

Relationship between Livelihood Coping Strategies and Livelihood Outcomes for Smallholder Farmers in the Bawku District of Northern Ghana

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Abstract

This research paper is a result of a study that analysed the relationship between livelihood coping strategies and livelihood outcomes for smallholder farmers in Bawku East District of Northern Ghana. The descriptive research design was chosen to permit obtaining and describing of information concerning the land acquisition structures/processes; the available livelihood assets, how these could be transformed through innovative livelihood coping strategies towards achieving sustainable livelihood outcomes for the rural dwellers who lost land in the Bawku East District of northern Ghana. The correlational design was utilised to permit investigation of the relationship between land acquisition and livelihood outcomes among smallholder farmers in Bawku East District of northern Ghana. 400 individuals participated in the study in four villages in Bawku District. The villages were selected because they had been affected by large scale land acquisitions for community development projects. The study found out that the nature of land acquisition process is not modelled to improve livelihood coping strategies adaptation among the farmers in Bawku East District; that non-agricultural specialization is key to better livelihood outcomes due to consequences that come along with land acquisition. The adaptation of better land acquisition structures through non-agricultural diversification approaches is desirable for good livelihood outcomes; but its aftermath is associated with land conflicts in the Bawku East District. The use of family heads, traditional chiefs, and law courts for settlement of conflicts are essential in resolving land conflicts in Bawku East District.

Keywords

Livelihood Coping Strategies, Livelihood Outcomes, Smallholder Farmers,

1. Introduction

It is an undeniable fact that large scale land acquisition by Government and influential individuals for development projects/facilities and residential/commercial infrastructure in Ghana is on the upsurge. The receiving end of the effect of land acquisition on household livelihoods is those living on or proximal to the acquired lands. Ideally, Carney (1998), Alhassan et al. (2018), Mallick (2019) and Agbley (2019), posited that an underlining principle of the Sustainable Livelihood Framework (SLF) is that those sufficiently endowed with assets especially land, are in a better position to make positive livelihood choices. This implies that several range of options avail rural households to choose from in order to maximize their achievement of well-being rather than being forced into any given livelihood coping strategy (Lyatuu et al., 2015).

Livelihood coping strategies consist of a situation where individuals combine various activities necessary to accomplish their livelihood objectives. They are also known as adapting and coping strategies. Coping strategies have been characterized “as a short-term reaction to a particular shock”, and adaptive strategies “as a long-term change in behavior actions because of a shock or high stress” (Singh & Gilman, 2002). Adaptive strategies might be generally pertinent to understanding a peri-urban setting, as individuals and families change their strategies to benefit as much as possible, from or to adapt to, changes achieved by the metropolitan turn of events (Brook et al., 2000). Research conducted by Bonye et al. (2020) on “Urbanization, agricultural land-use change and livelihood adaptation strategies in peri-urban Wa, Ghana”, revealed the following findings on livelihood strategies for land-lost smallholder farmers at Wa in the upper west region of Ghana. As the usage of land persistently changes in the community areas of study, reduction of land sizes for crop cultivating activities or farming due to pressure of land acquisition, smallholder farmers must resort to strategies that are relevant for livelihood improvement and sustainability. While some of these livelihood strategies involve innovative agricultural practices within the capability of the farmer, others engage in non-agricultural livelihood strategies. The farmers resort to different forms of strategies often encompassing agricultural diversification, migration, innovation of agricultural practices, and livelihood diversification. Regardless of the fast-changing economies of the community under study, and due to the incessant urbanization, some of the respondents indicated that they resort to land-based jobs to achieve a positive turnaround, for instance, quarrying, sand mining, land deals and, sometimes, limited farming activities just to keep the house running. The continuously decreasing area of land-lost to smallholder farmers has driven farmers into developing any small land that is accessible for production. Mumuni, E., &

Oladele, O. I. (2016) defined “rural livelihood diversification” as “the process by which households construct a diverse portfolio of activities and social support capabilities for survival and to improve their standard of living”. These activities require some level of innovation and entrepreneurship to be able to improve the rural dwellers’ livelihoods and create enabling business opportunities and incomes for them. The portfolio of activities helps to influence livelihoods outcome of rural farmers through decisions they make about the management of their wealth or capital resources in their household. Livelihood diversification of natural resources available to the rice farmers can also help them cope with disasters and vulnerabilities.

2. Literature Review

2.1. Agricultural Diversification

Similar research conducted by Abass et al. (2014) in peri-metropolitan Kumasi, found out that, due to how land for agricultural purposes is reducing, cultivation is done on any land that one is privileged to acquire including one along mini lands close to the riverside, those available at building sites, open spaces and backyard farming. Abass et al. (2014) further reiterated that farmers divert into livestock farming to survive, and this has led to intensive livestock farming on any small piece of land available. Their study further revealed that a certain farmer indicated that he went into intensive livestock farming after losing a bigger proportion of his private land and developed a strategy to use the small land available for livestock rearing. This has improved his life and has become the major source of livelihood due to limited land for crop production. According to Lin (2011), crop diversification improves soil fertility, pests and disease control; ensure stable yield and diversity of nutrition and for better health. It also serves as a substitute for the use of chemicals to maintain soil fertility and pest’s control. Truscott et al. (2009) considers crop diversification as an environmentally better alternative to the control of parasites and in the maintenance of soil fertility in agriculture; and is more agronomically stable and resilient. It is also associated with reduced weed and insect pressures, reduced need for nitrogen fertilizers (especially if the crop mix include leguminous crops), reduced erosion (because of cover crops inclusion), increased soil fertility and increased yield per unit area (Lin, 2011). Diversified cropping systems also provide habitats beneficial to insects and help to reduce the number of pests by rendering host crops less apparent for colonization by parasites. Shoffner and Tooker (2012) attributed the increasing adaptation of crop diversification because of its support for species mixtures over monoculture which offers reasonable ways of controlling pests and diseases. Crop mixtures increases natural enemies of insect pests who breaks the disease cycles, suppressing weeds and volunteer crop plants thereby creating a dilution effect by reducing resource concentration and modification of the microenvironment within the crop canopy. This makes pest and diseases pathogen penetration more difficult; and contributes to local biodiversity espe-

cially when farmers grow indigenous crop varieties. One of the benefits of crop diversification is soil fertility improvement which is a foundation of sustainable and productive farming systems (Lin, 2011). While most farmers have sought alternative livelihood coping strategies, there have been some exceptions to this trend among African farmers. According to Eshetu et al. (2010), involvements in alternative income-generating activities besides agriculture had yet to be prioritised or adopted in some parts of Ethiopia. The United States Agriculture Department (2015) purported that the relevance of an alternative livelihood coping strategy differed from farmer to farmer, reducing as farm output increases. Livelihood's analysis focuses on the structures and systems that determine people's asset base and the resultant livelihood coping strategies and outcomes. These livelihood coping strategies and outcomes depend on the stress and shock encountered and the vulnerability context (Nasreen et al., 2013). In Ghana, villages on the within or at the edge of forests belts utilize timber and nontimber forest products for a wide array of livelihood activities. Any negative impact to these forests equally threatens the livelihood of these forest-dependent villages (Amisah et al., 2009).

Engagements such as illegal mining and illegal logging, however, degrade the environment and thereby undermining the sustainability of forest-dependent livelihoods. Mulika, T., & Routray, J. K. (2016) assess the livelihood sustainability of smallholder livestock farmers in the Northeast Region of Thailand; were three livestock farming systems; ruminant (RM), non-ruminant (NRM), and mixed livestock farming (MF) were analysed. A total sample size of 205 households was sampled in a District that focused on livestock farming. Linear discriminant analysis was used to identify significant contributing factors to sustained livelihood outcomes of the farmers. The findings were that, for RM and MF, the income-expenditure ratio was identified as a significant factor, and for NRM the significant factor was adequate experience with livestock rearing. The results suggested that livestock farming was a good livelihood coping strategy for smallholder farmers.

2.2. Innovation of Agricultural Practices

If soils are well-managed, it helps lower pest pressure, optimize water use by plants, and improve overall crop yields. However, there was some opinion that crop diversification had a positive impact to climate change effects through the ability of local flora (as opposed to monoculture) to hold carbon thus generating less carbon dioxide. This therefore implied that crop diversification contributes in one way or the other to all the three main principles of CSA by improving: productivity, livelihood outcomes, resilience of farming systems and reducing carbon dioxide emissions. Makate et al. (2016) demonstrated how crop diversification impacted on two outcomes of climate SMART agriculture: increased productivity (legume and cereal crop productivity) and enhanced resilience (household income, food security, and nutrition) in rural Zimbabwe. Us-

ing data from over 500 smallholder farmers, the researchers found that crop diversification depends on the land size, farming experience, asset wealth, location, access to agricultural extension services, information on output prices, low transportation costs and general information access. Their results also indicated that an increase in the rate of adoption improved crop productivity, income, food security and nutrition at household level. Their findings indicated that the crop diversification was a viable climate smart agriculture practice that significantly enhanced crop productivity and consequently resilience in rural smallholder farming systems. They, therefore, recommended wider adoption of diversified cropping systems notably the less diversified for greater adaptation to the ever-changing climate. Focus group interview discussions from the study showed that Tindanas and family heads were giving out more lands in the area for the construction firms to engage in sand winning, mining and stone quarrying. The miners caused destruction to agricultural lands in very big proportions, leading to huge displacement of lands for farming activities. A farmer in Nakori, said he lost his farmland to the sand miners, and he had to change strategy and do any casual work available.

2.3. Livelihood Diversification

Livelihood diversification is defined by Ellis F. (2000) as the process by which rural families adopt to a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living. Scoones (1998) considers livelihood diversification as a choice to invest in order to accumulate assets aimed at coping with temporal or permanent livelihood adversity. Ross et al. (2009), considers diversification as the spreading of investment across assets which protect livelihoods from extreme exposures. Literature offers many reasons why such diversification and or integration occurs; among these might be diminishing returns on increasing investment in certain activities. Similarly, subsistence farmers may wish to minimize risk ex ante by participating in activities that generate imperfectly correlated returns (Ellis, 2000; Barret et al., 2001). Several studies have examined livelihood and diversification. However, what constitutes livelihood, seemingly, remains unanswered by available literature due to the vagueness of the concept. It is clear from the researchers, that livelihood refers to how assets and their access interact through activities to determine how people make a living (Chambers & Conway, 1991; Scoones, 1998; Jansen et al., 2006; Groenewald & Bulte, 2013; Nielsen et al., 2013). In summary, livelihood therefore refers to activities done by people to earn a living.

The various definitions above agree to the fundamentals of the concept contained in Chambers and Convey (1991) who facilitated the popularity of the concept in the literature that; rural and urban dwellers engage in activities that guarantee their consumption demands. Livelihood does not only mean income generating activities, but self-sustaining activities, a construction of which this paper has adopted. Livelihood strategies are a portfolio of activities pursued to

achieve a livelihood goal (Ellis, 2000; Jansen et al., 2006). The livelihood activities available to a household vary based on location (OECD, 2007), but their goals may be similar. Some scholars like Barrett et al. (2001) advanced the discourse on livelihood categorization making it possible for comparative analysis of the livelihood coping strategies of rural and urban households. Livelihood diversification is broadly determined by necessity culminating from issues surrounding; access to land, land fragmentation, declining soil fertility, ill health and natural disasters and choice which is represented by proactive initiative to educate household members to position them better for nonfarm job opportunities or to save money to invest in nonfarm business. Livelihood diversification motivated by choice is perceived as a luxury that removes such bracket of people from the poor and vulnerable people of the world. Diversification influenced by necessity is often determined by seasonality and its effect on income variability, labour and consumption smoothing problems; risk spreading or coping strategies; credit market failures and asset endowment strategies (Ellis, 2000).

The process of constructing different portfolios of activities to achieve livelihood goals is termed diversification (Ellis, 2000; Adepoju & Oyewole, 2014). Diversification as considered by Barrett et al. (2001) is a norm because very few people live on a single source of income. Although the focus of the study was on rural Africa, it nonetheless holds for urban areas as well. Livelihood diversification depends on one's capital and willingness to innovate which generates earnings for the household (OECD, 2007). Diversification is an important source of income for households in rural areas (Assan, 2014) and urban areas in developing countries. The pattern of diversification is gradually reducing from the dependence on agriculture by households in most African countries and developing countries in general (OECD, 2007; Babatunde & Qaim, 2009 in Adepoju & Oyewole, 2014). Barrett et al. (2001) posited that the question as to why study the origin of diversification is, "Why do households diversify?"; and it is in the answer to this question that the determinants of diversification can be understood. Diversification is triggered by underlying factors within and outside the household; while the push and pull factors account for the multiple livelihood activities of households (Hilson, 2010; Nielsen et al., 2013; Groenewald & Bulte, 2013; Adepoju & Oyewole, 2014). Ellis (2000) for instance observed that diversification is a resultant effect of threats to current livelihood activities and opportunities presented by prospective activities. The desire to overcome the problem of seasonality and risk reduction in natural resource-based livelihood explains why households diversify, especially among the rural households in post-liberalisation era (OECD, 2007; Barrett et al., 2001). The push factors for diversification are supported by the "de-agrarianisation" argument—that agriculture cannot guarantee the livelihood of rural dwellers (OECD, 2007). Diversification is the result of incomplete markets, especially in rural areas (Barrett et al., 2001); due to the production-consumption disequilibrium which forces households to diversify. In perfect markets, it is possible for exchanges, production and consumption needs of households to be met with little difficulty. Empirical studies

on livelihood, which is based on the utility models, make assumptions regarding the behaviour of markets that; households diversify because of the need for a stable consumption pattern and security known as consumption smoothing (OECD, 2007). Diversification is therefore a self-insurance against any future loss of income (Barrett et al., 2001). The economies of scope in production also explain why households diversify, because resources of the household would generate higher per unit profit when spread across multiple outputs rather than on one (Barrett et al., 2001).

Livelihood diversification among smallholder farmers is often seen in three main faculties or portfolios including on farm diversification comprising of mixed cropping and mixed farming; off-farm and nonfarm activities and a cocktail of activities. In a study on livelihood diversification in rural households in the Oyo state of Nigeria, human capital was seen to be significant at 1% in influencing household's degree of diversification while natural capital, social capital, physical capital and financial capital were all significant at 5% in determining diversification. A related study concluded that non-agriculture-salaried strategy was less diverse compared with agriculture-biased livelihood strategy which was highly diverse. The empirical examination of the determinants of livelihood and diversification presents findings which are inconclusive and contain mixed results (Rahut & Scharf, 2012).

Rahut and Scharf (2012) employed the utility function approach to study diversification and with this approach, livelihoods were categorized into farm, off-farm, low-return non-farm, high-return non-farm, among others. They asserted that households diversify if the returns to the non-farm livelihood strategies were greater than the farm livelihood strategies. They found that labour endowment increased the probability of diversifying into sectors of high-return non-farm sector relative to engaging in only agricultural self-employment. Additionally, male-headed households were more likely to diversify into off-farm wage employment, high-return non-farm activities and both low and high returns livelihood sectors. Further, they found education as a significant determinant which enabled people to diversify into high remunerative livelihood sectors. Other significant determinants of livelihood were land ownership, the age of the head of a household and proximity to market. The finding on proximity resonated with OECD (2007) assertion that location considerably provides the opportunity for people to diversify their livelihood opportunities (OECD, 2007). Labour endowment defined as the number of adult persons in a household, increases the likelihood of diversification into higher returns livelihood relative to a livelihood in agriculture (Rahut & Scharf, 2012). This is supported by Barrett et al. (2001), which households endowed with more labour and limited land would diversify into off-farm livelihood activities. This is similar to utility maximization decision whereby a person must sell his more endowed resources to have more utility of his less endowed resources—re-aligning needs to maximize utility. Apart from the self-admitted limitation by the authors in respect of their ca-

tegorisations and data, the study focuses on the rural economy and says little about urban livelihood activities. [Adepoju and Oyewole \(2014\)](#) adopted the multinomial logit model like [Rahut and Scharf \(2012\)](#) to study livelihood determinants and the effect of diversification on welfare in Nigeria by categorising livelihoods into the farm, non-farm and both farm and non-farm. They found out that age, age squared, and land ownership were significant determinants of non-farm livelihood while the household size was a significant determinant of farm livelihood. Gender however was an insignificant determinant, unlike the findings of [Rahut and Scharf \(2012\)](#) which explains some of the mixed results. However, [Adepoju and Oyewole \(2014\)](#) addressed only the determinants of main livelihood coping strategies, but not the determinants of livelihood diversification and the spatial dimension. [Smith, H. E. et al. \(2008\)](#) classified livelihood diversification into five clusters—casual off-farm, traditional livestock, combination of staple crops and traditional livestock, integration of fruits and exotic animals and specialisation in regular off-farm livelihood strategies—to study livelihood diversification among other objectives in the Keiyo East District of western Kenya. Like previous studies, the age and gender of the household head; years of education, among other factors were found to be significant determinants of diversification. Unlike in [Rahut and Scharf \(2012\)](#), land access was not a significant determinant, although it is inappropriate to directly compare these studies due to the different focus and categorisations of livelihood.

In Ghana, few studies addressed some dimensions of livelihood diversification. [Kuwornu et al. \(2013\)](#) stated that, most farmers diversified into the agro-processing and non-agro processing using the multinomial logit. Gender, farm size and household's income were identified as significant determinants of diversification into agro-processing and non-agro-processing while education was only significant for agro-processing. [Assan \(2014\)](#) also examined same subject in the Dangme West and Akuapim Northeast Districts but focused more on livelihood activities with limited statistical analysis. There were a number of other studies on livelihood in Ghana focusing on gender ([Hilson & Banchirigah, 2009](#); [Hilson, 2010](#); [Okah & Hilson, 2011](#); [Porter et al., 2011](#); [Hirons, 2013](#); [Tsikata & Yaro, 2011](#)) and theoretical explanation for livelihood. None of these addressed the subject matter of this paper as the empirical literature focused on socio-economic determinants as well as livelihood-related determinants of diversification.

The category of factors that significantly accounts for the larger proportion of diversification is non-land-based livelihood strategy. The study by [Samuel and Sylvia \(2019\)](#) revealed that 39% of respondents resorted to construction, trading and provision of services. This was corroborated by the findings of [Abass et al. \(2014\)](#) on a comparative report in Kumasi wherein he thought that the development of metropolitan territories leaves occupants with no option other than to change from land-based livelihood activities to non-land-based livelihood activities. Diversifying from agricultural land cultivation to other forms such as

trade and provision of services becomes a significant livelihood source of work, particularly for women to survive. It is therefore normal to see several forms of SMEs offering various services to their clients for livelihood improvement. The SMEs include Tailors and dressmakers, woodwork, brick laying, and others required to improve livelihood. In a similar finding, Marchetta's (2011) concurs from his study in Northern Region on reduction in farming areas and livelihood diversification strategies that the decrease in yields led to investing in non-farm livelihood activities that produced correlative returns on profits to help sustain livelihood in the community.

As smallholder farmers were losing lands significantly, proceeds from their farms became insufficient to meet the necessities of their families, hence they needed to invest in other types of jobs to supplement it. Tagesse et al. (2014) delved into the patterns of livelihood diversification strategies adopted by the smallholder farmers at Kembata-Tembaro zone, Southern Ethiopia. Their study was based on cross-sectional survey data from 384 farm households that were selected through a combination of three-stages: cluster, simple random, and proportional to the size of population sampling techniques. They used a mix of instruments such as interview-schedule, focus group discussions, key informant interviews and field observations to acquire primary data. The diversification patterns of the smallholder farm households in the study area took different forms involving alteration of land use patterns, intensification of crops and livestock productions, and non/off-farm activities. Superiority order of livelihood strategies in terms of commercial crop stands first followed by livestock rearing and subsistence crop production as second and third, respectively. Livelihood diversification could only be a viable strategy to achieve sustainable rural livelihoods if the farmers were capacitated so that they could choose the right remunerative livelihood strategy among the existing options. Hunting and gathering of wild fruits, charcoal production, and chain saw operations are important coping strategies and a means of building assets that have become common in Ghana. Armah et al. (2012) found out that; petty trading (sale of foodstuff, spices, dye clothing, and other basic household needs and equipment at community levels on table tops or small shops in villages or carried from community to community on head pans, on the streets in urban areas, toll boots along highways), craftsmanship, production of charcoal, and selling of firewood and emphasised that, in Ghana, people's livelihood depends on farming and many off-farm income generation activities.

2.4. Migration

Migration is a spatial mobility involving a change of usual residence between clearly defined geographic units. Ghana is a diverse country with 59% of its population aged seven and above being temporal or permanent migrants (Ghana Statistical Service, 2008). Literature is unanimous in asserting that migration in poor and vulnerable households is an effective poverty redistribution and reduc-

tion strategy (Waddington & Sabates-Wheeler, 2003; Warner & van der Geest, 2011; Kanbur & Venables, 2005; van der Ploeg, 2010). The most effective way to facilitate deconcentration of economic activities to help the poor benefit from the global economy is to remove all barriers to migration (Kanbur & Venables, 2005). Though migration is a human well-being enhancement strategy, the decision to migrate is contingent on asset base and social networks available. The economics behind migration as a livelihood strategy limits the extremely poor households from exploiting it as a poverty ameliorating strategy (Waddington & Sabates-Wheeler, 2003). Migration in Ghana is usually motivated by marriage, employment, conflict, nonfarm opportunities, witchcraft and the desire for freedom or independence (Ghana Statistical Service, 2008). Sylvia

In a study on north-south migration in Ghana by Warner, K., & van der Geest, K. (2011), it was found out that the amount of rainfall and crop yields were negatively correlated with migration at significance levels of 1% and 5% respectively, while population density was positively related to north-south migration in Ghana. Most farmers usually migrated to more vibrant and economically productive areas to sell their labour; as posited by Nassef et al. (2009), that many pastoralists move to urban settlements in search of alternative livelihoods. Demeke and Zeller (2012) explained that when the rains are poor, farmers commit more labour resources to less risky alternative livelihood activities. Therefore, sale of labour to off-farm livelihood activities lessen the effect of climate variability on household income and food supply. Eshetu et al. (2010) in their study on income diversification in Ethiopia report that more than 40% increase in household income came from sale wage labour. As outlined by Gyampo et al. (2011), in selected villages in the high forest, Coastal and Guinea Savannah ecological zones in Ghana; migration, sale of livestock and fowls, and menial jobs such as weeding the farms of others who are able to build some resilience (among men) or fetching water (among women) for income are some of the off-farm adaptation practices. Also, the collection and sale of shea nuts (*Vitellaria paradoxa*), dawadawa (*Parkia clappertoniana*), fuel wood, and wild fruits have become major livelihood options, especially in the lean season in savanna regions in Africa while small-scale mining, harvest of timber for logging and crafts, and fruit gathering are some forest livelihood activities that have been intensifying over the years. The collection of shea nuts (*Vitellaria paradoxa*) and dawadawa served to provide a source of income in the short term. On migration as a livelihood, the study by Samuel and Sylvia (2019) revealed that 3% of family heads occasionally move to nearby villages to engage in farming activities or take part in other livelihood activities, including limited scope of mining for survival because of the significant reduction of lands. Furthermore, Mohammed and Sheikh opined that there is a surge in rural-to-rural migration in search of other sources of livelihood strategies and this form of migration is on the increase in the Wa East District. The migrants are individuals that do not have enough capital start new business activities, and do not have enough land to farm. They,

subsequently, migrate to nearby rural villages in search of lands for farming purposes.

3. Methods and Tools

In this study post-positivist research paradigm was adopted. The descriptive research design was chosen to permit obtaining and describing of information concerning the relationship between livelihood coping strategies and livelihood outcomes; how these could be transformed towards achieving sustainable livelihood outcomes for the rural dwellers who lost land in the Bawku East District of northern Ghana. The correlational design was utilised to permit investigation of the relationship between land acquisition and livelihood outcomes among smallholder farmers in Bawku East District of northern Ghana. The study purposively selected four villages (Baribari, Kulungungu, Missiga and Kard) out of the twelve villages as the target area because these villages had similar vegetational, climatic, social, cultural, social characteristics. Results from any findings will be same in any of the 12 villages within the BED. According to the Bawku Municipal Statistics Service Department, the 4 villages targeted in this study have a total population of 11,985 inhabitants with 3876 persons as active farmers and farm owners as the target population (Ghana 2021 PHC). The sample size of participants included active smallholder farmers from the four villages seriously affected by land acquisitions for community development projects and by individuals for residential purposes, who would have been displaced from their farmlands, disrupting their livelihood and sustainability; key government officials and public servants within the Bawku East District Assemblies; representatives of NGOs in the affected villages. Since a population of 3876 was very big, the sample size of 400 participants from the rural areas was selected, and determined using of the [Sloven \(1960\)](#) formula as shown below:

$$n = \frac{N}{1 + Ne^2}$$

where n = sample size; N = Target Population size and e = the level of precision of measurement (acceptable error margin); the error margin will be considered at a Level $e = 0.05$.

Thus, substituting into the Sloven's formula of

$$n = N \div 1 + N(e)^2$$

$$n = 3876 \div 1 + 3876(0.05)^2 = 3876 \div 1 + 3876(0.0025) = 400 .$$

Adoption of purposive sampling method ensured that the most qualified and key informants relevant to the focus of the study were selected. The Researcher's used a contracted professional photographer, his IPAD, Android phone and notebook for record purposes through video recordings and picture taking during the data collection process.

Structured interview guides and interview schedules elicited relevant data that underpins the objectives of the present study. The choice of the in-depth inter-

view was used to allow the cross-checking of the survey results and to explain the realities behind the identified trends in the data. The observation method was used in this study; because it facilitated physical engagement that enabled researcher to get firsthand impression of events, by acting as a participant in all activities. An observation checklist was used as a guide in data collection as social and developmental facilities was observed on rural farmlands together with the related activities. Documentary review was based on the analysis of literary works of scholars, and it was an intensive exercise which involved deep analysis and interpretation of facts and findings/records of others (Mbabazi, 2008). One of the main methods used to collect data was the survey method because the population was too large to observe directly. The information collected was through self-administered questionnaires which were distributed to the respondents. This study majorly employed the survey method because it was cheaper and convenient given its flexibility (Mbabazi, 2008). One of the main methods used to collect data was the questionnaire; because the population was too large to observe directly. Many studies of Land Acquisition Structures/Processes employed questionnaire research techniques to examine Land Acquisition Structures/Processes and alternative livelihood outcomes of smallholder farmers. The focus group discussion method advantage was that it involved stakeholders who are normally part of the land acquisition structures and participated in the land acquisition processes; owned land and livelihood assets; initiated and implemented livelihood coping strategies for alternative livelihoods of land-lost smallholder farmers; and it was possible to have information which was obtained by use of a tool like a questionnaire on Land acquisition structures and processes.

The observation and unit of analysis focused on smallholder farmers in four villages, namely: Baribari, Kulungungu, Kard and Missiga in the Bawku East District of the Upper East Region of Ghana who have lost their farmlands or have been compelled to leave their lands. The target population for this study was smallholder farmers, traditional leaders/Tindanas, family heads, government officials/influential individuals and commercial farmers within the agricultural sector. The study population constituted mostly of the smallholder farmers within the Bawku East Districts of Northern Ghana.

Triangulation of the research techniques, where several methods of data collection were employed was done. All data collection instruments were analysed to establish their consistency and validity. In order to ensure internal and external validity, a pilot test was conducted in Bador village of the Bawku East District using 20 participants. Results obtained were used to identify weaknesses in the guide and appropriate correction(s) made. To ensure reliability, the internal consistency was measured using the Cronbach alpha. Reliability is defined as the degree of consistency with which an instrument measures the attribute it is designed to measure. Reliability of the questionnaire was measured with Cronbach's alpha statistics using SPSS 20. Data was edited to detect errors and omissions and make corrections; classified based on common characteristics according to the descriptive attributes. Descriptive and inferential statistics, by means

of the Statistical Package for the Social Sciences (SPSS) version 20 was also used to process the data collected for the study. The use of both manual and electronic coding helped in the identification of emergent trends and pattern in the data.

Data analysis involved both qualitative and quantitative data. The data ably answered the research questions and hypotheses. The descriptive analysis of the data was performed using SPSS analyses, while the research hypotheses were analysed using the Partial Least Square Structural Equation Model (PLS-SEM). The use of structural equation modeling, the Smart PLS has been proven to be an effective software for such analysis involving latent variables and mediation effect (Hair et al., 2013). The final outputs and selected summary tables were transferred into the main report, findings presented, interpreted and conclusions deduced. The qualitative data helped to supplement the data that had been generated quantitatively.

The researcher envisaged certain limitations that could inhibit the collection of rich data and overall findings of the study. These were forestalled through meeting with participants before the interview/FGDs to allay any fear or favour. Also, closed-ended questions were raised to elicit opinion of participants. The study strictly considered all the research ethics and protocol regarding the conduct of research of this kind with human subjects and the living conditions. The respondents were further assured of confidentiality of the information given and that the findings of the study were entirely for academic purposes only. Every respondent involved in the study was entitled to the right of privacy and dignity of treatment. The researcher employed all avenues and opportunities to ensure that all issues that were considered unethical in context were addressed. Questions included in the guide were ethically considered to avoid personal sensationalism and sentimentalism.

4. Discussion of Results

The study assessed the livelihood strategies adaptation among smallholder farmers in Bawku East District and the results are presented in **Table 1** below.

The study findings as presented in table indicate high levels of livelihood strategies adaptations among smallholder farmers in Bawku East District ($M = 4.13$). Adapting different livelihood strategies needs to be encouraged as it serves the best way of achieving self-sustenance. It was found out from the study findings (**Table 1**) that farmers have employed some unique strategies after losing significant sizes of their lands (Livelihood diversification strategy) ($M = 4.58$). In terms of livelihood diversification, the substitution of a new type of livelihood (for example doing business/trading) for an existing one (for example farming) should only be considered when there is no feasible way of restoring the existing means of livelihood. Objectively, developing new livelihoods carries much more risk of failure than restoring existing livelihoods, or intensifying existing livelihoods. For existing livelihoods, usually the factors needed to maintain those livelihoods can be identified with some confidence. However, for new livelihoods, even with the best planning, it may not be possible to ensure that all the technic-

al, economic, human and intangible factors are in place for the new activities to be successful and self-sustaining. If the introduction of a new livelihood activity is only partially successful, then the goal of restoring livelihoods of all affected people may not be met. In many cases, the promotion of alternative livelihoods may be more appropriate under community development programs, which are not intended to mitigate specific economic losses for specific individuals.

The study findings further revealed that farmers in Bawku East District are highly into other agricultural works like animal rearing in addition to crop farming (Agricultural Diversification) ($M = 3.52$). Livelihoods are largely enhanced through land-based agricultural diversification with households practicing a combination of rotational agriculture, pastoralism and forest product extraction among others. Crop diversification needs to be encouraged as it is one viable option in smallholder farming that can ensure establishment of resilient agricultural systems that can contribute significantly to household food security.

It was further found out that because of the limited access to physical capital or social intervention capital, farmers in Bawku East District highly migrate to other villages to acquire a piece of land for subsistence farming (Migration strategy) ($M = 4.01$). A key factor in migrants' decisions about the future is access to appropriate livelihoods, and particularly land. Widespread land-grabbing, which has grown as ceasefire areas become more accessible to private actors, presents a risk to the credibility of the peace process. Forced migrants should be able to gain access to land through restitution of previous landholdings, including those confiscated by well-connected ("crony") companies, or through compensation and land allocation.

Table 1. Livelihood coping strategies adaptation among smallholder farmers in bawku east district.

Livelihood Strategies Adaptation	Mean	Std. Deviation
We have employed some unique strategies after losing significant sizes of our lands (Livelihood diversification strategy)	4.58	0.94
We are now highly into other agricultural works like animal rearing in addition to farming (Agricultural Diversification)	3.52	1.42
Due to limited access to physical capital or social intervention capital, we migrate to other villages to acquire a piece of land for subsistence farming (Migration strategy)	4.01	1.10
We are using new agricultural practices to improve upon yields despite the small land left (Agricultural Innovation Strategy)	4.10	1.06
We are now highly involved in non-agricultural business to survive and cater for needs (Non-Agricultural Specialization Strategy).	4.47	0.88
Aggregate Mean & Standard Deviation	4.13	1.08

Scale: 4.20 - 5.00, Very High, 3.40 - 4.19 High, 2.60 - 3.39 Average, 1.80 - 2.59 Low, 1.00 - 1.79 Very Low.

The results in **Table 1** also show that farmers in Bawku East District highly use new agricultural practices to improve upon yields despite the small land left (Agricultural Innovation Strategy) ($M = 4.10$). Innovation is key to feed a growing population and face the challenge of displacement. Displaced farmers highly need innovative solutions to intensify agricultural production in a sustainable way. Innovation can support smallholders and family farmers and increase their productivity and profitability, thus improving their livelihoods.

Table 1 findings also show that farmers are highly involved in non-agricultural business to survive and cater to needs (Non-Agricultural Specialization Strategy) ($M = 4.47$). Non-agricultural activities need to be encouraged among farmers after displacement. They can include various ventures like handicrafts, household as well as non-household small-scale manufacturing, construction, mining, quarrying, repair, transport, community service etc., but of course in the designated rural areas.

Correlational Results between Livelihood Coping Strategies and Livelihood Outcomes

To understand the relationship between livelihood strategies and livelihood outcomes, a Pearson Correlation analysis was carried out and the results are presented in **Table 2** below.

Table 2. Correlational results between livelihood strategies adaptation and livelihood outcomes among smallholder farmers in bawku east district.

		Livelihood Outcome	
Livelihood Strategies Adaptation	Livelihood Diversification strategy	Pearson Correlation	0.043
		Sig. (2-tailed)	0.548
		N	200
	Agricultural Diversification strategy	Pearson Correlation	-0.213**
		Sig. (2-tailed)	0.002
		N	200
	Migration strategy	Pearson Correlation	0.219**
		Sig. (2-tailed)	0.002
		N	200
	Agricultural Innovation Strategy	Pearson Correlation	0.065
		Sig. (2-tailed)	0.358
		N	200
Non-Agricultural Specialization	Pearson Correlation	0.258**	
	Sig. (2-tailed)	0.000	
	N	200	

** . Correlation is significant at the 0.01 level (2-tailed).

The study findings presented in **Table 2** show that agricultural diversification strategy had significant but negative effect on livelihood outcomes among smallholder farmers in Bawku East District ($r = -0.213$, $p = 0.002$). This is an indication that farmers should look out to engage in other livelihood activities other than agriculture for better livelihood outcomes. In confirmation to the above finding, the study results indicate that non-agricultural specialization had a positive and significant effect on livelihood outcomes among smallholder farmers in Bawku East District ($r = 0.258$, $p = 0.000$). Farmers affected by land acquisition should put more emphasis in non-agricultural activities such as trade and crafts among others. Other livelihood strategies like migration and agricultural innovation had positive but insignificant effect on livelihood outcomes.

To boost their livelihood coping strategies, smallholder farmers could adopt and implement some or any from the total of 165 marketable technologies developed and successfully profiled in June 2015 by the CSIR Institutes.

5. Summary of Results

It was found out from the study findings that farmers have employed some unique strategies after losing significant sizes of their lands (Livelihood diversification strategy) ($M = 4.58$). In terms of livelihood diversification, the substitution of a new type of livelihood (for example doing business) for an existing one (for example farming) should only be considered when there is no feasible way of restoring the existing means of livelihood. Findings also show that farmers are highly involved in non-agricultural business to survive and cater for needs (Non-Agricultural Specialization Strategy) ($M = 4.47$); non-agricultural activities need to be encouraged among farmers after displacement which can include various ventures like handicrafts, household as well as non-household small-scale manufacturing, construction, mining, quarrying, repair, transport, community service etc., but of course, in the designated rural areas.

Recommendations

In terms of livelihood diversification, the substitution of a new type of livelihood (for example doing business) for an existing one (for example farming) should only be considered when there is no feasible way of restoring the existing means of livelihood.

Non-agricultural activities need to be encouraged among farmers after displacement which can include various ventures like handicrafts, household as well as non-household small-scale manufacturing, construction, mining, quarrying, repair, transport, community service etc., but of course, in the designated rural areas.

Instead of promoting livelihood coping strategies adaptation, the land acquisition process hinders the farmers efforts to adapt the livelihood strategies.

The MOFA, Lands and Natural Resources Ministry should develop and implement programmes to boost the livelihood coping strategies of smallholder

farmers; of which others could adopt and implement non-agricultural diversifications such as any of the 165 marketable technologies developed and successfully profiled in June 2015 by the CSIR Institutes.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Abass, A. B., Ndunguru, G., Mamiro, P., Alenkhe, B. et al. (2014). Post-Harvest Food Losses in a Maize-Based Farming System of Semi-Arid Savannah Area of Tanzania. *Journal of Stored Products Research*, 57, 49-57.
- Adepoju, A. O., & Oyewole, O. O. (2014). Rural Livelihood Diversification and Income Inequality in Local Government Area Akinyele, Ibadan, Oyo State, Nigeria. *Journal of Agricultural Sciences Belgrade*, 59, 175-186. <https://doi.org/10.2298/JAS1402175A>
- Agbley, G. K. (2019). Land Grabbing and the Gendered Livelihood Experience of Smallholder Farmers in Northern Ghana: Through a Human Development and Capability Lens. *Ghana Journal of Development Studies*, 16, 155-180. <https://doi.org/10.4314/gjds.v16i1.8>
- Alhassan, S. I., Shaibu, M. T., & Kuwornu, J. K. M. (2018). Is Land Grabbing an Opportunity or a Menace to Development in Developing Countries? Evidence from Ghana. *Local Environment*, 23, 1121-1140. <https://doi.org/10.1080/13549839.2018.1531839>
- Amisah, S., Gyampoh, A. B., & Sarfo-Mensah, P. (2009). Livelihood Trends in Response to Climate Change in Forest Fringe Communities of the Offin Basin in Ghana. *Journal of Applied Sciences and Environmental Management*, 13, 5-15. <https://doi.org/10.4314/jasem.v13i2.55294>
- Armah, F. A., Vercillo, S., Kuuire, V. Z., & Luginaah, I. (2012). Smallholder Farmers' Livelihood Security Options amidst Climate Variability and Change in Rural Ghana. *Scientifica (Cairo)*, 2017, Article ID: 1868290.
- Assan, N. (2014). Gender Disparities in Livestock Production and Their Implications for Livestock Productivity in Africa. *Scientific Journal of Animal Science*, 3, 126-138.
- Barrett, C. B., Reardon, T., & Webb, P. (2001). Nonfarm Income Diversification and Household Livelihood Strategies in Rural Africa: Concepts, Dynamics and Policy Implications. *Food Policy*, 26, 315-331. [https://doi.org/10.1016/S0306-9192\(01\)00014-8](https://doi.org/10.1016/S0306-9192(01)00014-8)
- Bonye, S. Z., Aasoglenang, T. A., & Yiridomoh, G. Y. (2020). Urbanization, Agricultural Land Use Change and Livelihood Adaptation Strategies in Peri-Urban Wa, Ghana. *SN Social Sciences*, 1, Article No. 9. <https://doi.org/10.1007/s43545-020-00017-1>
- Brook, B. W., O'Grady, J. J., Chapman, A. P., Burgman, M. A. et al. (2000). Predictive Accuracy of Population Viability Analysis in Conservation Biology. *Nature*, 404, 385-387. <https://doi.org/10.1038/35006050>
- Carney, D. (1998). Implementing the Sustainable Rural Livelihoods Approach. In *The DFID Natural Resource Advisers' Conference* (p. 4). Department for International Development.
- Chambers, R., & Conway, G. R. (1991). *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. Scientific Research Publishing Inc.
- Demeke, A. B., & Zeller, M. (2012). Weather Risk and Household Participation in Off-Farm Activities in Rural Ethiopia. *Quarterly Journal of International Agriculture*, 51, 1-20.

- Ellis, F. (2000). *Rural Livelihoods and Diversification in Developing Countries*. Oxford University Press.
- Eshetu, F., & Beshir, M. (2017). Dynamics and Determinants of Rural-Urban Migration in Southern Ethiopia. *Journal of Development and Agricultural Economics*, *9*, 328-340.
- Eshetu, Y., Wei, W., Xiaoping, S., Habtamu, T., & Bekele, B. (2010). Land Use and Land Cover Changes and Associated Driving Forces in North Western Lowlands of Ethiopia.
- Gebbisa, M. B., & Mulatu, G. (2020). Choice of Livelihood Strategies and Its Determinants in Pastoralist Area of Bale Zone: The Case of Sawena District, Oromia, South East Ethiopia. *Open Access Library Journal*, *7*, e6737.
<https://doi.org/10.4236/oalib.1106737>
- Ghana Statistical Service (2008). *Ghana in Figures*.
https://www2.statsghana.gov.gh/docfiles/gh_figures_2008.pdf
- Groenewald, S. F., & Bulte, F. (2013). Trust and Livelihood Adaptation: Evidence from Rural Mexico. *Agriculture and Human Values*, *30*, 41-55.
<https://doi.org/10.1007/s10460-012-9383-9>
- Gyampo, R. E. V., Kuditcher, N.-L., & Asare, B. E. (2011). First One Hundred Days of Oil Production in Ghana. *African Research Review*, *5*, 16-28.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, *46*, 1-12. <https://papers.ssrn.com/abstract=2233795>
- Hilson, G. (2010). Child Labour in African Artisanal Mining Communities: Experiences from Northern Ghana. *Development and Change*, *41*, 445-473.
<https://doi.org/10.1111/j.1467-7660.2010.01646.x>
- Hilson, G., & Banchirigah, S. M. (2009). Are Alternative Livelihood Projects Alleviating Poverty in Mining Communities? Experiences from Ghana. *The Journal of Development Studies*, *45*, 172-196. <https://doi.org/10.1080/00220380802553057>
- Hirons, M. (2013). Shifting Sand, Shifting Livelihoods? Reflections on a Coastal Gold Rush in Ghana. *Resources Policy*, *40*, 83-89.
<https://doi.org/10.1016/j.resourpol.2013.08.005>
- Jansen, H. G. P. et al. (2006). Policies for Sustainable Development in the Hillside Areas of Honduras: A Quantitative Livelihoods Approach. *Agricultural Economics*, *34*, 141-153.
<https://doi.org/10.1111/j.1574-0864.2006.00114.x>
- Kanbur, R., & Venables, A. J. (2005). Economic Policy, Distribution and Poverty: The Nature of Disagreements. *Peace Economics, Peace Science and Public Policy*.
- Kuwornu, J. K. M., Suleyman, D. M., & Amegashie, D. P. K. (2013). Analysis of Food Security Status of Farming Households in the Forest Belt of the Central Region of Ghana. *Russian Journal of Agricultural and Socio-Economic Sciences*, *1*, 26-42.
<https://doi.org/10.18551/rjoas.2013-01.04>
- Lin, B. B. (2011). Resilience in Agriculture through Crop Diversification: Adaptive Management for Environmental Change. *BioScience*, *61*, 183-193.
<https://doi.org/10.1525/bio.2011.61.3.4>
- Lyatuu, E. T., Nie, F., & Fang, C. (2015). The Role of Agriculture in the Economic Growth and Poverty Reduction in Tanzania. *Journal of Economics and Sustainable Development*, *6*, 154-166. <http://repository.businessinsightz.org/handle/20.500.12018/619>
- Magcale-Macandog, D. et al. (2014). Eliciting Local Ecological Knowledge and Community Perception on Fishkill in Taal Lake through Participatory Approaches. *Journal of Environmental Science and Management*, *17*, 1-16.
- Makate, C., Wang, R. C., Makate, M., & Mango, N. (2016). Crop diversification and live-

- lihoods of smallholder farmers in Zimbabwe: adaptive management for environmental change. *SpringerPlus*, 5, Article No. 1135.
- Makate, C., Wang, R., Makate, M., & Mango, N. (2016). Crop Diversification and Livelihoods of Smallholder Farmers in Zimbabwe: Adaptive Management for Environmental Change. *SpringerPlus*, 5, Article No. 1135. <https://doi.org/10.1186/s40064-016-2802-4>
- Mallick, S. (2019). *African Land Questions, Agrarian Transitions and the State: Contradictions of Neoliberal Land Reforms*. CODESRIA.
- Marchetta's (2011). *On the Move Livelihood Strategies in Northern Ghana*. Post-Doctorante CNRS, (CERDI), France.
- Mariam, T. G., Mohamed, A., Ibrahim, N., & Baye, D. (2014). Prevalence of Fasciolosis and Paramphistomosis in Dairy Farm and House Hold in Hawassa Town. *European Journal of Biological Sciences*, 6, 54-58.
- Mbabazi, T. (2008). *A Sure Friendly Guide to Research and Research Methods*. Jotain Co. Ltd.
- Mulika, T., & Routray, J. K. (2016). Farmer Livelihood Assets Contributing to the Sustainable Livelihoods of Smallholder Livestock Farmers in the Northeast Region of Thailand. *International Journal of Agricultural Management, Institute of Agricultural Management*, 5.
- Mumuni, E., & Oladele, O. I. (2016). Access to Livelihood Capitals and Propensity for Entrepreneurship amongst Rice Farmers in Ghana. *Agriculture & Food Security*, 5, Article No. 1.
- Nasreen, M., Azad, A. K., & Hossain, K. M. (2013). *Community Perception on Adverse Effects of Natural Hazards on Livelihood and Enhancing Livelihood Resiliency: A Case Study at Patharghata Upazila, Barguna*. Elsevier, 2018.
- Nassef, S. L., Gaafar, A. M., & Basuny, A. M. (2009). *Pastoralism and Climate Change Enabling Adaptive Capacity*. <https://pubs.iied.org>
- Nielsen, Ø. J., Rayamajhi, S., Uberhuaga, P. et al. (2013). Quantifying Rural Livelihood Strategies in Developing Countries Using an Activity Choice Approach. *Agricultural Economics*, 44, 57-71. <https://doi.org/10.1111/j.1574-0862.2012.00632.x>
- OECD (2007). *Promoting Diversified Livelihoods. In: Promoting Pro-Poor Growth: Policy Guidance for Donors*. OECD Publishing.
- Okah, G., & Hilson, G. (2011). Poverty and Livelihood Diversification: Exploring the Linkages between Smallholder Farming and Artisanal Mining in Rural Ghana. *Journal of International Development*, 23, 1100-1114. <https://doi.org/10.1002/jid.1834>
- Porter, C. E., Donthu, N., MacElroy, W. H., & Wydra, D. (2011). How to Foster and Sustain Engagement in Virtual Communities. *California Management Review*, 53, 80-110. <https://doi.org/10.1525/cmr.2011.53.4.80>
- Rahut, D. B., & Scharf, M. M. (2012). Livelihood Diversification Strategies in the Himalayas. *Australian Journal of Agricultural and Resource Economics*, 56, 558-582. <https://doi.org/10.1111/j.1467-8489.2012.00596.x>
- Ross, C., et al. (2009). *The Effect of Corporate Diversification on Capital Structure of Firms Listed in the Nairobi Securities Exchange*. <http://erepository.uonbi.ac.ke>
- Samuel, O. O., & Sylvia, T. S. (2019). Analysis of Rural Livelihood Diversification Strategies among Maize Farmers in North West Province of South Africa. *International Journal of Entrepreneurship*, 23, 1-11.
- Scoones, I. (1998). *Sustainable Rural Livelihoods: A Framework for Analysis*.
- Shoffner, A. V., & Tooker, J. F. (2012). The Potential of Genotypically Diverse Cultivar

- Mixtures to Moderate Aphid Populations in Wheat (*Triticum aestivum* L.). *Arthropod-Plant Interactions*, 7, 33-43. <https://doi.org/10.1007/s11829-012-9226-z>
- Singh, N., & Gilman, J. (2002). Making Livelihoods More Sustainable. *International Social Science Journal*, 51, 539-545. <https://doi.org/10.1111/1468-2451.00225>
- Sloven, E. (1960). *Slovin's Formula for Sampling Technique*. *Journal of Geoscience and Environment Protection*, 8.
- Smith, H. E. et al. (2008). Urban Energy Transitions and Rural Income Generation: Sustainable Opportunities for Rural Development through Charcoal Production. *World Development*, 113, 237-245.
- Tagesse, M., Gizachew, A., Sulamo, A., & Tesfaye, L. (2014). Prevalence of Fasciolosis and Paramphistomosis in Dairy Farm and House Hold in Hawassa Town. *European Journal of Biological Sciences*.
- The United States Agriculture Department (2015). *The Future of Food and Agriculture—Alternative Pathways to 2050*. Food and Agriculture Organization of the United Nations, Rome.
- Truscott, L., et al. (2009). *Crop Diversification and Livelihoods of Smallholder Farmers in Zimbabwe: Adaptive Management for Environmental Change*. SpringerPlus 2016.
- Tsikata, D., Yaro, J., Consortium, T. F. A., Tsikata, D., & Yaro, J. (2011). The Land Deal Politics Initiative. *Journal of Peasant Studies and Future*, 44, 515-537.
- Van der Ploeg, J. D. (2010). The Peasantries of the Twenty-First Century: The Commoditisation Debate Revisited. *The Journal of Peasant Studies*, 37, 1-30. <https://doi.org/10.1080/03066150903498721>
- Waddington, H., & Sabates-Wheeler, R. (2003). *How Does Poverty Affect Migration Choice? A Review of Literature*. Working Paper T3, Sussex University, Brighton.
- Wairimu, G. (2015). *The Effect of Corporate Diversification on Capital Structure of Firms Listed in the Nairobi Securities Exchange*. <http://erepository.uonbi.ac.ke>
- Warner, K., & van der Geest, K. (2011). Loss and Damage from Climate Change: Local-Level Evidence from Nine Vulnerable Countries. *International Journal of Global Warming*, 5, 367-386.

Comments

RELATIONSHIP BETWEEN LIVELIHOOD COPING STRATEGIES AND LIVELIHOOD OUTCOMES FOR SMALLHOLDER FARMERS IN THE BAWKU DISTRICT OF NORTHERN GHANA. (1766995)

Comment

Comment to the author:

This research paper is a result of a study that analysed the relationship between livelihood coping strategies and livelihood outcomes for smallholder farmers in Bawku East District of Northern Ghana.

The suggestions are as follows:

- 1) For “Summary”, please add more description for research method. And a section of “Keywords” can be provided after “Summary”.
- 2) For the data, such as “25%”, please provide specific sources.
- 3) More narratives for research problem can be presented in “Introduction”.
- 4) The “Literature review” is really long. Please provide a summary.
- 5) In “Methods and tools”, data collection with samples can be provided specifically.
- 6) More recent articles can be added in “References”, such as:

“[Gebbisa, M.B. and Mulatu, G. \(2020\) Choice of Livelihood Strategies and Its Determinants in Pastoralist Area of Bale Zone: The Case of Sawena District, Oromia, South East Ethiopia. Open Access Library Journal, 7, 1-22. doi: 10.4236/oalibj.2020.79737.](#)”

All in all, I’d suggest that this paper is suitable for publication with revision.

Comment to the editor:

I’d recommend that the paper should be accepted with revision.

No.1