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Assessing the Compliance of Sachet Water Producers to Regulatory Standards in Ghana: A Study of the Tamale Metropolis

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Abstract:
The sachet water industry has witnessed an influx of a significant number of producers dotted all over the towns and cities in the country. The study was therefore, designed to assess the influence of the regulatory bodies on consumer protection in sachet water production in the Tamale Metropolis. Data for the study were obtained from a sample of 215 respondents, made up of 18 regulators, 27 sachet water producers and 170 consumers of sachet water. It came to light that the regulatory bodies uses certification, fines, court sanctions, seizure and destruction of unwholesome sachet water and constant monitoring and testing of sachet water to ensure compliance. The study further established that, a significant number of producers of sachet water are not certified in the metropolis. In view of the findings, the study recommends that the regulators intensify their monitory activities and in collaboration with other relevant stakeholders engage the public in education to avoid uncertified sachet water.

1. Introduction

The proliferation of sachet water manufacturing firms in the urban communities in Ghana was an ingenious way by individuals and firms with the financial wherewithal to meet the ever growing demand for drinking water by urban dwellers. Unlike the rural communities where one can easily obtain a calabash of water to quench one's thirst upon request, same cannot be the case in the urban communities because every service is monetized. It is not farfetched to state that the coming into existence of pure water manufacturers came as a relief to the urban population since their water needs could be met anywhere anytime. This assertion is manifested in the mushrooming of pure water firms dotted all over the cities and towns in the country. Water is life and without the availability of this essential resource, life on earth would cease to be. It is in the light of this that, Alison (2001) has noted that water has always been an important and life-sustaining drink to humans and is essential to the survival of all organisms. In spite of the overwhelming importance of water, it is worrying to note that access to potable water for the satisfaction of basic human needs has been a topical issue and of critical challenge. This underscores the views expressed by the United Nations Secretary General, Ban Ki-moon, who observed that safe drinking water and adequate sanitation are crucial for poverty reduction, crucial for sustainable development, and crucial for achieving any and every one of the Millennium Development Goals (MDG's) (UN Water News, 2007). The views of Ban Ki-moon concurs with the Human Development Report (2006) that access to clean water and sanitation will broaden opportunities, enhance human dignity and help create a virtuous cycle of improving health and rising wealth. The MDG Target 7c calls on countries to 'halve' by 2015 the proportion of people without sustainable access to safe drinking-water and basic sanitation' (UNICEF/WHO JMP 2008). The quest for sustainable access to safe drinking water engineered the introduction of sachet water production in Ghana and other developing countries on the African continent. The production of sachet water in Ghana found expressions in the works of Okioga (2007) who posits that both small and large scale industries in Ghana bag machine-sealed sachet water for the consuming public. In the light of the sachet water production, Kwakye-Nuako et al. (2007) noted that, the introduction of

sachet water in Ghana was to provide safe, hygienic and affordable instant drinking water to the public and to curb the magnitude of water related infections in the country. The Ghana Chemical Society (GCS) revealed that 85% of the 'pure water' produced in the country does not meet required safety standards (Adofo, 2011). The Food and Drugs Board (FDB) has raised concerns that improper handling of water can cause death. The FDB lamented over the fact that a lot of unscrupulous businessmen and women have taken advantage of the boom in sachet water production to enrich themselves without due regard to quality and safety of consumers (Adofo, 2011). The FDB expressed worry that most of the sachet water production houses are at unhygienic environments, with some producing from their car garages and small kiosks. These lamentations tell the frustrations that the FDB goes through in carrying out its legitimate duties. The plethora of research findings indicated above mean that the sachet water lacks the purity and quality that consumers of sachet water are hoodwinked into believing. The statistics further imply that the producers of the sachet water willfully contravene the provisions of the Food and Drugs regulations, Standards Decree Laws as well as International conventions. Section 8 of the Food and Drugs Law 1992 (PNDCL 305B) as substituted by the Food and Drugs (Amendment) Act, 1996(Act 523) provides that, any person who:

- Sells, or offers or exposes for sale, or has in his possession for sale; or
- Deposits with or consigns to any person for the purpose of sale, any food intended for, but unfit for human consumption commits an offence.

The Ghana Standards Board established by the Standards Decree, 1973(NRCD 173) repealed by the Standards (Amendment) Decree, 1979(AFRCD 44) provides in Sections (2a) that the Board is to establish and promulgate standards with the object of ensuring high quality of goods produced in Ghana, for local consumption or for export. The law also has as its objective to promote standards in public and industrial welfare, health and safety as per section (2d). The United Nations (1999) in its guidelines for consumer protection calls on State Parties or Governments to set priorities for the protection of consumers in accordance with the economic, social and environmental circumstances of the respective countries.

The inability of the sachet water producers to meet quality and standards requirements makes it worthwhile to pry into the roles of regulators whose mandate is to ensure that consumer rights and safety are held lofty by sachet water producers in the Tamale metropolis. Several studies carried out on sachet water production in Ghana focused on the technical aspects of purification and water quality. However, this current study explored the topical issue of sachet water production from the perspective of producers' compliance with the regulatory standards. The findings of the study will help policy makers, regulators, consumers and consumer rights activists in the on-going efforts to minimize if not eliminate the wanton disregard and abuse of consumer rights and safety.

1.1. Statement of the Problem

The World Health Organization report (2004) estimated that about 2.3 billion people world-wide suffered from diseases caused by contaminated water. The report further alluded to the fact that about 1.8 million people affected by diseases from contaminated water eventually die from diarrheal diseases. Water plays a significant role in the transmission of human diseases (Afiukwa, et al., 2010). Potential health problems may exist due to the microbial content of sachet water since water is one of the vehicles for the transmission of pathogenic organisms Brock, 1991; Prescott et al., 2005 (cited in Afiukwa, et al., 2010). The net effect of drinking contaminated water poses greater health hazard to the innocent consumers. Without any shred of doubt, sachet water enjoys massive patronage from all segments of society. The health effects of drinking contaminated sachet water exposes the people to the danger of contracting diseases of which the consequences can be anybody's guess. From the discourse so far, one gets the feeling that consumer rights are not only compromised but are trampled upon with impunity. The provisions of the Food and Drugs regulation and the International Guidelines (1999) on consumer rights protection are obviously not being adhered to. It is against this background the study is designed to investigate the roles of the regulatory bodies in ensuring that consumers' rights are held sacrosanct by producers of sachet water in the Tamale metropolis.

1.2. Objectives of the Study

- To ascertain the regulatory framework for sachet water production in the Tamale metropolis.
- To assess producers compliance with regulations by the Food and Drugs Board and the Ghana Standards Board.

2. Literature Review

2.1. Access to Potable Drinking Water

Access to potable water for the satisfaction of basic human needs has been a topical issue and a critical challenge in most parts of the world, particularly in Africa. This alarming situation mandated the inclusion of water and sanitation as one of the main goals the United Nations is committed to achieve for the world by 2015(MDG target 7c). The target has been to reduce by half the proportion of people without sustainable access to safe drinking water. Worthy of note is that, the world met the Millennium Development Goal target for drinking water as at the end of 2010. Eighty nine percent (89%) of the world's population representing 6.1billion people had access to improved drinking water sources (WHO/UNICEF, 2012). This remarkable achievement falls short of the hundred percentage mark that will ensure that the entire world's population has access to good drinking water. The trend in water coverage in sub-Saharan Africa is however a marked departure from the somewhat success story in global trends as indicated in the preceding paragraph. The coverage for improved water supply stands at 61%. It is estimated that about seven hundred and eighty three million (783million) people world- wide are still without improved sources of drinking water. According to International Year of Fresh Water (2004), if the

MDG's agenda for 2015 in respect of water and sanitation is to be achieved, there is the urgent need to triple current water supply and quadruple the sanitation coverage on the African continent. Estimates by UNICEF/WHO JMP's (2008) point to the fact that Ghana has exceeded her 2015 target of 78% coverage for use of improved drinking water by 6%. It should however be noted that a significant proportion of the population do not use improved sources of drinking water. More efforts have to be made to extend water coverage to the remaining segment of the population. An improved drinking-water source is one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with fecal matter.

In Ghana, it is reported that, over 60% of the population who are in the low income segments and who live in the rural areas, as well as those on the fringes of densely populated areas of urban centers have least access to improve sources of drinking water. They pay more than ten times the official rates to vendors for water supply and end up spending more than 10% of their income on potable water (Freshwater, 2004). The overall percentage of the national population with access to safe drinking water supply is abysmally low. Water supply coverage for both rural and urban areas of Ghana in 1992 was 28% and 76% respectively. As at the end of 2001, water supply for rural and small town communities had increased to 41%. Coverage for urban supply had however decreased to about 70%. Kwakye-Nuako, et al. (2007) noted that the introduction of sachet water in Ghana was to provide safe, hygienic and affordable instant drinking water to the public. Sachet water augments the safe drinking water supply requirement of the Ghanaian populace. The consumption of sachet water has widely increased partly due to the growing awareness that the consumption of unsafe or untreated water is the cause of many water borne diseases. Addo, et al. (2009) concurred with the view of Kwakye-Nuako, et al. (2007) by noting that most households in Ghana now rely on sachet water as their main source of drinking water.

2.2. Regulatory Framework on Consumer Protection in Sachet Water Production

2.2.1. International Law on Consumer Protection

The United Nations is the vanguard for protecting consumer rights world-wide. This is amply demonstrated through the provision of United Nations guidelines for consumer protection (2003). The guidelines uphold and espouse the ideals and principles of consumer rights. The cardinal objective is to protect the interest and needs of consumers in all countries particularly those in developing countries where consumer rights are treated with contempt.

Section 56 of the UN guidelines on consumer protection stipulates that, in advancing consumer interests, particularly in developing countries, governments should give priority to areas of essential concern for the health of the consumer, such as food, water and pharmaceuticals.

2.2.2. Regulatory Bodies and Consumer Protection

In the midst of the proliferation of sachet water firms with quality concerns are the regulatory bodies. The two organizations that have express mandate within the purview of statutory laws in Ghana are the Food and Drugs Board (FDB) and the Ghana Standards Board (GSB). The two bodies have the relevant powers to monitor and determine the quality standards of all products, consumables and non-consumables supplied in the market or for export. Significantly, Ghana has no strict government policy specifically dealing with consumer rights protection. However, there are some legislative instruments that seek to address aspects of consumer rights though not comprehensive enough to provide total and complete protection to the ordinary consumers as it obtains in other jurisdictions. Some of the legislations that carry the mandate of ensuring consumer rights protection relevant to food production, packaging and distribution for human consumption include; the Ghana Standards Decree, the Food and Drugs Law, the Pharmacy Act, and the Narcotics Drugs (Control, Enforcement and sanctions) Law.

2.2.3. The Ghana Standards Board

The Ghana Standard Board was established by the Standards Decree 1967, NLCD 1999 with the core mandate of standardisation and quality assurance of goods and services for both the local market and for export. The law empowers the Standards Board to establish and promulgate relevant standards with the object of ensuring high quality of goods produced in Ghana, for local consumption or for export, promote standards in the field of public and industrial welfare, health and safety.The standard mark or mark of conformity indicates that the product has been produced according to accepted standards. The mark assures consumers that the product has been inspected, tested and conforms to the requirements of an accepted standard. The mark assures consumers of quality, reliability, safety and value for money (Famiyeh-Addo, 2011). Only certified businesses are qualified to use the standard mark to label their products. It is important to establish the certification status of bagged potable water. Products that are duly certified by the GSB are periodically subjected to rigorous testing and scrutiny to help evaluate their quality and to ascertain whether safety standards have been adhered to (Famiyeh-Addo, 2011). The GSB mark of conformity is a mandatory requirement and indicates that products are of accepted standards thus giving assurance to consumers that such products have been inspected and tested for consumer safety (GSA, 2011).

2.2.4. The Food and Drugs Board

The Food and Drugs Board on the other hand was established by the Food and Drug Law 1992, PNDL 305B. Prior to 1990, the control of drugs and the practice of pharmacy profession were under the Pharmacy and Drug Act 64, 1961. The Food and Drugs Law has auxiliary powers with the Standards Decree of controlling the manufacture, importation, exportation, distribution, use, and advertisement of food, drugs, among others. The law establishing the Food and Drugs Board (FDB) significantly recognizes water in its definition of food. This is encapsulated in the interpretation section of the FDL 305B of 1992. In its broader interpretation food

includes any article manufactured, sold or represented for use as food or drink for human or animal consumption. Items such as chewing gum, water and any ingredient of the food, drink is therefore considered as food. By this definition, water is viewed in the eyes of the law, as food. Section 7 of the Act requires that whatever constitutes food should be preserved in a manner that its composition, quality and purity as well as the dissipation of its nutritive properties due to climatic and deteriorating conditions are minimised as possible.

In view of the preservative requirements, section 48 of the FDL, empowers the FDB to formulate codes of practices to provide guidance to manufactures or producers of foods in the Ghanaian market for the safety of consumers. In fulfillment of this statutory requirement, the FDB (2006) formulated specific code of practice for the sachet water industry. The purpose of the code of practice is to ensure hygienic practices in the processing, packaging, handling and distribution of sachet water intended for human consumption. Besides the code of practice, the sachet water industry is also expected to comply with existing standard requirements in the country for the general safety of consumers.The FDB code of practice for sachet water manufacturing firms takes a critical look at the following areas: place for processing of sachet water, processing controls, storage areas, and transportation. Other areas of attention include personnel hygiene and health requirements, pest control systems, waste management as well as processing and production records.

2.2.5. Sanctions and Penalties of the Food and Drugs Board

The codes of practices are binding on all individuals and firms engaged in the manufacturing of sachet water in the country. Appropriate sanctions and penalties are applied for violations of the law in accordance with the relevant sections of the FDL 1992 (PNDL 305B). Officials of the FDB in their bid to inject some sanity and discipline in the operations of sachet water firms sometimes carry out snap checks to bring non-compliant producers to book. Boadu (2012) posited that the FDB is clothed with powers to impose administrative fines on companies whose actions contravene the rules and regulations of the board. Adofo (2011) opined that, a sum of 48 producers of sachet water in the Greater Accra Region have been shut down by the FDB. The reasons that accounted for the FDB sanctions were failure to meet required standards and producing under unwholesome environments. The FDB and GSB are mandated by law to seize and destroy food items or any commodity deemed to constitute a health hazard to consumers. A total of about 620 sacks of unwholesome water were seized and destroyed by officials of the FDB in some parts of the Volta region of Ghana. In same operation, the management of Kristar Filtered Water in Ho, received orders to stop production until the company secures the necessary certification to do business (Afrifa, 2008). This scenario points to the fact that there are several sachet water firms briskly doing business in the underground economy at the blind side of officialdom.

2.3. Producers compliance with regulations by the FDB and the GSB

Safe drinking water is a fundamental human need; our health and life depend on it (Wadstrom, 2007). Yussif (2006) posited that sachet water sellers in Tamale Metro alluded to the fact that they sell sachet water because it is preferred by consumers. This mainly is attributed to the fact that sachet water is considered well treated and machine packaged and, therefore, not contaminated. The consumers held the view that, they do not know the condition iced-water is packaged, but for sachet water, it has been approved by the Food and Drugs Board (Yussif, 2006). There is a mass proliferation of sachet water producers in Tamale because of the high patronage. The quest for safe drinking water resulted in the reliance on sachet water which is perceived to be of high quality. According to Addo, et al. (2009), most households in Ghana now rely on sachet water as their main source of drinking water. The source of water for sachet is a contentious issue. All manufacturers lay claim to using water from clean sources in their business. According to Obiri, et al. (2003), the source of water for the production of the sachet water is piped water or well water. Water obtained from these sources is supposedly treated to make it safe for direct consumption hence the erroneous impression that sachet water is treated water (Addo, et al., 2009). Nwosu and Ogueke (2004) had earlier expressed sentiments similar to the views by Addo, et al. (2009). They were of the opinion that the sources of contamination of the sachet water are traceable to the main water source used for sachet water production. Addo, et al. (2009) added a different dimension to the debate on the sources of contamination of sachet water. They argued that the inadequate treatment of the water by producers before bagging constitutes one major source of contamination. Yet another source of contamination is the improper use of filters which is the cause of post- production contamination. The presence of contaminants in packaged water is due to poor hygienic practices of producers such as failure to wash hands before producing sachet water. Coroler, et al. (1996) on their part are of the view that ignorance about good hygienic practices coupled with the presence of animals in the vicinity of the factory could be a potential source of contamination. The perceived quality of the sachet water makes the demand for it very high among children and adults alike at home, work places, hospitals, churches, streets, schools to mention just a few. Sachet Water Project (2009) reports that sachet water is being used in many homes, hospitals even in theatres and delivery rooms. The phenomenal increase in the use of sachet water is as a result of the perennial water crisis in the urban communities in Ghana (Sachet Water Project, 2009). Some worries have been expressed that given the current level of patronage, if the sachet water in the market is contaminated, the consequences could be deadly (Addo, et al. 2009). Obiri et al (2003) explained that most Ghanaian sachet water producers use 'beds' or 'columns' of ion exchange resins or activated carbon. Unfortunately, these can enhance bacterial growth unless they are properly maintained and serviced. Similarly, Nwosu and Ogueke (2004) are also of the view that poorly maintained filter systems are the source of contamination because bacteria grow on filters if not changed regularly could easily enter the water supply. They further revealed that charcoal filters used in removing unpleasant odours from drinking water can support large bacterial growth. Nwosu and Ogueke (2004) also reported that some unscrupulous producers just bag and seal pipe water without any form of treatment.

2.4. Effects of drinking Contaminated Water

Drinking of water from contaminated source is a recipe for the spread of water borne diseases which inevitably becomes a source of public health concern. Water-related diseases, linked to inadequate access to safe water and basic sanitation, are endemic in many regions. There are 4 billion cases of diarrhea each year, causing 2.2 million deaths which translate into about 5,000 deaths daily. Children under the age of five are mostly the victims. One million children die each year from malaria, filariasis, bilharzias, intestinal worms and other water-related diseases (World Water Day, 2007). Okonski (2009) concurred with the disastrous consequences of contaminated water. He noted that, dirty water can transmit parasites, bacteria and viruses and can inhibit sanitation, resulting in millions of cases of water borne diseases.

3. Research Methodology

3.1. Sample Size

The sample for the study comprised thirty (30) producers of sachet water, 20 staffs of the FDB and the GSB and 200 consumers of sachet water, all in the Tamale Metropolis. Given the respective samples, 30, 20 and 200 questionnaires were respectively distributed to the producers, regulators and consumers of sachet water. However, 27, 18 and 170 questionnaires were retrieved from each of the producers, regulators and consumers in that order. The return rate represents 86% of the total respondents.

3.2. Sampling Techniques

David and Sutton (2004) are of the view that the representativeness of a sample is a product of the sampling technique hence a simple random sampling technique was used to select the communities within the three constituencies of the metropolis. The simple random sampling technique gives an equal chance for all the communities within the Metropolis to be selected for the study (Sarantakos, 2005).

3.3. Data Collection Instruments

The instruments for the study were of quantitative dimensions. They are made up of closed ended questionnaires that were designed to reflect the research objectives that elicited responses from the sachet water producers, consumers and regulators.

3.3.1. Validity and Reliability of the Instruments

Best and Khan (1998) expressed the opinion that validity and reliability are very essential to the effectiveness of any data gathering procedure. While reliability ensures consistency of the research instrument, validity on the hand defines the appropriateness, meaningfulness and usefulness of specific inferences made from the instrument (Gall, et al, 1996). The study incorporated the procedures of content and construct validity in refining the research instrument. The claim to content validity was guaranteed through the examination of the survey instruments by the supervisor of the research work. Participants in the pilot-testing of the instrument made useful comments on the clarity of questions which were taken into due consideration.

3.3.2. Pilot-testing of the Instruments

There is an emerging consensus among researchers that, piloting questions on a small sample of respondents drawn from the target population is more useful in uncovering aspects of the questions that would make it difficult for respondents to interpret questions as intended (Foddy, 1995). Several writers, including (Best & Khan, 1998; Gall, et al., 1996 and Glesne, 1999) have advocated the pilot-testing of a survey instrument prior to its delivery to participants. In line with the views expressed, the instrument was pilot-tested in the KukuoamdKalpohini sections of the Tamale Metropolis. Pilot-testing of the instrument was to help determine whether the questions were appropriate to meet the purpose of the study. Reliability of the survey instrument was confirmed by examining the individual test items using the Cronbach's alpha coefficient test (Gall, et.al., 1996). The reliability of the instrument as per the Cronbach Alpha coefficient from the pre-test was 0.85. The Cronbach's alpha coefficient measures the internal consistency of reliability of the individual questions for a study. The Cronbach's alpha coefficient was deemed appropriate because the items in the questionnaire were multiple scored items. "Cronbach's alpha is used when measures have the same number of multiple scored items" (Ary et al 1990, p. 235).

3.4. Data Processing and Analysis

The data were processed with the aid of the Statistical Package for the Social Sciences and presented for analysis and discussion in tables, bar graphs, frequencies, percentages, means and standard deviations.

4. Data Presentation and Analysis

4.1. Demographic Characteristics of Respondents of Sachet Water Consumers

The analysis commences with the biographical data gathered from the research sample (n=170).

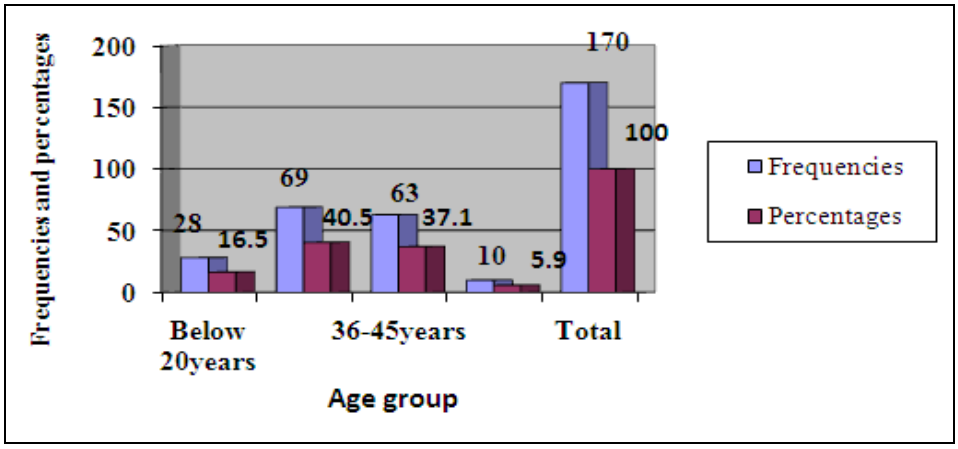

Figure 1: Age distribution of respondents
Source: Authors' Construct

It can be gleaned from Figure 1 that the majority of the respondents were between the ages of 21–25 and 36–45 constituting 77.6%. The least number of respondents were 10 who fell in the age group of 46 and above. The composition of the age group of the respondents is an indication that, majority are within the active working population of the country. This implies that if the sachet water they consume is a threat to their health and survival, it puts the future of the country in a blur situation. This necessitates immediate and prompt actions to be taken by the relevant authorities to help save the future of the country.

Level of education	Frequency	Percent (%)
Tertiary	29	17.1
Secondary	34	20.0
Basic	66	38.8
Illiterate	41	24.1
Total	170	100.0

Table 1: Level of education of respondents
Source: Authors' Construct

The data in Table 1 depicts that a greater percentage of the respondents had some level of education. The respondents with tertiary, secondary and basic level of education cumulatively constitute 129 representing 75.9%. The implication for the findings of the study is that majority of the respondents could read and should be able to identify registered and unregistered features of sachet water in the metropolis in order to help rid the market-off unregistered producers.

4.2. Regulatory Framework for Sachet Water Production

The inferential statistics used to presents the data for analysis presented in table 4.2.1 are means and standard deviations.

Question	Mean (M)	Standard Deviation (SD)
Sachet water producers cannot operate without FDB and GSB certification	4.00	0.00
Sachet water firms must meet all requirement before certification	3.91	0.30
There are regular snap checks to ensure compliance by sachet water producers	3.75	0.45
The FDB and GSB take measures to bring recalcitrant sachet water producers to book	3.45	0.52
The FDB and GSB collaborate with the law courts to sanction recalcitrant producers of sachet water	3.27	0.65
Sachet water producers association collaborate with FDB and GSB to stamp out unregistered sachet water producers	3.00	1.09
Unregistered sachet water is often seized and destroyed	2.65	1..4
Consumers report illegal sachet water producers to the FDB and GSB	2.83	0.71
There are channels put in place by the FDB and GSB for seeking consumer redress	2.56	0.89

Table 2: Regulatory framework for sachet water production
Source: Authors' Construct

It can be gleaned from Table 2 that the staff of both FDB and GSB were unanimous in their response to the question that 'sachet water producers cannot operate without FDB and GSB certification' with a mean of (M = 4.00) and standard deviation of (SD = 0.00.) The response to the question implies that both staff of the two regulatory bodies converged in their opinion on meeting certification requirements before authorization can be given to producers to commence business. This position is in line with the FDB code which specifically requires players in the sachet water industry to ensure that manufacturers conform to existing standard requirements in the country for the general safety of consumers (FDB, 2006). From the ensuing analysis, it is illegal for producers of sachet water to operate without authorization. The respondents were equally unanimous in their response to the question as to whether 'sachet water firms must meet all requirements before certification'. The mean was M = 3.91 with a standard deviation of SD = 0.30. The response pattern implies that authorization will only be given to producers who satisfy all the laid down requirements by the regulatory bodies.
The response to the question that 'there are regular snap checks to ensure compliance by sachet water producers' did not significantly depart from the emerging trend of convergence in opinion by the two regulatory bodies. The mean response was M = 3.75 with a standard deviation of SD = 0.49. The seizure and subsequent destruction of unwholesome sachet water by the regulatory authorities supports the claim made by both staff of the FDB and GSB. The findings are in tandem with the actions of the FDB in the Greater Accra Region where, a total of 48 producers were shut down for carrying out production activities under unhygienic environments and for failing to meet required standards (Adofo, 2012). Equally intriguing was the response to the question as to whether 'the FDB and GSB take measures to bring recalcitrant sachet water producers to book'. The regulators 'strongly agreed' to the statement with a mean of M = 3.45 and a standard deviation of SD = 0.52. The position of the regulatory bodies means that appropriate actions are applied on producers who violate the required guidelines in the production of sachet water. The response given is congruent with the views expressed by Boadu (2012) who observed that the laws of the land clothed the FDB with the authority to impose administrative fines on companies whose activities contravened the rules and regulations of the board. The regulators also 'strongly agreed' to the statement that 'the FDB and GSB collaborate with the law courts to sanction recalcitrant producers of sachet' with a mean score of M = 3.27 and a standard deviation of SD = 0.65. Arguably, the FDB and GSB are creatures of legislative instruments must enjoy the support of the law courts to enforce laws when people flout them with disregard. Table 4.2.1 reveals that the regulators agreed to the statement that 'sachet water producers association collaborate with the FDB and GSB to stamp out unregistered sachet water producers' with a mean of M = 3.00 and a standard deviation of SD = 1.09. The standard deviation points to some divergence in opinion by the regulators on the collaboration that exists between them and the sachet water producers' association. The difference of opinion among the regulatory bodies is accounted for because there is no such collaboration between the producers association and the Ghana Standards Authority. It is evident from the Table 4.2.1 that, the respondents 'agreed' to the statement that consumers are encouraged to report illegal sachet water producers to the FDB and GSB. The mean to this question was M = 2.83 and standard deviation of SD = 0.71. The response given is at variance with the views expressed by Folley (2012) in which he regretted the failure of the general public to willingly provide adequate information on product complaints and other non-compliant activities to the regulatory bodies for redress. The regulators 'agreed' to the statement that 'unregistered sachet water is often seized and destroyed'. The mean was M = 2.65 with a standard deviation of SD = 1.4. It is worth noting that the standard deviation almost halved the mean; an indication that there was some divergence in opinion by the regulators on the seizure and destruction of unregistered sachet water. The disclosure by staff of the FDB that most seizures of unwholesome sachet water and subsequent destruction are done in the quite may account for the information gap on the operations of the FDB and GSB. The regulators agreed to the statement that 'consumers report illegal sachet water producers to the FDB and GSB' with a mean of M = 2.83 and a standard deviation of SD = 0.71. The claim by the regulators of receiving such reports contradicts the response given by the consumers. Only 6% of the consumers which can be viewed in Table 4.2.1 reported that they knew the regulators of sachet water in the country. Similarly, the regulators agreed that there are channels put in place by the regulatory bodies to address the complaints of consumers. The mean was M =2.56 and the standard deviation SD = 0.89. The scores underscore the existence of channel by the regulatory institutions responsible for consumer complaints. This concurred with the revelation by Famiyeh-Addo, (2011) who reported that complaints about packaged water are to be made to the marketing department of the Ghana Standards Authority in Accra.

4.3. Producers Compliance with Regulation by the FDB and GSB

Frequencies and percentages were the tools used to generate data to answer the research question on the extent of producers' compliance with the regulations of the FDB and the GSB. Table 4.3.1 is a pictorial representation of the data used in answering the research question.

Question	SD	%	D	%	A	%	SA	%
There are guidelines for producing and packaging sachet water	0	0	0	0	6	22.2	21	77.8
I rigorously observe the guidelines in producing, handling and distributing sachet water	0	0	0	0	11	40.7	16	59.3
Producers of Sachet water cannot operate without FDB authorization	0	0	0	0	7	25.9	20	74.1
Producers of Sachet water cannot operate without GSB authorization	6	22.2	14	51.9	3	11.1	4	14.8

Question	SD	%	D	%	A	%	SA	%
We get sanctioned by the GSB for producing under unhygienic conditions	16	59.3	9	33.3	1	3.7	1	3.7
Regular testing of sachet water is done to ascertain its quality	0	0.0	0	0.0	8	29.6	19	70.4
All sachet water producers in Tamale Metro have license from FDB to operate	3	11.1	18	66.7	5	18.5	1	3.7
All sachet water in the metropolis have the logo of the GSB	2	7.4	13	48.1	10	37	2	7.4
Sachet water without the logo of the GSB is uncertified	7	25.9	12	44.4	6	22.2	2	7.4
Sachet water without the logo of the FDB is uncertified	7	25.9	15	55.6	2	7.4	3	11.1
Sachet water producers association gives information to the FDB and GSB about the existence unregistered firms.	10	37	14	51.9	1	3.7	2	7.4
Consumers are educated on the features to look for before buying sachet water.	3	11.1	11	40.7	9	33.3	4	14.8
There are complaints from consumers about the quality of our water.	1	3.2	3	11.1	14	51.9	9	33.3
Consumers have right to information on the safety of sachet water produced in the metropolis	0	0.0	0	0.0	11	40.7	16	59.3

Table 3: Producers compliance with regulations on consumers' protection in sachet water production
Source: Authors' Construct Note: SD= Strongly Disagreed; D= Disagreed; A= Agreed; SA= Strongly Agreed

It can be seen from Table3, that the producers either 'agreed' or 'strongly agreed' to the question as to whether 'there were guidelines for producing sachet water'. It is quite interesting to observe from Table 4.3.1 that no producer 'disagreed' to the statement on the existence of guidelines on the production of sachet water. The producers equally 'agreed' to the statement that, they rigorously observed the guidelines in producing sachet water. The facts on the ground seem to be a sharp contrast. Many vended sachet water in the Metropolis lack the GSB mark of conformity. The mark of conformity indicates that such products are of accepted standards and assures consumers that the product has been inspected and tested for consumer safety (GSA, 2011). Those bagged sachet water without the product certification marks are unlicensed to operate. Surprisingly, 74.1% (20) producers 'strongly disagreed' while 25.9 % (7) 'disagreed' that they required GSB authorization to operate sachet water firm. This stands contravenes established guidelines. Section 2 of the Standards Decree, 1973(NRCD 173) as repealed by the Standards (Amendment) Decree, 1979 (AFRCD 44) require manufacturers to follow due processes, guidelines and procedures to obtain authorization before operating a sachet water business. In particular, the Management Systems Certification Scheme (MSCS) of the GSB issues a certificate for a specific scope of business and products (Standards News, 2011). It is quite surprising that the producers of sachet water do not know the role of the GSB, thus failing to appreciate the duties of the board. The sale of unregistered sachet water attests to level of disregard for the GSB guidelines. At the flip side however, the producers overwhelmingly 'strongly agreed' with 74% endorsing that they required authorization from the FDB to operate. In reality, the GSB sets the standards for implementation by the FDB. The staff of the FDB has daily contact with the producers and that may have informed their strong endorsement of the FDB as being in charge of certification. It can also be seen from Table 4.3.1 that 99% of the producers cumulatively endorsed that there were periodic visits to test the water they produced to ensure conformity with standards. This revelation is in concert with the periodic surveillance and audits carried out by the Ghana Standards Board and MSCS. The board examines matters relating to quality of the products (Standards News, 2011). The response of the producers to the question as to whether all sachet water in the Tamale Metropolis without the GSB logo is uncertified was quite revealing. 70.3% of the producers 'disagreed' to the statement. Similarly, 81.5% of the producers again 'disagreed' to the statement that 'all sachet water without the logo of the FDB are uncertified'. The emerging pattern of the producers implies that sachet water without the logo or standard mark of authorization does not render the water unregistered or uncertified. This response can only be a deliberate attempt to evade a true response to the questions otherwise it would constitute a self-attempt to confess wrong doing. The position of the producers may account for the assertion by Okioga (2007) who in hisstudy found that about forty seven percent (47%) of sachet water tested in Tamale Metropolis was contaminated by microbial bacteria. The producers were forthright in their response to the question as to whether sachet water producers association gives information to the GSB and FDB about unregistered sachet water firms. 88.9% of the producers representing 24 out of the 27 respondents either 'strongly disagreed' or 'disagreed' to the statement. Impliedly, the producers association does not furnish the regulators with information on the existence of unregistered producers. This could either be due to the fact that, the producers' association members do not also follow due process or that they simply failure to appreciate the damage unregistered producers cause to them. The producers were almost evenly divided in their response to the question on whether 'consumers are educated on the features to look for before buying sachet water'. 51.8% of the producers disagreed to the statement while 48.2% agreed'. The difference of opinion is not surprising because, if consumers are well informed on the features to look for before buying sachet water, it could pose a threat to the uncertified producers in the market. This

might have accounted for the existence of sachet water in the market without batch numbers and dates of manufacture as noted by Kwakye-Nuako, et al. (2007) in samples of sachet water used in their study. Consumers need to apprise themselves with information on the features of sachet water quality. It is in the light of this that Famiyeh-Addo (2011) has called on sachet water consumers to be quality conscious and avoid substandard goods and products in the market.The producers agreed having received complaints from consumers on the quality of sachet water. 85.2% of the producers admitted having had such complaints. This tacit admission may be enough to come to a conclusion that sachet water consumers in the Tamale Metropolis have problems regarding sachet water quality. An influx of such consumer complaints on a particular product is an alarm bell and a call to action. This action alerts producers who may be oblivious of consumer concerns about their products (Twum, 2011). The producers unanimously 'agreed' with a 100% response that consumers have right to information on sachet water quality. Unfortunately, the producers themselves are victims for failure in providing the requisite information on bagged sachet water in the Metropolis.

5. Conclusion

It emerged from the study that sachet water manufacturing firms who operates without authorization by the regulatory authorities constitutes a violation of the guidelines that seeks to protect the rights of consumers. It further points out that a sachet water firm is only given authorization after the satisfaction of stipulated standards and requirements that are geared towards protecting the interest of consumers. In other to ensure strict compliance with the code of practice in the production of sachet water, the regulatory bodies use several measures to regulate the operations of sachet water firms. These measures include; certification, fines, court sanctions, seizure and destruction of unwholesome sachet water and constant monitoring and testing of sachet water in the market to ensure compliance. The results of the study established that producers of sachet water are of the view that they do not require GSB authorization for operation but however endorses that they required authorization from the FDB to operate. It further emerged from the perspective of the producers that sachet water without the logo or standard mark of authorization does not implied uncertified which is in a sharp contrast with the established guidelines acknowledged by the producers themselves as being significant. The emerged pattern can only be a deliberate attempt to evade a true response to the questions otherwise it would constitute a self-attempt to confess wrong doing. The regulatory institutions should educate the public to avoid sachet water which is uncertified using both the print and the electronic media. The features for determining the quality of sachet water should be part of the educational campaign to help inform the consuming public of what to look for before patronising sachet water. The educational campaign of activists should further encourage consumers of sachet water and registered firms to assist the regulatory institutions by reporting sachet water producers who flout the regulations to help protect the public and the sachet water business. In the light of these, the surveillance units of the FDB and the GSB should be well resourced with hot-lines to enable consumers to contact them with concerns of poor quality of sachet water in the metropolis. Recalcitrant producers should be given heavy penalties to serve as deterrent to potential culprits.

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7. Appendix 'A' Test Of Reliability

Reliability Test for Regulators

Scale: All Variables **Case Processing Summary**			
		N	%
Cases	Valid	8	66.7
	Excluded[a]	4	33.3
	Total	12	100.0
A. Listwise Deletion Based On All Variables In The Procedure.			
Reliability Statistics			
Cronbach's Alpha	N Of Items		
.683	21		

Table 4

Reliability Test for Sachet Water Consumers

Scale: All Variables

Case Processing Summary			
		N	%
Cases	Valid	16	100.0
	Excluded[a]	0	.0
	Total	16	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.858	16

Table 5

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
32.5000	80.667	8.98146	16

Table 6

Reliability Test for Sachet Water Producers
Scale: All Variables

Case Processing Summary			
		N	%
Cases	Valid	18	100.0
	Excluded[a]	0	.0
	Total	18	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.563	22

Table 7