure 1 Conceptual Framework Adapted for the Study

4.0 Research Methodology

This study addresses women's psychosocial and technical empowerment as brought about by adoption and application of ICTs innovation (McLean, 2008). It seeks to fill some gaps in gender studies especially as it pertains to rural women in less developed economies also struggling with effects of climate change. At this backdrop, this study adopted a multi-dimensional study approach to explore the adoption process of this ICT innovation. Analytical focus was placed on how the less literate among those women were able to use mobile phones to communicate with each other trying to sample each other's opinion regarding their farm land displacement. Of particular interest is how the more literate women among them were signing up to social networks to register their displeasure over the displacement of their farm land with the government's green growth project. They were able to voice out through social media on what they called government's insensitivity to the impact of flood on their rice production. Drawing from the underpinning framework (figure 1) the methodology combines the use of standard scales, interview extracts, questionnaire for data collection (Berger, 2001; Denzin, 2001; Aleke et al 2011). Among the key questions from the questionnaire were those addressing: current communication tools and pattern, perception of government green economy projects and climate change adaptation behavior

5.0 Results and Findings:

When the women rice farmers were asked to rate the a priori categories of perceived benefit and usefulness of ICT components to women empowerment, the result obtained is as displayed in Table 1. The ranking is in order of preference from 1-10 where (1) signify most impactful and (10) represent least impactful.

Categories	Frequency	Ranks
Communication	120	1
Seeking information	90	2
Family gain	41	6
Career progression	32	8
Social capital	75	3
Convenience	35	7
Personality/Status	55	4
Information storage/records	51	5
Entertainment	9	10
Marketing/e-business	11	9

Table 1 Frequency and Ranks of Categories of Benefits of ICTs in Women Empowerment and Capacity Building

Mirroring the result, it is clear that communication received the highest node of the respondents as being the most impactful benefit of ICTs in women empowerment and capacity building. However, whether the ranking also reflects the rate of adoption of ICTs innovation among the women farmers or other rural groups are still subject to further research. The result is further displayed by a chart (figure 2)

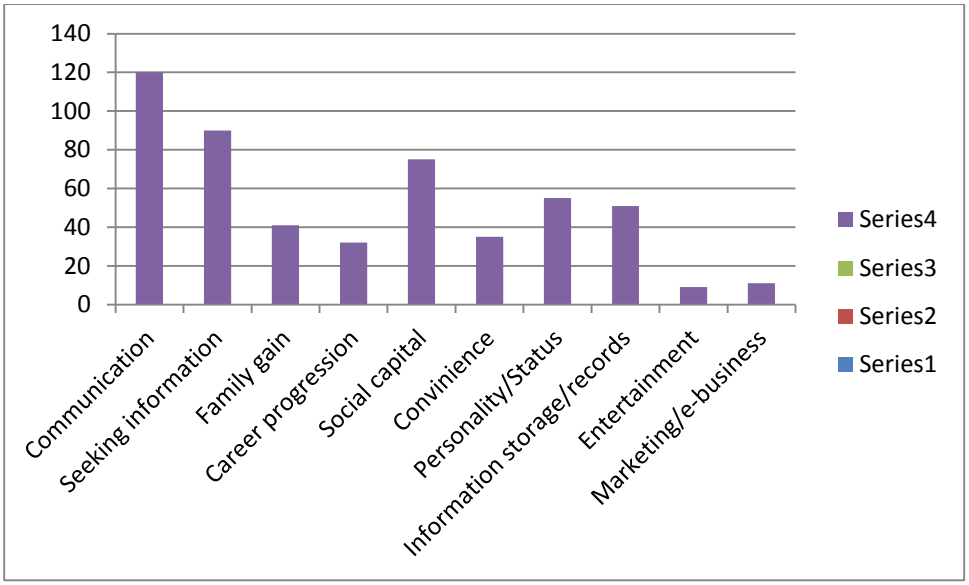


Figure 2: Ranking of perceived benefits of ICTs in order of impact.

Many scholars agree on the need to respect the perception of adopters of any innovation (Mark and Poltrock, 2004; Mallet, 2007; Aleke, 2010). Interviewees where further asked to express how useful the ICT innovation will be in assisting them to cope with climate change events. Responses obtained were translated to regression analysis as presented in table 2.

Responses from the interviews in this study is congruent to earlier work by Mallett (2007), showing that determining how human actors perceive a particular innovation is primarily a social process which is highly influenced by the perception of the adopters. The categories of benefits developed a priori were meant to represent a test of prediction and therefore served as good pointers when interpreting the data.

Table 2: Regression Analysis of the Impact of the Benefits of ICT in Women Empowerment

Categories	**B**	**standard error of b**	**β**	**T**
Communication	50.17	2.42	0.31	7.63***
Seeking information	30.5	0.15	0	8.59***
Family gain	4.01	0.42	0.1	0.01
Career progression	2	0.01	0	2.44**
Social capital	15.82	0.73	0.35	6.53**
Convenience	2.7	0.73	0.19	3.55***
Personality/Status	5.66	5.84	0	3.73**

Information storage/records	5	0.3	0.3	4.14***
Entertainment	0.49	0.74	0	3.22**
Marketing/e-business	2.01	0.06	0.27	1.36

Paramount in the result displayed in table 2 is the decision column "T" that returned the impact of factors at ***P<0.001, **P<0.01 and *P<0.5. Result shows that "communication", "seeking information" "convenience" and information storage/records" are multi-modal most impactful categories of benefits. This suggests to the fact that ICT adoption is influencing how information is shared. Worthy of note is that although there is element of usage of ICT in business transactions by the women under study, it is not yet impactful. This may probably mean that the number using it for business at the moment is still insignificant or there are some constraints to usage for business. This is also subject to further studies.

6.0 Discussion

The essential aim of this section i is to draw together the voices of the respondents in order to understand how social dynamics impact on the ICT innovation adoption process. For this reason, it was felt that a reflection on earlier work on data interpretation put forward by Alvesson and Deetz (2000), which include; intensifying interpretation, language sensitivity, historical context and politics is essential at this point. We recognize that language does not transport meaning outside the context it was displayed. It is worthy of note that through the crystallisation and immersion of the categories we identified that communication was the primary need of the group under study. Possibly because their traditional channel of communication has been inefficient and they were not able to network or cope with climate change events. So what does this imply? To give answer to this question let us elaborate further on the findings of this study. Both the ranking analysis and the factor analysis suggest that there is need for complete overhaul of communication mechanism among these women group who are dire need of voicing out their opinion each time they felt marginalized. This will be realized if they are platforms that enable them to network easily among them and at the same time provide access to sharing of information. This platform will not stop at that, it needs to be a structured communication mechanism that will empower the women to interact with other stakeholders such as government, Non-Governmental Organizations, research institutions, academics, social activists, civil society, cultural stewards, investors and proprietors in other value chains. This study also recommends that to ensure successful and sustained ICT innovation adoption as empowerment and adaptation strategy, there is a need to re-conceptualise the innovation diffusion process to incorporate more viable social and cultural imperatives of the people who are expected to adopt the innovation.

7.0 Conclusion

This study has actually revealed that there are actually potential benefits of ICT adoption in women empowerment. The discussion captured the three principal dimensions where ICT

adoption and application has enabled the women farmers to strategically confront their gender issues and challenges. The reflections are on increased used of hardware and software particularly mobile phones and internet access (technology and infrastructure). Secondly, the human factor where the women farmers' creativity, diversity and education were enhanced. The third reflection is on what this paper described as institution value of the ICT innovation. Here the leadership, government and policy makers (stakeholders) were dressed in a proper robe as a result of communication efficacy from ICT components application. The assumption here is that ICT application has the potential to empower the women farmers and help them to conquer their communication poverty and also stabilize them strategically for climate change adaptation. This study, even though not void of limitations has proved that ICT adoption as a process innovation has that capacity building potential. Such is a good platform for policy formulation when addressing gender issues.

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