

FEMALE-LED AGRARIAN HOUSEHOLDS AND THE QUESTION OF SUSTAINABLE LAND AND FOOD SECURITY IN AN EMERGING ECONOMY: EVIDENCE FROM TULA BAULE

Daniel Ibrahim DABARA^{1*} and Augustina CHIWUZIE²

1*Corresponding Author: danieldabara44@gmail.com; +447512826003
School of the Built Environment, Real Estate Programme,
Faculty of Technology, Design and Environment,
Oxford Brookes University,
Oxford, United Kingdom

2. Department of Estate Management,
Federal Polytechnic Ede,
Osun State, Nigeria

Abstract

Purpose: This study examines the nexus between land tenure security (LTS) and food security (FS) in female-led households of Tula Baule agrarian settlements.

Design/Methodology/Approach: The study used a qualitative research design based on the constructivist paradigm. The researchers conducted in-depth interviews with female household heads cutting across the three “yaati” (villages) of Tula Baule. Analysis of data collected from the interviews was done employing transcriptions, creating semantic networks and utilising thematic content analysis.

Findings: The study revealed that all but a few respondents believed that they had LTS based on “Feloh’s” (ancestral gods’) supremacy without recourse to documentary evidence of ownership. Similarly, all but a few participants do not have access to three square meals per day throughout the study period. The study also found a strong relationship between LTS and FS in the study area. Participants indicated a lack of motivation to invest in farms that lack LTS, consequently affecting their agricultural productivity and FS.

Practical Implication: It provides an empirical base to equip policymakers with valuable information for policies relating to females' access to land and food in agrarian settlements.

Originality/Value: This study is the first to empirically analyse land and food security in female-led agrarian households of Tula Baule in an eclectic context.

Keywords: Access to land; female-led household; food sustainability; gender equality; land tenure; Tula Baule.

1. Introduction

“Land is arguably the most important natural resource to man” (Dabara, et al., 2019. P. 1). This statement is in connection with the fact that land plays a vital role in achieving man’s three basic needs: food, clothing, and shelter. It is also the primary means of livelihood for most people, especially in developing countries. Hence, land ownership as regulated by existing Land Tenure Systems is significant. The concept of land tenure defines the relationship between land and man regarding its control, access and use. Payne (2001) defines land tenure as “the mode by which land is held or owned, or the set of relationships among people concerning land or its product”. The vital role which land tenure plays in the social, political, legal, economic and cultural life of a people or a nation cannot be overemphasised. Land tenure systems differ from country to country but generally take the form of customary, statutory, informal, and religious land tenure structures (Ojo, et al., 2021; Chiwuzie & Daniel, 2021). The concept of Land Tenure Security (LTS) is vital for administering land issues in any nation. It also has a significant impact on other sectors such as agriculture, housing and Real Estate Investment Trusts, among others (Daniel, 2021). However, this paper focuses on the relationship between LTS and Food Security (FS).

1.1 Nexus between Land Tenure Security (LTS) and Food Security (FS)

The nexus between land tenure security (LTS) and food security (FS) has been receiving attention from both academics and researchers in different climes (Lawal et al., 2019). The need for such studies in especially developing economies was observed to be more glaring in the face of the ongoing COVID-19 pandemic. The coronavirus pandemic appears to have posed a significant threat to FS globally, which is more amplified for female-led households of primarily agrarian settlements. This is because of the restriction of government movement regulations, which consequently impacts agricultural activities. In developing economies, access to secured land is a crucial determining factor to FS and food sustainability at the household level (Holden & Ghebru, 2016; Lawal et al., 2019). The subjects of LTS and FS have been assessed as individual subjects and in relation to one another. It has also been evaluated with other factors such as economic development, poverty, and agricultural productivity, among others, by previous studies such as Doken (2015) and Han et al. (2019). However, these studies did not focus on practical and sustainable options for the African female-led agrarian households, thereby creating a gap in the literature. This paper examined how access to secured land affects and is affected by FS in female-led households of Tula Baule agrarian settlements in Nigeria to fill this gap. Farmers in agrarian settlements of developing economies such as Tula Baule are mostly subsistence farmers striving to provide for home consumption, not on a commercial scale. This explains why the study was focused on the household level. Furthermore, the paper addressed the problem of gender bias/inequality regarding access to and tenure security of farmlands for women.

According to the Food and Agricultural Organization [FAO] (2009), tenure rights were a set of rules and norms that determine who can use what resource, under what conditions, and for how long. Agarwal's (1994) definition of tenure right (as cited in Dokken, 2015, p.107) states that "Tenure rights define to what extent a household or an individual can gain access to the benefit

streams generated by land and provide a set of benefits that have a positive impact on livelihoods outcomes". LTS was seen by International Fund for Agricultural Development [IFAD], (2015, p.1) as "people's ability to control and manage land, use it, dispose of its produce and engage in transactions, including transfers". Holden & Ghebru (2016) asserted that the significant sources of land tenure insecurity include land encroachment, land grabbing and land redistribution by the government. According to Chigbu (2019), women tend to have land rights that are weaker than their male counterparts. Even though in most agrarian settlements, women are usually saddled with the responsibility of providing food for their respective households through subsistence farming. The World Bank report (2011) revealed that globally, it was observed that female farmers do not have access to sufficient secured land for agriculture. This has motivated countries such as Vietnam, Peru, Rwanda and Ethiopia, to implement specific measures geared towards mitigating the challenges of women's access and rights to land to ascertain FS at the household level (Holden et al., 2011; Holden & Ghebru, 2016). Studies have provided empirical evidence that there is a correlation between access to secured land rights and improved agricultural productivity, which consequently leads to FS (Petrescu-Mag, 2019; Keovilignavong & Suhardiman, 2020).

The FAO (2010, p.8) defines FS as "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences for an active and healthy life". The FAO report further explained that household FS is "the application of this concept to the family level, with individuals within households as the focus of concern". It was observed that over two billion people have food insecurity worldwide, with Africa having the highest prevalence. This result vis a vis the Sustainable Development Goal (SDG) of achieving access to food and zero hunger for all people (SDG target 2.1) by the year 2030 is quite troubling (FAO, 2019). The food insecurity index, as indicated by FAO' report for the year 2018, suggested that Africa has the highest level of food insecurity (52.59%) followed by Asia (22.8%) while Northern America and Europe had the least (8.0%). The report further revealed that food insecurity was higher in females than in the male gender. Factors affecting FS include economic slowdowns and downturns, climatic conditions, conflicts, inflation, level of education, household income, employment, and family size among others (Frongillo et al., 2017; Smith et al., 2017; FAO, 2019). The recent COVID-19 pandemic is likely to be another devastating factor affecting global FS in the near future. The effect of FS on man includes adverse health and psychosocial impacts, among others.

Concerning FS, it is expected to be sustainable at all levels, especially at the household level. Sustainability can be generally defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Smith, 1998). The concept of sustainability is an all-encompassing concept, including but not limited to the environment, economy and human society. The subject of sustainability had been investigated by previous researchers such as Oladeji (2014). Findings from the study suggests that there is a lack

of FS in some African countries. Yi et al (2020), on the other hand, found that Jiangsu province in China had a troubling decline regarding the Water-Energy-Food relationship in the study area. Furthermore, in terms of population, Africa is adjudged to be the second-largest continent globally and, sadly, the most impoverished region (Oladeji, 2014). There is a gross mismatch between population and available/sustainable FS in many African nations. The population explosion experienced merely is faster than food production and agricultural development. The United Nations Department of Economic and Social Affairs [UNDESA] (2012) reported that Africa has the lowest life expectancy at birth as well as the life expectancy of 54 years (for adults), which is the weakest in the world. Oladeji (2014) stated that over 50% of Africans live below \$1.2 per day. It was revealed that by 2030, Africa would need at least 50% more food, 45% more energy and 30% more water (United Nations, MDG report, 2011). All these are indicators that developing economies, most notably African nations, are far from achieving sustainability, especially food, compared to its counterpart (the developed countries). This calls for all stakeholders (comprising of the government, NGO's, religious groups, corporate organisations as well as individuals) to put their hands on deck to ensure sustainability in respect of food access to achieve the SDG Goal target 2.1 globally.

1.2 Empirical Findings Regarding LTS and FS

Researchers and academics have investigated the nexus between LTS and FS worldwide with different findings. In Southeast Asia, the perception of rural farm households regarding land and FS was investigated. It was found that there was a uni-directional causal linkage between the two variables (Keovilignavong & Suhardiman, 2020). However, the study did not consider female-led households. In China, Liu et al. (2020) found that protected farmlands through zoning regulations could increase food production by 2.96% should other factors such as irrigation efficiency, cropping system, climatic conditions and soil fertility remain favourable. The study only focused on zoning regulations as a yardstick for tenure security; gender was not considered as a primary focus. This present study extends the frontier of knowledge in this field by hitherto considering the female gender as participants for the study. In another earlier similar study conducted in the same country, Han et al. (2019) revealed that the primary instrument for achieving LTS was the "formal title certificate" issued by the government. The authors further asserted that to increase female empowerment related to land, viable and sustainable gender-friendly policies need to be promulgated to narrow the gender gap. In Eastern Europe, Petrescu-Mag et al. (2019) suggest an existence of a strong correlation between agricultural land and FS in the study area. In Australia, it was found that FS was linked to productivism farming approaches that governments, farmers and the industry endorsed (Hamblin, 2009; Lawrence et al., 2013). In the US, the correlation between climate change and FS was examined by Bizikova et al. (2015). Findings from the study revealed that FS was impacted by climate change, land management and other critical infrastructure. Results from the aforementioned studies cannot be generalised because of geographical locations, dynamics in the respective economies where the studies were domiciled, gender of participants and the methodologies adopted for each of the studies.

Vast literature focusing on emerging economies of primarily Africa also provided insight into the linkages between LTS and FS. The report provided by Kanayo et al. (2013) asserted that Africa is observed to be the most impoverished region globally; this has constituted a great hindrance to the development of the region in terms of infrastructure, land-related issues, and FS as well. Regardless that the female folk are more involved in farming to provide for the family than their male counterpart, women in most communities are denied access to secured lands (Odoemelam et al., 2013; Dokken, 2015). In another study conducted by Chigbu (2019), the author examined women's role in impeding their access to land. Findings suggested that what was termed "brother complex" and "self-hurt" were the primary predictors of women's lack of access to land in the Southeastern part of Nigeria, which gives undue advantage to their male counterparts. This agrees with similar studies conducted by Agarwal (2003), Deere et al. (2003), World Bank (2011) and Dabara et al. (2017), which provided similar results. In terms of the correlation between LTS and FS in Africa, Deininger & Jin (2006) found that LTS influences investment incentives in agricultural lands in Ethiopia. This corroborates the findings of Chirwa (2008), which was conducted in Malawi. Holden & Ghebru (2016) also found a positive correlation between LTS and FS. The authors (Holden & Ghebru) further revealed that in Africa, LTS and FS were negatively impacted by social conflicts. Lawal et al. (2019) also found that land conflicts such as the Tula-Awak land contestations negatively impacted food production in the study area. In Ghana, it was found that land management practices positively impacted smallholder farmers' households in terms of food consumption and poverty alleviation (Issahaku & Abdulai, 2020).

In Nigeria, all land is vested in the government under the Land Use Act of 1974 (Ankeli et al., 2015a, 2015b; Dabara et al., 2012; Ogunba et al., 2021). Individuals are granted limited tenure rights to such land by the government through the customary land tenure system (taking to cognisance the culture of the people in the community of lands designated as rural lands and administered by the local government chairmen of the respective local government areas). The statutory land tenure system is administered on lands designated as urban land by the state governors of the respective states (Ankeli et al., 2017a; Dabara et al., 2019). The FS and food sustainability agenda are possible in Nigeria. The natural blessings in terms of natural resources, human resources, and so on place Nigeria on the right pedestal for sustainable development in all ramifications. Some of the options available to Nigeria were pointed out by renowned scholars such as Dabara et al., (2016) and Oluwatayo & Ojo (2016), who argued that development in the agricultural sector is a crucial option for FS in Nigeria. For this to become a reality, all stakeholders must focus on addressing problems/challenges bedevilling the nation in terms of environmental, socio-political and economic. Key among these challenges are the issues of abject poverty, gender bias policies and agricultural infrastructure deficit. The options and way forward for Nigeria will include mainly revitalising the agricultural sector, which can play a crucial role in the Nigerian sustainability agenda as well as promulgating gender-friendly policies on access to farmland. This is necessary because it has been found that women are more involved in food production at household levels; and that there is a nexus between LTS and FS (Dokken, 2015).

Similarly, in Nigeria, LTS was found to significantly impact production in the Agricultural sector (Dabara et al., 2019). As observed by scholars, other factors influencing FS include the size of a household, the size of a family's cultivable land, and the income level of the household's head (Abu & Soom, 2016). The consensus observed in the literature concerning LTS and FS suggests a causal linkage between the two variables. The explanation given is that farmers with lands that are accordingly secured are motivated to invest maximally with a resultant effect of increased food production. Quite the opposite is observed for unsecured lands.

The motivation for this study borders on filling the identified gap in the literature, which is the dearth of studies that focused on LTS and FS in female-led households in communities where agriculture is the primary occupation and means of sustenance. Furthermore, women tend to have land rights that are weaker than their male counterparts in the African context. Even though in most agrarian settlements, women are usually saddled with the responsibility of providing food for their respective households through subsistence farming. This becomes a source of concern because LTS is a significant determinant of land-related investments.

This study aims to examine the relationship between LTS and FS from the perspective of African female-led households, using Tula Baule agrarian settlements as a case study to provide information that could aid in achieving sustainable LTS and FS. The study's research questions include: Are lands cultivated by female-led households in Tula Baule agrarian settlements secured? What is the level of FS among the selected households? How can sustainable LTS and FS be achieved in the study area? The remaining part of the paper is structured as follows: After the introductory part, section two (2) presents the methodology adopted, while section three (3) presents' results and discussions; the paper closes with a concluding remark.

2. Methodology

Nigeria is located in West Africa; it shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. It has 36 states and a capital territory (Abuja). It is divided into six geo-political zones. It is referred to as the "Giant of Africa" because it has vast land (about 923,768 km²) and a population of about 200 million people (the largest in the continent of Africa). Nigeria has a tropical climate with two distinct seasons (dry and rainy seasons). Agriculture is the primary means of livelihood for a more significant percentage of Nigerians. In Nigeria, farming is usually done on a subsistence basis using simple traditional farming tools. Over 60 percent of Nigerians are still living in agrarian settlements, with most living in small and modest farming households. Most of these households are headed and led by male elders. However, a few are being headed and led by females.

The study area is located in the Kaltungo Local Government Area of Gombe State, populated by Tula Baule people of the Tula tribe. It lies between latitude 9.8709⁰N and longitude 11.5134⁰E; it is located about 100 kilometres from Gombe, the state capital. It was the first headquarters of the Tangale-Waja Native Authority in the year 1915. The study area has vast fertile agricultural land for farming which is the principal occupation of its inhabitants. Tula Baule comprises three Yaati

(villages), namely: Yaa Bwadi, which have four Bintu (settlements) comprising Biladira, Bilakwate, Kwallam and Bwatai. Yaa Balira has three Bintu, which are Lobuse, Loture and Lofine. The third Yaa is Yaa Daktibe comprising of the Bintu Taule, Yatibe and Bilakwale. The respondents for this study were drawn from all the Yaati and Bintu. All the yaati and Bintu are functionally identical and similar in relation to issues of land tenure, agriculture, language, custom, traditions, beliefs and norms. The study focused on LTS and FS at the household level rather than global, continental, national or regional levels. This is because the participants are all subsistence farmers whose primary intent of farming is to provide food for their immediate households and not for commercial purposes.

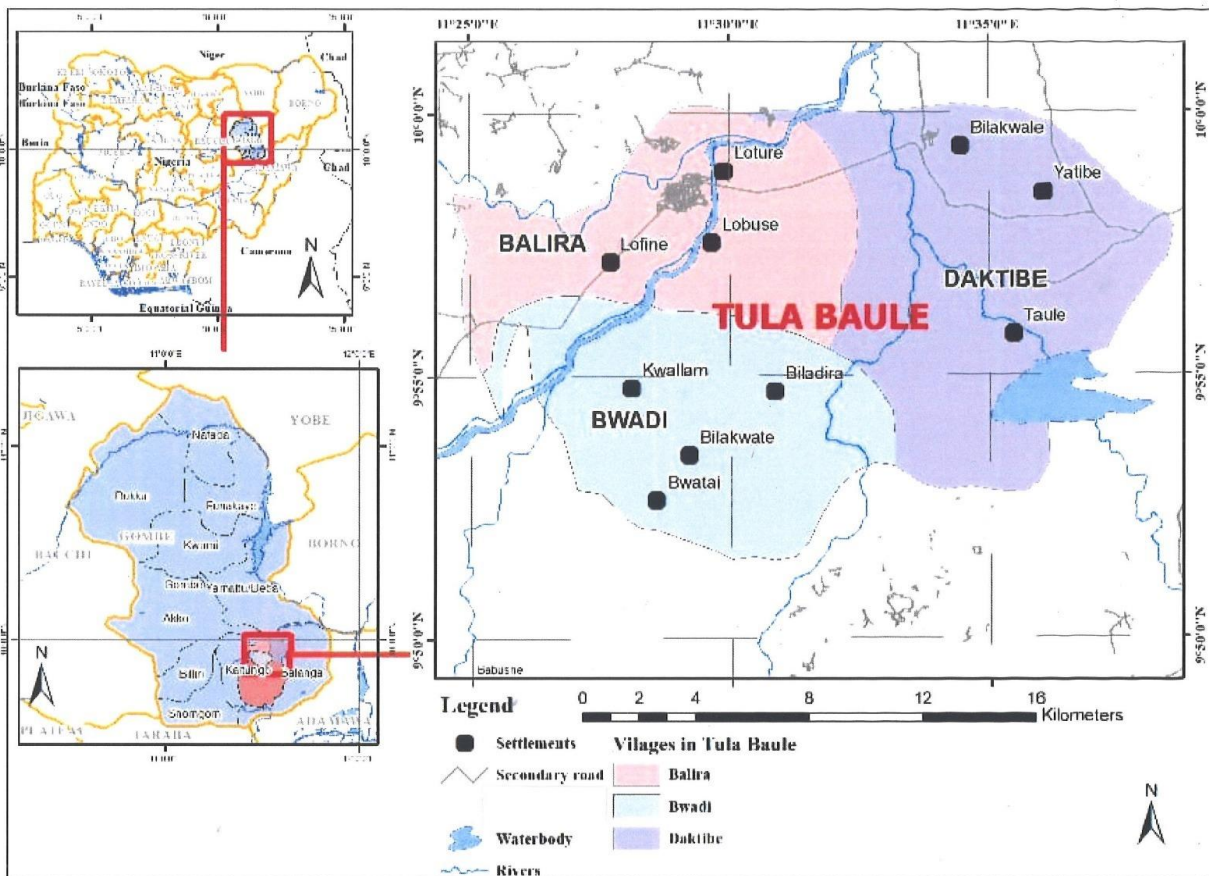


Figure 1: Map showing settlements and villages in Tula Baule

This study used the qualitative research design. The study was based on the constructivist paradigm in line with an earlier study conducted by Guba & Lincoln (1994). The researchers conducted in-depth interviews (audio-recorded) with female household heads in the three Yaati (villages) and ten Bintu (settlements) of Tula Baule. The respondents were drawn from individual Bintu. Female household heads who were ascertained to be the oldest in their respective Bintu and had led their separate households for not less than five years were purposively selected to participate in the research work. Interviews of participants were concluded when a point of data saturation was reached (a point where no new information was received but a reoccurrence of the answers

previously given by the prior interviewees). At this point, a total of nineteen participants across the three Yaati had been interviewed. From Yaa Bwadi, three participants were selected from Biladira and two from Kwallam and Bwatai, respectively. From Yaa Balira, two participants were selected from Lobuse, Loture and Lofine, respectively. Furthermore, from Yaa Daktibe, two participants were also selected from Taule, Yatibe and Bilakwale.

The interviews were conducted between February and March 2020. The interviews were conducted in the Tula language (the native language spoken by all the interviewees) because most of the participants do not understand the English language. All the interview sessions were duly recorded, and the responses of the respondents were subsequently translated to English and then transcribed using the Atlas.ti software. From the relevant details offered by the interviewees, the researchers were able to develop themes and patterns from the available data. Similarly, in line with previous studies such as Maxwell (2005), relevant quotes from the interviewees were included to substantiate the findings in the study.

The primary data source for this study was one-on-one interviews conducted by the researchers with the participants. As a prelude to the discussions, the participants were duly informed of the purpose and procedure of the interview. They were also informed about the protection of their confidentiality. With the permission and consent of the interviewees, the sessions were audio-recorded using mobile phones; this was to ensure a complete and accurate transcript. A structured interview guide was used to elicit rich data that could subsequently be used in qualitative analysis. The open-ended questioning approach encouraged the participants to respond to the questions freely. Probing questions were sometimes used to make the participants elaborate and clarify issues. Most of the interview sessions lasted between 15 to 20 minutes. The questions asked borders on the level of LTS among female-led households of Tula agrarian settlement, the level of FS among the selected households, and the relationship between LTS and FS in the study area (see Table 1).

Table 1: Research questions and interview guide questions

Research Questions	Interview guide questions	Purpose of the question(s)
Preliminaries	To what Yaati (Village) do you belong?	To identify and select participants.
	Which is your Bintu (settlement)?	
	To what Lo (Hamlet) do you belong?	
	Who is the oldest female household head in your Lo?	
	How long have you been the household head of your family?	
What is the level of LTS among female-led	What type of land tenure system do you practice?	

households of Tula agrarian settlement?	How did you acquire your land?	To determine the level of LTS of the participants.
	Do you have documentary evidence to prove ownership of your land?	
	How secured is your land?	
	What can you say in respect of your ability to control and manage land, use it, dispose of its produce and engage in transactions, including transfers?	
What is the level of FS among the selected households?	What are your experiences with respect to food availability, access, utilisation and sustainability in 2019 (January to December)?	To determine the level of FS in participants' households.
	Do you, at all times, have physical and economic access to sufficient, safe and nutritious food that meet your dietary needs and food preferences for an active and healthy life?	
	Do you always have access to three square meals a day (that meets the presiding question's requirement) from January to December 2019?	
How can sustainable land and FS be achieved in the study area?	What do you think can be done to attain and sustain land and food security in Tula Baule community, especially among female-led households?	To identify and examine factors that could facilitate LTS and FS in the study area.
Is there any relationship between LTS and FS in the study area?	In your opinion, is there any relationship between LTS and FS?	To determine the relationship between LTS and FS in the study area.

Analysis of data collected from the field was done in three phases. Firstly, the translated audio recordings were transcribed verbatim using the Atlas.ti software to enable the researchers to carry out accurate analysis and subsequently interpret the data obtained. The researchers reviewed the interview transcript to identify recurring regularities and quotes and phrases that were relevant to the study. These transcripts were coded accordingly and categorised using the Atlas.ti software. Secondly, the researchers used coding to establish relationships between and across the transcribed data by creating quotations and appropriate codes, which were eventually linked accordingly. Thirdly, the researchers created semantic networks from the quotations and codes, thus giving proper interpretations and drawing out inferences from the analysed data employing thematic content analysis.

3. Results and Discussion

Analysis and discussion of the data obtained for the study were done in four subsections. The first subsection addressed significant findings concerning LTS. The second subsection presented the results and discussion concerning FS. The third subsection discussed the issue of sustainable LTS and FS in the study area, while the fourth subsection presented and discussed data on the relationship between LTS and FS in the study area.

3.1 Level of LTS among female-led households of Tula Baule agrarian settlements

The first research question of the study, which concerns the level of LTS among female-led households of Tula Baule agrarian settlement, was addressed in the first subsection.

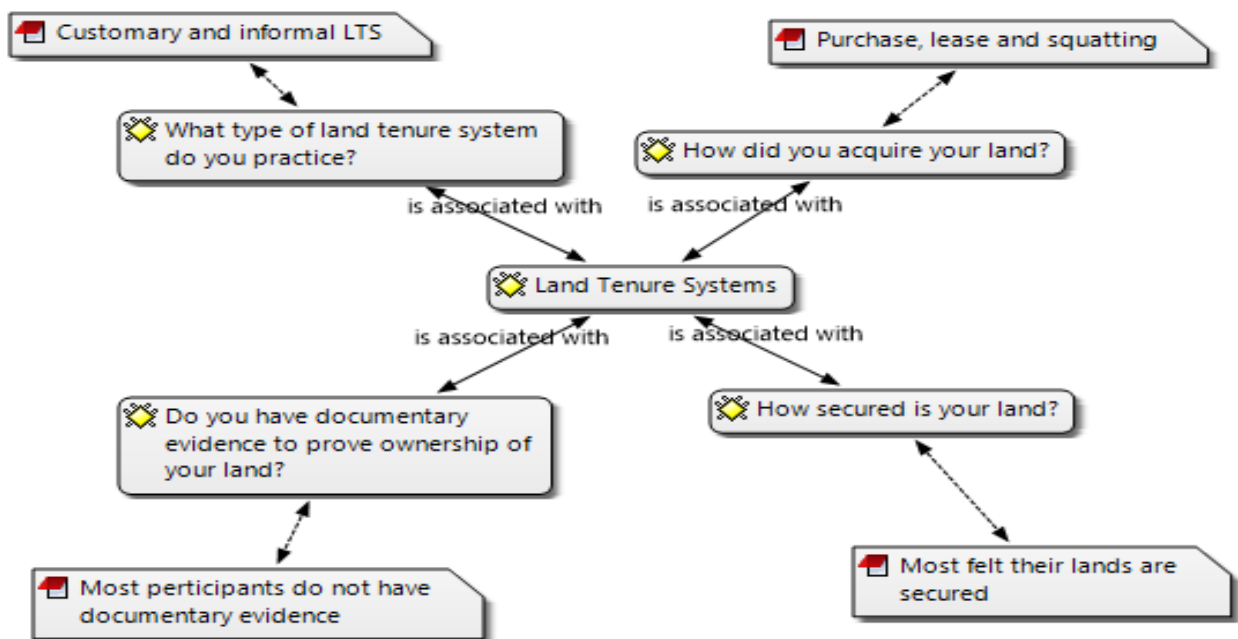


Figure 2: Semantic networks on land tenure security among female-led households of Tula Baule agrarian settlements

Four LTS themes emerged from the interviews which were analysed using the Atlas.ti software. This was shown on the semantic networks in Figure 2; the four themes include the type of tenure system practised, means of land acquisition, availability of documentary evidence on land acquired, and perception of land security by the participants.

From the participants' responses, which was further depicted on the semantic networks in Figure 2, it was revealed that firstly, the dominant land tenure systems practised in the study area were mainly the customary and informal tenure systems. This finding is congruent with similar African based studies such as Lawal et al. (2019) and Dabara et al. (2019). Secondly, the participants identified three means by which they acquired their land: purchase, leasing, and squatting. It was revealed that none of them acquired their land through direct inheritance (except for lands inherited

by their husbands or male children). In the literature, it was observed that most African communities do not allow women to acquire land through inheritance. In studies such as Dokken (2015), Lawal et al.; Dabara et al., and Chigbu (2019), there is consensus that the girl child cannot inherit her fathers' land in the African context.

Similarly, a widow cannot inherit her late husband's landed property. It will either be inherited by her male children or her male in-laws. As seen in this present study, it is easier for the female gender in such communities to access land through purchase, leasing or squatting. Thirdly, it was revealed that most of the participants do not possess any written documentary evidence to support their claim of land ownership. When asked whether they felt their land was secured or not, surprisingly, most of the respondents answered in the affirmative regardless of documentary evidence. One of the participants have this to say

“The lands are secured because if anyone tries to take it, the elders and mai anguwa (clan head) will intervene”. (Interviewee number 5, February/March 2020).

She believes that the elders and clan-heads who are custodians of culture and traditions also play a role in land security. In a similar study, Dabara et al. (2019, p.56) asserted that the feeling of LTS, regardless of documentary pieces of evidence, could be because “in such communities, contestation and conflicts over land ownership are minimal since almost everyone knows each other and which land belongs to which family”. Another participant claims that the “gods of the land” also plays a significant role in LTS in the community.

“We do not have the problem of tenure insecurity in this village. You cannot claim someone else's land. Except if you want Feloh (ancestral gods) to strike you dead or put sickness on you”. (Interviewee number 14, February/March 2020)

This present study suggests that the belief and fear of the Feloh (ancestral gods) contributed immensely to the feeling of LTS in the study area. Most interviewees believe that Feloh always metes out judgement to land trespassers. This contradicts the findings of some researchers such as Cheng et al. (2018) and Han et al. (2019), who found that LTS was achieved through securing of formal title certificate.

3.2 Level of FS among female-led households of Tula Baule agrarian settlements

This subsection addressed the study's second research question, which focused on the level of FS among the selected households of participants in the study area.

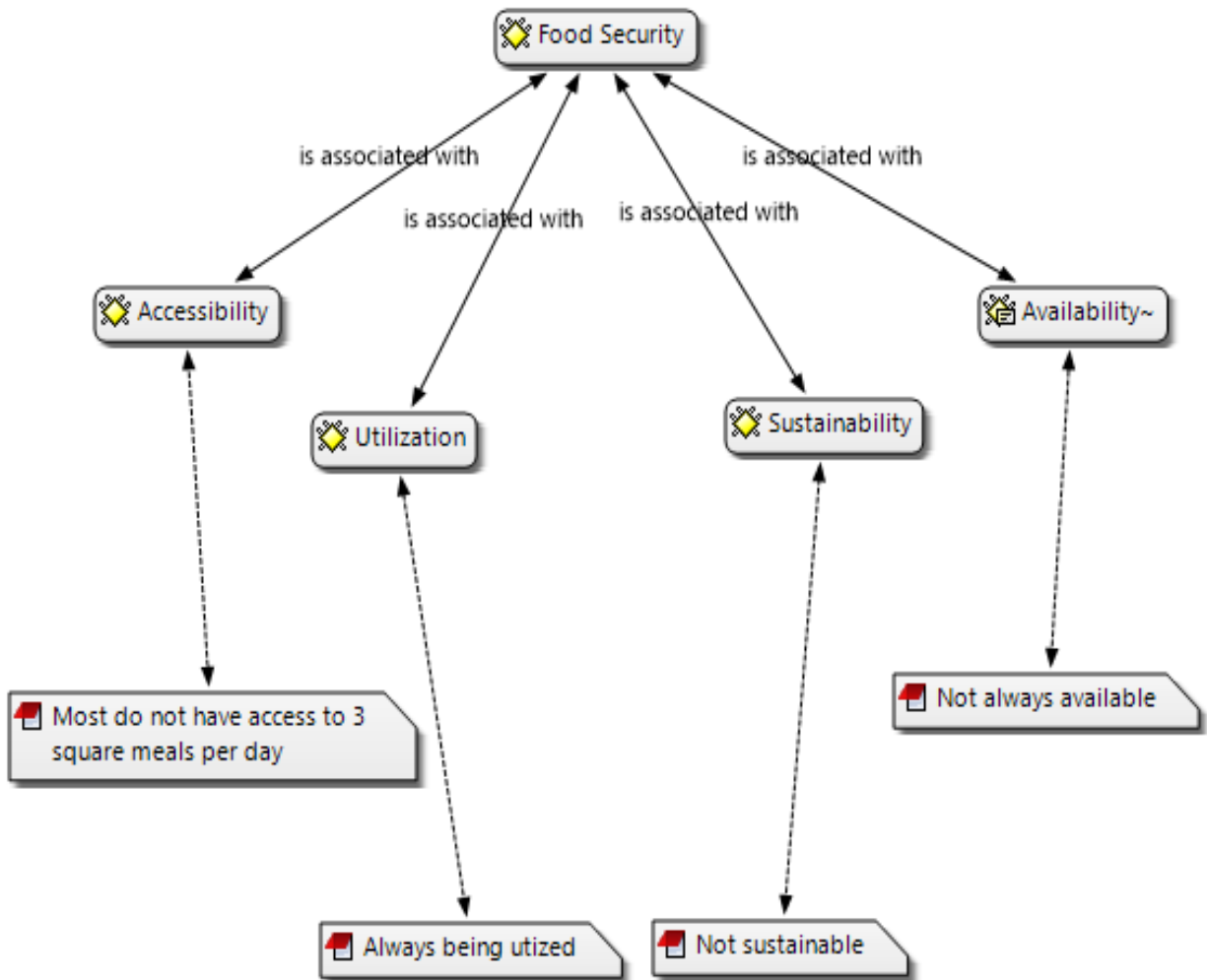


Figure 3: Semantic networks on food security among female-led households of Tula Baule agrarian settlements

Four FS themes emerged from the interviews depicted on the semantic networks in Figure 3. The four themes include food availability, food accessibility, food utilisation and food sustainability. However, this study focused on food access at the household level, in line with similar studies (Ingawa, 2002; Babatunde et al., 2008). When the participants were asked whether their respective households had access to three square meals per day from January 2019 to December 2019 (the study period), most participants indicated that they did not. However, a few of them revealed that they did have access to three square meals per day within the study period.

From the responses, it was observed that most of the participants did not have access to three square meals per day within the study period.

“Sometimes we eat three times a day, but most of the times it's either once or twice a day”.
(Interviewee number 3, February/March 2020)

“Most of us in this village live in poverty; we hardly have three square meals per day”.
(Interviewee number 13, February/March 2020)

This finding agrees with Babatunde et al. (2008), revealing that over 70% of Nigerians do not have access to three square meals per day. Similarly, Dabara et al. (2019) found that only 25.1% of respondents in a study conducted in Southwestern Nigeria had access to three square meals per day. This situation is quite pathetic; there is a need for all stakeholders to put their hands on deck to ensure that the Sustainable Development Goal (SDG) of achieving access to food and zero hunger for all people (SDG target 2.1) by the year 2030 is achieved. However, very few of the respondents attest that they had access to 3 square meals per day. For example, one of the participants had this to say:

“Our family have access to three square meals per day, except when anyone does not feel like eating. Not because we do not have food but for any personal reason like sickness, or you do not like what was cooked or when you engage in fasting for religious purposes”.
(Interviewee number 7, February/March 2020)

3.3 Sustainable Land and FS among female-led households of Tula Baule agrarian settlements

This subsection addressed the third research question of the study, which centred on sustainable land and FS among female-led households of Tula agrarian settlements.

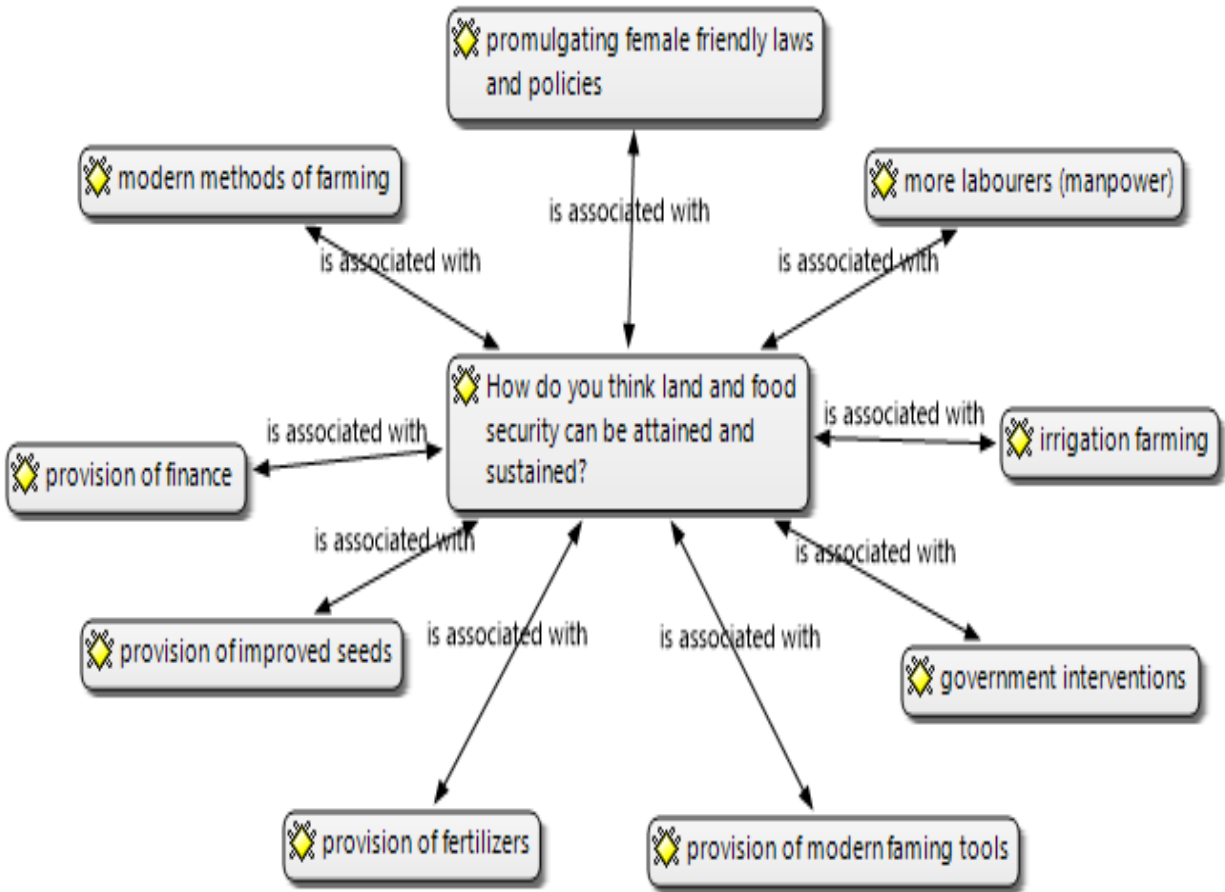


Figure 4: Semantic networks on sustainable land and food security among female-led households of Tula Baule agrarian settlements

Nine sustainable land and FS security themes emerged from the interviews depicted on the semantic networks in Figure 4. The nine themes include promulgation of female-friendly laws and policies; provision of improved seeds/seedlings; modern method of farming; government intervention; provision of fertilisers; irrigation farming; provision of finance; labourers/human resources; and modern farming tools.

When asked what could be done to ensure sustainable LTS and FS in the study area, the participants provided the following suggestions. Some participants believed that if the female gender were given the same privileges as their male counterpart for a land inheritance, it would go a long way in mitigating the situation, hence leading to LTS.

“The custom that a woman cannot inherit land either from her father’s family or from her husband’s family should be abolished; this will give women a sense of land security which will encourage them to plant perennial crops and make other investments on such lands”. (Interviewee number 8, February/March 2020)

Another interviewee thought that widows should be protected from bad in-laws who usurp their rights by forcefully collecting their lands for selfish reasons.

“There should be strict laws and policies to protect widows from their in-laws who forcefully take away the lands left for them by their late husbands”. (Interviewee number 4, February/March 2020)

The participants indicated a desire for the community leaders and the government to promulgate female-friendly land-related laws and policies. Others opined that the provision of improved seeds/seedlings could lead to sustainable FS. All the participants are subsistence farmers who still use the traditional farming method; it was suggested that the introduction of modern farming methods could be a precursor to sustainable FS. Government interventions in finance, agricultural loans, provision of fertilisers, among others, were some of the suggestions made by the participants. Some of the participants believe that introduction and encouragement in irrigation farming and the provision of modern farming tools will significantly mitigate the precarious situation experienced by the female-led households in the study area. It was suggested that financial intervention for particularly female affected households should be made available in terms of soft loans and interest-free loans. Removing gender inequalities and discrimination and the introduction of modern agriculture will improve FS in especially female households of emerging economies.

3.4 The Relationship between LTS and FS in Tula

This section addressed the fourth research question of the study, which determined the relationship between LTS and FS in the study area. Participants' responses suggested a relationship between LTS and FS in the study area. Some of the participants ascertained that they could not plant trees or perennial crops because of the uncertainties associated with their farmlands (for example, they are not sure if the family will allocate the same piece of family land to them for cultivation the next farming season). Others (especially widows) showed fears that their male in-laws might forcefully take the family farmland from them, negatively impacting their investment decisions on such lands. Studies such as Deininger & Jin (2006), Dokken (2015), Holden & Ghebru (2016), Lawal et al. (2019) and Dabara et al. (2019) also revealed that there is a strong correlation between LTS and FS. The implication is that for a sustainable FS, there is a need first to address the issue of LTS in all households.

4. Conclusion

This study examined the relationship between LTS and FS from the perspective of African female-led households in Tula Baule, Nigeria. The study investigated whether lands cultivated by female-led households in Tula Baule agrarian settlements are secured and whether such households have FS within the study period. The importance and significance of LTS and FS are well established in agrarian settlements of emerging economies of primarily African context. While a school of thought posited that possession of documentary evidence of ownership in the form of title

registration provides LTS and consequently FS, another school of thought submitted that LTS could be achieved regardless of lack of title registration or documentary evidence. Findings from this study revealed that all but a few respondents believed that they had LTS without recourse to documentary evidence of ownership. They believe that Feloh (ancestral gods) will mete out judgement to land trespassers; hence, the feeling of tenure security without recourse to written documentary evidence. This agrees with Abdulai & Owusu-Ansah (2014), who asserted that documentary evidence of ownership was not necessarily linked to land tenure security in a study conducted in Ghana. However, it disagrees with the study conducted by Han et al. (2019), where documentary evidence in the form of formal land title certificates was the primary criteria for LTS. Similarly, all but a few respondents do not have access to three square meals per day throughout the study period. The study also found a strong relationship between LTS and FS in the study area. This is congruent with findings from the literature in studies such as Dokken (2015), Holden & Ghebru (2016), Dabara et al. (2019) and Keovilignavong & Suhardiman (2020). The underlying dynamics between LTS and FS nexus have been consistent in the literature that this study also highlighted. We believe that LTS for female-led agrarian households of Tula Baule must be improved (by eradicating female gender bias/inequality in the land allocation process in Tula Baule) if the LTS and FS nexus is to be positively achieved sustainably.

The findings in this paper can plausibly be used for policy implications. The implication of this study for especially developing economies in Africa is that to ensure FS for especially agrarian households, farmers need to have LTS as this encourages investments in the secured land, which consequently translates to availability and access to food for household consumption. The study also provided information that can be used by stakeholders such as the government, philanthropists, NGO's and concerned individuals in making informed decisions and policies that could lead to sustainable FS among, especially female-led households. It was recommended that governments and policymakers need to promulgate female gender-friendly policies to encourage and facilitate land ownership and access to females, thereby removing gender inequalities and discrimination in the land allocation process. Similarly, financial intervention for particularly female affected households should be made available in terms of soft loans, interest-free loans; and, the introduction of modern agriculture in agrarian settlements of primarily developing economies to enhance the possibility of their achieving the SDG goal of access to food and zero hunger for all people (SDG target 2.1) by the year 2030.

The study, however, has some limitations, it focussed on only female-led agrarian households, and its geographical coverage was limited to only Tula Baule agrarian settlements. The implication of this is that the findings of this study cannot be generalised. This is because similar studies conducted on different geographical locations, gender, cultures etc may present different results. Hence it is recommended that for further studies, researchers can consider including all genders in the study as well as having a broader geographical coverage.

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