FREQUENT BOAT ACCIDENTS ON THE VOLTA LAKE OF GHANA

A Case Study of Tapa Abotoase in the Jasikan District of the Volta Region

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Declaration

I hereby declare that this piece of work is the product of my own efforts and individual work. Where there are borrowed ideas, quotations and concepts, appropriate referencing and acknowledgement have been dully established.

Dedication

To Perpetual Agbagba; my wife and lovely daughters; Paschaline Emefa & Patricia Eyram Agbagba.

ABSTRACT

Boat accidents have become a matter of public concern during recent times as a result of its frequency in recording high fatalities on the Volta Lake of Ghana. This study sought to find out the main causes of this frequent event and to identify the various ways it affects life in totality. Besides, the paper tries to investigate efforts by some institutions including government to curb the situation and also to discuss relevant interventions in matters relating to the various forms of boat accidents on the lake. A case study approach was therefore adopted; leading to the choice of Abotoase in the Jasikan District of the Volta Region as the study area. The main approach to the study was qualitative where different data collection techniques were used to gather relevant information for the study. Major concepts such as accidents, governance and risk culture/behaviour were considered in explaining the findings. A theoretical framework of accidents was adapted and modified after Rick Curtis (1995) to explain the interrelationship among the two categories of factors (natural/environmental and human-induced) and how they work to cause accidents. The findings indicated that, although there are numerous causes of boat accidents on the Volta Lake, most of the factors have not been critically considered by stakeholders except for a few that have been highlighted several times by the media. Poor governance and indiscipline were noted as the basic underlying factors influencing the number of accidents on the lake. However, a major factor that has posed a lot of challenges to all stakeholders of the boat transport industry is the numerous tree stumps standing in the lake. This of course is a natural/environmental factor that has received a lot of attention in recent times because it has been responsible for the greater number of accidents in the past. It has also been found that, the accidents affect individuals directly, the communities in which they live and the nation at large. The study concludes among other things that, absence of an alternative means of transport, bad governance, lack of enforcement of rules and indiscipline among the participants in the boat transport industry; besides the submerged tree stumps in the lake are the major influencing factors of boat accidents on the lake. In addition, the study found that although some effort was made by government to improve the situation, there are more recommendations to be considered for a better future of the industry.

LIST OF ABBREVIATIONS

US	**United States of America**
NGOs	**Non- Governmental Organizations**
VALCO	**Volta Aluminium Company**
VLTC	**Volta Lake Transport Company**
JDA	**Jasikan District Assembly**
USD	**United States Dollar**
GHS	**Ghana Cedi**
GMA	**Ghana Maritime Academy**
VRA	**Volta River Authority**
NADMO	**National Disaster Management Organization**
NTNU	**Norges Teknisk Naturvitenskapelige Universitet**
PDFs	**Personal Floatation Devices**
CPO	**Chief Petty Officer (in the navy)**
GNAF	**Ghana National Association of Fishermen**
CSRD	**Clark Sustainable Resources Development**
RMA	**Regional Maritime Academy**
GHAPOHA	**Ghana Port and Harbours Association**
FODAR	**Foundation for Democracy Awareness & Research**
ADRA	**Adventist Development and Relief Agency**
GNFA	**Ghana National Fisheries Association**
GPS	**Global Positioning System**
GNA	**Ghana News Agency**

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CHAPTER ONE

Background to the Study

1 Introduction

Hardly a week goes without news of boat accident in the world's inland waters especially in Africa. Hundreds have died on Lake Victoria and Ghana's Volta Lake in recent years. According to the 4th May 1996 edition of (The New Work Times), the police confirmed on 3rd March, 1996 that at least 81 people drowned when a crowded boat capsized in rough weather on Lake Victoria on Thursday, just days after 36 people died in a similar accident.

Some headlines on boat accidents in the world during recent times read: Death toll rises to 97 in Djibouti boat accident, At least 120 dead in Ghana's Lake Volta accident, Ghana Calls Off Search For Survivors of Boat Accident, Death toll from Djibouti boat accident rises to 109, At least 20 dead after DR Congo boat capsizes, Egypt says families of ferry victims to get compensation, More survivors found in Indonesian ferry accident, 23 still missing[1]; and more.

According to Mc Knight et al (2006), over 600 people die whilst more than 4000 are reported injured in recreational boating accidents in the US. As with most other accidents, human error is the major contributor.

1.1 Statement of the Problem

In recent times, the Volta Lake has recorded fatal accidents which have claimed several lives, most of them being poor traders, school children and farmers on island settlements and port towns along the banks of the lake. Almost every month of the year, lives and properties are lost through navigation on the Volta Lake. According to Ghanaian newspaper reports collated between 1995 and 2006, 96 cases of boat accidents were recorded; causing hundreds of deaths and massive loss of property. Major ones include 140 lives in 1995, 45 lives in 1999, 99lives in

[1] http://www.skyscrapercity.com/showthread.php?t=314043&page=3 (accessed on 18/01/08)

2002[2], 60 school children in 2005 and 130 lives in 2006 most of them women and children. (Amnesty International, 2006)

Volta Lake basin spreads across 16 districts located in 5 different regions. These districts have a population with communities whose size range between 400 and 3000 people.

Communication networks are poor and social infrastructure, such as health, education and market facilities, are inadequate. Consequently most of the inhabitants in these communities have no alternative than using the only means of transport (small canoes and boats) in accessing the needed facilities inland. This makes them vulnerable to these accidents. Accidents on the Volta Lake are becoming a source of worry to the government and the country at large in view of the human resources being lost and the socio-economic effect of the accidents on the country.

For the past years, transportation on the Volta Lake has posed a major challenge to both government and civil society groups as the lake continues to record a high number of fatalities. Apart from the existing tree stumps in the lake that cause boats to capsize, several other causes of these accidents are not clear to the public and other stakeholders.

This situation has prompted me to delve into the issues of these frequent boat accidents with specific areas of concern as far as the experiences of the people are concerned. In connection to this, the following research objectives have been formulated with the appropriate questions to guide me find out more about the issue.

1.2 Objectives:

-To find out the main causes of frequent boat accidents on the Volta Lake.
-To identify the effects that major boat accidents have had on the people in recent times.
-To investigate efforts by some institutions, including government to curb the situation.
-To suggest relevant recommendations on any matter related to the major accidents to forestall any future occurrence.

[2] http://www.skyscrapercity.com/showthread.php?t=314043&page=4 (accessed on 12/05/08)

1.3 Research Questions

- To what extent has environment, social, population and technological factors (human induced) are responsible for boat accidents on the Volta Lake?

- What is the relationship between socio-economic activities and the causes/effects of boat accidents in the area?

- What roles have major institutions such as government and NGOs played in mitigating the numerous boat disasters on the Volta Lake

1.4 Selection of the Study Area

Though the Volta Lake stretches from Akosombo in the Eastern Region through the Volta Region, Yeji in the Brong Ahafo Region and to the Northern Region of Ghana, the accident rate within the research area is the highest. Tapa Abotoase is one of the largest market centres along the Volta Lake in the Jasikan District serving several island communities. Since traders, fishmongers and other people have to travel across the lake to sell and buy; and because these activities are dominated by women; they and their children are the mostly affected accident victims. Besides marketing activities, people seek for other social services like schools, health facilities and communication networks in towns along the lake.

One advantage of easy access to data in this area is that, the residents understand my local language since they also speak the same language except for a few dialectal differences. Since little has been done to alleviate their plight, regarding boat accidents, they would be willing to give more information to anybody researching on a topic like this.

1.5 Volta Lake and Akosombo Dam

The Volta Lake is a man-made lake created after the River Volta was dammed at the Akosombo gorge. The lake is dendritic in shape and has a generally north- south orientation with an average length and width of 400 km and 25 km respectively. It has a catchment of 385,185 km2, excluding its own area of 8,730 km2. Nearly 60% of this area lies outside of Ghana. (World Lakes Database, 2002)[3]

[3] http://www.ilec.or.jp/database/afr/afr-16.html (accessed 22nd April,2007)

The construction of the dam being called Akosombo dam today was started in 1961 and completed in 1965. The main purpose of this dam was to generate hydroelectric power for the nation. The dam which is the main element of the Volta project was undertaken to regulate the flow of the Volta River, to store water for irrigation and to generate hydroelectricity (750,000kw capacity) to supports a large aluminium industry (VALCO) in Tema together with other industrial and domestic uses.

The multi purpose use of the lake and the generated electricity has contributed greatly to the socio-economic development of the country. It is an important source of water for domestic consumption, agricultural production, transportation, industry, hydropower, sight seeing as well as tourism.

The Volta basin occupies the central part of Ghana and covers about 45 percent of the nation's total land surface. It is characterized by poor soil and the annual rainfall averages between1, 000 and 1,140 millimeters. The most widespread vegetation is savanna with areas of dense and thick forest. With the construction of the dam, 8,515 hectares[4] in area, much of the forest area in the research area and nearby Afram plains were submerged. The subsequent flooding of this vast area of vegetation led to the growth of island communities within the basin of the lake. This triggered the need for lake transportation, to and from these communities. Though efforts were made to connect the displaced communities by road, lake transportation remained the only alternative means of communication and growth of better economic activities.

In spite of the tremendous benefits from the new dam, little was done as far as appropriate environmental and social impact assessments are concerned. According to Quartey (1969), the creation of the dam has resulted in the displacement of some 88,000 people; for which the government of Ghana has provided an initial 54 settlement communities/towns.

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[4] http://www.ghanaweb.com/GhanaHomePage/tourism/akosombo.php (accessed on 04/02/08)

Apart from the only official Volta Lake Transport Company (VLTC) for providing efficient and reliable ferry services on the lake, there are individual boat owners who form small associations for the purpose of navigation on the lake. Although the Volta Lake Transport Company operates in four different areas on the lake, none of these services is rendered in the research area. This is due the fact that, the nature of the boats used by the company cannot easily meander through the numerous tree stumps submerged in the lake as the local boats do. The major areas that Volta Lake Transport Company operates include, transport of general cargo, petroleum transport, cross ferry and tramping services.

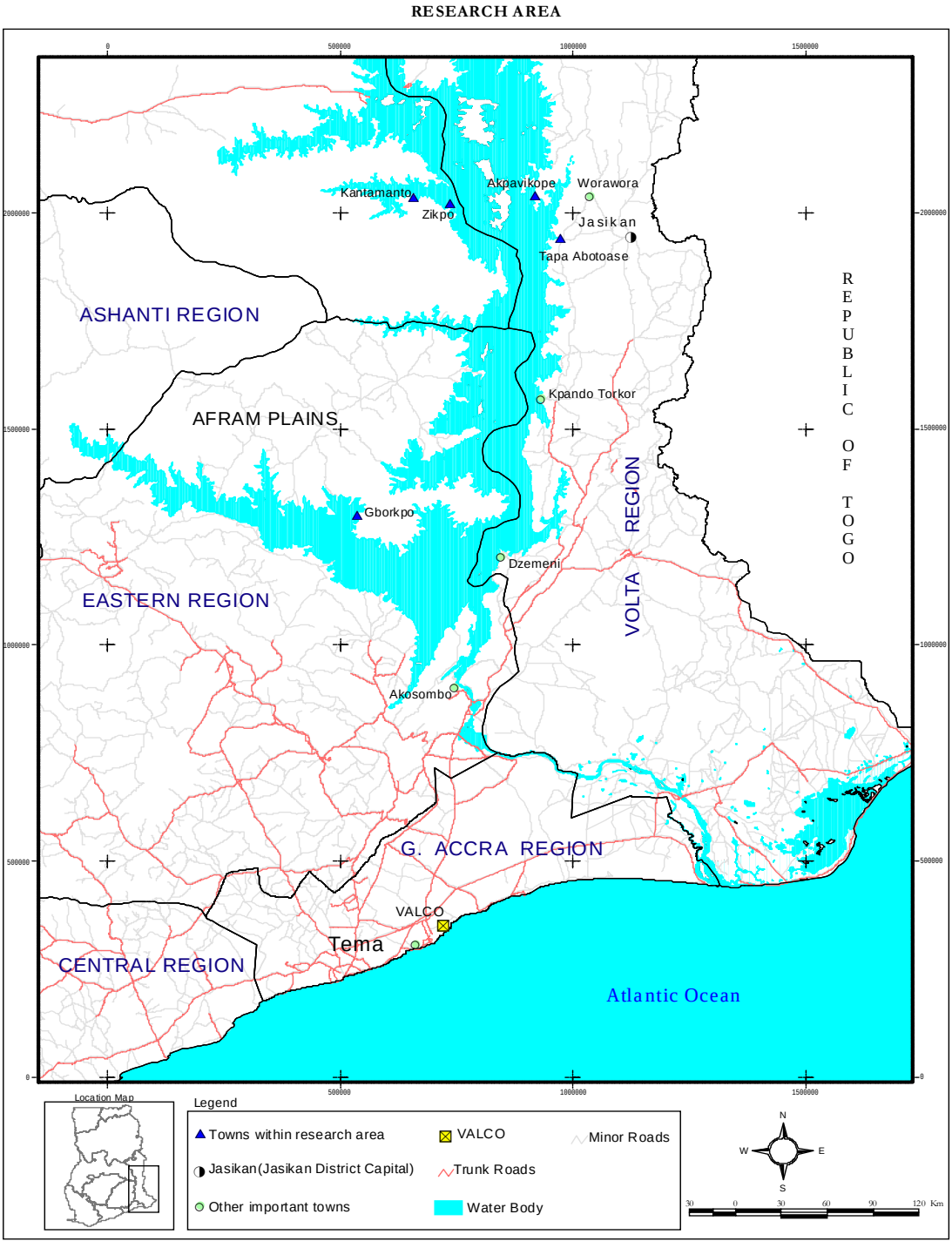
Transportation of general cargo includes cement, cotton seeds, cotton lint, shea nuts and construction materials besides passengers. The company also undertakes the transportation of petroleum products to the northern sector of the country. Under tramping services, it is a combined passenger and cargo vessel with the capacity to carry 300 passengers and 300 tonnes of cargo between Kete Krachi and Yeji in the northern region[5]. Besides, the Company operates cross ferry services along the lake at places that have no road network connecting them but not in the research area. In these areas, that the company operates there are less tree stumps in the lake and the routes for the ferries are short and clearly demarcated unlike in Abotoase and its Island communities.

1.6 Geography of the Study Area

Tapa Abotoase is a cosmopolitan centre in the Jasikan District of the Volta Region in Ghana. It is linked by a first class road from Kpando and a second class road from the District capital; Jasikan. There is also another first class road from Worawora that connects Abotoase as indicated in the map below:

[5] http://www.ghana.gov.gh/ministry_of_ports_harbours_railways (accessed on 22/01/08)

Figure 1Map of the Study Area



There are major ethnic groups from different parts of the Country residing in this area; ranging from Akans, Buem, Bowiri and Nkonya. Besides, there are groups of Fantis, Ewes, Ga-Adangmes, Kotokolis, Hausas and the Bassari people.

The town is a small port town located at the Eastern side of the Volta Lake with geographical coordinates of 7° 24' 0" north and 0º 18' 0" east. The altitude of the town is about 140 meters (462feet) above sea level.

As a small port town and a big market centre serving surrounding villages and nearby island communities, major economic activities in the town include fishing, vegetable farming, trading and the formation of small co-operatives such as community based organizations and farm based organizations. Trading involves the buying and selling of salt, charcoal, agro- chemicals, pre-mix fuel, fish, foodstuffs and other assorted goods.

According to Ghana's 2000 population and housing census[6] the population of Abotoase increased between 1984 and 2000 mainly because of economic potentials available along the Volta Lake. Many migrants from the southern part of the Country flocked in to engage in fishing along the Volta Lake.

Some of the numerous island communities within the area include, Akpavikope, Gbokpo, Zikpo and, Katamanto as indicated in the map of the study area above.

1.7 Boating Activities in the Research Area

The absence of cross ferry services motivated individuals in the research area to organize themselves and provide transportation services in that part of the country through the construction of wooden boats. However, to own a boat means to have a fair amount of initial capital. According to the respondents, (boat owners and operators), a new boat costs 2,500 Ghana cedi; equivalent to (2,631.25USD) and an outboard motor also the same amount. Meanwhile every boat needs two outboard motors to start with transportation on the lake.

[6] ghanadistricts.com; is the official site for all 138 metropolitan, municipal and district assemblies in Ghana

All in all, one needs to raise an initial capital of 7500-8000 USD to begin business in the transport industry.

To operate a boat according to the people, however needs no formal training except the skills acquired through apprenticeship especially during childhood. However, modern technology and the rate of accidents in recent times; have challenged this notion that, boat transport operation does not require professional training.

The boat owners have their own associations with rules and regulations supposed to be governing them.

1.7.1 Some Bye-Laws of the Association

- An overloaded boat will be arrested and prosecuted or pay an amount of (200,000 cedis[7]) to the Association; subject to review
- Any boat that refuses to buy the required number of life jackets to all passengers shall be dealt with drastically and shall also be liable to a fine of (100,000 cedis)
- A passenger will not be seen seated at the edge of any boat during navigation. Offenders shall be charged to pay a fine of (50,000 cedis)
- Any boat discovered not to be river worthy by the executives or the task force shall be stopped from operating until the owner buys a new boat.
- An absence of a fire extinguisher in a commercial boat attracts a penalty of (100,000 cedis)
- Boats seen to be involved in speed games on the lake shall be charged to pay a fine of (500,000 cedis)

The passengers mainly commute from the island communities to the market centres and main towns along the lake. The transport boats for that matter work only on market days. Besides, during festivities like Easter and Christmas and sometimes during vacations for students, the boats make good money. But after all, the organization of lake transport by these individuals is greatly in line with the government's ambition to provide market access

[7] Ghana's currency; cedis has been redenominated in 2007 into what is called new Ghana cedi. Now 200,000 old cedis is equivalent to 20 new Ghana cedi with an equivalence of 20.1459USD

to the inhabitants of the immediate lake hinterland areas towards improving economic activities especially agriculture production and effective trade.

As long as accidents on the Volta Lake are concerned, the different actors and stakeholders hold different perspectives. In some cases, the responsibility for the accidents is accepted, but in most cases the blame game continues when every group passes the buck to the other. Major stakeholders involved in the business include the government, the boat owners and operators, fishermen, individuals, JDA, farmers and traders. Each stakeholder or group would want to prove that, it is the other which is not doing what it ought to do; and it was clear that, all the groups try to shift major responsibilities to the government. This became a major methodological challenge for me as I have to cross-check what each group says to be sure of what they are telling me. This is the only way I can understand the situation better and also to avoid biasness in the kind of knowledge I produce.

To do this I tried to vary issues of responsibility when interviewing all the respondents. I also cross- checked claims and blames of each group from other respondents who are not directly considered responsible for the causes of the accidents. For example about life jacket provision, boat operators tried to prove that they were interested in procuring more for the passengers but Volta River Authority (VRA) did not bring the ones they promised for sale. Others also said if government could reduce the prices they could afford more.

Also when it came to issues of carelessness and indiscipline among boat operators, it was only one of them who accepted that drunkenness and overloading exist among them but even he refused ever overloading or drinking; before operating. But the police officer interviewed explained that, they have numerous records of such cases on the Volta Lake. So I was very careful in trying to get the information about who is responsible for what and who fails to do what; by asking questions that could give detailed information about the respondents themselves and of those that were not present.

The blame game continued as evident in the special case of an evacuation exercise from Digya Island where 120 people were alleged to have perished in a boat disaster. Almost all

the respondents except the officials from the Ghana Navy, Ghana Police Force and the Ghana Maritime Authority (GMA) tried to put the blame on the irresponsibility of the officials of the Forestry Commission in the district. The respondents claimed the evacuation exercise was not professionally executed because too many people were forced onto a boat designed to carry only 63 passengers which caused the boat to be badly overloaded.

I tried to confirm this by interviewing stakeholders or groups that do not belong to any government institution, and they all testified it. Fortunately the sector minister who is also a government official accepted in a report from the 24th August, 2007 edition of the statesman, also a private newspaper that, "Government has accepted the findings of the committee that the eviction exercise was not well planned and that the Wildlife Division did not involve the relevant stakeholders to fashion out an acceptable evacuation plan which will have mitigated the suffering to the evictees".

CHAPTER TWO

2 Research methodology

2.1 Introduction

This chapter intends to explain the techniques of data collection, analysis and interpretation. According to Kitchin and Tate (2000:6), 'methodology is a coherent set of rules and procedures which can be used to investigate a phenomena or situation within the framework dictated by epistemological and ontological ideas'. It is also my desire to highlight some reasons underlying my choice of qualitative methods. There will be a further description of the various techniques employed in gathering my data and how they will be analysed. But this chapter can never be complete without outlining a few problems I encountered in making the collection of the data a reality. Issues of data reliability and validity will as well be discussed here; where the emphasis on the inability to adopt a quantitative approach to this study will again be highlighted.

2.2 Methodology

Though I intended to collect some secondary data in addition to primary ones, the emphasis was basically placed on collecting qualitative data from primary sources. The choice for qualitative method was influenced by several other factors rather than thinking of what will be easy for me. Qualitative research generally defined, ''is any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss and Corbin, 1990:17) According to Limb and Dwyer (2001) qualitative methodologies are characterized by an in-depth, intensive approach rather than an extensive or numerical approach.

2.3 Reasons for Qualitative Approach

Limb & Dwyer (2001), points out that qualitative methodology explores the feelings, understandings and knowledge of others. The aim is to gain a deeper insight into the processes shaping the social world. The emphasis in qualitative research is to understand the lived experiences and to reflect on and interpret the understandings and shared meanings of people's worlds and social realities. It is not aimed at carrying out statistical

descriptions or generalizable predictions, but to seek subjective understanding of social realities.

Since statistical descriptions do not seek subjective understanding of the social reality, I have decided to use qualitative descriptions to understand the lived experiences of boat disaster victims and the entire population of the research area in order to reflect on and interpret the shared meanings of their everyday social, economic and cultural world and realities.

Also, manipulating just the numbers of accidents, the causes and the victims involved might not reveal the feelings and the expressions of the people about this long rooted problem in their area.

Kvale (1996) indicates that, qualitative research is sensitive to the human situation. It involves an emphatic dialogue with the subjects studied and it may contribute to their emancipation and empowerment. I found this interesting to my work because, the issue of boat accidents at Abotoase and its environs has been there for several years. The voice of the people is only heard when a reasonable number of them get involved in such dreaded events. After a few days, no one cares about the underlying factors/causes of the accidents, let alone considering measures to alleviate the problem.

However, if I had used quantitative approach, the rich display of statistical patterns and superimposition of the situation will mean less to the inhabitants since their feelings and experiences might have been ignored unlike a qualitative study.

To do a qualitative study is also determined by the research questions. It is also influenced by the researcher's understanding of social reality and the positionality of knowledge production. The issue of positionality is mainly about the question of representation; that is what exactly gets done by whom, how and where it is done. In social research, the issue of representation especially of a marginalised group is critical to the results of a particular research work. Limb & Dwyer (2001) argue that qualitative methodologies are

characterized by a rational production of knowledge between the researcher and research objects and that the knowledge produced is usually situated and partial and that it requires critical analysis of the data obtained in order to get a clear picture of issues being discussed.

In practice, this means that, whatever knowledge I produce at the end of this work might be partial and situated, based upon what the respondents told me and how I treated the information I received. To limit this, I tried to cross check answers the respondents gave me by interviewing a different respondent who is not directly responsible for the issue. For example, I tried to find out from different groups such as government officials, passengers, boat owners and operators; who is responsible for what as far as the accidents are concerned. Besides, I computed monthly and annual income of boat owners to ascertain whether they were really not making profits as they have indicated.

According to a conference paper by Akua Anyidoho, positionality refers to the contextualised and relational locations such as nationality, ethnicity, race, class, education, religion, marital status and non-demographic characteristics such as ideological leanings, epistemological perspectives, philosophical orientations, and so on. Positionality; she argues is contextual because it concerns both the subjectivity of the researcher and the subjectivities of others (such as others in the research situation and the audience of the research). Positionality is an important concept because it has implications for the nature of the knowledge produced, and how that knowledge is received[8]

The attitude of the subjects under study, the role of the researcher, then position and responsibility in the field (Dowling, 2000 in Hay, 2001:29) are also to be considered. Since I am interested in looking at the social, economic and cultural perspective of the causes and effects of boat accidents in the research area I think the best approach to consider is qualitative. This will enable me to understand the perception of the people about the accidents and how it is affecting their social and economic life.

[8] http://www.cordesria.org/links/conferences/papers/N

Qualitative research has however, come under criticism regarding subjectivity and positionality of the researcher. It is argued that the positioning of the researcher by herself / himself and by the research subjects influences what information is given and how the subjects' "truths" are represented. It is noted by many researchers that the boundary between the insider and outsider is difficult to negotiate. The approach of data collection and analysis under the qualitative approach may also be labour intensive and time consuming.

2.4 Techniques of Data Collection

Data are research facts that are based on respondents' answers to questions. Data collection is the gathering of information (figures, words or responses) that describes some situation from which conclusions are drawn[9]. Though secondary data may be very useful in qualitative research, the purpose of fieldwork is central and purposeful for collecting primary information. Secondary data is additional information that enables the researcher to cross check facts or do an empirical comparative analysis of results. The basic underlying factor determining data collection is the research questions and the objectives of the project.

Data for this study were collected from primary sources, with little additional information from secondary sources. The sources of the primary information include focus group discussions, in-depth interviews, participant observations, key informant interviews and the use of photographs. With regards to focus group discussions, priority was given to boat operators and fishmongers. Passengers, and other community members were to be considered but I later realised that the atmosphere was not conducive for such discussion since all passengers were just so anxious to join the boat. It was not easy to organize them for this purpose because I think the setting was not the right time and place.

The secondary sources were to entail literature studies (review) of published materials, selected reports, other relevant journals, articles and internet sources. About the published materials, departments and institutions such as National Disaster Management

[9] http://www.esomar.org/index.php/glossary-d.html (accessed on 08/10/2007)

Organization (NADMO), Jasikan District Assembly, and Ghana Maritime Authority were consulted for available information.

Unfortunately, the respondents at these departments granted an interview instead of releasing published materials. Most of them said there was no published material where others expressed the feeling that they can give verbal descriptions of their experiences. Since I was interested in both, it was wise to accept their offers. On the issue of selected reports, three different commissions and committees of inquiry formed by the President after some of the boat accidents were to be reviewed, provided they were accessible. But I later realised that it became very difficult to get these documents since the whole issue of boat accidents have been heavily politicised. However, a few articles from the national and private daily newspapers were gathered as a source of secondary information. In all, I spent three weeks for collecting the primary data using various techniques as mentioned above. The different approaches I used throughout the data collection period are explicitly explained below.

2.5 Interviews

Kvale (1996) defines qualitative research interviews as ‘‘attempts to understand the world from the subjects’ point of view, to unfold the meaning of peoples’ experiences, to uncover their lived world prior to scientific explanations’’ According to him research interview is a form of conversation in which the subjects not only answer questions prepared by an expert, but themselves formulate in a dialogue their own conceptions of their lived world.

This was the case in most of my interviews as some respondents brought in their own experiences from previous accidents, especially what recently happened during an evacuation exercise on one of the islands. They narrated the whole story and expressed their feelings about whose fault they thought the causes of the accidents were.

In this study, I employed structured/open-ended questions and the key informants’ strategy as the basis for my interviews in response to Kitchin and Tate (2000:213) argument that, interview allows the researcher to produce a rich, in-depth and varied data set.

2.5.1 Structured/Open-ended interviews

In its simplest form, a structured interview involves one person asking another person a list of predetermined questions about a carefully selected topic. The person asking the question (the interviewer) is allowed to explain things to the interviewee (respondent) does not understand or finds confusing[10]. In this type of interview, the interviewer tries as much as possible to ask all the respondents the same questions in order to compare results/responses at the end of the process. But respondents are not prevented from discussing related topics. It must however be noted that, the quality and usefulness of the information is highly dependent on the quality of questions asked. The technique can also be time consuming when there are a large number of respondents to be interviewed.

In my study, this technique was adequately used to collect information from the secretary of the boat owners' association, a boat operator, a fishmonger who travels often on the lake and the Chief Inspector of Police at the Abotoase Police Station. Others include the former assemblywoman, a female victim of one major accident; and the representative of Ghana Maritime Authority boss. In all these interviews, the focus was based on the research questions, with well prepared questions but with certain modifications when it comes to specifics. General issues like causes of the accidents, the social and economic effect and suggestions for the way forward were commonly discussed with all the above respondents. But each and every one was allowed to delve into specific regimes when it came to issues of socio-economic effect, what was done to alleviate the problem and what is in progress.

These interviews really took close to forty minutes in each case, as individuals have their own experiences and related issues to share. Besides, I had to be very careful when it comes to individual responsibilities in reducing the problem, since it is an issue of divergence.

[10] http//www.sociology.org.uk/methsi.pdf (accessed on 9/10/07)

2.5.2 Key Informant Interviews

On the issue of key informants, I selected five respondents, including a naval officer; a fishery officer, a boat operator who was a victim of Digya boat disaster, the Assemblyman of Abotoase and a victim of the accident involving evictees from Digya Game reserve. According to Mikkelsen (1995), key informants are people anticipated to have particular insight into or opinions about the topic under study. They may be ordinary people and not necessarily professional specialists, the better educated or the officials. For example, the Assemblyman is neither a boat owner nor an operator, but he has been in Abotoase for years and the elected political leader of the area. He gets regular reports and complains about accidents and all matters of indiscipline related to the use of the Volta Lake in that area. This has enriched him with a lot of information about the issue under discussion. The naval and the fishery officers are professionals so almost all the information they gave was more technical and it appears that they are more vested with issues of lake transportation, specifically in this part of the country. The two victims; the operator and the latter (mere victim) are people who use the lake regularly for transportation purposes. Both travel on every market day for their own businesses.

The key informant interviews were semi structured as in the other cases, and a prepared interview guide was followed in getting their views and experiences. According to Mikkelsen (1995), in a semi-structured interview, an interview guide is used with the topics and issues to be raised specified in advance, mostly in outline form. The outline increases the comprehensiveness of the data and makes data collection systematic for each respondent. Logical gaps in the data can be anticipated and closed.

However, in semi-structured interviews, important and salient topics may be inadvertently omitted. Interviewer flexibility in sequencing and wording questions may result in substantially different responses from different perspectives, thus reducing the comparability of the responses.

Mikkelsen (1995) argues that, though outsiders with inside knowledge are often valuable key informants who are able to answer questions about other people's knowledge, attitudes and

practices besides their own, there is the risk of being misled by key informants' sometimes biased information. Nichols (2002) also argues that though key informants are most reliable on factual matters such as the availability of some services and facilities in a community and their opinions and evaluations can be very useful; one needs to follow a wider view to follow up with a survey or other research project**.** That is to say that one must not rely on only this method to get a broader perspective of issues.

2.5.3 Focus Group Discussions

Mikkelsen (2005) indicated that, focus groups, homogeneous or mixed groups are relevant when the dynamics of the group situation is considered to provide additional useful information. Besides, a group interview with specialists may provide more and better information than could be obtained through a much more time-consuming exercise of individual interviews with the same people. According to Kitchin and Tate (2000), the dynamics of a group discussion often bring out the feelings and experiences that might not have been articulated in a one to one interview. In Kvale (1996), it was clear that, the interaction among interview subjects often leads to spontaneous and emotional statements about the topic discussed. However, the group interaction reduces the interviewer's control of the interview situation and the price may be a relatively chaotic data collection, with difficulties for systematic analysis of the intermingling voices. But Limb and Dwyer also argue that, the flow of conversation ensures that there is a dialogue between people with individuals free to challenge the interpretation or assumptions of other group members.

It must be emphasized here that conversation in the group discussions was not a problem since all the group members understood the languages of one another which are basically Ewe and Twi. Fortunately for me too, I didn't require an interpreter as I can perfectly speak the two languages and so the natural flow of information was not affected here.

In this study, two main discussions were organized in groups; one consisting of boat crew and some boys who helped the crew to load and offload goods from the boat. The second one was organized for two students in the secondary school who have their parents living in one of the island towns.

In the first instance, the discussion delved into the real causes of the accidents, issues of human behaviour, equipments lacking for safety transportation, responsibility issues, how the accidents affect the social and economic life and suggestions to improve the situation. A leader was made in the discussion by the group (the operator) and he was the first person that the group always requested the first response to come from. On several occasions, his co-operator (navigator) adds and subtracts to whatever he said. When it came to the date and the number of people involved in the Digya boat disaster, all the group members were struggling between the actual number and the date. Eventually, they all agreed that, the accident occurred on 9th April, 2006 with 120 lives lost. There were similar disagreements on other issues like the behaviour of passengers, issues of life jackets, and the level of income they get; among others.

During the second group discussion, there were only two participants and they were both secondary school students who left the island communities to stay at Abotoase. Though the two people according to textbook definitions of focus group interviews are not qualified to form a group, I used this technique on my own initiative to serve as a check on what each person will say about the situation in presence of the other. Also since there is the need for the individuals to feel secured and confident in their responses, it was convenient for these two friends to express themselves freely in their answers.

According to Sherraden (2001), data can be difficult to summarize and analyze when the group is large – a lot of specific information, some of it can be very tangential to the topic. The use of the two students in a group discussion in this study has also limited the likelihood of group thinking where almost all the group members agree on a particular view because that is the majority's view in a large group.

In their case, when one was insisting that, they only travel to their communities during vacations, the other reminded him, by asking about the weekends they visit their parents when they are short of money and food. One had earlier been involved in an accident before and had a different story to tell; and the other has his own experiences about the

accidents but was never been involved in any. During the discussion on the major causes of these boat accidents, both differed in their views. All in all, the causes were really a common factor of discussion. This was the same case in the effects and suggestions for remedy. What was interesting here was that, the answers from one person served as a guide and teaser to the other. If it were individual interviews, divergent views may not have come in great numbers like in this case.

2.6 Observation

Participant observation was conducted at the lakeside (landing site) of the boats. According to (Mikkelsen: 1995), direct observation is a good alternative to participatory observation where the researcher has limited time at her/his disposal. Since the situation at the lake side did not allow me to do active participation I was just with them as a passenger and watching and asking some questions spontaneously to enhance my understanding of situations. In fact when I was there until one boat finished loading and took off, I did not need anybody to tell me about some issues like the behaviour of the passengers or the boat operators, whether there were life jackets or not, how the boats were loaded, the type of goods they carried together with the passengers and a whole lot of information I would not have had instant access to; if I had not been there. This emphasizes what Wolcott (1995 cited in Kitchen and Tate, 2000:19-20) that, the difference between interviewing and observation is that; in observation 'one watches events as they unfold, whereas with interviews one gets noisy'

At the beginning of loading one boat, passengers joined patiently with their belongings. Then gradually the number of passengers started increasing and their behaviour eventually began to change. Everybody was rushing for a place for himself and the belongings when the market closed and it was getting late in the afternoon. Finally the boat got full up leaving more passengers off the landing site. There and then the passengers started begging the operators for help but for the presence of the naval officers to maintain discipline, they would have been allowed to squeeze themselves somewhere.

Since corruption has eaten so deep into the fabric of the Ghanaian society, the deputy commander for the naval officers present at the time asked that the boat reverses back to

pick up a certain man whom he claimed was sent to carry some items to the next island. Amazingly, one of his junior officers maintained that, if that man should be allowed to join the boat, then all the other people including several women should also be allowed to join since the boat was already loaded to its capacity. This became an argument between them and finally, it was only the man who was allowed to join the boat by the senior naval officer at the time. This behaviour questions how possible it is to alleviate the problem even if the law enforcing authorities could not be firm on maintaining discipline.

I was very vigilant when the boats were loading in order to see how many life jackets each had in their boats. But I didn't set my eyes on any such equipment. I got closer to one of the operators and told him that, I was a passenger and could only join the boat if they had jackets because I was afraid. Interestingly enough he showed me two live jackets and said that was what they had for emergency rescuing. Although I have advanced information that the boats in this area overload, I was not expecting to see the kind of items that the boats carry together with the passengers.

Picture 1 Loading a boat by the landing site Source: Field survey (July, 2007)

According to Nichols (2002), a participant observer taps a continuous flow of information. This may prove more valuable to project management than an information from a whole series of structured interview surveys, which are more like ‘snapshots’ and may only show the surface reality. This is true because, during my first interview with the secretary of the boat owners association, he mentioned the danger of the tree stumps over and over but I did not appreciate it as expected. When I went to the lakeside the next day, I had a great sigh of breath and quickly took a photograph. Then I started analysing how the situation was going to be if there should be an accident. I quickly prepared some notes in my field note book about the causes of the accidents.

Picture 2 Tree Stumps in the lake Source: Field survey (July, 2007)

2.7 Photographs

Pictures and photographs provide visual reassurance when outlining opinions and allow the use of imagination in expanding on the scene[11]. Donaldson (2001) argues that, though photographs serve as useful source of data, it is difficult; perhaps impossible to use them as an exclusive source of data; they should be part of multiple research strategy. In his book, using photographs to strengthen family planning research, he stated that, photographs could be used to clarify findings related to respondents' attitudes and perception about a phenomenon. Besides, photographs taken at the time of data collection would have increased the reliability of the findings and also reduce the ambiguity of what the data actually convey.

In this study, most of the photographs were taken by the lakeside to portray the type of boats that operate, how they load, the behaviour of passengers during loading, the equipments the boats have, the tree stumps among other things. In fact a picture of the scene at the landing site of the boats could speak a lot as far as the causes of boat accidents and their effects were concerned. But this alone was not conclusive enough; one has to combine it with the stories the people tell to be able to make a value judgement.

[11] http://sru.soc.surrey.ac.uk/SRU12.html. (accessed on 11/10/07)

Picture 3 A scene at the landing site **Source: Field survey (July, 2007)**

What is interesting is that, different people have different perceptions about the risk involved in these accidents. Some respondents stated that it is common for passengers to sit at the edge of the boats. This story was confirmed by pictures of some passengers sitting at the edge even as the boat moves. To those sitting at the edge, it is normal, but most people consider this very risky since a small shake off could cause such stubborn passengers to fall into the lake.

Picture 4 Passengers sitting at the edge **Source: Field Survey (July, 2007)**

There were photographs taken to portray how the naval officers were checking such people and general maintenance of discipline and order. I have also taken pictures of the market, an accident victim under interview, the lake itself and some goods offloaded at the landing site. All these photos will add more information to the data gathered through the other methods and will increase the credibility of the data. I hope these photographs will help me to do detail interpretation and analysis of the data since they will serve as memory refresher and at the same time information providers.

2.8 Methodological Problems

One of the major problems I faced under my fieldwork was the approach of my interviews. It was not easy for me to get the approval of all the expected informants because; the setting and timing of my interviews were not something I discovered to be the most suitable. This is because; I was told by some of my initial respondents that, the best time for meeting the boat operators and owners was on a market day. I agreed on this and I found out later that, it was not a suitable approach, since most of them were busier with their businesses.

I realised from this that, the best way would have been a situation where I meet the informants in their various homes. I therefore changed the approach of my interview by visiting the remaining informants and this worked to a greater extent. Again there was a problem with one of my focus group discussions, where I interviewed two students. This according to textbook definitions of a focus group discussion might not be qualified to be considered as such.

Limb and Dwyer (2001) define focus group as a one-off meeting between four and eight individuals who are brought together to discuss a particular topic chosen by the researcher(s) who moderate or structure the discussion.

The membership of each group should be as homogenous as possible, representing a particular segment of the population, but group members should not be close friends (Sherraden, 2001). The aim is to 'create conditions that promote both comfort and independence of thought, in order to maximise discussion and self-disclosure' (ibid.).

Focus groups are group discussions in which about eight people are gathered together to discuss a topic of interest. The discussion is guided by a group leader (called a moderator) who asks questions and tries to help the participants to have a natural and free conversation with one another[12]. Focus groups are aimed at encouraging participants to talk with each other, rather than answer questions directly to the moderator. The group interaction of focus groups is important because it gives us some understanding of how people are thinking about the topic through their interactions.

Though the numerous definitions are not specific on the exact number of people to constitute a focus group, it is clear that the number goes beyond two. However, in my survey, I considered other characteristics of a focus group like participants sharing common characteristics, such as age, sex, educational background, religion, or something directly related to the topic being studied.

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[12] http://www.unu.edu/Unupress/food2/UIN03E/uin03e06.htm (accessed on 7th November, 2007)

According to Sherraden (2001) the membership of each group should be as homogenous as possible, representing a particular segment of the population, but group members should not be close friends. What I was not able to do, was to get more than two students from the island communities who travel on the lake during festivities and holidays. This is because, key informants have already established that, during such periods, the boats take undue advantage of the numbers and overload the passengers. But the information provided by these two students was very useful although the number was limited.

2.9 Research Reliability

Reliability is the consistency of your measurement, or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects[13]. In short it is the repeatability of your measurement. A measure is considered reliable if a person's score on the same test given twice is similar. It is however important to remember that, reliability is not measured, but estimated.

In this study, it was clear at the data collection stage that, even though all the informants were subjected to the same questions during the interview, they continue to give divergent views and figures about the accidents, their causes, the victims, amount of property lost and the effects these accidents have on the social and economic status of the people. It is important to say here that, the positioning of the interviewees had little effect on the divergent answers they give but for the complexity of the problem under study. Also the general public may want to quote higher figures in terms of the number of victims involved in some of the major accidents to show how serious the situation is. However, majority of them tried to quote same figures showing that this is not far from the truth.

When it comes to state and public officials, they underestimate the figures and properties lost in the previous accidents as a way of defending government's position on the issue. For example, the police officials, NADMO officials, the navy and officials from the Ghana Maritime Authority will tell you that the figures mentioned by the residents and in the press

[13] http://www.socialresearchs.net/tutorial/colosi/lcolosi2.htm (accessed on 16/10/2007)

were heavily exaggerated. When asked why residents always do that, they explained that, this is usually done to show that they have been neglected for too long a time.

However, the situation of people will confirm that, the place actually deserves serious attention after all. Structures in the island communities look dilapidated and most residents have fled back to their hometowns leaving the aged and children behind. Some can hardly afford three square meals a day, since the lake is drying up gradually and fishing is no longer booming.

However it must be explained here that, the decreasing water level has little to do with the existence of the submerged tree stumps. The only effect is that, low water levels in the lake exposes more of the submerged tree stumps. Survivors of the previous accidents have had no compensation except in the case of Digya evacuation exercise where they received 38 Ghana Cedi (40.2 USD equivalents) from an International NGO for personal support.

Many boats have not been maintained for years and the tree stumps are glaringly standing in the Lake. The market hardly functions even though new structures have been provided. The water is gradually retreating and the market women advance with their goods to the new landing sites. As a result the market is gradually moving from its main structures to a new location without structures.

Also for scoring cheap political point, opposition parties try to portray the severity of the situation and to show that the government in power is not efficient. More and more articles were written and demonstrations organized to protest the government's neglect for the area; despite the fact that the people also participate in national elections.

One critical factor about the reliability of interviews is the nature and consistence of questions asked by the researcher. Only experienced researchers are able to maintain a greater level of consistency and relatedness of questions during interviews with a large number of respondents. Besides the physical setting of the interview, the audience present,

the interaction between the respondent and myself; and the wording of the questions were major factors that affected the reliability of the answers.

Since there is a greater problem of reliability during the interviews on boat accidents in the area; in that different sources gave different answers and responses, the issue of reliability became very critical in my work and I was very cautious to find some consistency and truth in whatever responses I got. This was done by cross-checking results from other respondents about the same issue.

The unfolding nature of events during the various stages of data collection for this study, show that if the same approach should be applied to a wider group than those who took part in the survey, the results might be different. The only similarity would just be the causes of the accidents, but this is what qualitative studies are all about. The approach is not out there to quantify and make generalizable conclusions; but rather to bring out the feelings and experiences of the people's everyday life and how they understand, perceive and appreciate the unfolding nature of events in their area.

2.10 Problems in the field

It was difficult to get secondary data for my work since all the departments I visited, complained of not having existing facts and figures on the issue. Some of these departments include the Jasikan District Assembly, the National Disaster Management Organization and the Ghana Maritime Authority. This could be an attitudinal problem and administrative cultures, since very few institutions in Ghana are ready to release what they regard as 'vital statistics'. This is because; I was surprised to be told that there were no statistics on boat accidents in an organization like NADMO ; a national institution for emergency relief to victims of disaster in the Jasikan District of the Volta Region; despite the numerous accidents that occurred in the past.

The problem in Ghanaian institutions is inability to organize data and archive them appropriately for future references. During times for information retrieval, officials tend to give excuses and try to provide limited information based upon their own experiences on the issue. In institutions and departments where data is a little bit organized and readily available, they are not easily

released. In most cases high financial demands are attached to access to public information, even for research and academic purposes.

Although I was not given the required secondary data, the institutions agreed and granted me an interview on the issue and this has provided a lot of useful information on the causes of the accidents, forms of assistance received by victims of the 'Digya boat disaster', sources of support and number of victims involved in that particular accident.

At the Ghana Maritime Authority, though a document comprising a few accidents that occurred since 1990, and their death toll was given to me, the table seemed to have underestimated the death toll within the research area and it is also silent on the causes of the accident. I feel this is not detailed enough but it gives the picture of major areas that experience boat accidents on the Volta Lake and the type of boats used. The dates of the accidents also indicated which times of the year these accidents happen. Below is the table (1).

Table 1 Accidents on the Volta Lake since 1990

Month and Year of Accident	Type of Boat	Location of Accident	Market Centre	Death Toll
April,1990	Wooden(open)	Accra-Town	Yeji	46
April,1995	Wooden(open)	Amankwa-Torno	Kpando Torko	100
March,1997	Wooden(open)	Kpando Torko	Kpando Torko	6
June1999	Wooden(open)	Dzatake	Abotoase	70
September,1999	Wooden(open)	Cedikope	Dzemeni	5
January,2001	Wooden(open)	Accra-Town	Yeji	7
April,2001	Wooden(open)	Kataba	Yeji	6
April,2002	Wooden(open)	Amevlovikope	Abotoase	50
April,2006	Wooden(open)	Near Abotoase	Abotoase	10
August,2006	Wooden(open)	Grubi	Yeji	27
Total				327

Source: Ghana Maritime Authority (2007)

The problem could also be political, since these institutions do not know my political affiliation and the confidentiality of the data they will give me. It must be emphasized that, the press has over generalized the issue and government and other stakeholders were blamed over and over for their actions and inactions.

Most people think that, the tree stumps should have been removed by government long time ago. Others also believed that government should have given material support to the people in the form of life jackets, communications gadgets, rescuer boats and adequate social infrastructure.

I could not have access to the three commissions of inquiry instituted by the president of Ghana on some major accidents on the Volta Lake; as intended. This was because, the documents have not been released into the public domain, since the issue of these accidents has been highly politicized by some people. I tried having access to these documents at the Ministry for Ports and Harbours and I was directed to the Ghana Maritime Authority. There I was told frankly that, they also did not have access to the document at my time of request.

The financial burden for transportation especially from my hometown to the capital city on several occasions to collect data from Ghana Maritime Authority was just unbearable even though I believed I had prepared adequately. This was because I never met the Director General of this institution during my numerous visits until I left back to Norway. Three days to my departure, I went again and he delegated one of his deputies to grant me an interview.

The financial burden extended to tipping some individuals for their time spent on the interviews and conversations. This was because the area receives a lot of visitors resulting from the high incidence of boat accidents in the area. Some of the visitors just travel to see what exactly happens there, whilst most of the visitors are researchers and journalists. In most cases the journalists tip the respondents to get their required information to make news. As a result of this establishment, the respondents on any other occasion feel that, they need to be compensated for their time. They also see these opportunities as a means of making some few cedis (Ghana’s currency) for their daily expenses. Similarly, on the part

of some officials, to give information into the public domain from a public office demands some kind of appreciation from whoever receives it. Perhaps, my planning and budgeting were not adequate enough.

It was also not easy to get the informants as planned, because one can only get the boat operators and the passengers on market days (after every five days). But other categories of respondents were easily available for information. One problem coupled with this market day syndrome was that, the respondents were busier with boating and marketing activities than spending time with me. Since the next market will come after the next five days and transportation on the lake can only exist on these days, business was prioritized to any secondary issue of concern to the informants. On non-market days, I had to interview other respondents who were not directly involved in this market day business. For example, it was on one of these occasions that, I travelled to Jasikan District Assembly to interview the officer in charge of National Disaster Management Organization (NADMO)

On one of my usual data collection expeditions, my digital camera was seized by one of the naval officers who were there for a three months operation as a result of numerous accidents in the area. The officer claimed that, I was not allowed to take pictures in a military zone; even though I informed the commander in charge officially by giving him my letter of introduction from NTNU on my arrival. My camera was released after eight days at their headquarters (Tema) after a short interrogation but I later realized that it was damaged.

2.11 Methods of Data Analysis

In qualitative analysis, data are preserved as textual (in the form of transcripts, observational field notes or reflective notes) and later organized to generate different categories for the purpose of further explanations. One of the ways I intend to do this is by the use of computer generated software called Amado.

Amado is a new method and software which integrates Jacque Bertin's[14] Graphics and Multidimensional Data Analysis method. In his book, Semiology of graphics Bertin used reorderable matrix as a graphic multivariate technique for analysing different types of data. This method helps in the analysis of multivariate data by displaying the structure of data matrix containing multiple variables. Bertin's graphics use powerful analytical tools to show similarities and differences between the matrix elements (rows and columns). The software helps to reorder matrices, compare findings across different layouts and find consensus among several clusterings.

I will also do a descriptive analysis by giving explanation to issues based on the relationship between variables and also assigning reasons to why there is relatedness or deviations in the results of the comparisons. This will be based on review of the information gathered from the informants and identifying patterns of similarity and dissimilarities between and among the variables as well as among respondents. General concepts such as accidents, governance, and risk culture/behaviour will be considered in explaining the causes and effects of boat accidents on the Volta Lake.

[14] Jacques Bertin is one of the fundamental gurus of information visualization and analysis of different sets of data in a graphical representation form.

CHAPTER THREE

3 Concepts and Theoretical Framework

3.1 Definition of General Concepts

3.1.1 Accidents

An accident is an unplanned event resulting in either physical harm to an individual, damage to property, or both. An accident may be the result of an unsafe act (standing up in a boat) or an unsafe condition (a leaky boat). Often times these situations can be related. An unsafe act can result in an unsafe condition.[15] The United States Coast Guard defines a "boating accident" as one of the following three scenarios: (1) a boat passenger dies or becomes seriously injured; (2) a boat passenger disappears and death or injury is suspected; or (3) a vessel causes or sustains damage. Boating accidents are therefore not limited to collisions, but may occur whenever someone is killed, injured or disappears while boating.

In the context of this research, a boat accident is any mishap that confronts a boat that sails from one part of the Volta Lake to the other with damage to people and property. This could emanate from a multiple of factors that could be physical/environmental and or human induced.

3.1.2 Buoyancy:

In this piece of work, buoyancy is used to determine the ability of a boat to submerge in the lake without sinking; based upon the architectural design of the base of the boat. When the bases of boats are not well designed, they often take in water during a storm surge due to the uncontrolled up and down movement of the boat. In the research area owing to lack of appropriate skill for boat design, the local manufacturers hardly design boats whose bottoms are buoyant enough to withstand rough weather on the lake. This is what the respondents referred in the interview to as poor boat design.

[15] www.co.clark.wa.us/recycle/documents/household_safety.pdf(accessed on 16th October, 2007)

3.1.3 Personal Floatation Devices (PDFs)

According to Alan Sorum (2007), PDFs are devices that help protect and keep boaters floating on water during navigation. They range from wearable to throwable devices which could roll wearers face-up in water, keep them just floating or kept accessible by hanging it from a boat rail or other convenient spot for a swimmer in trouble. He classifies them into five different groups and gives examples as life jackets, buoyancy vests, ring buoys, foam and other inflatable devices.

3.1.4 Capsize

A small boat is said to **capsize** when it rolls over upside down or on its side with its **mast** and sails in water.

3.1.5 Mast

A line or rope attached to the front end of a small boat which is used to tow the boat or fasten the boat to a dock or mooring.[16]

3.1.6 Righting

According to Merriam Webster's online dictionary, righting means; to bring or restore to an upright position. Operationally, righting is used here to mean the process of uplifting a capsized boat in order to save its passengers and recover its other contents.

3.1.7 Waterline

According to Merriam Webster's Online Dictionary, 'waterline' is: a line marked on the outside of a ship that corresponds with the water's surface when the ship is afloat on an even keel under specified conditions of loading.

This is slightly different from load line because, as a load line is primarily marked to check overloading, waterline is just generally marked on the boat to determine the level at which it floats in water. Other factors besides overloading could change the buoyancy of a boat when watching the waterline.

[16] http://www.smallboat.sailingcourse.com/capsize_recovery.htm (accessed on,9th September, 2007)

But in the research area, waterline is used to refer to both processes because; the main purpose of giving this mark to all commercial boats by Volta River Authority is to check overloading.

3.1.8 Governance

The issue of governance in the research area relates to matters of decision making affecting the lives of people involved in the boat transport business. It concerns issues of leadership position, management, administration, and control/monitoring of general conduct of people on and around the lake within the research area. It also pertains to formulation of rules and policies towards effective and safe boat transport within the area.

Unfortunately, these roles have been minimally performed by the various agents and officials responsible as a result of one factor or the other. General control is lacking, corruption is on the increase and the level of monitoring is rapidly losing its effectiveness. More operators are manipulating the system to their own advantage as the rules are relaxed. Passengers care less about their own safety as they are mostly overcrowded on the boats with their goods. Leaders hardly get offenders to punish as they have no proper monitoring system. Since most of the offences are committed off the landing sites, it is difficult for the task force responsible for checking indiscipline to easily get culprits because they operate by the landing site only. There are no speedboats for the naval personnel checking the misconduct of the boat operators.

Government officials rarely visit the area unless during times of accidents. The people do not get any support from the government in the form of equipment supply or procurement of scarce resources such as hard quality wood for the boat owners to purchase. Besides several commissions of enquiry have been formed by the government after major accidents on the lake to establish the causes of the accidents and to suggest better ways of reducing the problem; but little results have been seen in this direction.

3.1.9 Risk Culture and Behaviour

According to Stuart (1992) risk culture is the group of social mechanisms by which a group of people evaluates and reacts to physical and health hazards in its environment. In our day-to-day activities, we encounter situations that require the ability to analyse and manage risk. Similarly,

in the issue of boat accidents on the Volta Lake, the people are confronted with issues of risk culture and corresponding behaviour.

Questions such as the peoples' level of economic investment in the society; cost of educating people, how they consider danger or accidents and their behavioural outcomes are taken into consideration when thinking about risk culture and behaviour in the area. Besides the general perception of the people about boat accident and the purpose of rules and regulations concerning boat safety are matters of critical concern as far as risk culture and behaviour are concerned.

It must be emphasized here that, the people in the boat transport business know the danger involved in transportation on the Volta Lake but they hardly respect the rules and regulations governing transportation on the lake. Even though they have had enough casualties in boat accidents over the years, passengers still overcrowd themselves on the commercial boats with the sheer excuse that, they wouldn't want to be left behind for the next five days.

One would have expected that, the consequences of previous accidents would change the peoples' behaviour naturally, but this depends on how the people perceive accidents. To them, there is no need prescribing the dangers involved in the accidents by putting regulatory tags on their activities. Instead, they should be left to discover the realities of the issue and change their attitude accordingly. This is because, if the rules are not respected and more people are dieing from the accidents, then it is not rewarding to let the people do their own will. Stringent measures from the appropriate authorities should be the next line of action. In spite of the regulatory measures, the people still experience more accidents caused by their own behaviour.

It is common for the people to sit at the edge of the boats during navigation despite all efforts by the naval task force to control the situation. Passengers submissively agree on instructions by the landing site and turn into something else when they get to the middle of the lake. They are usually difficult for the boat crew to control. Owing to the fact that, operators too flout most of the rules, they find it difficult to maintain discipline aboard the boat since they are less disciplined themselves.

As mentioned earlier, it is very expensive to acquire a boat and outboard motors to enter the transport business. When accidents happen, boat owners often get their boats partially damaged or totally destroyed and it is not easy to recover the financial loss. The numerous economic implications to boat owners /operators and passengers still do not seem to have any significant impact on the people, since their bad conducts are still perpetrated.

Similarly, in the United States, a greater percentage of the accidents that happen are caused by human error as indicated by the governor of the state of Illinois towards safe boating[17]:

> WHEREAS, on average, 700 people die each year in boating-related accidents in the U.S.; nearly 70% of these are fatalities caused by drowning; and
>
> WHEREAS, the vast majority of these accidents are caused by human error or poor judgment and not by the boat, equipment, or environmental factors; and
>
> WHEREAS, between 1993 and 2005, the State of Illinois registered 4,521,660 recreational boats. During these years 1,783 boating accidents were reported that resulted in 230 fatalities and 1,117 injuries; and
>
> WHEREAS, a significant number of boaters who lose their lives by drowning each year would be alive today had they worn their life jackets; and
>
> WHEREAS, modern life jackets are more comfortable, more attractive, and more wearable than styles of years past and deserve a fresh look by today's boating public.

Although human error seems to be a common factor in the world, in US, the rules are strictly maintained and equipments are readily available whereas in Ghana, the problem is acute; because of non-compliance with existing rules, poor monitoring system and lack of equipments.

[17] http://dnr.state.il.us/pubaffairs/2006/may/boating.htm (accessed on 12th October, 2007)

3.2 Theoretical Framework

A theoretical framework is a collection of interrelated concepts, like a theory but not necessarily so well worked-out[18]. A theoretical framework guides your research, determining what things you will measure, and what statistical relationships you will look for. According to Wikipedia, the free encyclopedia, a theory has some relationship with hypothesis and some people in everyday usage interchange the two. In this encyclopedia (Wikipedia), a hypothesis is defined as a suggested explanation for a phenomena or reasoned proposal suggesting a possible correlation between multiple phenomena. Any useful hypothesis will enable predictions by reasoning (including deductive reasoning).

Theories are generally not hard and fast rules limiting just certain phenomena, but are opened up hollow designs which can accept different components, provided a better relationship between the variables can better be established by their users. In line with this idea, I have decided to consider the work of Curtis (1995) on how accidents occur, based upon the pioneering work of Hale (1995). I therefore made a lot of modifications to suit my work on boat accidents on the Volta Lake.

According to Curtis, general factors that cause accidents were grouped into environmental (natural hazards) and human factor hazards. In my work, all the factors stated by the respondents have perfectly fitted into the model of 'Natural' and 'Human induced' factors. This has been formulated by Curtis into a theory called 'The Dynamics of Accident Formula'.

However, I considered it to be a graphical model of two categories of factors (more or less a Venn diagram) than a formula, since there is little of mathematics in the model.

In this theory, two circular rings of different colors were used to represent the two categories of factors respectively. When these rings were put together, they overlapped resulting in the potential of the accident. According to Curtis, the factors can overlap to a greater or lesser extent;

[18] http://www.analytictech.com/mb313/elements.htm (accessed on 22nd February, 2008)

and the greater the overlap, the higher the accident potential. He argued that, the effect of combining Environmental Hazards and Human Factor Hazards multiplies the Accident Potential rather than been simply additive. The greater the number of hazards, the more quickly the Accident potential can rise. Mathematically this was represented as: Accident Potential = Environmental Hazards x Human Hazards.

In a paper authored by Curtis[19] he gives some examples of environmental hazards: adverse weather, remote location, undercut rocks, strainers, holes, cold temperatures; and examples of human factors: fear, low skill level, resistance to instructions, careless attitude, little or no awareness of hazards, exhaustion, etc. The lists go on and on. Below is the model formulated by Rick Curtis (1995).

Figure 2 Curtis' Accident Model

[19] http://www.princeton.edu/~oa/paddle/rivplan.shtml

Figure 3 Dynamics of Accident Model (modified after Rick Curtis 1995)

Environmental factors + Human-induced factors = Accident Potential

- Tree stumps -Overloading
- Windstorms -Poor maintenance
- Darkness -Drunkenness

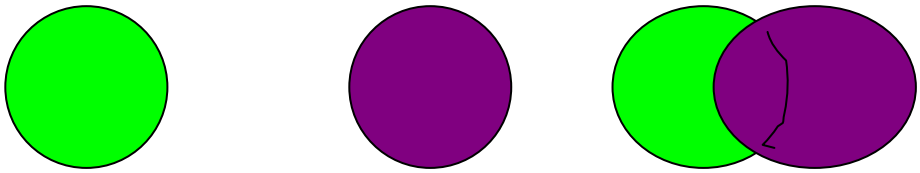


Table 2 Relationshipship between factors and their Accident Potential

2environmental hazards	+	2human factor hazards	=	4times higher accident potential
3environmental hazards	+	3human factor hazards	=	9times higher accident potential
Tree stumps and windstorms	+	Indisciplined passengers and drunk operators	=	4times higher accident potential
Undercut rocks, lake fluctuations and bad woods	+	Overloading, defective boat design and over speeding	=	9times higher accident potential
Tree stumps, undercut rocks, windstorms and lake fluctuations	+	Dilapidated boats, inexperienced operators, equipment failure and night traveling	=	16times higher accident potential

Out of the numerous factors stated by the respondents in the research area, it was only 6 that fell under natural/environmental factors and the rest fell under human induced. This could tell immediately that, human error and negligence formed the largest component of the problem.

However, the effect of combining both categories of factors determines the potential of accidents on the lake. This is necessary because the factors in most cases do not work in isolation. According to the respondents, there was no single accident in the past that occurred just as a result of a single factor; in most cases, multiple factors accounted for the accidents. As indicated in table 2 above, a combination of more factors increases the accident potential. The greater the number of hazards, the more quickly the accident potential rises. As argued by Curtis, the effect of combining *Environmental Hazards* and *Human Factor Hazards* multiplies the *Accident Potential.*

For example during the last accident in April, 2006 where residents of Digya Island were alleged to have been forcibly evicted by Forestry Commission officials of Ghana, the boat involved in the accident was said to have been weak. Consequently, when the boat struck a submerged tree stump, a hole was created under the boat and it started taking in water. Unfortunately too, the boat was said to be badly overloaded as a result of the evacuation exercise, so within a few minutes, it capsized leaving over hundred people dead and several others injured. It was clear here that, there was a tree stump(natural factor), a weak boat resulting from lack of servicing or maintenance and overloading all resulting from human behavior. One could say that, the accident would have been less severe if the boat had not been overloaded. If the boat had been normally loaded, it could have taken some time to capsize since there would be less pressure on it. As for the tree stumps they can hardly be avoided but the condition of the boat would have been better if it had been constructed from a hard quality wood and had been regularly maintained.

The actuality of accidents on the Volta Lake depends on the interrelationship between the factors stated as the causes of the accidents. For example, continuous observation by respondents over time revealed that, accidents on the lake are common during Easter festivities when storm surges are common, coupled with greed by the operators overloading boats as a result of excess goods and passengers during such periods. This is the time most people travel to their hometowns to celebrate Easter. Students also go on vacations and general business is at its peak.

Table 3 Categorization of Boat Accident Factors

Environmental factors	Human-induced factors
A. Environment • Tree stumps/undercut rocks • Strong winds/storms • Darkness • Lack of hard quality wood • Heavy rains • Thunder and lightning	A. Participants • no regard for rules • no alternative means of communication • behavior of passengers • fear and panic • no protective clothing • resistance to instructions • less swimming skills • non payment of fares
B. Equipment • weak/dilapidated boats • old fashioned outboard motors • No live jackets • No rescuer boats • No communication equipments • No navigational routes and charts • Lack of patrol boats • No *PDFs*	B. Leaders • Little knowledge about real causes • Poor supervision/monitoring • Relaxation of rules • Corruption • Politics • No assistance to boaters • Lukewarm attitude towards problem • No weather forecast • Low public awareness campaigns
C. Navigation • Night traveling • Unfamiliar with route • Water level(fluctuations) • Remote locations	C. Boat operators/owners • No training • Operators limiting the boats • Poor operating skills • Poor coordination • Over speeding • Overly tired on long journeys • Non-servicing of boats • Overloading • Drunkenness

Modified after Curtis (1995)

As asserted by Alan Sorum (2007), boating accidents are the final product of multiple factors contributing to the final event. He explained that, incidents occur due the interaction of many

contributing, interrelated and mostly preventable causes or factors. Alan classified his factors into human, equipment and environmental causes.

The factors stated by the respondents have been classified into two major groups in table 3 above; taking into considerations the modifications of Curtis' Dynamics of Accident Model

3.2.1 Operational Definition of Specific Concepts

In explaining the model further, there is the need to define operationally a few concepts used.

3.2.1.1 Participants

Participants according to this work refer to the people who use the boats as their main means of communication. It consists of regular passengers and occasional travelers who have no alternative but to sit in boats across the lake.

3.2.1.2 Boat operators /Owners:

This group refers to the people who either own the boats or use the boats for transportation on the lake. Sometimes an operator could be the owner of the boat but in most cases, the owners do not operate the boats even though they may regularly sit in them. Usually, there are two operators; one controlling the outboard motor from the back whilst the other stands at the frontal edge of the boat directing the path of the boat. He is usually called the 'navigator' by others in the boat transport industry.

3.2.1.3 Leaders:

This group comprises of officials and those in executive position directing and controlling the state of affairs. In most cases they are not directly involved in the transport business but play the role of control and monitoring as far as safety measures on the lake are concerned. Examples of leaders include executives of Abotoase Boat Owners Association, officials from the law enforcement agencies, chiefs, workers from government and non-government departments, organizations, ministers of state and other responsible people from the community.

3.2.1.4 Environment:

All living and non-living organisms within the basin of the Volta Lake, ranging from vegetation, rocks, animals, weather and its elements including all the endowed properties of the Volta basin.

3.2.1.5 Equipments:

All the necessary apparatus that make boating effective and safe as far as transportation on the Volta Lake are concerned. Examples include life jackets, fire extinguishers, communication gadgets, charts, buoyancy vests, ring buoys, foam and other inflatable devices.

3.2.1.6 Navigation:

This refers to boat movement from one part of the lake to the other bearing in mind the direction of destination relative to one's (operators') own location. The factors under this category describe what happens during the process of transportation on the lake, with regards to environmental factors.

There is an interesting relationship between the number and type of factors that come into play for the determination of an accident potential on the Volta Lake. In a few cases that boaters have to maneuver through tree stumps without a storm, overloading or darkness, level of accidents were controlled. According to some of the respondents the boat involved in June, 1999 accident was a poorly maintained wooden boat that had been badly overloaded. The respondents explained that, most of the passengers were sitting at the edge of the boats whilst others were standing. The boat was said to be carrying 90 passengers, 150 tubers of yam, 300 bags of groundnut, 27 bags of gari, 10 bags of beans, five cows and 16 big baskets of smoked fish. No specific reason was assigned for the boat's sinking, but one could have estimated the accident potential of this boat. What also increased the accident potential and consequently the effect was that, only a few of the passengers knew how to swim. According to the reports, only 25 people managed to swim and two women were rescued. In Ghana, many of the health staff or team members fear travelling on the lake because they have no skills in swimming or use of life jackets. (WHO, 2006)

3.3 Relevance of Theory

Though the formula of dynamics for accident potential has several uses and values, the modifications have provided just three major useful things for this piece of work.

- It could serve as a technique for evaluating risk potential in the field
- It could be used as a tool for analyzing how accident potential can be reduced.
- It could also be used as a decision making tool

As a ***technique for evaluating risk potential in the field***, the formula tries to examine the factors that may hinder safety boating or successful transportation on the lake by helping to explain the linkages and the interrelationship between environmental factors and human induced ones. This could be done by looking at what modifications are being made by human beings to the already existing natural factors or the activities of participants, leaders or operators/boat owners. The formula consequently helps in the assessment of the effect of the interplay of these factors looking at their capacity of causing accidents, or estimation of the end result in the absence of certain factors.

For example, by using this formula in the field, one would be able to see the effect of putting say overloading, lack of training, drunkenness, tree stumps and windstorms together with a dilapidated boat for transporting people on the lake. In the same vein, one can estimate how the situation will be like, if some of these causes are taken off; say maintaining that, drunken people do not operate and the boats should take the required number of passengers and amount of goods. Definitely, the situation will be better even if certain environmental factors still exist in the absence of those human induced ones mentioned in the example above.

As a tool for ***analyzing how accident potential can be reduced***, the model considers critically, the potential threat and the possibility of accidents on the Volta Lake with a close look at the interrelationship between and among factors. This is done through examination of the potential risk by questioning the interaction of the various factors in producing or causing mishaps. In analyzing how accident potential can be reduced, the degree of damage and injury caused under the influence of multiple factors from the two major categories (environmental and human-

induced factors) are also closely considered. Finally, the general effects of boat accidents, either social or economic are examined by the help of this formula.

Based upon the results of the analysis, participants will ask themselves what they can do individually or communally to reduce the accident potential. They will become aware of how their behavior is directly or indirectly related to reducing the possibility of accidents on the lake. They can then take some responsibility for their own safety since the problem affects all. Different participants can take different responsibilities in line with what the causes really are.

In doing this, there is the need to reduce the overlap between environmental factors and human-induced ones. For example operators need to do some of the following: reduce speed, avoid overloading, prohibit drunkenness, and avoid night traveling among others. Boat owners in collaboration with government need to demarcate the route for the boats and also provide the basic equipments needed for safe transportation on the lake. Then the government needs to remove the tree stumps from the route of the boats, support the boat transport industry by making hard wood readily available and affordable; and also ensure that stringent measures are used in the boat transport business for safe transportation. Finally passengers need to play an important role in ensuring safe boating on the lake. They can do this by refusing to join already overloaded boats, stop sitting at the edge of the boats during navigation and reporting indisciplined operators on the lake to appropriate authorities.

As a ***decision making tool***, the formula helps one to project a better solution, in order to reduce the frequency and level of accidents on the Volta Lake. Decisions are usually made based upon a thorough analysis of alternatives vis-à-vis already existing situation. The success of every business like boat transport depends on the quality of decisions made by its stakeholders.

Through the use of ‘dynamics of accident formula’ in analyzing how accident potential can be reduced, one gets a better understanding of the situation by manipulating the interaction between and among the factors of boat accidents on the lake. That is to say that, knowing how these variables work together gives the individual an insight into the probability of how accidents occur. This later guides one to identify the various stakeholders through a stakeholder analysis in order to propose options for decision making strategies.

In the research area, the major stakeholders include the boat transport industry, affected communities with their inhabitants, government and its related agencies, non-governmental organizations and the future generation.

During the proposal stage for the strategies to use, stakeholders will depend on the information provided by the formula to consider which options are available, values of options available in economic and social perspectives and finally what to change. In deciding on the values of the options, the various advantages and disadvantages of such options are critically scrutinized. The formula also provides knowledge about where responsibility is lacking and based upon this information, stakeholders make necessary adjustment by assigning responsibilities to various groups, agencies and individuals. For example, where it is realized that, government for instance is unable to provide necessary resources for safe transportation on the lake, appropriate recommendations would be made by the decision making body.

CHAPTER FOUR

4 Empirical Work I: Issues of Boat Transport

4.1 Formation of Boat Owners Association

The early phase of the struggle for the formation of this association was led by Kaizaro Yao Awoye and a few others after a terrible accident that occurred on the 4th of June 1999; besides the previous numerous ones. Owing to the absence of a viable association to take decisions affecting the residents concerning issues of boat transportation, the problem of accidents persisted over several years. It was this situation that compelled the pioneers of this association to form it and register it with the Jasikan District Assembly (JDA). Immediately, the Volta River Authority encouraged the association by donating 200 life jackets for the start. Various efforts were made by various groups such as the Boat Owners Marketers, gallant fishermen and fishmongers and all allied fish workers of Ghana to make the formation of this association a success.

This was the declaration the members made during the registration of the association: "we the members of the Boat owners Association, a grass root based voluntary association engaged in the boat transport business and registered with the Jasikan District Assembly and Civil Service Organizations with a vision of establishing a strong body of large Boat Transport, determined to uphold the Boat Transport Laws of Ghana and actively participate in the management and administration of the Boat Transport resources of the Volta Lake; do hereby solemnly adopt and enact for ourselves this constitution this April day of 26th , the year of 2002. The name of the Association shall be called and known as Tapa Abotoase Boat Owners Association whose identifying logo shall be a map of Ghana with a picture of the Volta Lake on it."

This association has its own aims and objectives and principal among them is to ensure a safe transportation on the Volta Lake and to maintain generally, discipline on and along the lake as far as issues of transportation are concerned.

However, indiscipline among the operators remains a matter of public headache since they hardly comply with their own guidelines. The operators rarely respect the regulations due to lack of proper control and monitoring system. Non-compliance with the rules was clear as different sources for example have it that, the boat owners regulate the number of boats to travel to a particular destination a day so as to make enough money to meet their expenses and this; they said is the major cause for overloading. One of the respondents was honest enough to confirm that, though they, the operators, are restricted from drinking before operating; it is not all of them who are able to abide by it. Practicality of the rules and realization of the goals is now a matter of public concern, since most of the items stipulated in their constitution are not enforced.

Most of these numerous items in the constitution of the association are non-operational. The association for example outlined in its constitution that, it shall ensure that all boats plying the route to and from Abotoase shall be lake worthy. But unfortunately, some dilapidated boats remained operational on the lake even as at the time of my visit. May be the level of damage to the boats, which will require their removal from the lake should be well defined in their constitution. It is important to note that, ensuring lake worthiness of the boats is even more important than procurement of license any equipment.

Major targets in the objectives include avoiding overloading, prevention of fire aboard the boats, organization of periodic training for its members and maintaining boat stability on the lake through proper loading; among others. The association agreed to liaise with the District Assembly and the Forestry Department of Ghana in acquiring Odum (wood) boards for members. Besides issues of members' welfare is also high on the agenda for the members of this association. The members agreed to support development programmes through their own financial resources, access loans for members towards acquisition of outboard motors, maintenance of environmental sanitation on the lake and to seek the welfare and socio-economic development of its members.

What I feel is missing in the plan of establishing this association is their inability to consider carefully what the major causes of the accidents on the lake are. Though they have

considered the issue of overloading, acquisition of wood and outboard motors, training for members and the respect for '*waterline*', much is still left to be done. This is because, during the interviews, issues such as windstorms, tree stumps, behaviour of operators, lack of equipments and general issues of indiscipline on the part of boat owners and operators were often mentioned as important factors.

A proper survey could have given the founding fathers of this association much more information about the problem in totality, so as to put modalities in place to forestall future occurrences of boat accidents, since that is their primary goal. There was also no record of even a single training organized for the members of this association since its establishment in 2002. What I think is that much of the welfare of passengers and the general maintenance of law and order were minimally considered by the good works of the founders. However, credit must be given to them for taking the bold step to start something of this nature.

They also have their bye-laws guiding the smooth running of the association; most of which include the punishments for offenders of boat safety rules on and around the vicinity of the Volta Lake. Several items were enumerated in this part of their document consisting of fines and seizure from being members of the association.

According to all the respondents, the very practices for which these fines were stated in the document persist without any punishment from the executives. But when the secretary of the association was interviewed, he explained that, there were just a few fines, because most of the offences are committed aboard the lake and most passengers feel reluctant to complain when the boats land.

4.2 Organization of Lake Transport

Owing to the absence of both state owned and private transport companies in the research area, lake transport in this part of the country is organized by individuals. Boat transportation here is a real business venture and to operate a boat means one is financially sound according to the opinion of the informants. This assumption is so because; it is very

expensive to acquire a boat and two outboard motors as indicated earlier. This makes the business a regulated and limited one for the fortunate few who can raise this initial capital.

The boats move to and from Abotoase only on market days; covering long hours of about 6-10 hours. They are usually operated by two people, mainly a navigator at the front and an operator at the rear. The navigator usually directs the operator by standing at the front edge of the boat. They are usually supposed to be experienced boaters with all the skills of leading a boat safely through all the difficult situations on the lake. The operator sits by the outboard motor and ensures that, it propels the boat safely to its destination, with all the attention to the navigator. When there is a problem with one of the outboard motors, he quickly changes to the other one without causing any delay on the lake.

Though all the boat owners are required to procure life jackets for all the passengers they carry, they hardly do so. This is what one of the operators had to say about life jackets: "Life jackets are very expensive to buy. Volta River Authority promised to sell some to us on reduced prices but they never showed up. We have been able to buy three for our boat to save people during accidents. Can you imagine one costs us 60 Ghana cedi (62.24177 US Dollar)? Meanwhile the required number of passengers for our boat is 63. If we can get it cheaper, around 20 Ghana cedi (20.74726 US Dollar) we can afford for all the passengers"

The boat operators load animals, goods and passengers in the same boat to and from the market centers, mainly Abotoase, Dzemeni and Kpando Torkor.

4.3 Passengers as Captive Customers

It should be established that, passengers at this side of the country are obliged to travel by boat because; they have no alternative means of transport to the market (Abotoase). As mentioned earlier, social infrastructure is lacking in these island communities and the only way to access some of them like schools, market, health facilities and other communication networks is to travel long distances (some between 6 and 10 hours) by these wooden boats.

The inhabitants in these communities produce fish, foodstuffs, vegetables, cattle and various types of livestock which demand ready markets. In return they need salt for

preserving their fish, premix fuel, kerosene, soap, clothing and other personal effects. They also need to be connected to other parts of the country through different communication networks.

Besides people living outside these communities also need to travel to these areas for the purposes of business, tourism and family interactions.

This situation might explain the behaviour of passengers on occasions that they have to board the boats; especially market days. It could also explain the different opinions and expressions by passengers during the interview on why they are usually overcrowded on the boats or why they can hardly avoid boarding boats that exhibit signs of danger.

4.4 Causes of Boat Accidents on the Volta Lake

According to Alan Sorum (2007:1), accidents are the final product of multiple factors contributing to the final event. Some analyses of accidents reserve the term "cause" to that which directly results in unintentional damage or injury, treating those events which lead up to the cause as "contributors". However, more common usage in accident analysis accepts as a cause any factor without which the accident, or its consequences, would not have occurred, often referred to as the "but for" criterion- McKnight et al (2006).

All in all, about twenty- four causes were identified by the respondents interviewed, as the factors responsible for frequent boat accidents on the Volta Lake. Some of the factors have been demonstrated to have less impact on the rate of the accidents whilst others have strong effects.

Among the factors outlined by the respondents were the *existence of tree stumps in the lake, overloading of boats, windstorms, drunkenness, over speeding, passengers' behavior and weak/ dilapidated boats*. Others include *inexperienced operators, lack of basic equipments, fear and panic, night traveling, lack of good wood, equipment failure and non payment of fares by passengers*. Besides, respondents identified some more causes as *loading passengers and goods in the same boats, lack of concentration/coordination, non-servicing of boats, lack of training, Indisciplined boat owners/operators, seasonal*

fluctuations of the lake, defective boat design, lack of patrol boats, lack of enforcement regime and the absence of navigational routes and charts. It must be re-emphasized here again that, the respondents were not limited in stating any factor responsible for boat accidents in the area.

The first three causes of tree stumps, overloading and windstorms stood among the numerous causes as the major and commonest factors responsible for boat accidents on the Volta Lake. All the fifteen respondents have something to say about these three causes as major factors responsible for the numerous lost of lives and property over the years and demonstrated that if the situation should be improved, a critical look needs to be given to these factors. This notion is confirmed by Dennis Johnson[20] (1996), that making prudent decisions on river trips take into account a good working knowledge of the river and its rapids at various water levels. Johnson also pointed out that, if there are some locations on river harbours particularly insidious boulders and undercut rocks that have a history of entrapment, a river party needs to be aware of such areas and take extra caution.

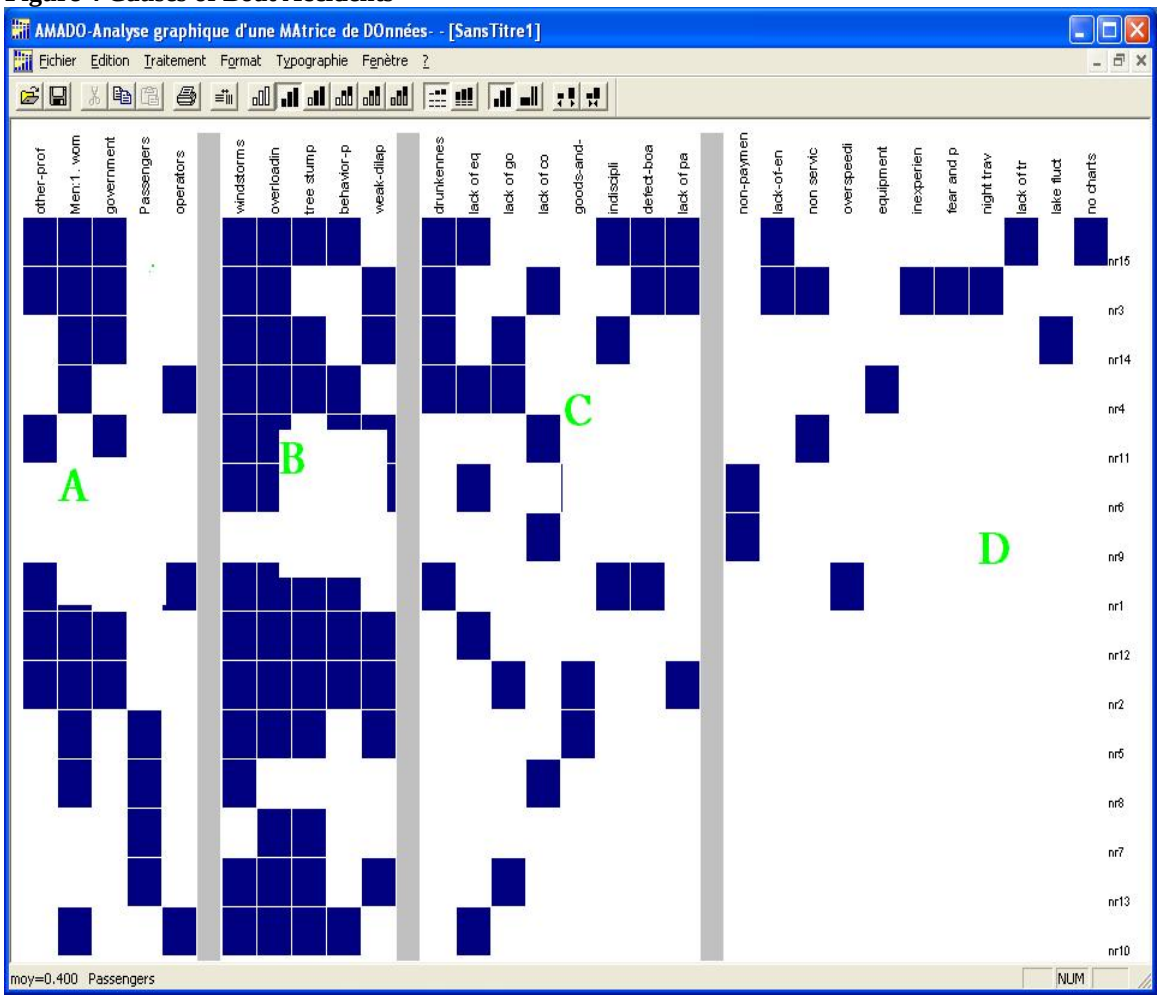
This is what the first respondent approached, had to say about the tree stumps. "My brother, those things you see standing in the lake will continue to be perpetual death traps unless something is done about the situation. It is only God that can save us from perishing, since all of us during one time or another have to travel through this mess".

To order the data collected into a more meaningful form for easy explanation, understanding or interpretation, I have decided to use a method for synthesis and classification of multivariate data called Amado. This method which is usually in a reorderable matrix form was developed first by a French cartographer, Jacques Bertin in 1983; purposely for visualization of information (refer to methods of data analysis above). Examples of this reorderable matrix in a graph form below illustrate pictorially, the various respondents and the causes they outlined as responsible for the boat accidents. Besides one can see how concentrated the bars are in some sections than others. For example, the bars

[20] Dennis Johnson is from University of California who made this contribution after Charles Walbridge's presentation on case studies about river accidents at the International Conference on Outdoor Recreation ad Education; Cornwell University (1996).

are mainly concentrated around tree stumps, overloading, windstorm, behavior of passengers and dilapidated boats. The respondents are represented by n1, n2, n3 etc according to who was interviewed first, followed by the other. The bars can be moved from their original positions towards those that have similar characteristics. This means that, similarities and dissimilarities can be figured out using this graph below. By doing so one can easily see which respondents say what, what is common among the factors of boat accident and what is least expected as a factor responsible for accidents on the Volta Lake.

Figure 4 Causes of Boat Accidents



In the figure (4) above, the causes of boat accidents on the Volta Lake are plotted on the x-axis, whilst the respondents are plotted on the y-axis (with n1, n2, n3 etc representing the

number of respondents interviewed). In all, 15 respondents were interviewed and 24 different causes were stated to be the factors responsible for accidents on the Volta Lake. Clearly one can easily single out who said what, which factors are recurring among the informants and why.

The first portion of the graph marked 'A' represents the different categories of respondents interviewed. As can be seen, it consisted of gender (men and women), operators, government officials, passengers and other professionals. The rest categories marked 'B', 'C' and 'D' represent the causes stated by the respondents in order of frequency. There were some causes which were frequently stated by respondents as in 'B', others were less frequent as in 'C' whereas some were only outlined by just a few people as in 'D'. For example, over speeding as a cause was just outlined by only one informant throughout the whole interview. This situation applies to factors like inexperience operators, fear and panic during accidents, night travelling, equipment failure, lack of training, seasonal fluctuations of the lake, and the issue of no navigational routes and charts. This group is considered as a marginal group as far as the responses to the causes are concerned.

In the case of the factors that were least mentioned by respondents, it was clear that, there were two major situations that prevailed here. In the first instance, it appeared that, these causes rarely cause accidents on the Volta Lake, but through the handicraft of some informants, they think these factors also go a long way in affecting the level of boat accidents on the Volta Lake; for example over speeding, fear and panic and night travelling.

In the second instance of less frequent factors as in 'C', the informants who outlined such causes were either professionals in the field of boat transport or have had a lot of experience from the issue of boat accidents as a result of long stay in the area or active participation. For example, the mass of informants could not easily look beyond the most common factors responsible for the accidents unlike the more informed ones who mentioned issues like no navigational routes and charts, lack of training, equipment failure and seasonal fluctuation of the lake. These causes could be considered as the more technical reasons for the accidents and can highly be mentioned by those who are well vested in the issue at stake. Of course, one of

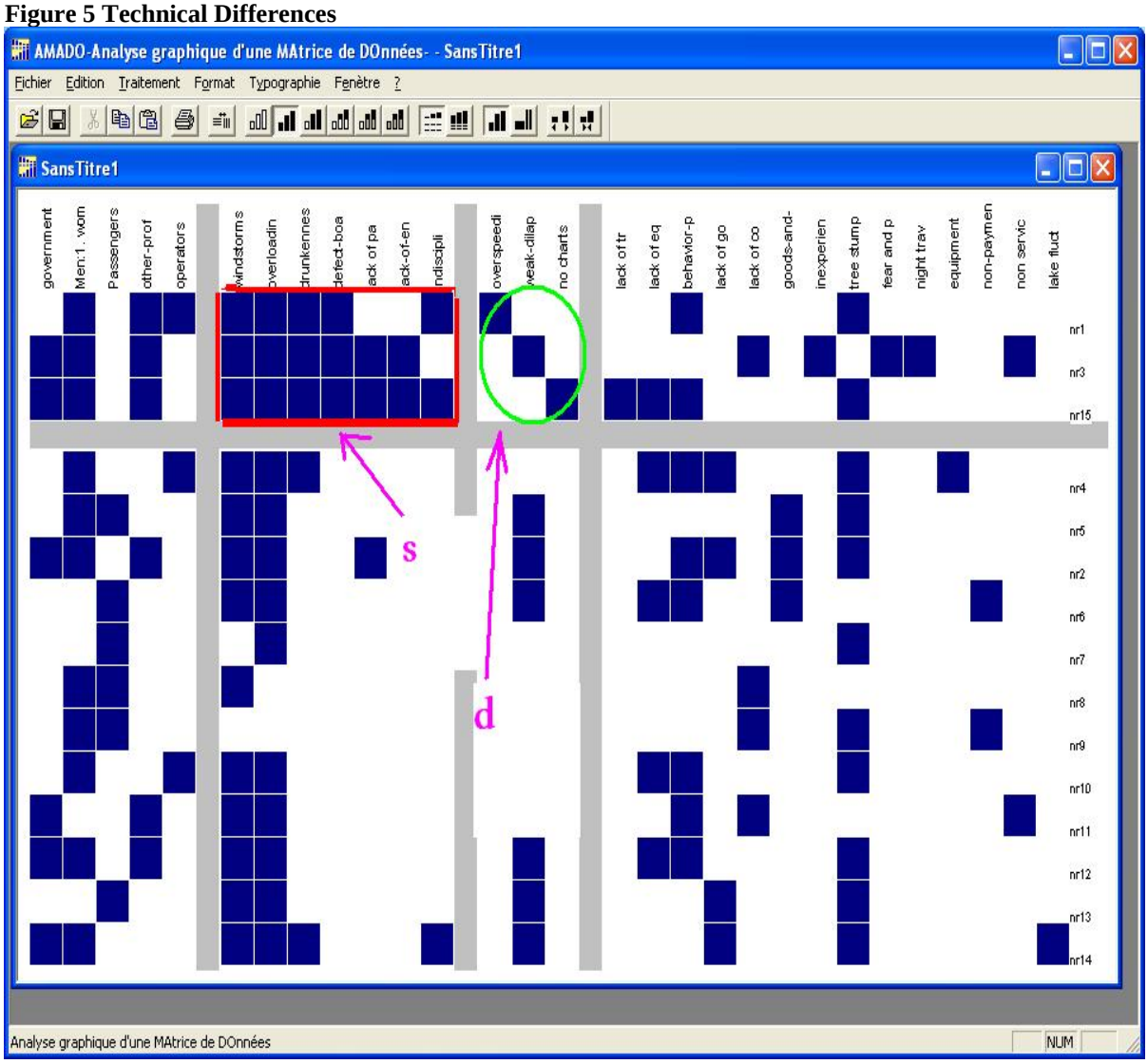
the officials from the Ghana Maritime Authority was noted for giving such answers during the interview.

The empirical data, also provided that, besides the three most common factors of boat accidents outlined by the respondents, those who also have regular encounter with issues of boat transport in the area like fishmongers, students and passengers in general stated that, factors like drunkenness, passengers' own attitude, weak and dilapidated boats and lack of equipments especially life jackets caused some boats to be victims of accidents in the area.

Others have the feeling that, when passengers and goods are loaded in the same boat, the slightest external force on the boat could cause it to capsize. This is true because during accidents, the boats themselves do not sink, but all the goods sink to the bottom of the lake. In the process of this sinking, some of the goods may sit on passengers, dragging them to the bottom of the lake or causing them to gulp in several litres of water. Most passengers in turn get unconscious before rescue and may die later.

On a more technical note, two of the informants gave almost similar causes in several aspects except in a few. These informants belong to the Ghana Maritime Academy (n15) and the Ghana Naval Base (n3) respectively. One other person, who appeared to have similar views but on a less account is the general secretary (n1) of the Boat Owners Association of Abotoase. The first two professionals have common views on overloading, windstorms, drunkenness, defective boat design, lack of patrol boats and lack of enforcement regime as marked by the rectangular region 's' with an arrow in figure 5 below. The only factors they differ on; were over speeding, weak and dilapidated boats and lack of navigational routes/ charts represented by an elliptical region'd'.

Figure 5 Technical Differences



The general secretary of the Boat Owners Association also shared the view that, lack of patrol boats on the lake, encourage the operators and the owners to do whatever they wish especially when they know that, they are off -sight from the loading site. Besides this factor, the inability of boat owners and operators to regard the rules and regulations of boat transport on the Volta Lake was considered by all three respondents as 'indisciplined boat operators'.

On individual basis, each respondent tried as much as possible to assign reasons for the causes they outlined. On general commonalities, almost all the respondents gave similar explanations for the causes outlined. But where issues such as night travelling, equipment failure, fear and

panic, seasonal fluctuations and over speeding among others were mentioned, special explanations were given.

For example, the respondent who stated night travelling as a cause explained that, when visibility is poor in the night, boaters face the difficulty of identifying their route amidst the numerous tree stumps. The informant also explained that, the boaters sometimes travel on the lake during the night because of sheer competition for fish by fishermen and goods by general boaters. Another informant explained that, equipment failure could be an abrupt seizure of outboard motor or non-functioning of a fire extinguisher when there is fire on the boats. The informant explained further that, when this happens in the middle of the lake where storms could also arise easily, the only way out is rescuer boats (which is lacking) to save the life of the passengers on board.

On the issue of fear and panic, this was what the respondent who gave this factor had to say "I was on the boat in which 120 lives were alleged to have been lost. When the boat struck a tree stump and started taking in water, most passengers especially women started shouting, others were jumping from the boat and some others pulling the clothing of men on the boat asking for help. Most of them got unconscious and drowned whilst others were severely injured before *'righting'* began. Those who were calm were given empty water cans to suspend on until they were rescued"

Another informant explained that seasonal fluctuations of the lake (rise and fall of water level) mostly cause boaters to loose track of their route. This he explained further that, during the dry season, boaters can easily identify the location of the tree stumps during navigation. But in times of flood, it becomes very difficult for boat operators to locate the positions of the tree stumps and could easily run into them during navigation.

Finally, an informant mentioned that, boaters sometimes over speed in competition for passengers, goods or in an attempt to escape an approaching storm. In the cause of doing so, the boats could easily run into insidious boulders, undercut rocks or tree stumps causing total damage or capsize.

4.5 Similarities and Differences among the various categories of Respondents

According to Strauss &Corbin (1990), the part of analysis that concerns naming and categorization of phenomena through close examination of data is referred to as coding. This could be done manually or by the help of computer generated programmes. Whatever means is used, it is the researcher that defines and names the categories of data. What is important is for the researcher to make sure that, there is some connectivity among the categories so as to conceptualize the meanings developed finally.

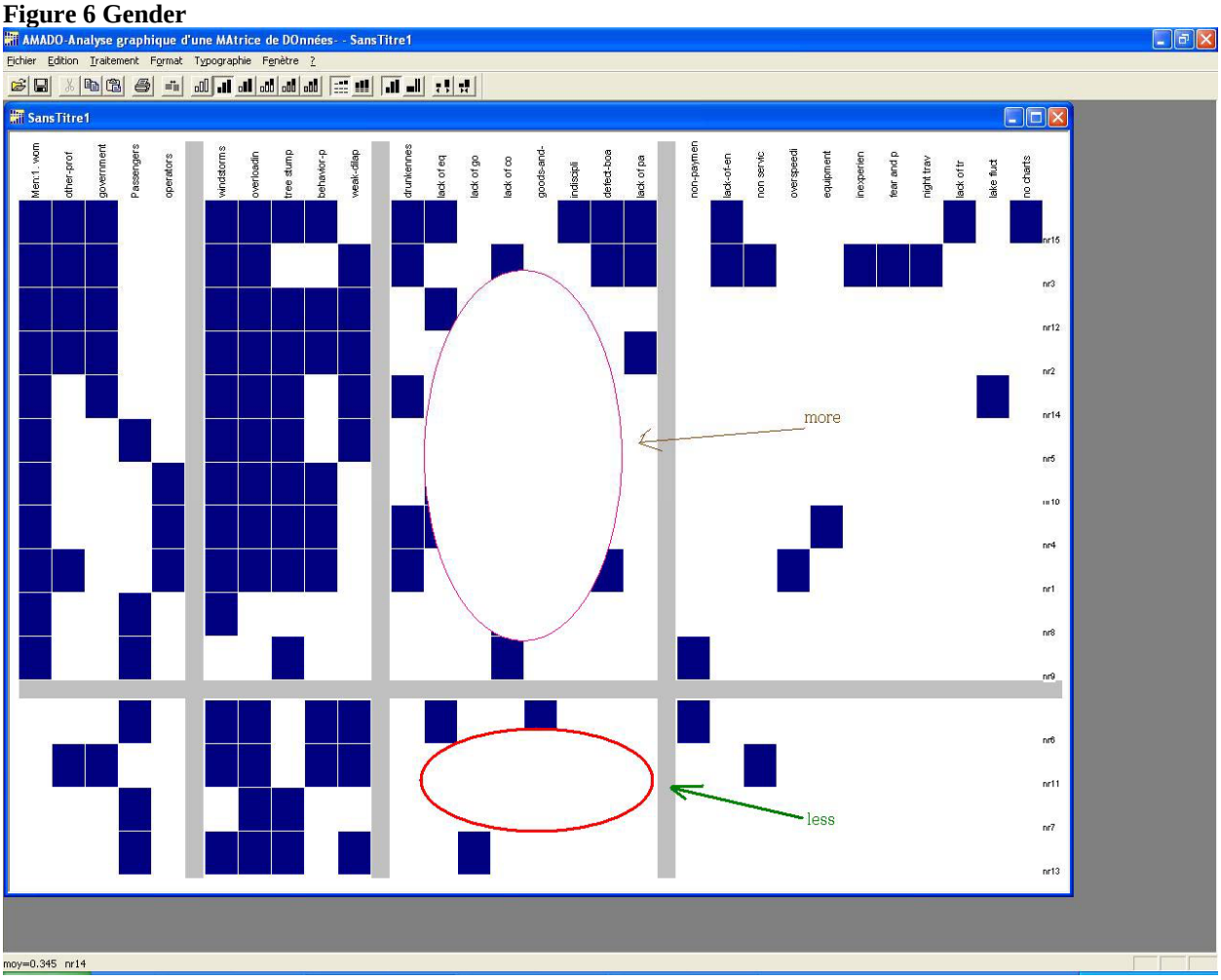
In this part of the work, I have decided to bring out the relationship among the various categories of respondents in line with the causes they have stated. In doing this patterns of similarities and differences were drawn to show which group said what and why certain assumptions were made. To visualize the various patterns, I will still use the Amado Software with special attention to the numerous factors assigned for accidents on the Volta Lake.

The various categories consisted boat operators/owners, passengers, government officials, men/women and other professionals. In describing each of the categories and their responses to the factors responsible for boat accidents, graphs generated from Amado software were drawn to explain further the patterns. All in all, 24 factors were stated as factors responsible for boat accidents on the lake as mentioned earlier in the text.

4.5.1 Gender

Throughout the responses from all the informants, it was evident that, the five factors within the category of frequently stated causes were not an issue of who had more knowledge or was well- informed about boat safety issues; but rather these are factors that commonly cause accidents, hence almost all residents are aware of them. As a result, one does not need to think deep to remember them. As such, both men and women do not show any disparity in stating these factors. This is represented in the graph (figure 6) below.

Figure 6 Gender



However, beyond these factors, women did not seem to be more concerned about whether operators were drunk or not, whether boats were well-equipped, operators disciplined or passengers/ goods were loaded in the same boat or not.

In the process of stating the factors that influence boat accidents more men; for that matter, mentioned factors within the second category than women. Although more men than women were interviewed, proportionally, it was clear that, women had less responses in this category marked by the red ellipse showing 'less' and more for men by the violet ellipse marked 'more' with the arrow.

Similarly, women did not really care about the factors in the marginal group except for non-payment of fares and non-servicing of the boats.

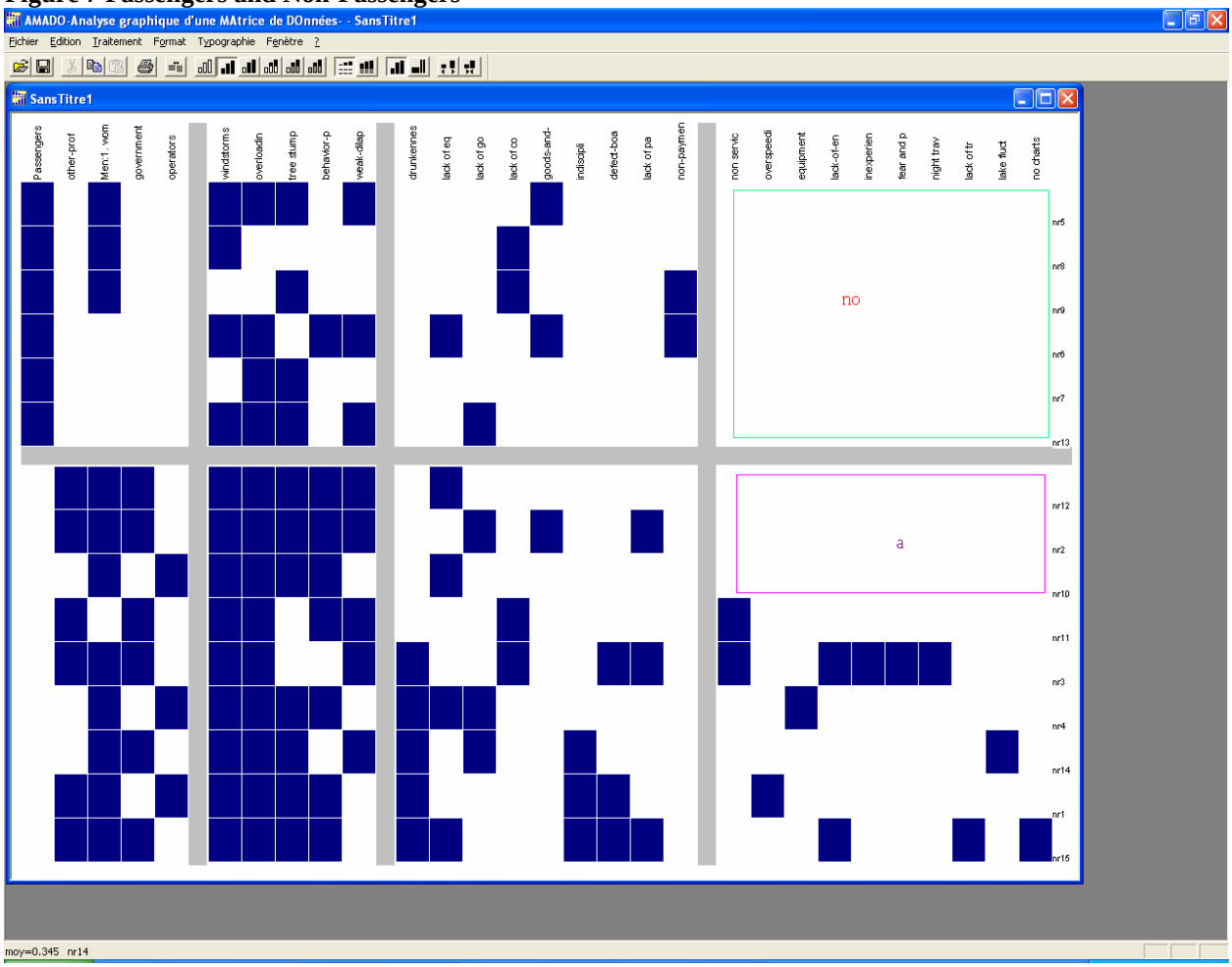
This could explain why more women were said to have been victims of past accidents. This was because, they did not take into consideration, other factors of boat accidents during their times of travel apart from the ones they referred to as ‘major ones’ in category one. Women could have taken into consideration other factors in this category that were equally important for causing accidents on the lake such as drunkenness, defective boat design, indisciplined operators and loading goods and passengers in the same boats; when stating the causes.

4.5.2 Passengers and Non-Passengers

4.5.2.1 Passengers

The passengers stated the most frequent factors that the larger group of respondents stated, without taking critical look at other factors such as lack of enforcement regime, non-servicing of boats, over speeding, inexperienced boat operators, lack of training, lake fluctuations and no charts represented by the rectangular region marked ‘no’ in (figure 7) below.

Figure 7 Passengers and Non-Passengers



Since all the respondents were not limited in stating factors responsible for boat accidents on the lake, the passengers stated freely the most frequent but less technical factors because, those ones were clearly visible and easy to remember. One could also say that, other factors were of less concern to them.

However all the passengers interviewed, except one fail to state that, their own behaviour on the boats was also a factor for the accidents although this factor did not require deep thinking to remember. This is because, right at the landing site for the boats, one could see the numerous passengers sitting at the edge of the boats, and others rushing to enter an already overloaded boat. According to some of the respondents too, some passengers sometimes fail to pay their fares when travelling.

When the respondents were asked how this could cause accidents, they explained that, some operators usually stop in the middle of the lake when this happens until such passengers manage to pay before they continue the journey. Further explanations revealed that, the boats need to speed and escape on-coming storms and also leave dangerous areas of tree stumps and undercut rocks before it gets dark. But abrupt stopping could delay and lead them into any mishap.

Also in the rectangle marked ‘no’ it was clear that none of the passengers responded to such factors. It could be that, these factors are of less importance to them. But when these factors are considered critically, one can see that, these factors should rather have been of more concern to the passengers than non-passengers since they also contribute to accidents.

4.5.2.2 Non-Passengers

Interestingly, non-passengers stated more causes, which passengers should have rather stated. Apart from the most frequent factors which were commonly stated by both groups, non-passengers stated other causes such as drunkenness, lack of equipments, lack of good wood, loading passengers and goods in the same boat, indisciplined boat owners/operators, defective boat design and lack of patrol boats on the lake. It can be seen clearly from the graph (figure

7) that the factors labelled as marginal in the last category were rather stated by non-passengers than the passengers themselves.

However, the polygon marked ‘a’ in the graph indicated that, more of the causes in this category (marginal) were not stated by all the non-passengers except for a few. It appeared that, non-passengers were even more concerned about boat safety issues on the lake than passengers themselves. This is because all the factors mentioned above especially about operators, equipments and the nature (state) of the boats should have remained the priority factors among the passengers rather than non-passengers. But this again depended on the level of information and awareness of the respondents in question about boat safety issues.

It should also be noted that, some of the factors like defective boat design, no charts (navigational), lack of training, lack of patrol boats and lake fluctuations were considered to be more technical issues left for the operators and other officials who have much knowledge about boat transport. For example, factors like no charts, no patrol/rescuer boats, inexperienced boat operators, lack of training stood among what I considered to be technical for the passengers because none of them stated these factors unlike in the case of frequently stated factors in the first category.

4.5.3 Operators and Non-Operators

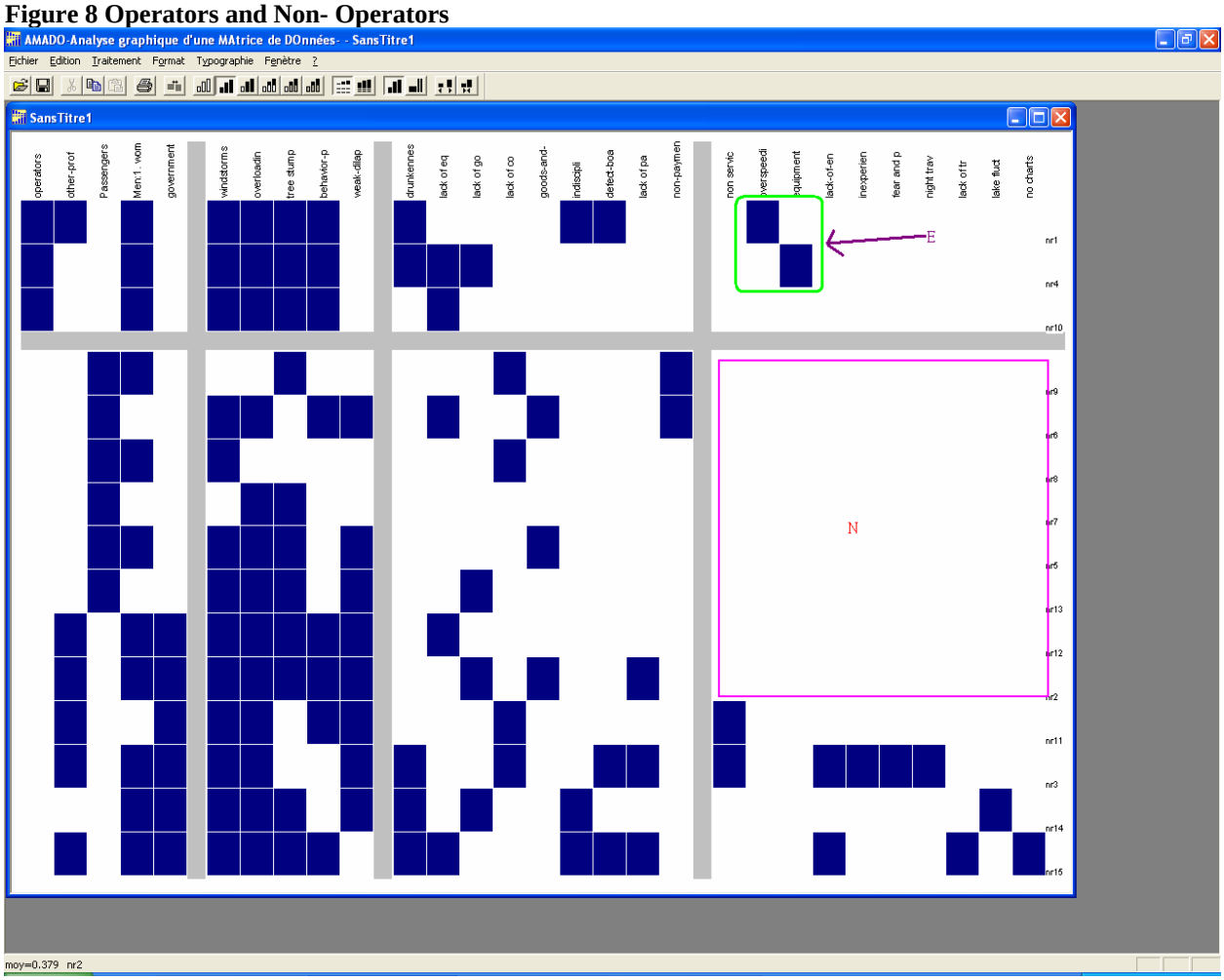
4.5.3.1 Operators

As can be seen from the graph (figure 8), all the three operators interviewed, agreed on the four most common factors of windstorm, overloading, tree stumps and passengers’ behaviour as causes of accidents on the Volta Lake.

But none of the operators stated weak and dilapidated boats as a cause of accidents as did by non-operators. One could deduce from this that, operators wanted to maintain that, the boats are regularly serviced and for that matter they are always in good condition. Adversely, non-operators demonstrated that, most of the transport boats are not in good condition but the operators would hardly take them off the lake. This emphasized the issue of blame shifting and inability to accept responsibilities. Once responsibilities are hardly accepted, it is always difficult to make amends and improve upon situations.

Similarly, operators were silent on factors like lack of coordination between operators and navigators during navigation, putting both passengers and goods together in the same boat, non-servicing of boats, inexperienced boat operators and lack of training. These factors remained favourite ones among non-operators. There was only an exceptional case in which two of the operators agreed that over speeding among them and lack of equipment also contribute to accidents on the lake. This region is marked by the rounded rectangle named 'E' in figure 7 below.

Figure 8 Operators and Non- Operators



4.5.3.2 Non-Operators

This group demonstrated that, they were as well informed as operators about boat safety issues in the region. They stated all the factors mentioned by operators and added more especially in areas where the operators were reluctant in accepting responsibilities.

But one should be very careful of the fact that, government officials also belonged to the larger group of non-operators in addition to passengers and other professionals. Consequently, it would be prudent enough for this group to shift much of the blame to operators. This is also another way of failing to accept responsibilities. This was clear in issues such as drunkenness, non-servicing of boats, indisciplined boat owners/operators, inexperienced operators, loading goods and passengers in the same boat as stated by non-operators.

However, the fact remains that, this group of non-operators serves as a check on the boat operators/owners as far as boat safety issues in this region are concerned. Without them, boaters would have been doing things their own way to the detriment of all in the Country.

In the last category of marginal factors, operators and non- operators were almost silent except for the few factors that they thought could have serious effect on accidents. Although non-operators serve as check on operators here, there were numerous factors that they felt has less impact on accidents and did not state them in their responses. This area of no response is shown by the right-angled triangle named ‘N’ in the graph (figure 8) above. More factors were stated individually because of no limitation during the interviews.

4.5.4 Government Officials and Others

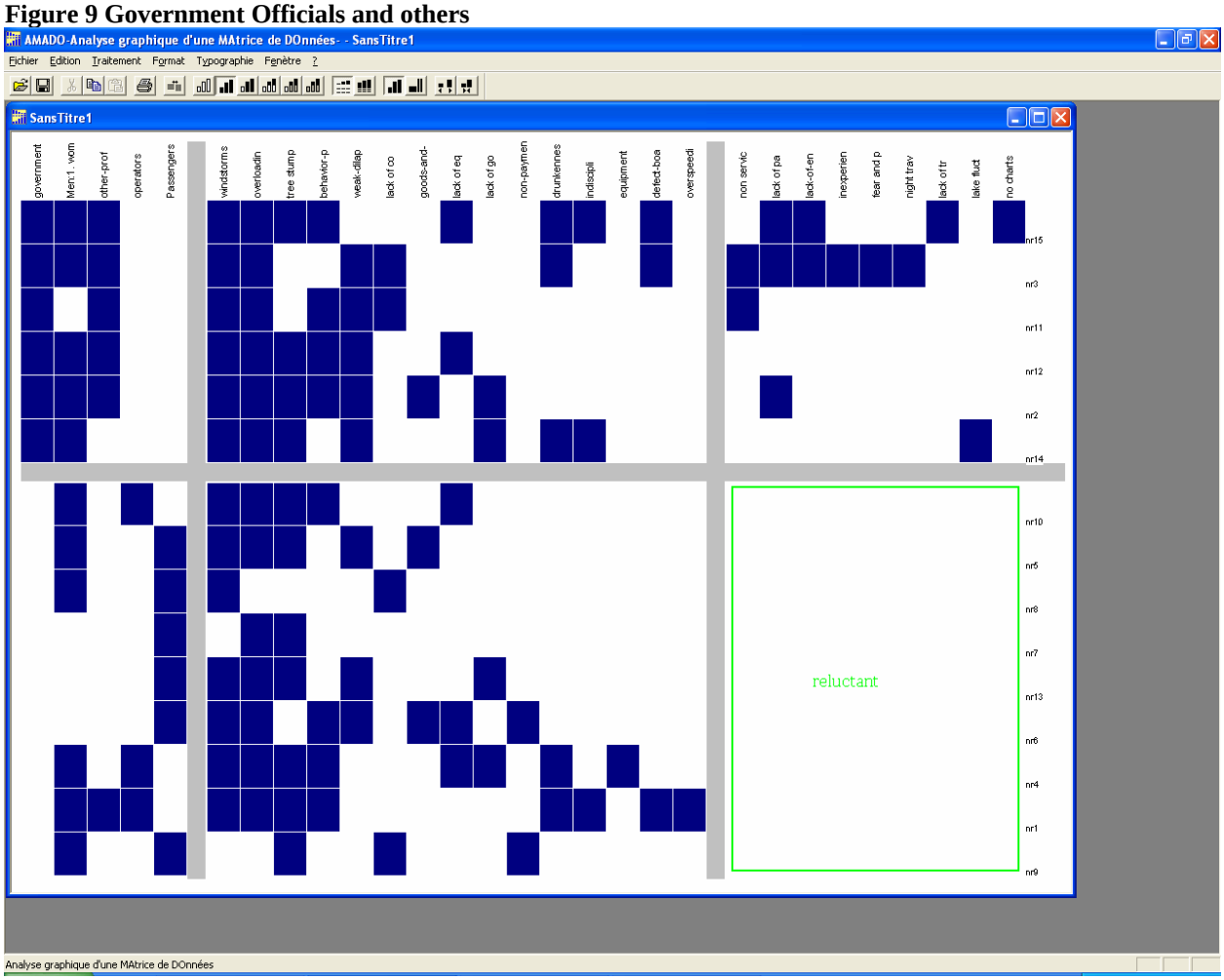
In the first category of frequently stated cause, the concentration of responses is almost equal for both government officials and others. This could mean that, the factors within this category were of utmost importance to all. Whatever the case might be, none of the two groups may want to downplay on these factors as a way of shifting blame to the other.

Although there were operators in the second group of ‘others’, they were honest to state that, overloading was a factor responsible for several accidents in the past. The government officials also stated what factors have actually been responsible for accidents in the past.

Consequently, it showed that, these factors in the first category (frequently stated causes) are inevitable when talking about boat accidents in the study area.

But in the second group of 'others 'most people were reluctant to state some factors like non-servicing of boats, lack of patrol boats, lack of enforcement regime, inexperienced operators, fear and panic during accidents, night travels, lack of training, lake fluctuations and absence of navigational routes and charts. This region is marked by the green box named 'reluctant' in figure 9 below.

Figure 9 Government Officials and others



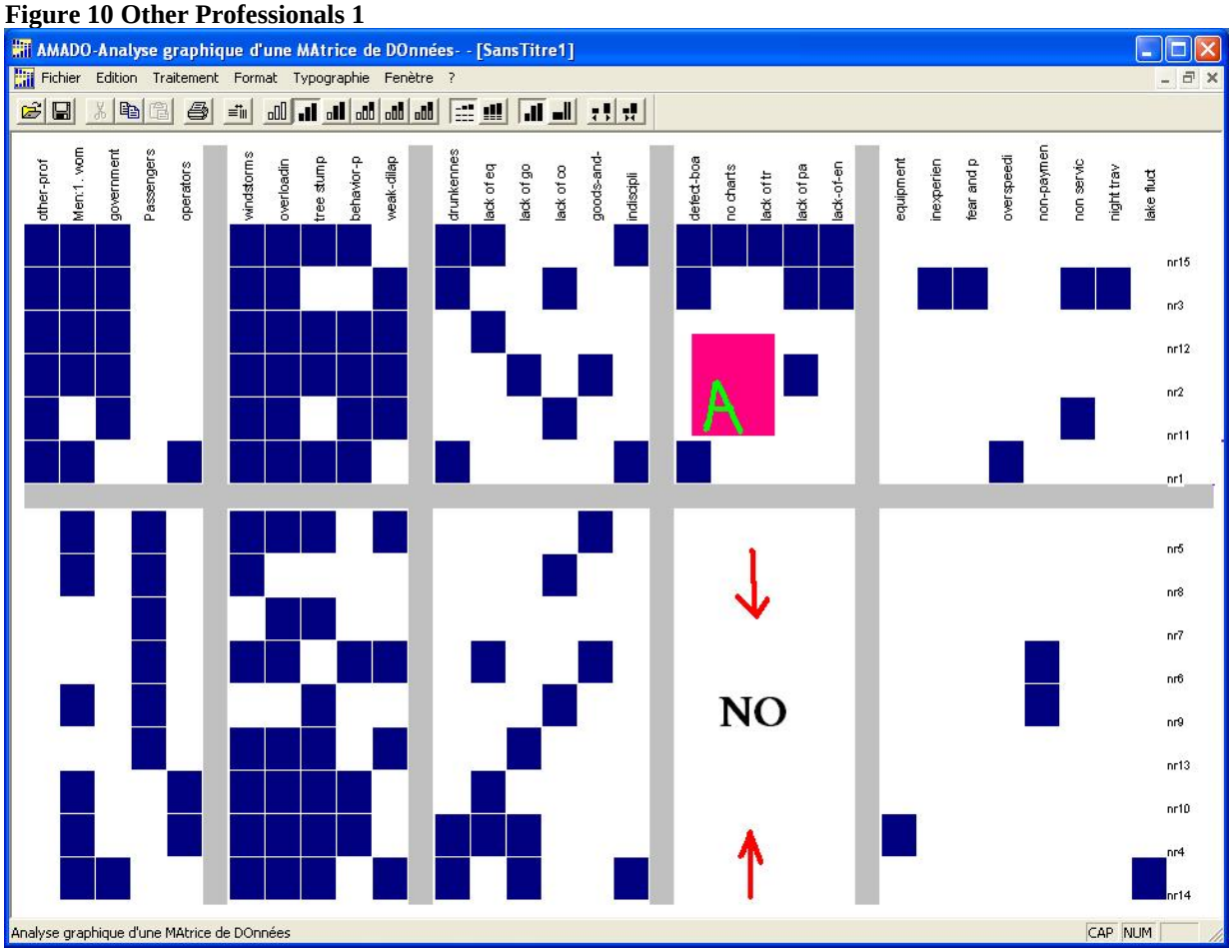
This implies that, government officials had no problem stating these factors since they were not directly involved. But others including operators and civil society would want to demonstrate that, the problem is more of governmental negligence than people's general

attitude. This was still visible in the last category of marginal factors as more government officials responded to these factor than the 'others' did.

4.5.5 Other professionals

Different professionals from other fields but with some relatedness to boat safety and transportation issues were also interviewed. These included a naval officer, a police officer, a representative from the National Disaster Management Organisation (NADMO), an official from the Ghana Maritime Authority, the secretary of Boat Owners Association (Abotoase) and a fishery officer controlling the area. Though this group has stated factors that other groups stated, they demonstrated that, they have more knowledge and are technically informed about issues of boat transport and safety. They did this by going beyond the well-known causes stated by everybody and stated additional factors like defective boat design, no charts, lack of training, lack of patrol boats and lack of enforcement regime. This is shown by the rectangle named 'A' in figure 10 below .

Figure 10 Other Professionals 1



All the factors in this region have not been stated by the second group of other professionals. Surprisingly the three operators interviewed were part of this region marked with arrows as 'NO' even though issues of boat technicality should have involved operators. The inability of operators to state these factors could emanate from their lack of training. It was stated earlier that boaters in this area do not get any training but rely on skills acquired from apprenticeship with their parents during childhood

4.6 Social, Economic and Cultural Perspectives of Factors Affecting Boat Accidents

Since the causes of boat accidents on the Volta Lake are multi-faceted, classifying them according to different regimes can help one to perceive the situation better than talking about them in isolation. Although there could be other categories of grouping the factors, the objectives of this paper were to find out the main causes and consequences of the accidents, and to investigate the efforts made so far by various institutions in alleviating the problem. Finally appropriate suggestions would be made in line with the findings.

As such, I have decided to consider research questions like: to what extent are environmental and human induced factors responsible for accidents on the Volta Lake?

What is the relationship between socio-economic activities and causes /effects of boat accidents in the area?

Finally, what roles have major institutions such as the government and NGOs, played in mitigating the previous boat accidents?

4.6.1 Social Dimensions of factors

After observing passengers of boats by the landing site at Abotoase, one could describe their behaviour as strange. There is always a mad rush for space since none of them is ready to be left behind for the next five days (market day). All the respondents confirmed that, once the boat that travels to your area is gone; there is no alternative than to stay at the terminal town of Abotoase for the next five days for the arrival of another boat.

What appears to be a social problem is that, anybody can sit at any part of the boat without adhering to caution from the boat crew. Some passengers could sit at the edge of the boat, despite several attempts by the boat crew to prevent them from putting up such behaviour. It appears therefore that, people do not have any fear for the risk involved in boat transport on the lake because they think they are already familiar with the lake.

Another factor is the inability of the stakeholders involved, to formulate, implement and maintain better policies, rules and regulations guiding boat transportation on the Volta Lake Government puts in less efforts in this direction, state institutions like the police and navy act minimally, local officials rarely enforce the rules and individuals involved in the boat transport business do not regard the rules and regulations because they thought they are obstacles to smooth running of the transport business. This is because, the numerous rules and regulations do not seem to operate and the accidents keep on recurring.

The officer in charge of the naval officers at the moment of the interview said, “We tried hard to maintain that the boats do not overload, that they use live jackets and all the safety measures necessary, but when they leave the scene to the middle of the lake, they do their own will. Unfortunately we do not have patrol boats to monitor their movement”

The chief inspector of police at the Abotoase station during the time of the interview said “what I think of this problem is that, there is no legal code of conduct for boat transport unlike the road traffic unit. On most occasions, we get culprits who misbehave on the lake, but there is no act that requires their prosecution and since the arrival of the Ghana navy to monitor the situation, we have been minimally involved as police officers”

4.6.2 Economic Dimensions

Agriculture, mainly fishing is a serious economic venture for the people of Abotoase and its island communities. The people depend on fish for their livelihood by using it as food and raising income from its production. But what happens is that, most of the fishermen use unacceptable and dangerous methods of fishing in the lake. Some use chemicals to prepare food for trapping tilapia (a delicacy in Ghana).

According to the fishery officer in charge, the use of unacceptable methods of fishing is gradually affecting the ecosystem of the lake. He explained that, malfunctioning of life activities in the lake is gradually leading to the gradual drying up the lake. Once the water dries up gradually, transportation is eventually affected since submerged tree stumps get a higher possibility of striking the bottom of the boats.

The issue of overloading is also economic, since boaters will do everything possible to maximise profit by overloading the boats with passengers and goods especially during festivities. According to the passengers, they pay higher fares for their goods than for themselves during exceptional days and, boaters always take undue advantage of the situation by carrying more than the required capacity.

Though the boat operators interviewed agreed on carrying more than the required number of goods and passengers during certain times, they claimed these are times that more passengers are left by the landing site due to shortage of boats. They describe these periods as their busiest schedule as almost every boat gets their 'fare share of the cake'. They however agreed that, they make more money from their proceeds than 'ordinary days'.

One other factor is that, passengers will also want to get to the market on time with their products; so will not hesitate to join the boat even if it is already overloaded. One of the market women (a fishmonger) said during the interviews that, she cannot afford to miss the first boat and wait for barely an hour again for another boat to be fully loaded; whilst she has to catch the earliest bus to Accra and sell her fish. This is because once that boat is missed, another boat which does not move directly from that island has to charge extra before taking her to the next island for the boat already loading there.

Common among the economic factors is non-servicing of the boats used by the operators. This is usually as a result of low returns from the transport fares as against high cost of maintaining the boats. One of the operators interviewed stated that, on many occasions, they run at a lost because they do not get the required number of passengers, enough goods and unfortunately some of the passengers can just tell the boat crew sometimes that, they do not

have money for the fares. This he said usually happens because they have no tickets to give before the boat sets off. They have to collect the fares when the boat is off the landing site or when it is mid-way to their destination.

However, during a recent interview by the 'daily graphic' the nation's state newspaper, the Commander of the Naval Ratings, chief petty officer I (CPO I), W.A.Y Abodakpi stressed that, "Now as soon as a boat arrived, the operator is made to take the outboard motor to the mechanic for testing and the necessary maintenance work"[21]

Another economic activity that affects the causes and effect of boat accident in the area is animal rearing especially cattle. Rearing of cattle is common in the island communities of the Volta Lake. As such, the herdsmen get good market for their produce at Abotoase. Usually, a day prior to market day at Abotoase is earmarked by the herdsmen for transporting the ones they intend to sell. On some occasions, people complain of lost cattle too, and they have to travel all the way to the market centre; Abotoase to search for them. But one has to highlight that, the cattle are really overloaded and some of the boats travel during the night. This is a potential threat to safety transportation on the Volta Lake. But it must be emphasized again that, there has not been any record on accidents involving cattle alone in a boat.

Trading in salt from the coastal towns of Ghana through Abotoase to the island communities is also predominant among the people of Abotoase. The salt is used for preserving fish and is usually sold on wholesale basis for people from the island communities. But what is interesting is how the salt is loaded on the boats to these island communities. People are not separated from the sacks of salt during loading. The sacks are arranged at both front and back of the boats leaving space at the middle for the passengers. As salt is always a heavy product, the risk of boats having accidents become high when other factors of boat accidents come into play. For example, the boats are not river worthy, stumps are common everywhere in the lake, storms could emerge anytime and the carelessness of the boat crew can never be

21 http://www.modernghana.com/GhanaHome/NewsArchive/news_details.asp?id=VFZSUk0wNVVWWGM9&menu_id=1&sub_menu_id=13 (accessed on 14th December, 2007)

underestimated. This is to say that, the accidents do not occur with one factor in isolation. Mostly it is a multiple factor effect on the boats and their contents. One other issue under economic issues is to be sure of what respondents said about the profitability of the business. One would wonder why and how the business persists when it is not profitable. Although more and more operators and boat owners complain of not meeting their target economically, more new boats are seen entering the business from time to time. To investigate whether the transport business is worth its investment, I have decided to compute the annual income of the boat owners in order to ascertain whether or not it is really not fetching as most of them indicated. Below is a table indicating a rough estimation of the annual income of boat owners.

Table 4 Estimated Incomes of Boat Owners (Peak Periods)

Maximum Period (63 passengers per boat)	
Long Distance(e.g. Abotoase - Xedzro) 1 passenger = 4.00 GHS(4.12911USD) 63 passengers = 4.00 × 63 = 252 (260 USD)	Short Distance(e.g. Abotoase- Gbokpo) 1 passenger = 1GHS (1.0322 USD) 63 passengers = 1×63= 63 (65.0335)
Monthly Income (5 market days each) 252×5 = 1260 (1,300 USD)	Monthly Income (5 market days each) 63×5 = 315 (325.167)
Annual Income (12 months each) 1260 ×12 = 15120 (15,608 USD)	**Annual Income (12 months each)** 315 ×12 = 3780 (3,902.01)
Estimated annual returns from goods 7500 GHS (7,463 USD)	**Estimated annual returns from goods** 1890 GHS (1,880.69 USD)
Annual income (one way) **22,620 GHS (22,508 USD)**	**Annual income (one way)** **5,670 GHS (5,642.07 USD)**
Total Annual Income (two way; in & out) **= 22,620 × 2 =45,240 GHS(45,017 US)**	**Total Annual income (two way)** **= 5,670× 2 =11,340GHS (11,284 USD)**

Field Survey July, 2007

Simple calculations in table 4 above; indicated that, if the cost of starting a boat transport business is between 7500 to 8,000 USD and within one year boat owners could earn an estimated amount of 30,000-40,000 USD during peak periods, then the argument of non-profitability of the business is baseless. This accounts for why more and more people are entering the business despite the numerous injuries and deaths recorded in the industry during the past. One of the boat operators explained that, even though they don't always get the required number of passengers, they make up for the lost during peak periods.

Table 5 Estimated Income of Boat Owners (Non-Peak Periods)

Minimum Period (Half number of Passengers required)	
Long Distance (e.g. Abotoase-Xedzro) 1 passenger = 4.00 GHS(4.12911USD) 31 passengers = 4.00 ×31 = 124 (128.002)	Short Distance (e.g. Abotoase-Gbokpo) 1 passenger = 1GHS (1 USD 31 passengers = 31(32)
Monthly Income (5 market days each) 124 × 5 = 620 (640.012)	Monthly Income (5 market days each) 31×5 = 155 (160)
Annual Income (12 months each) 620 × 12 = 7440 (7,680.14)	**Annual Income (12 months each)** 155 × 12 = 1860 (1,920)
Estimated annual returns from goods 3,720 GHS (3,701.67 USD)	**Estimated annual returns from goods** 930 GHS (925 USD)
Annual income (one way) **11,160 GHS (11,105.02 USD)**	**Annual income (one way)** **2,790 GHS (2,776 USD)**
Total Annual Income (2 way; in & out) **= 11,160 × 2 =22,320 (22,210.05 USD)**	**Total Annual Income (2 way; in & out)** **= 2,790 × 2 =5,580 (5,552 USD)**

Field Survey July, 2007

Even during times that boaters do not get required number of passengers (non-peak periods), they still make money that could help them make a living and still save a little towards recovering the initial investment they made(as indicated in table5 above).

It should be established that, boaters also make good money from loading goods such as cement, cattle, foodstuffs, charcoal, salt, cans of kerosene and other personal effect; as indicated in tables 4 and 5 above. According to passengers, they pay almost half of their fare for the goods to their destination. For example, a sack of salt is priced at 50 Ghana pesewas (0.50 GHS; equivalent to 0.5161 USD). A cow transported from long distant place such as Kantamanto could cost 5 GHS (5.161 USD). One can just imagine a boat fully loaded with cattle from this place to Abotoase purposely for sale. Some of these boats that load the cattle travel during the night in order to reach the market (Abotoase) early in the morning. Although this situation is a potential factor for accidents, no such case has been recorded in the past.

To make the picture clearer I made an estimation of annual running cost of boaters (as in table 6) and evaluation of their annual profit using the capital cost and the running cost in comparison with the estimated annual income (as indicated in table 7).

Table 6 Estimated Annual Running Cost for Boaters:

Items (Long distance boats; 6-10hrs)	Items (short distance boats;3-4hrs)
Fuel(Premix):1 gallon= 27 GHS(27.19) 20 gallons; in & out =540 GHS Monthly exp.(5market days) =2700 GHS **Annual exp. = 2,700 × 12 = 32,400 GHS** **(32,636 USD)**	Fuel(Premix):1 gallon= 27 GHS(27.19) 5 gallons; in & out =135 GHS Monthly exp.(5market days) =575GHS **Annual exp. =575×12 =6900 GHS** **(6,950 USD)**
Monthly salaries for boat crew i.e. Operator = 60 GHS (59USD) Navigator= 60 GHS 2Assistants=30 GHS each (59USD) Total monthly salary= 180GHS(179) **Annual Salary =180×12 = 2160GHS** **(2149USD**)	Monthly salaries for boat crew i.e. Operator =35 GHS (39 USD) Navigator= 35 GHS 2Assistants=20 GHS each (19 USD) Total monthly salary= 190GHS(90) **Annual Salary =90×12= 1080** **(1,087 USD**)
Occasional Boat Maintenance =**80GHS(79USD)**	Occasional Boat Maintenance =**30 GHS(30USD**)
Total = 34,640 GHS (34864 USD)	**Total =8010 GHS (8067)**

In table 6 which indicates the running cost for boaters within a year, it was clear that, boaters really make quite substantial expenditure; an issue which is rarely considered by the general public. To evaluate further whether the business is profitable or not, one needs to consider the capital investment boaters have made. It can be seen from table 7 that, although boaters invest an initial capital of 7,500 GHS (7,554 USD) in boat construction and purchase of outboard motors, it is not enough to use this figure as a lump sum when evaluating their profitability for each year. In connection with this, the average cost of boat construction and purchase of outboard motors were calculated using the respective years of replacing these items (five and seven years respectively).

Table 7 Estimated Returns from Boat Transport Business

Item	Income	Expenditure	Result
Fuel		32,400 GHS (32,636 USD)	
Wages		2160GHS (2149USD)	
Boat maintenance		80GHS(79USD)	
1 new boat (replaceable after 5 years)		2,500 GHS (2,518 USD) 2,500÷ 5 = 500 GHS (503 USD)	
2 outboard motors (replaceable after 7 years)		5,000 GHS (5,036 USD) 5,000 ÷ 7 = 714 GHS (719 USD)	
Total	**45,240 GHS(45,017 USD)**	**35,854 GHS (36086 USD)**	**9,386 GHS (8, 931 USD)**

The general picture from this evaluation shows that, even though boaters make significant amount of expenses during each year, it is not realistic enough for boaters to claim that, they do not make profits from the business, hence the difficulty in acquiring the necessary transportation equipments and also to afford regular boat maintenance. This is due to the fact that, a business that makes returns of over 8000 USD annually could generally be accepted as

lucrative venture. This is not an industry in which people for example; should complain of buying life jackets at 60 GHS (62 USD) to protect each passenger during navigation.

Boaters; with this returns should also be able to buy insurance policies for their own protection and that of the passengers. They could also save some amount of these returns for organising refresher courses and training for themselves by inviting the appropriate authorities in charge.

4.6.3 Cultural Dimensions

4.6.3.1 Risk culture

Through three weeks of consistent observation and interview, some other people like me could be convinced that, the risk behaviour of the people in the study area towards boat transportation is strange. They hardly exhibit the culture of taking simple precautionary measures during boarding of boats. It is common to see people sitting at the edge of boats during navigation and women with children sitting on the numerous goods packed in the boats without life jackets; simply because that is the only way they can be comfortable. Besides, every passenger may want to sit closer to his/her goods.

What is interesting to hear is that, some of the boat owners do not even have the belief that, live jackets are necessary equipment for boat safety as quoted in the 20th May 2006 edition of the Spectator; a private weekly newspaper in Ghana- "The Ghana National Association of Fishermen (GNAF) presented a quantity of life jackets to helmsmen on the Volta Lake, but the people rejected the jackets, claiming it is a mark of cowardice and bad omen for men to wear them on the lake"

Overloading as mentioned several times is common and surprisingly accepted among the passengers themselves whilst the issue of maintaining that, boats are strong and river worthy is hardly considered by the passengers. It is sad to see the passengers rushing madly when it comes to boarding the boats and overcrowding themselves even when the boat is full to its capacity; just because, they complain of not having any alternative when the only boat available leaves them behind. In this respect, all that the passengers care about is that, they must not be left by the other side of the lake during one time or another for the fear of not

getting another boat to their destinations until the next market day. This situation has over the years encouraged overloading until the arrival of the Ghana naval officers to maintain discipline.

No one cares about what safety equipments a boat has before sitting in it or whether the boat operator is drunk, inexperienced and disciplined enough to adhere to caution from the passengers during the process of navigation.

On the issue of boat maintenance, one operator argues that, the returns they get from the transport business are too little for them to afford maintenance fees and also acquire safety equipments for their boats. But my evaluation based upon estimated income of the boaters showed that, what they earn is enough to afford maintenance fees and also acquire safety equipments. It is assumed therefore that, out of greed the boaters are unwilling to spend on the boats but want to gain more from them.

4.6.3.2 Boat Insurance

Even though boat insurance is compulsory, all the respondents confirmed that, there was no insurance company ever involved in boat transport in the area since the transport business began .As a result, boat owners do not have the idea about what exactly a boat insurance covers, although they have a fair knowledge that, it is aimed at helping them during times of trouble. During an interview with one of the boat operators, he said, “my boss considers his boat a valuable asset and he is always careful in protecting it from involving in any mishap. However, he has never mentioned anything like an insurance since none of the numerous boats has ever been involved in an issue of boat insurance. This again emphasizes the point that, there are existing rules, regulations and requirements of boat transport but the officials in charge rarely enforce them.

Owing to little education on safety measures and general issues of boat transport, passengers know little about their rights as far as boarding boats are concerned. For example, passengers involved in boat accidents know little about their entitlements of medical claims, payment for lost and damaged items and compensation for lost relatives among others. So it s common for

most victims who do not die during accidents to say; “thank God we didn’t die, we can work again to recover our lost properties”

As a result of absence of insurance companies in the transport business, the responsibility of support and compensation for victims and relatives of boat accidents rests on NGOs, government, individuals and some relief agencies.

Owing to the fact that some passengers travel regularly on the lake, they tend to think that they are used to conditions on the lake and can hardly be victims of boat accidents. This is evident in the behaviour on board, when they refuse to adhere to simple precautionary measures outlined by the boat crew during navigation.

CHAPTER FIVE

5 Empirical Data II: Effects of Boat Accidents

In order to sieve, reorganize and bring meaningful classifications into the numerous responses given with regards to effects of boat accidents on the Volta Lake, I have re-grouped them into different categories. The purpose of doing this is to bring order and meaning into a cluster of results so as to explain better what relationships exist between and among the issues.

According to Dey (1993) categorization is seen as a process of funnelling the data into relevant categories for analysis; but the data loses its original shape. Basically, categorization helps in clarifying the relationship between observations, interpretations and the general analysis.

Generally, the effects were just stated by the respondents; but after careful study, I realized that they can be grouped according to Social, Economic and Psychological perspectives. But it must be stated here that, these classifications could be turned around in various ways by different people depending on the purpose of categorization and the preference of the individual. This is in conformity with the argument of Aase (1997), that the ability to categorize is a universal human characteristic. Since, the respondent were not limited in their answers, they stated all they were able to remember during the time of the interview.

In ‘categorization of effects I’ (as in table 8), the responses showed that, the problem of boat accidents is impacting more on the social and economic aspects of the people’s life than the Psychological aspect. More and more responses were given in these directions and one of the respondents explained that, the problem starts as an economic one and later develops into social. She said it is when things started getting out of hand that, the issue of psychology sets in.

It was also clear from this categorization that, boat accidents have multiple consequences; however passengers continue to use the transport boats knowing very well the dangers involved. This is simply because; they are captive customers and they have no other alternative. The lake is the principal unit of socio-economic activities in the area. The main source of livelihood for most

people depends on the lake and its related activities. The market functions because of the lake, people get basic incomes through petty trading, food in the form of fish is a product of the lake, fishermen and boat operators get their daily wages from the lake and farmers depend on the lake for vegetable production. The link continues on and on until the least person is affected. Consequently, if people get injured or die as a result of these accidents, it brings a multiple effect to children, adults and all able bodied people in diverse ways. Great financial loss from boat accidents to passengers, operators and boat owners in various forms could be transformed into social and psychological problems.

Table 8 Categorization of Effects 1

Social	Economic	Psychological
Children's education affected Orphans increasing High rate of indiscipline Departure of people to their hometowns Area neglected by national professionals Disabilities Loss of lives Drug use Robbery Injury School drop-outs More dependants	Low turn up for market Revenue reduces Market dying gradually Low budget support from JDA Loss of human resource Increase in govt. expenditure Low income for boaters Poverty Low traffic on the lake Change to fishing Low development Property loss High medical bills Unemployment Hunger Great financial loss Work impossible	Fear for further travel Disabilities Psychological trauma Injury

Source: Field Survey (July, 2007)

Similarly, the general effects of boat accidents could be categorized into how it affects the people, the community and the nation as a whole as indicated in table 9. The same responses given by the respondents have been regrouped to show meaningful themes between the people involved in the business, the communities they live in and how the nation is also affected.

It is clear that, the people within the research area suffer from economic, social and psychological consequences of boat accidents on the Volta Lake. These transcends into all aspect of their lives. Indirectly those who are not involved in the transport business have not been eliminated from the effects.

Collectively, the various communities within the affected region face a lot of challenges emanating from the accidents. Physical infrastructure suffers as a result of low revenue and external support. This is because, an area that generates lower revenue internally, does not get enough support from the central and local government according to the guidelines of decentralization in Ghana. It is also difficult for accident prone zones of this nature to get acceptance of national professionals such as teachers and health workers to willingly serve. This directly affects development and standard of living in such areas.

Once, there is undervelopment and poor living standards resulting from unemployment and low income generation, the government of the day becomes unpopular and may eventually lose the votes of the people in those areas during elections. Despite this, the government may not neglect the people during times of adversity such as accidents and also during times of national exercise as in the case of vaccination programmes or elections.

Table 9 categorization of Effects II

The people	The Communities	The Nation
Children's education affected High rate of indiscipline Disabilities Loss of live Property loss Drug use Robbery Injuries More dependants Low income for boaters Poverty Change to fishing High medical bills Unemployment Fear for further travel	School drop-outs Departure of people to their hometowns Area neglected by national professionals Low turn up for market Revenue reduces Market dying gradually Loss of human resources Low budget support from Jasikan District Assembly(JDA) Low development	Increase in government expenditure Refusal of state professionals to work in the area High medical bills unemployment work impossible government unpopular loss of votes during elections underdevelopment

Source: Field Survey (July, 2007)

It is also important to draw a line between what effects the accidents have on the participants (passengers), the operators/owners of the boats and those in authority as indicated in table 10 below. Participants include all those who travel by using the lake whilst leaders include

government officials, responsible individuals in the society, the law enforcement agencies and those from Non-Governmental Organizations. Though there may be some overlaps between the various groups, there are some effects that are solely bearable by each of the distinct categories.

Table 10 Categorization of Effects III

Participants(passengers)	Boat Operators/Owners	Leaders (state officials and others)
Unemployment Poverty More dependants Problem of feeding Orphans increasing Injuries Disabilities Loss of live Property loss Children's Education Affected High medical bills Fear for further travel Psychological trauma	Low income Great financial lost Bankruptcy Change to fishing Injuries Disabilities High medical bills Further fear for boating	Drug use Robbery Increase in government expenditure Refusal of state professionals to work in the area High medical bills Authorities challenged Government unpopular Loss of votes during elections

Field Survey (July, 2007)

5.1 Empirical Data III: Efforts by Government towards reducing the problem

5.1.1 Commissions of Enquiry

Several commissions and committees of inquiry have been formed by the government of Ghana in connection with these numerous accidents but one would be surprised that, little has been done about the recommendations of these legally instituted commissions.

For example, on 18, April 2002 when there was a serious accident on the Volta Lake, a committee led by Justice Paul Gyaesayor was quickly established to investigate the causes of the accident and to suggest relevant recommendations to forestall the occurrence of any such event. Finally, the committee established that, overloading and indiscipline were the causes of that accident which claimed the life of 50 persons (36 children, 2 men and 12 women) together with their properties. According to the reports of the committee, the boat which was designed to carry 53 passengers was carrying 88 people with goods at the time of the accident.-GNA (June 28, 2006)

In another development, Justice Kofi Essel Mensah committee was formed in May, 2006 to investigate the causes of a terrible boat accident on the 8th of April 2006 in which 120 lives were alleged to have been lost. In this accident, the inhabitants of a place demarcated to be used as a game reserve were evicted by the officials of the Forestry Division of Ghana and respondents alleged that, the evacuation exercise was the sole cause of the accidents. – GNA (June 28, 2006)

So the terms of reference for this committee were to investigate the causes of the accident and loss of human lives, to establish the actual number of lives lost in the accident, to examine the extent to which the Wildlife Division's evacuation exercise was linked to the boat disaster and to make recommendations on any matter related to the accident. As planned, the committee finished its work within five weeks and government assured the public that, the recommendations would receive the necessary attention from the Ministry of Ports Harbours and Railways.- GNA (June 28, 2006)

Interestingly enough, there is total silence for now; no action has been taken so far until the next accident happens; then another committee of enquiry will be formed. However, the question is; where are the rules and the law enforcement agencies?

5.1.2 Naval operations

Owing to the high level of indiscipline on and around the lake, the Ghana Naval Base from Tema was charged for an initial three –month's operation in the area to maintain law and order.

The operation was directed towards special areas demanding attention such as checking of overloading, drunken behaviour of operators and sailing during times of bad weather. Others include routine checks on regular boat maintenance, cancellation of roster prepared by boat owners for transport boats, stopping weak and dilapidated boats from operating and checking the use of live jackets, fire extinguishers and other necessary equipments during navigation.

After a few months of operation, order was restored and no accidents were recorded within that period. This really is a proof that, control works and there is the need for proper control and monitoring system on the lake. Relating this achievement to other reasons stated as causes of the problem, it is clearly indicative that, the larger portion of the problem remains human error and lack of proper control on the lake. However he question is how sustainable the control is going to be, since authorities turn to relax when they feel that measures have worked to some extent

5.1.3 Contract to remove tree stumps

It should be stated that, the government of Ghana has already signed a contract with a Canadian Company; Clark Sustainable Resources Development (CSRD) for underwater harvesting of the tree stumps from the lake. However, actual work is yet to commence after signing a three year memorandum of understanding in September 2007; which is expected to be extended for additional seven years.

5.1.4 Training Programmes

Owing to lack of training for boat owners, operators and passengers, government in its efforts has drafted; through parliament an inland waterways safety code purposely for education and

sensitization of participants in the boat transport business within the area. Government has also contracted the Regional Maritime Academy (RMA) and Ghana Maritime Authority to organise training courses for boat owners and operators as well as outboard motor mechanics at various landing sites.

5.1.5 Formation of Task Force

Prior to the arrival of the naval officers, a task force comprising members from the Boat Owners Association, the Police, NADMO and the district assembly (JDA) was formed to monitor and enforce all safety bye-laws. Although NADMO is a relief institution, the organization creates awareness to the people about safety measures on the lake. According to the officer in charge during the time of the interview, the organization educates the people on weather forecasts on routine bases upon advice from the meteorological department of Ghana.

The district assembly (JDA) was responsible for registration and licensing of all transport boats in the area. However, this was not as effective as it should be since it was only six boats that received the district assembly license although forty boats have been registered into the transport business as at the time of interview.

The Police also used to monitor activities at the lake side and tried to maintain law and order with regards to safe transportation. During market days, two police officers were usually discharged to the landing site to control overloading, drunkenness and to maintain general discipline at the landing site. However, there is lack of continuity as the laws seemed to be relaxed not only by the police but all other members within the task force. This is true because, despite the existence of this task force, accidents continued to happen until the arrival of the naval officers.

As mentioned earlier, the Boat Owners Association at Abotoase had the ambition of reducing the accidents to substantial level through enforcement of the rules and regulation governing boat transport within the area. Initially, the association started well by insisting that all transport boats respect the *waterline* given to all boats by Volta River Authority. This was to ensure that boats do not overload. Drunkenness was also checked regularly and sitting

arrangements of passengers was also inspected before departure of every boat. One wonders why accidents still persisted since these checks were not different from that of the naval officers; perhaps their enforcement might have been relaxed as mentioned earlier. Eventually, the naval officers had to come in for reinforcement and one member of the existing task force had been absorbed into the Ghana Navy for his commitment during the time of his work.

5.1.6 Ghana Maritime Authority (GMA)

The Ghana Maritime Authority Act, 2002, Act 630 that established this institution was operationalized in 2004. This is to say that, the institution became active in 2004 for the purpose of ensuring safety on Ghana's waterways as far as fishing and transportation are concerned. One of the critical areas that, the institution looks at is safety of inland water transport.

Consequently, the institution put in several measures in relation to transportation on the Volta Lake in order to reduce the numerous accidents that occur frequently in this part of the country.

In collaboration with Volta River Authority, GMA has given loading marks and waterline for all transport boats at various stations including Abotoase (research area). This is to reduce overloading of boats and to maintain that, passengers sit well in the boats and are well protected before the boats set off.

Through its initiative, a task force made up of personnel from the Ghana Navy has been formed to ensure enforcement of lake transport regulations. Also in collaboration with Ghana Ports and Harbours (GHAPOHA), the institution is putting up measures to finalize a draft regulation in order to enforce safety on the Volta Lake. Besides, it has once organized training courses for boat owners/ operators at Abotoase.

Other efforts by GMA remained plans as they complain all the time of lack of funds for their activities. Common among its plans are efforts to organize training for boat owners and

operators, to procure navigational equipments, build landing sites with modern facilities provided and to raise funds in order to enable them phase out old ferries on the lake.

5.2 Non- Governmental Organizations

When it comes to NGOs and boat transportation on the Volta Lake, little has been done and recorded. According to the respondents, NGOs are not actively involved in transportation issues rather than in providing relief during times of accident. Even with relief, just a few NGOs have been involved in the past.

However, an NGO known as Foundation for Democracy Awareness and Research (FODAR), through the support of Hanns Seidle Foundation (a German NGO) has once organized a workshop for boat owners, operators and passengers at Abotoase.

There are other NGOs which do not involve themselves directly in the transport business but make provisions to improve the living standard of the people. The services of these NGOs include provision of bore holes, schools and toilet facilities in communities which are regarded as deprived. One such NGO is ADRA (Adventist Development and Relief Agency) which supports people in the country through various ways such as provision of used clothing, financial support to farmers and food aid during disasters among other things.

Another NGO that supports the people in fishing and island communities is Inland Canoe Fishermen's Council (ICFC). This organization also provides markets, toilet and transport facilities to fishing communities especially along the Volta Lake.

During the last boat accident in April 2006, different organizations in different capacities have provided aid for the victims and their families. Notable among these organizations were Ghana National Fisheries Association which donated t-shirts, rice, cooking oil and soaps to the people. Some of the victims also confirmed that, there was also a foreign based NGO that donated 38 GHS equivalent to 39.22USD to survivors of the accident.

CHAPTER SIX

6 Conclusions

Numerous causes of boat accidents exist, most of which are regularly underestimated by participants in the boat transport industry because the factors do not cause accidents as frequent as others.

6.1 Main Problems

Although the factors responsible for boat accidents have been classified into natural and human-induced ones, overall, human behaviour and error constitute the largest component within the framework of factors responsible for boat accidents on the Volta Lake, especially within the research area. Consequently, the respondents decided to name these factors that frequently cause accidents on the Volta Lake as 'major factors' whilst majority of the causes remained in the marginal group. Whereas the human induced factors were seen to be controllable to a greater extent, the natural or environmental ones were discovered to be very difficult to control.

Following the various causes of boat accidents and the multiple impacts they have on the people and the country at large, it is now clear that, the larger picture remains an issue of *governance, enforcement of rules and absence of alternative means of transport for customers* (captive customers) in the boat transport industry.

Owing to lack of proper governance, there has never been any insurance company involved in the transport business in this part of the country although it is a compulsory requirement for transport boats. Out of greed to maximise profit, boaters neglect boat maintenance and also fail to seek any information regarding boat insurance because; they thought these items would definitely increase their expenditure. Besides several other requirements in the code of boat transport are neglected simply because boaters do not respect the rules and the officials in charge too; are not doing what they ought to do.

There is total absence of compliance to the rules as boat operators do their own will by overloading, over speeding in dangerous areas of tree stumps and undercut rocks, travelling in the night and during bad weather just because there is little control from the authorities. Following the number of accidents on the Volta Lake, the boaters decided to form an association to monitor activities on the lake. Although the association was formed with well defined bye-laws in their constitution, most of the bye-laws are still non-operational. Hence accidents continue to occur as frequent as in the past, until a task force made up of naval officers was formed by GMA to address the situation. With the arrival of the naval task force, the rate of accidents has diminished significantly and this is indicative of the fact that, respect for rules &regulations; and control are very vital in reducing boat accidents in the area.

Besides, the naval operations also indicated that if human error and indiscipline could be controlled to a larger extent, the number of accidents on the lake can also reduce drastically. No matter how the situation is perceived by the people of Ghana, it should be emphasized that, there is an improvement in the situation, since Volta Lake has not recorded any accidents since the institution of this monitoring body. However, the naval operators could have performed better in their monitoring exercise if they have had the necessary equipments such as speedboats, high standard binoculars and other communication gadgets.

It should however be stated here that, one problem with law enforcement and maintenance of discipline was that, the agents responsible turn to relax the rules in one time or another to the advantage of a few and to the detriment of many. This was evident when the deputy commander of the naval officers on operation for example; had asked a fully loaded boat to reverse and pick up a man he claimed had to deliver some items at the next island; from the midst of many passengers left at the landing site. This behaviour could explain why the existing task force and the boat owners association could not perform to expectation. They might have indulged in similar behaviour to the detriment of maintaining safety codes for boat transportation. Besides, law enforcement and control become weaker with time; hence the possibility of the naval task force losing credibility and becoming inefficient with time.

It should also be emphasized here that, the people have no good evaluation of bad weather and their own risk culture; hence they take chances by travelling in the night and during bad weather together with other indisciplined acts. There were also more accidents in the past resulting from lack of trained and unlicensed operators in the industry as well as overloading because of greed. Even though the findings revealed that, most people do not believe in the need for any formal training before becoming a boat operator, it was again realised that the challenges of modern technology and the number of accidents on the lake could not permit this behaviour. It is therefore important for boat owners and operators to have regular and adequate training by appropriate institutions responsible.

Despite the existence of an official company (VLTC) for lake transport on the Volta Lake, the residents in the research area do not enjoy the services of this company because of the numerous tree stumps submerged in that part of the lake; therefore lake transport organized by individuals remains the only alternative means of transportation and growth of better economic activities within this region.

It was evident that, there was a greater relationship between socio-economic activities and the causes/ effects of boat accidents in the research area. For example, accidents were said to be higher during festivities such as Easter and vacation holidays for students. During these periods, the number of passengers increases than ordinary days; hence boaters' decision to overload and make more money. Previously, boaters were also said to have prepared rosters for themselves in order to make sure that, fewer boats operate each day to get more passengers and goods.

Although some boaters argue that, this helps them to raise enough money to maintain the boats, a computation showing a rough estimation of their annual income and expenditure revealed that, the returns they get generally from the business were profitable enough to maintain the boats and cater for other expenses. As a result their argument of not getting enough returns was deemed as baseless.

6.1.1 Responsibility

Blame shifting and buck passing were noted to be common among the various actors and stakeholders as none of them was ready to accept responsibility for the accidents. Boaters accuse passengers for their behaviour and the government for negligence and lack of support; passengers and the general public accuse the boaters for inexperience and indiscipline whilst the government accuses the residents for their own behaviour. As for the tree stumps all the other people would want to agree that, government is the one responsible for their removal.

Although government has formed several commissions of enquiry into the causes of boat accident in the area, action is hardly taken and the recommendations of the reports are soon forgotten until another accident occurs. Similarly, government and its agencies on several occasions have underestimated the number of victims and property lost in the accidents as a way of indicating that, the situation was not as pathetic as other people would want to portray.

The consequences of boat accidents are usually in multiple folds; ranging from socio-economic to psychological effects. Individuals suffer in diverse ways, the communities experience the adverse effects whereas the country at large loses human resources and faces higher socio-economic expenditure in the affected regions.

Although government claimed to have made some efforts in mitigating the problem, the general picture seemed to be a governmental negligence to the people. Notwithstanding these efforts towards a better situation, more *recommendations* need to be considered by government and other stakeholders in the business for a better future.

6.2 Recommendations

Various efforts need to be made by different institutions and actors if the situation should be improved. However the scope of this is limited to what responsible authorities and participants in the boat transport industry should do, together with what material procurements that needs to be made. These efforts do not included measures that have already been taken towards reducing the problem.

6.2.1 Action by Authorities

The institutions considered by this work as authorities include the Jasikan District Assembly (JDA), some NGOs and the government. Previously, the JDA has started registration and licensing of transport boats, but the records indicated that, since the beginning of this programme only six transport boats have been licensed out of over hundred boats registered. In respect to this, there is the need for JDA to intensify its efforts in registration of transport boats and licensing of qualified owners and operators into the transport industry.

As mentioned earlier, much is always expected from government in reducing problems of this nature in Ghana. As a result government needs to establish timber markets in the area with hard quality wood readily available. This is to give easy access to boat manufacturers upon request so that, wooden boats will be strong and durable. Besides, training and organization of workshops for boat owners and operators, education on accident management and training of local boat manufacturers rest on the shoulder of the government. Training for local boat manufacturers and mechanics of outboard motors can be done by government through collaboration with GMA and Ghana Boat yard in Tema.

The bye-laws and safety codes also need to be re-enforced by government and its law enforcement agencies so as to maintain discipline and high standard inland water transport.

6.2.2 Material Procurement

Material procurement and provision of necessary logistics for efficient and safe transportation on the Volta Lake should be the responsibility of all stakeholders. Communication gadgets such as mobile phones, binoculars, reporter wireless and global positioning systems (GPS) among others are necessary for easy transfer of information and location of direction during navigation and accidents. Silver boats are better replacements for wooden boats and where there are no options, wooden boats should be constructed from hard quality woods as mentioned earlier.

Life jackets and durable outboard motors should be made readily affordable to boaters. Government needs to provide a floating jetty in its plan to provide modern facilities at the landing sites of boats. This will make boating accessible to more people regardless of age or physical abilities.

6.2.3 Action by Participants (Passengers and Boat Owners/Operators)

Since much of the factors responsible for the accidents are linked to human behaviour and error, people who are directly involved in the transport business owe it a duty to observe strictly the existing safety codes and bye-laws of boat transportation. Besides, boaters are advised to move in groups so that one can rescue the other during times of accident. Passengers and operators should get adequate training on accident management so as to know what exactly to do when there is accident on the boats.

6.3 The Future of Boat Transport on the Volta Lake

With all the good suggestions and recommendations from all manner of people and angles; one would wonder what exactly the future of the boat transport industry is going to be like. It is nevertheless a difficult prediction to make since the problem remains a complicated one.

However, it is very important to consider some critical issues relating to the progress of the industry, besides what the various stakeholders need to do. The future of the boat transport industry might remain bleak if the procrastinative attitude of officials in relation to law enforcement and maintenance of safety codes continue. For example, a common statement by officials during times of accident on the lake is that all boats would soon be registered and the owners licensed and educated on how to ensure safety on the lake. Interestingly only forty out of more than hundred boats have been registered by the district assembly, whilst none of them have been licensed as at the time of this study.

Similarly, a team of personnel from GMA were said to be studying the situation in order to introduce some transformations such as new lake regulations and boat design/construction but nothing concrete has been produced from this initiative since March 2007 when it was instituted. Again it would be difficult for accidents to stop occurring on the lake when

individuals are not valued and life respected by the boat operators and owners. When would behaviour and habits change as passengers refuse to take their safety into their own hands by continuing to overcrowd themselves in commercial boats with the excuse of not having an alternative? Overloading will hardly end since boaters do not acquire licenses and insurance.

I again feel that, accidents in this part of the country will hardly reduce since necessary laws are either missing or inactive. Besides law enforcement agencies are dormant and legal obligations of operators are not clearly defined. Where the agencies are a bit active, they still lack the necessary logistics to check recalcitrant operators and passengers. Motor courts are lacking and traffic offences on the lake are not even monitored or reported; let alone tried in the traditional courts. Where such cases are tried in the traditional courts, they are delayed over long periods and the impacts are very great on the victims. Operators do not know the implications of their actions and the passengers are not even aware of their rights with regards to claims and entitlements during accidents. It is difficult for passengers to tell what exactly they are supposed to do during accidents so as to be compensated for property damage, medical expenses, permanent injury, pain or suffering and filing a wrongful death suit. It has never happened in the history of boat accidents for individual victims or families to take such legal actions except for human right institutions. How then would the situation improve if the people do not know their rights in order to put the operators on their toes?

6.3.1 The Actual Project

It is a laudable idea to remove the tree stumps from the lake as suggested by all concerned domestic and international stakeholders. However the feasibility of the project is what I question all the time. Have we thought about the environmental and social impacts of such a big project? According to conservationists (example, director of conservation international in Ghana), as long as it is necessary to reduce the risk to lake transportation; it is also important to protect the biodiversity and the livelihood of the fishing communities in the lake basin.

What about the financial inputs to be made by the country and the external community? Funding of the project is said to be solely done by private investors such as Wayne Dunne and Joe Clark (Canada), City Capital Corporation (London) and Goldman Sachs; the world's largest global

investment bank. Whereas the Company is expected to start harvesting the tree stumps in August this year; government in a recent report indicated that Clark Sustainable Resource Development (CSRD) will not be able to complete its feasibility studies before this deadline. The feasibility studies were to identify the tree species and later to make a better assessment of the market value of the wood. However, implementation of the project seems to be a problem since there was an original challenge of governmental approval; and later getting investor funding. Consequently, the tree stumps will continue to be as risky as they have been over the years for boat transport.

Do we really need to remove all the tree stumps in the lake to make way for boat transportation? I think demarcating the routes of the boats with buoys should be the simplest way of solving the problem since boaters have already defined their own routes across the fields of numerous tree stumps. The situation only becomes difficult when boaters cannot identify their route during bad weather, darkness and in times of flood. Since the project is aiming at finding a long term solution to the problem, I think people should be given an alternative solution in the short term, so that we don't lose our human resource from this part of the country before the project begins.

If transportation on the lake becomes safe and accident free, boat transport on the lake will possibly increase, and hardly will passengers be left by the landing site during market days. Several types of boat transport operation may develop in the form of pleasure trips, seasonal fishing, excursions and educational trips. More workers who refuse postings to the area for the fear of accidents will begin to accept professional services in the area. The people will begin to benefit from all national exercises such as vaccination programmes and active electioneering campaigns in surrounding villages during national and local elections. Trading activities will be facilitated and general communication will function smoothly hence boosting up the standard of living of the people. The residents of the area will thereafter begin to feel some sense of belongingness and confidence in the government will gradually be restored.

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Appendix 1

Interview Guide

Boat owners
Has your boat ever been involved in an accident on the Volta Lake? If yes what caused the accident?

Do you know of other people whose boats have been involved in similar accidents? How many?

Do you remember the ones you consider major accidents? Why do you consider them as such?

What accounted for these accidents?

Do you have license for your boats? What about other owners?

Do you lack some equipment as boat owners for your boats? What are they?

Now, looking at the factors you have mentioned to be responsible for these accidents, what role do you play as boat owners to reduce or stop them.

Has the government also done something to improve the situation? What exactly?

What about some NGOs? What have they done?

How do you think these accidents have affected you as a person and the community as a whole?

In your opinion, what do you think needs to be done to improve the situation?

Boat Operators
From where to where does your boat plies?

Have you ever been involved in an accident? If yes what caused it?

Have you witnessed or heard about other boats involved in accidents? What caused these accidents?

How serious/ terrible were these accidents? What made you consider them as such?

Do you have a license as a boat operator? What about other boat operators?

What other regulations do you have as far as operation on the lake is concerned?

What is the carrying capacity of your boat; that is number of people allowed?

Do you always get the required number of people, less people or more people to load?

When there are more people than required, what do you do?

What equipments do you need for safe operation; for yourselves and the passengers you carry?

Do you have all these equipments? If no why?

Are there radio communication gadgets, mobile phones, emergency rescuer boats and protective clothing? What about their affordability?

How do you think these numerous accidents affect you as boat operators and the community as a whole?

What do you suggest should be done to improve the situation?

The Police

Do you have any records/reported cases of boat accidents at your station in recent years?

How many cases have you registered so far?

Which ones do you consider the major ones?

What factors accounted for the cause of these major accidents?

Considering the number of cases you have registered within this period, what can you say are the general causes of boat accidents on the Volta Lake?

How do you think these accidents have affected the people and the community at large? (General effects)

But considering the numerous causes that you have enumerated, do you play some role as police officers in reducing or stopping the accidents from occurring?

What exactly do you do?

Has the government taken some measures to control or improve the situation? What exactly?

So, how is the situation like currently, in terms of the frequency of accidents on the lake?

Officials

Do you have records on boat accidents in the JASIKAN DISTRICT? What are the numbers?

Among these reported cases, which one do you consider major/terrible? Why?

What do you consider the general causes of these accidents after careful review of the records?

How have these accidents affected the people and the communities within and outside the Jasikan district?

What measures have your institution, government and NGOs, taken to remedy the situation?

What current/ future measures are put in place to curb the situation?

Are there laws governing the general operation on the lake? If yes, are they enforced? So what then happens to the illegal operators?

Do the operators benefit from some training, weather report information, communication gadgets and emergency relief measures?

What further preparations have you made to this effect?

What challenges do you encounter in handling boat accident issues on the Volta Lake?

What suggestions do you make for improving the situation?

Fishmongers, Traders and general Passengers

Have you ever been involved in or heard about boat accidents on the Volta Lake? How many times?

Which ones do you consider terrible? Why?

What accounted for these terrible accidents?

Are there readily available boats at the times you need them?

What then happens, if you are more than the carrying capacity of the only boat available?

Are you always comfortable with the boats in which you travel? If not, why? E.g. conditions of the boats, behaviour of operators etc.

Do you have separate boats for your goods and belongings?

Should the boat operators/owners/passengers be blamed for the frequent accidents? Can you justify your case?
How do these accidents affect you in person, your business and the entire community?

What do you feel should be done to improve the situation?

Key Informants
How often do boat accidents occur in this area? Could you give numbers too?

Which one was the most current?

Do you consider the accidents that occur on the Volta Lake terrible? Why?

Which people are mostly affected and why?

What reasons account for these numerous accidents?

Whom do you blame: government, operators, passengers or the law enforcement agencies? Give reasons.

Do you get some relief support from the government, NGOs and other relief agencies during and after these accidents? What forms do they take?

Have these accidents affected individuals and the communities at large? How?

What equipment are lacking for safe transportation on the Lake?

What measures do you feel; need to be taken by the different actors and stakeholders to improve the situation?

Appendix 2 ***Page***

List of Pictures