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Challenges of Undertaking Research in Rural Areas of Ghana: The Influence of Geographical Factors

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Abstract

Research in rural areas in developing countries such as Ghana is affected by various challenges. A number of these challenges are geographical in character and need to be factored into the research design to minimize costs, delays, data inadequacies and other inconveniences. This paper draws attention to geographical variables such as distance, climatic influences, settlement patterns, housing characteristics and unclear spatial boundaries that were encountered during research in 2 rural communities in Ghana, and analyses various ways in which they impinge on the trend and tempo of rural research. It then discusses specific measures instituted to minimize their adverse impacts on the research processes. Based on these, it recommends that the academic community must incorporate flexibility, approximations and other strategies into their research design in order to mitigate atypical geographical challenges encountered in rural communities particularly those in the global south, and thereby ensure successful rural research.

Keywords: geographical, rural, research, Ghana; distance; rainfall

1.0 Introduction

Rural dwellers comprise significant proportions of various countries particularly those in Sub-Saharan Africa (Nchuchuwe & Adejuwon, 2012; New Partnership for Africa's Development and Centre for Technical Cooperation in Agriculture, 2012; Okoko, 2011; United Nations Environment Programme, 2010). The proportion of rural dwellers in Sub-Saharan Africa is expected to constitute up to half of the sub-region's total population by 2030 (Montgomery, Bartram, & Elimelech, 2009). Despite rising urbanization, the rural population in Ghana constituted 49% of the total population in 2010 (Ghana Statistical Service, 2013). Their significant numbers notwithstanding, rural populations experience high levels of poverty (Food and Agriculture Organisation, 2008; FAO & United Nations Education, Scientific and Cultural Organisation-International Institute for Educational Planning, 2006; FAO, 2012; Ghana Statistical Service, 2007; Haidu, Ansell, Robson, van Blerk, & Chipeta, 2011; Tetteh & Frempong, 2009; The World Bank 2007). Rural communities also lack basic socio-economic infrastructure compared to urban centers (Arku & Arku, 2010 Boateng, 2012; FAO & UNESCO-IIEP, 2006; FAO, 2012; Okoko, 2011). As a result of these and other factors, studies are regularly conducted on rural communities to unearth challenges that confront them and identify remedial measures needed to address these challenges. Research processes in rural areas are influenced by a number of peculiar factors some of which are geographical in nature and which predominantly characterize rural regions in developing countries.

A variety of facility inadequacies and supply deficiencies associated with the relative under-developed conditions in these countries could accentuate delays and contribute to higher than projected research costs. Failure to ensure that the tools and processes utilized during rural research are premised on peculiar situations that are prevalent in rural areas could lead to costly mistakes, delayed responses, inaccurate outcomes and other difficulties. Awareness of these geographical variables is essential for successful rural research since being armed with such information will enhance the preparedness of researchers for the vagaries associated with rural studies. This paper aims to highlight peculiar and practical geographically-based factors that one encounters during research in rural communities in developing countries and presents remedial measures adopted to minimize their diverse impacts on rural research processes. It is based on a case study of two rural communities in Ghana.

2.0 Rurality and Rural Research

Rural areas have peculiar characteristics that have led to a number of perceptions and viewpoints being formulated about them. These perceptions largely define attitudes, processes and procedures adopted by development workers, researchers and other external actors who are keen to engage in rural research and other programs that variously impact on the well-being of rural populations. A detailed analysis of these perceptions and the practical conditions prevailing in rural communities is essential since these guide external actors that engage in diverse programs in these communities. In addition , a more nuanced understanding of the degree to which the rural is similar to, and also differs from, the urban settlements that external actors tend to be more familiar with is essential since it enables them to better appreciate the opportunities and challenges that various upcoming encounters with rural communities might entail.

Although the rural is associated with a number of characteristics and perceptions, one of the key variables used in distinguishing rurality is its often cited small population size (Dewees, Lobao & Swanson, 2003; FAO & UNESCO-IIEP, 2006; Ghana Statistical Service, 2013; López-i-Gelats, Tàbara, & Bartolomé, 2009; Madu, 2010; Malone, 2012; Sherval, 2009; Slama, 2004; Yankson, 2008). It has been argued that as a result of their small population sizes, rural dwellers tend to interact frequently and therefore know each other (Slama, 2004). Their low socio-economic development status (Alkadry & Tower, 2010) is also a well-documented situation which offers various challenges to rural research. Another critical perception about rural areas is their supposed simplicity (Little, Panelli, & Kraack, 2005; Johnson, McDonnell, O'Connell, & Glynn, 2011). Woods (2003) for example notes that structures such as roads and concrete buildings are “alien materials” in rural areas that represent violations of the rural landscape and are therefore uncharacteristic of the traditional perceptions of rurality. Several authors have however disputed some of these perceptions about rurality particularly their perceived simplicity (Galani-Moutafi, 2013; López-i-Gelats et al., 2013). Galani-Moutafi (2013) highlights the rural as a space of diversity and his research in Metsa confirms his view that rurality ought not to be considered a homogenous entity but comprising varying components. Similarly, the rural economy is considered to be exhibiting greater diversification than before, with growing transformation from hitherto agriculture-focused economy into a consumption-based one characterized by commodification and diverse economic activities such as recreation (Galani-Moutafi, 2013; Madu, 2010; Sayre, 2011; Young, 2006). Recent literature further indicates that agriculture,

though an important rural economic activity, is losing its preeminence in rural areas in Ghana and other Sub-Saharan African countries due partly to declining fortunes from farming and a consequent shift to non-farm economic ventures (Anthopoulou, 2007; D'haen, Nielsen, & Lambin, 2014; Haidu et al., 2011; Knudsen, 2007). These imply that rural areas have become a lot more dynamic than originally thought; hence views of the rural as being of pristine simplicity are no longer reliable.

Other rural characteristics are increasing disintegration of rural family systems (Roscigno & Crowley, 2001) and differential power relations between males and females (Anthopoulou, 2007; Bieri, 2009; Campbell & Bell, 2000; Dadvar-Khani, 2015). The tendency for some sections of the rural population to be sidelined due to dominance of more powerful persons (Chomba, Nathan, Minang, & Sinclair, 2015; Ratner et al., 2013; Turinawe, 2016) lends credence to the suggestion by Nay, Abkowitz, Chu, Gallagher, & Wright (2014) for deliberate inclusion of people who are socially excluded on the basis of their gender, limited literacy and other characteristics in the knowledge generation processes. Apart from pronounced power asymmetries in rural communities, interactions between external actors and rural dwellers particularly those that are geared toward knowledge generation also tend to be clouded by unequal power relations (Gleitsmann, Kroma, & Steenhuis, 2007; Pade-Khene et al, 2013; Woods, 2010). External actors who are considered 'experts' due to prevailing perceptions that they possess considerable knowledge and 'modern' expertise frequently assume a more privileged position than the 'non-expert' rural actor. As a result, they wield substantial influence during knowledge generation and ultimately crowd out the views and opinions of rural actors (Barnaud & van Paassen, 2013; Bohensky, Butler, & Davies, 2013; Cundill, Roux & Parker, 2013; Prager & McKee 2015). Trust-building measures are therefore recommended in order to build bridges and promote dialoguing to ensure that the interests and views of the less privileged rural actors are successfully voiced during interactions with external actors (Pade-Khene et al., 2013; Prager & McKee, 2015; Taylor & van Grieken, 2015; Woods, 2010). As (Gleitsmann et al., 2007) argue, regular dialogue and direct involvement of rural dwellers are critical pre-requisites for successful engagements with them since "subsumed power relations, control and concealed interests in rural communities …" (p. 143)could derail programmed rural activities.

Paucity of infrastructure remains a perpetual characteristic of rural areas (Arku & Arku, 2010; FAO & UNESCO-IIEP, 2006; Fuest, 2005; Madu, 2010; Montgomery et al, 2009; Ugwoke, 2014; Woods, 2003). This impacts on rural research activities in diverse ways. For example, the lack of basic socio-economic infrastructure such as postal facilities, and technical difficulties in establishing telephone connectivity result in delays in communication between rural respondents and researchers (Goodsell, Ward, & Stovall, 2009), necessitating increased reliance on regular travels for personal communication. This contributes to inflated research expenditure. One of the visible manifestations of the restricted infrastructural development in rural areas is their limited transportation networks (Okoko, 2011; Kalvemark Sporrong et al., 2016; Ugwoke, 2014). And among the variety of geographical characteristics of rural communities that influence knowledge generation and other engagements, their distant location appears to be the most prominent (Fuest 2005; Gleitsmann et al., 2007; Johnson et al., 2011; Kofie, Attua, & Nabila, 2008; López-i-Gelats et al. 2009; Okoko, 2011; Rye, 2006; Smith, Blake, Olson, & Tesaro, 2002). Distant location which is associated with rural communities implies remoteness and accessibility difficulties (López-i-Gelats, 2009), resulting in the need to traverse long distances in order to access vital support services (Johnson

et al. 2011) or participate in various activities (Sseguya, Mazur, Njuki, & Owusu, 2013). Studies by Busari (2007), Kofie et al. (2008), Gleitsmann et al. (2007), and Nyong and Kanaroglou (2001) reveal that distance considerations were influencing variables in implementation of potable water and sanitation schemes that are regarded as health-focused projects due to their minimizing impact on the incidence and spread of major disease infections. Fuest (2005) also reports that the remote locations of some rural communities, and absence of motorable roads that could have eased travels to them, were critical factors that limited the extent to which such communities were supported under foreign donor-funded water and sanitation schemes in Ghana. Households also frequently premised their choice of water sources on the basis of their distant locations instead of quality characteristics (Busari, 2007; Nyong, & Kanaroglou, 2001), a further demonstration of the impact of distance on decision making in rural areas. Fatigue that emerges from the effort to overcome distance and increasing costs from wear and tear associated with travelling to undertake various engagements have also been cited as critical issues (Veitch 2009). These distance related considerations affect the extent and tempo of interaction between remotely located rural communities and outsiders.

Distant rural location is also a subject of intense debate among a number of scholars. Sherval (2009) for example, while admitting that perceptions about rural areas "visualise all rural spaces as remote, frontier-like and often peripheral to a specific core" (p. 426), voiced her disagreement with the use of remote rural location as a major yardstick for characterizing rurality. Sherval's criticism of remoteness or distant location of rural communities being used as the defining criterion that distinguishes them from other localities is the tendency to view them as being too far from spheres of activity or centres of influence. This results in the perception that they are out of reach of mainstream and dominant socio-economic centres hence are unable to participate in activities that are undertaken in urban centres (Sherval, 2009).Young (2006) also dissents from the distance criterion as being a constraining or limiting characteristic of rurality. In a major analytical work on distance, he argues that it should not be considered merely as physical separation between two localities but more as a function of the strength and type of links established between them. Young (2006) states that while distance "refers to the territorial separation of actors, it is obvious that the physical dimensions of distance are much more relative, varying tremendously according to the geographic positioning of actors and markets" (p. 257). He argues further that such distances are significantly altered by "networks of roads, telephone lines, and satellite communications" (p. 257). These facilities minimize distance challenges that exist in rural areas and the latter's perceived remoteness.

Other aspects of this discourse that are unfortunately overlooked but which characterize conditions in Ghana and other developing countries are limited availability, ineffectiveness and operational difficulties associated with telecommunication systems, transport networks and other operating facilities in rural areas. These place limitations on their effectiveness and reliability in ensuring connectivity and thereby minimizing the degree to which rural actors are able to overcome distance in order to associate with each other.

3.0 Geographical Factors and Rural Research

A number of researchers indicate that their research activities in rural areas, the diverse directions that they take, the quality of data collected and various research processes are impacted upon by a range of variables (Baxter & Eyles, 1997; Duenckmann, 2010; Goodsell et al., 2009; López-i-Gelats et al., 2009; Madsen & Adriansen, 2004; Punch, 1998; Ragin, 1994; Teufel-Shone, Siyuja, Watahomigie, & Irwin 2006). Successful rural research, particularly in developing countries that are characterized by imperfect transportation facilities and other spatial organization bottlenecks, requires that some consideration is given to geographical variables in the research approach. The relevance of spatial analysis of phenomena in developing countries is evidenced by the use of geographical variables in analysis of some aspects of poverty conditions in Africa (Sachs et al., 2004) and the recommendation for inclusion of spatial analysis in rural studies by sociologists (Lobao & Saenz, 2002). Generally, the relevance of geographical variables is additionally recognized and highlighted by Twigg (2009) who notes that location and other spatial dimensions are critical in understanding the varied characteristics of communities when assessing community resilience to disasters. The influence of spatial proximity on the choice of research topics and field settings is also emphasized by Punch (1998) who states that some researchers find it a lot more convenient conducting research in areas that are easier to reach. Delayed completion and the higher than expected travel costs due to the greater distance traversed before reaching rural areas swell research budgets beyond their original estimates. Smith et al. (2002) acknowledge the increased cost element associated with research conducted in remotely located rural communities in West Virginia.

Spatial analyses of epidemiological phenomena that are often considered to be only remotely linked to geography, due to their overwhelming health focus, are ready examples of various issues being studied with geographical explanations as the dominant points of reference (Bongaarts & Way, 1989; Gould & Wallace, 1994; Gould, 1993; Krieger, 2003; Pickle & Su, 2002). Boscoe, Ward, & Reynolds (2004) for example, elegantly analyzed data on the incidence and spread of cancer with a spatial focus and based on that, made a compelling case for geographical analysis of health phenomena. Studies by Moses et al. (1990) that analyzed spatial patterns in the incidence of male circumcision in 41 countries, application of geographical analysis to the spread of HIV/AIDS among gay men (Brown, 1995) and other studies on HIV disease that similarly reveal distinct geographical patterns in its incidence and spread in Ghana (Agyei-Mensah, 2006; Oppong, 1998) broaden societal understanding of various aspects of disease infections beyond their demonstrable health characteristics. The substantial contribution of geographically based studies to knowledge on the incidence and transmission of debilitating diseases underscores the need for placing space and place issues at the core of research generally and in rural research in particular, especially since the latter is impacted by space related variables such as infrastructural imperfections and accessibility difficulties.

Generally, areas where diseases and other phenomena are found, their spread over geographical space from their original locations to new sites, the distances they cover and the patterns they exhibit as they move are critical issues. Moreover, the various ways in which peculiarities and characteristics of the areas that these phenomena move to impact on them are of interest to geographers. An example is the association of malaria, cholera and other tropical diseases with poor sanitation, contaminated water supply and other environmental conditions that characterize

developing societies (Opio, 2012; UNEP, 2010; World Health Organisation & United Nations Children's Fund, 2000). The linked relationships between such areal characteristics and the incidence and spread of such diseases reveal the complex processes that are associated with their occurrence and persistence. Disease spread characteristics such as spatial flow patterns, for example, enable health professionals to better understand their attributes, and the reasons for their relative prevalence in some areas and scarcity in other regions. These then enable health experts to strategize on eradicating or at least containing their spread. Spatial analysis of the extent of exposure of nearby areas to infection due to their proximity to, and scale of interaction with disease prevalent areas would further contribute toward disease spread curtailment. Similar arguments can be made in the case of diffusion of agricultural innovation from farming communities that had already adopted these innovations to nearby and distant farms. A better understanding of spatial diffusion of innovative farming practices is vital if the desired goals of accelerated adoption of hybrid seeds and other modern farming techniques for enhanced rural development is to be attained. Specific spatial patterns that the spread of innovative agricultural practices over geographical space exhibit enable agricultural experts to better plan and schedule their agricultural promotion engagements with farming households in rural areas.

In view of the above, it can be confidently argued that representation of phenomena on earth surface, their association with environmental and other variables they encounter in their flow or distribution over the earth, the influence of some geographical factors such as distance and availability or absence of basic infrastructure in limiting or alternatively accelerating their spread and the spatial patterns they exhibit during their expansion reveal complex processes that broaden knowledge about rural processes generally. Knowledge gleaned from geographically-based studies also enables society to better understand the abundance of certain phenomena in some regions or their relative scarcity in others. These perspectives point to the fact that giving due consideration to geographical factors during research in rural areas that tend to be dominantly affected by geographical variables is a fundamental requirement. The inclusion of spatial analysis in rural research would contribute to expanded knowledge about rural conditions and would also be academically rewarding as findings from a case study of two rural communities in Ghana that are presented in this paper indicate.

4.0 Methods

A team of five persons—the lead researcher and four research assistants—undertook data collection which focused mainly on community water resource management in Djogbe and Dupong, two rural communities in Ghana. While the lead researcher was of a different nationality, all the research assistants were Ghanaians. Moreover, they hailed from the same ethnic groups that the communities belonged to. The advantages of using local persons were their familiarity with the research sites, prociency in the dominant laguages and thorough understanding of traditions, cultural practices and local protocols. Their experiences were brought to bear on community entry processes which eased acceptance of the research team by the communities and facilitated subsequent interactions with the people. Officials from the Department of Community Development and the Community Water and Sanitation Agency who accompanied the research team during initial community selection processes introduced the team to the communities after their selection for the research and explained the research objectives and planned activities to the

people. These also eased the acceptance of the team by the communities and enhanced community willingness to participate in research activities.

Key issues that were covered in the research include uses of water resources, differential access and use based on gender, age and other variables, perceptions on water quality and quantity, indicators of changes in water quantity and quality, and specific measures for improving upon water quality and quantity.

Prior to commencement of interviews, guided walks to sources of water supply were undertaken with the assistance of some community members for firsthand observation of their main characteristics. These observations were reinforced during the team's participation in festivals and traditional ceremonies held to confer reverence on their deities that supposedly resided in these water bodies. Guided walks and participant observation provided the people with additional opportunities to offer detailed explanations about their water-dependent activities, livelihoods and traditional activities. Data were collected from community leaders and elders using semi-structured interviews. Structured interviews with a sample of respondents who were selected using systematic sampling procedure were then conducted. In an effort to ensure balanced representation, the number of households in each community which were 88 for Djogbe and 57 for Dupong was employed in selection of respondents in line with the probability proportional to size approach. As a result, 33 women and 43 men from Djogbe as well as 22 women and 27 men from Dupong were selected for interviews. Focus group discussions were held after interviews had been completed both to obtain additional, in-depth data and to triangulate data collected earlier to enhance data validity. In each community, separate groups for adult and young women were formed and discussions with them were facilitated by two female research assistants, while similar sessions with male groups were handled by two male research assistants. Group sizes ranged between 8 and 10. This ensured a more effective interaction between the participants and then between them and the research team. Data collection started in June 2007 and was completed at the end of February 2008.

5.0 Study Sites

Data for this paper are predominantly based on fieldwork conducted in Dupong and Djogbe which were finally selected for the research from seven other rural communities. However, additional supplementary data were also derived from observations gleaned during preliminary visits to the five communities that were undertaken during the initial community selection process. A set of criteria used in the ultimate selection of the two study communities out of the original seven included small population size of below 1,000 persons, a complete absence of internal disputes due to the need for a tranquil atmosphere for the smooth conduct of the research, long residence in their current location (at least 50 years) and prolonged use of water resources.

Both Dupong and Djogbe are located in the forested zone of Ghana and therefore experience two maxima rainfall periods annually. These cover April to June and September to November and yield an average annual rainfall of 2,030 centimetres (Ghana Statistical Service, Noguchi Memorial Institute for Medical Research, and ORC Macro, 2004). Dupong had a small population of 293 whilst Djogbe had a relatively larger population of 629. In Ghana, population size is the determining factor in the categorization of communities into urban and rural, with communities with populations below 5,000 being considered rural (Yankson 2008; Ghana

Statistical Service 2013). This distinction is accordingly applied in this paper to distinguish them from urban centers.

Levels of infrastructural development in the communities were low. None of them, including the five that were not ultimately selected, had an electricity supply, a school or a health facility. Dupong and another rural community were linked to nearby settlements by an untarred road. The remaining five communities including Djogbe were accessible only through winding footpaths. None of household members in Dupong and Djogbe had acquired items such as television sets and refrigerators partly due to lack of electricity supply to power them. However key items such as vehicles and motorcycles whose use did not require electricity supply were similarly unavailable. This was obviously due to poverty. Availability of radio sets was however almost universal, with household possession levels of 81% in Dupong and 84% in Djogbe being in excess of the national average of 70% for rural communities as at 2012 (Ghana Statistical Service, 2014). These radio sets were powered by batteries hence lack of electricity supply did not affect their acquisition and use. In both communities, very few households possessed mobile phones, and these were functional only when the owners traveled to urban centres since coverage was yet to be extended to the communities. There was no landline in either community. Table 1 provides additional details.

Table 1: *Household Assets*

Household assets	**Households owning assets in Dupong (%)**	**Households owning assets in Djogbe (%)**
Radio sets	81	84
Bicycles	1	3
Sewing machines	9	13
Mobile phones	5	8

Source: Fieldwork, 2007-2008.

Crop farming was an important occupation in both communities. Major crops cultivated included cassava, which was the staple food in communities, then maize, cocoyam, plantain, vegetables and rice. Over 78% of household heads in Dupong were farmers while 43% of household heads in Djogbe were farmers. The proportion of farmers in Djogbe was relatively low compared to Dupong due to their engagement in fishing. Men were responsible for fishing while women dominated in fish processing. Both communities cultivated pepper and pineapples for export.

Though farming was a major economic activity in the communities, a substantial proportion of the farming households had simultaneously established small-scale non-farm economic ventures including agro-processing enterprises. Details of various economic activities undertaken in the two communities are provided in Table 2.

Table 2: *Small-scale Rural Non-farm Enterprises in Dupong and Dgjobe*

Type of Enterprises	**Number of Persons Operating Enterprise**				
	Dupong		**Djogbe**		**Total**
	Male	**Female**	**Male**	**Female**	
Fishing	0	0	113	0	113
Fish preservation	0	0	0	78	78
Trading	3	27	5	33	67
Cassava processing	0	3	0	45	48
Charcoal making	15	20	0	0	35
Food preparation and vending	0	25	2	7	34
Hunting	7	0	6	0	13
Drinking bar keeping	0	8	0	3	11
Dressmaking/tailoring	3	3	0	1	7
Local alcohol distilleries	5	0	0	0	5
Herbs preparation	3	0	2	0	5
Chewing stick making	0	4	0	1	5
Hairdressing	0	3	0	0	3
Traditional reproductive care (by traditional birth attendants)	0	1	0	1	2
Palm oil and kernel oil processing	0	2	0	0	2

Source: Fieldwork, 2007-2008.

6.0 Results and Discussions

A number of challenges were encountered during the research due to peculiar characteristics of rural communities and they included poor infrastructural development, blurred spatial boundaries, climatic variations, settlement patterns and housing quality. These led to increased expenses, delays in task execution and other frustrations that defined and shaped the research processes in diverse ways.

6.1 Travel Difficulties

Traveling to the communities to fix meeting dates and make other arrangements entailed considerable time, effort and expenses since their lack of telephone coverage and postal services meant traveling for direct and face-to-face engagements was the only means of reaching them. As noted earlier, out of the seven communities visited during the initial selection period only two, one of which was Dupong, were linked by roads to nearby settlements. However, unlike urban centers that often had asphalted road surfaces, only untarred roads that had been stabilized with laterite soil connected both communities. Traveling entailed significant delays due to the numerous potholes that dotted the roads. These worsened after the onset of rains widened the potholes. This meant reaching rural areas through vehicular travel was easier during the dry season than the rainy season. Accessibility to the remaining five communities that included Djogbe was only possible through footpaths. Distances to these communities were unavoidably lengthened by the winding nature of the footpaths and the fact that they could only be traversed by walking or riding bicycles and motorbikes. Reliance on these modes of transport instead of vehicles, though unavoidable, resulted in further travel delays.

As part of efforts to accurately schedule research activities and to collect data through field observations and guided walks, the research team sought information on the location of research sites such as streams and ponds, and the distances to these sites. Unfortunately, community members, though aware of their location, were unable to provide the expected distance information. The team was frequently told the sites were 'just around the corner', 'a little bit far' and other vague answers. Apparently such hazy responses were because they could not specify distance in terms of kilometers or miles. This could also be attributed to limited appreciation of distance as they had become used to walking to these sites on a daily basis. Another plausible reason was that standard units of measurement such as metres were not in use due to poor record keeping abilities which in turn could be due to their low literacy levels. As Boahene (1995) notes with regard to his research among cocoa farmers in Ghana "some of the farmers were not familiar with figures and so had difficulties in answering questions relating to their farm sizes, ages, and the exact time that they heard about the hybrid." (p. 261) Such imprecise information generated uncertainties regarding the extent of travel requirements which adversely affected planning and estimating the duration of data collection activities.

6.2 Settlement Patterns

Settlement patterns of rural communities affected the research. In contrast with urban communities that have a more compact built environment and therefore exhibit nucleated settlement patterns, not all rural communities have nucleated patterns. Whilst Dupong exhibited a nucleated settlement pattern which eased research activities, Djogbe had a linear pattern with the majority of its houses dotted along the Volta Lake. Djogbe's linear pattern was obviously due to the desire by community residents to be as close to the Volta Lake as possible to facilitate their fishing operations. Three other communities that were covered during the preliminary community selection process had dispersed settlement patterns. Both linear and dispersed patterns posed considerable difficulties to research such as increased expenses and longer duration of data collection tasks as a lot more time and effort were expended in identification and contacting community members for meetings, focus group discussions and other data collection activities.

6.3 Community Boundaries

A few households had established temporary farmsteads on farms when they were located at quite a distance from their communities. They resided in these temporary structures to maximize proximity advantages, engage in more intensive farming and ensure better farm management. Establishment of farmsteads presented difficulties as to whether these were constituent parts of the communities or their separate locations meant they were autonomous settlements, especially in situations where the farmsteads had been assigned names separately from the communities. These made it difficult to gauge with exactness the community spatial extent and thereby know the precise limits of research coverage. Absence of clear community boundaries also made it difficult for the research team to know where to commence and end research activities. The research team also needed to tread cautiously since boundary disputes and conflicts over resource ownership had degenerated into territorial battles in some areas in Africa. Whilst Ghana had largely been spared such internal conflicts and wars, there was nevertheless the need to exercise caution in order not to unduly inflame dormant passions and stir up old rivalries between nearby communities. The fact that boundary disputes delayed the completion of the Ghana 2010 Population and Housing Census in some areas (Ghana Statistical Service, 2013) confirmed the usefulness of adopting a guarded approach. The procedure adopted in these instances was to first find out if there were any simmering boundary disputes in the area and then proceed to ask the farmers resident in nearby farmsteads whether they considered themselves part of their original communities or not, and proceed to capture demographic and other data on only those who indicated their allegiance to their communities.

6.4 Rainfall and Rural Livelihood Responsibilities

Knowledge of climatic conditions of the area especially rainfall patterns and distribution is important for successful rural research due to their varied influences on methodology used, and the extent and depth of data collected. Despite the changing rural economic landscape, agriculture remains an important source of livelihood for rural households in Ghana (Ghana Statistical Service, 2014) as well as in developing countries generally (Madsen & Adriansen, 2004; UNEP 2014). Since farming in Ghana is predominantly rain-fed, the duration, annual total and seasonal distribution of rainfall impact variously on rural livelihoods. They influence scheduling of critical pre-cultivation practices such as land clearing and bush burning as well as farming activities such as seedling transplant and crop tendering. During this period, key data collection tasks particularly interviews and focus group discussions almost ground to a halt as community members departed at dawn and returned late in the afternoon, too tired from exhausting farm work to entertain requests for interviews and discussions. As Hoffmann, Probst and Christinck (2007) argue "when interacting with outsiders, such as researchers and extension workers, farmers have to weigh their input or time investment against the expected output of the interaction for themselves, their families, and possibly their relatives and friends. They must calculate the opportunity costs, i.e., what they could earn in that same time span by doing something else" (p. 364).

Between June and September 2007, there were repeated postponements of agreed interview and focus group sessions as a result of respondent preoccupation with urgent farming activities. An additional impact of rainfall emanated from its torrential nature as the excessive noise levels meant words uttered at meetings were

hardly audible. This led to frequent suspension of discussions until the rains subsided, further extending the period over which interviews were completed. Rainfall also affected traveling as most streams and rivers lacked bridges hence their water levels had to subside before they could be crossed for travel to proceed. The Ghana Statistical Service was compelled to suspend its national census program in some communities located along the Volta Lake that were affected by flooding during the rainy season and which delayed completion of enumeration tasks (Ghana Statistical Service, 2013). Appropriate consideration must therefore be given to the influence of seasonal variations on programing of data collection tasks.

In view of the above, the research team re-strategized its data collection approaches during the months of June to September by undertaking tasks for which only minimal community inputs were required. These included guided walks to assess community assets, land use systems and water supply sources. Additional strategy adopted included restricting data gathering activities to persons who seldom participated in farming such as handicraft makers, elderly persons and the infirm. On the other hand, at the onset of the dry season period, it was easier to conduct interviews and focus group discussions since farming activities were on the decline hence the people were readily available to participate in these sessions. The steep decline in the volumes of water bodies during the dry season also presented the research team with greater exposure to the frustrating difficulties that women and children in particular encountered in procuring household water supplies. A major lesson from these is that, researchers must identify the rainy and dry seasons to be able to gauge periods of excessive pre-occupation with farming activities and schedule appropriate research tasks accordingly.

6.5 Housing Characteristics

Identification of houses in the communities was another difficulty. As frequently encountered during research, there was an occasional need to return to respondents for repeat interviews, collection of additional data or seek data clarification. Moreover, there were occasions when some respondents were absent during the initial visits as a result of emergencies that had cropped up. Tracing such persons was hindered by peculiar rural housing characteristics that posed identification problems. Up to 75% of houses in Dupong and 73% in Djogbe were constructed with the same materials—mud and other earth materials. These compared with the 2010 national average of 60.5% of rural houses that were walled with earth materials, as against only 12.4% with respect to urban dwellings (Ghana Statistical Service, 2013). Apart from this, very few of the houses were painted, a situation that largely emanated from the use of poor walling materials. None of the dwellings had house numbers. Lack of tracing signs such as paint color or other distinctive physical features further constrained identification of respondent' houses which complicated the task of locating them. The houses were also sited without any discernible pattern, which placed extra impediments in efforts to locate them. One advantage that could have ensured an effortless resolution of this problem was the fact that in rural communities every person was known by the other (Rye, 2006; Slama 2004) due to their small population sizes and regular interactions, hence just mentioning the names of the respondents would have facilitated re-tracing them. However, respondent names were not being recorded on the questionnaires in line with standard research practice and also in accordance with ethics protocols that required anonymity. Two measures were adopted to minimize these difficulties. All houses were given temporary serial numbers to aid identification and subsequent retracing

of respondents. The second was to identify specific nearby landmarks such as a tree or grocery store and use these in determination of houses that were to be re-visited for additional data collection.

6.6 Lack of Venues for Meetings and Other Infrastructural Bottlenecks

As a result of the paucity of socio-economic infrastructure, the communities lacked community centres or other suitable places for holding meetings, hence meetings had to be held at chiefs' palaces, market places or under trees. Due to their peculiar characteristics, these meeting venues either positively or negatively affected research processes such as attendance and depth of discussions that ensued. Most of these venues were not necessarily places of central location and partly affected attendance especially by the infirm and the elderly. Chief's palaces though generally not spacious enough, were nonetheless occasionally used for meetings especially when issues of vital importance to the communities were to be deliberated upon. The main advantage was that such meetings attracted the largest audience because the presence of the chief made attendance mandatory. This meant that information dissemination was effective as almost everybody could be reached through such meetings. On the other hand, feedback was inadequate as during question and answer sessions, the people found the presence of their leadership a bit intimidating and were unwilling to articulate opinions that were contrary to their expressed views.

The lack of basic infrastructure and essential social services in rural communities also had another dimension—it necessitated procurement of basic items need to ensure that a sound environment was available for the research. Rural access to communication systems such as telephones in Ghana is generally low (International Telecommunication Union, National Communication Authority and Environmental Protection Agency, 2012). This situation was also encountered in Dupong and Djogbe. The lack of telephone lines, absence of internet access and other communication limitations also meant that online purchasing was impossible. Accordingly, direct purchasing of logistical items required for the research was the only possible means available whenever initial purchases got depleted. This could be undertaken only by traveling to, and from, the nearest urban centres which was associated with unbearable delays due to transportation imperfections.

7.0 Specific Strategies Adopted to Address Other Challenges of Rural Research

Whilst infrastructural limitations posed considerable challenges to the research, this difficulty also enabled the research team to adopt measures that enhanced their immersion in the communities, promoted their acceptance and eased flow of information from the people. For example, the team decided to spend a few days in the communities partly to minimize the need to travel from hotels in urban centres to the communities on a daily basis and thereby reduce fatigue associated with this, and partly to curtail research expenses. These local stays, though they only lasted a few days, attracted considerable appreciation from the people as to them, it constituted evidence that the team considered them equal partners. Furthermore, they interpreted this as a gesture of friendship and affinity as well as a desire for bonding with them. Major impacts this strategy had on the research included the more frequent interactions between the team and community members that ensued, an enhanced community willingness to share treasured views on their unique

cultural processes such as selection of a chief by the queen mother, and a readiness to divulge sensitive historical information normally withheld from outsiders.

Another research approach that eased community acceptance of the research team was guided walks and participant observation of traditional events such as festivals. Guided walks that entailed using local persons to lead the team for visits to, and first-hand observation of, specific geographical sites such as water bodies, rocks and big trees provided community members with opportunities to brief the team of the religious and cultural relevance attached to these sites. These enabled the team to avoid encroachments and other acts that they considered offensive to their religious and cultural sensibilities, and which could have alienated them. In an effort to gain additional insight into traditional festivals held to accord reverence to the water bodies and other sites that they considered abodes of their deities, the team participated in these events and joined in dancing, singing and tasting traditional food types offered as part of their religious and cultural protocols. These acts further bonded the team with the community members. Open use of sophisticated gadgets such as laptops in the communities was avoided in order not to create an atmosphere of superiority. These strategies endeared the team to the communities and enhanced collaborative engagements that smoothened research processes.

Periodic stays in the communities, participation in festivals, and consumption of locally prepared food types were interpreted by the people as signals of friendship and contributed toward local acceptance of the research team. Furthermore, these measures enabled the team to successfully navigate the power dynamics that frequently characterize relationships between external actors who are considered experts and communities, and which lead to the latter's uncritical acceptance of views from them (Bohensky et al, 2013; Das, 2010; Goodsell et al, 2009; Prager & McKee, 2015). Adoption of these strategies contributed to increased interaction even at odd hours, frequent dialoguing and greater willingness to provide ready clarification of vague responses.

8.0 Conclusion

The foregoing indicates that rural research processes are impacted upon in diverse ways by various geographical conditions that characterize rural areas in developing countries such as Ghana and also define to a significant extent the contours of rural livelihoods. As found in Dupong and Djogbe, people's diverse preferences for, and use of, space such as establishment of temporary farmsteads that resulted in hazy community areal boundaries and use of poor housing construction materials, in addition to modifying the rural landscape, lead to altered research methodology, swelled research budget, and delayed start and completion of data collection activities. One key attribute of rural communities which significantly impeded research is their restricted infrastructural development. Rural accessibility difficulties contribute to reduced interactions between researchers and rural respondents, which in turn minimize the vigor of the relationship that eventually emerges between them. Limited availability or non-functioning communication systems and other facilities imply that the lived realities of a place or space must be given due consideration when undertaking research and other activities. This suggests that network of roads and other communication systems that are considered by Young (2006) as aids that enable one to overcome distance limitations are effective in the developed world characterized by public transit systems, car-based mobility and other multi-modal travel facilities that offer reliable schedules, pre-

determined routes and other benefits but are largely redundant in Dupong, Djogbe and other rural areas where motorized trips are rare.

It must be noted that both Djogbe and Dupong exhibited one attribute that closely mirrored what pertained in developed countries—increasing rural economic diversification. Engagement in non-farm economic activities contributed to income diversification and minimized vulnerability during periods of crop failure. These were further indications of increasing complexity of the rural economy, and confirm the prevailing opinion that the rural economic landscape is no longer exclusively characterized by agricultural activities. An awareness of both similar and differing characteristics of rurality in the developed and developing worlds is therefore critical for successful engagement in rural research. It is also essential for researchers to be cognizant of the fact that changing environmental conditions associated with both dry and rainy seasons and other peculiarities in rural areas could affect the scale and pace of their research activities, hence these need to be incorporated into their research programming and scheduling. Strategies must be devised to minimize power differentials between researchers and rural people. Awareness of intra-community power differences including between the chiefs and the people such as occurred when meetings held at palaces led to restrained expression of divergent views is essential. Outsiders keen to engage with rural dwellers, when armed with such knowledge, will be better positioned to accurately strategize their plans and programs, and thereby utilize the most appropriate approaches for pursuing varied rural engagements. As Leyshon (2011) argues, libraries, the web and other information sources can be tapped for data on cities and villages but notes further that "yet young people are walking in order to know a place despite the fact that all that may be discovered has already been captured and indexed, because they cannot know a place simply through these systems of information" (p. 315). Generally, the practical rural realties discussed above imply that rural research should entail sufficient flexibility to enable researchers to make on-the-spot adjustments in response to fluctuating field situations encountered. It also implies that researchers must be ready to modify the type and tempo of their research activities to suit distinctive rural conditions.

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