
Electronic Voting in Ghana: Is It The Solution To Ghana's Perceived Electoral Challenges After Biometric Registration?

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ABSTRACT

Recent election results in Ghana have been characterized by series of allegations over vote rigging. These allegations and counter allegations from the various political parties led to the use of biometric voter registration in 2012 general elections. As if this is not enough, the 2012 Presidential election results is being challenged by the New Patriotic Party's presidential candidate, his running mate and the party's chairman at the Supreme Court. This development has led to many Ghanaians calling for the use of electronic voting in the subsequent elections, with the view of bringing this controversy to an end. The purpose of this paper is to find out whether electronic voting could help prevent vote rigging and make election results acceptable by all political parties. A sample size of one hundred and sixteen (116) was selected by the researcher, comprising political party representative and individuals representing the whole population of Ghana. Convenient sampling technique was used with questionnaire for data collection. Statistical Package for Social Sciences (SPSS) was also used for analyzing the data. The study accepted the hypothesis that the electronic voting system will help eradicate rigging in Ghana and that the e-voting will encourage people to vote more and the best results of candidates might be achieved.

Key words: Election, Political Party, Vote Rigging, Electronic Voting, Biometric Registration, Electoral Commission

1.0 INTRODUCTION

Electronic voting also known as *e-voting* is a term which encompasses several different types of voting, consisting both electronic means of casting votes and electronic means of counting votes. It includes punched cards, optical scan voting systems and specialized voting kiosks which include self-contained direct-recording electronic voting systems or *DRE*. It also characterized transmission of ballots and votes via telephones, private computer networks or the internet (Johnson 2001).

Electronic voting systems for electorates have been in use since the **1960's** when punched card systems debuted (Alexander 1984). Their first pervasive use was in the *USA* where 7 countries switched to this method for the 1964 presidential elections.

DRE voting machines which collect and tabulate votes in a single machine are used by all voters in all elections in Brazil and India, and also on a large scale in Venezuela and the United States. They have been used on a large scale in the Netherlands but have been decommissioned after public concerns. Internet voting systems have ultimately gained popularity and have been used for government elections and referendums in the UK, Estonia and Switzerland as well as municipal elections in Canada and party primary elections in the United States and France (Neumann 2001).

However there has been contention especially in the united states, that electronic voting especially DRE voting could facilitate electoral fraud. Electronic voting is yet to be adopted in Ghana and currently, there has been intensive agitation towards its adoption after the biometric exercise failed to yield the anticipated results in the 2012 elections. *One* major condition that has necessitated the adoption of electronic voting in Ghana is that currently the existing type of voting which involves personal voting and counting of votes by individuals (electoral officers) is claimed to be time consuming and even results in stealing of ballot boxes by candidates' supporters. *Another* call of concern is that, during this type of voting, electoral personnel always replicate the votes which at the normal circumstance would not have been so as compared to e- voting which is claimed to be devoid of such (Mercuri 2002). Even though, Ghana is seen as the icon of democratic governance in Africa yet, recent development indicates that all is not good from within. Allegations and counter allegations from political parties over electoral frauds and malpractices led to the adoption of biometric registration with its associated term "no verification, no vote" in the 2012 Presidential and Parliamentary elections hoping that this will solve all electoral issues. However, after the chairman of the Electoral Commission, Dr. Kwadwo Afari Gyan had declared President John Dramani Mahamah (the National Democratic Congress-NDC party's candidate) the winner of the presidential elections; the New Patriotic Party-NPP alleged that the President has connived with electoral commission to rig the election. Currently, the 2012 Presidential election results is being challenged at Ghana's Supreme Court by NPP's Presidential Candidate-Nana Addo Dankwa Akuffo Addo, his running mate Dr. Mohamadu Bawomia and their party chairman Jake Obetsebi Lamptey claiming that the Electoral Commission illegally counted and added 1.3million votes to the declared winner, President Mahamah. This development necessitated the boycott of the inaugural ceremony of the President elect, His Excellency John Mahamah on the 7th of January 2013 by the NPP. It is against this background that people are calling for the adoption of E-voting in 2016 elections and beyond to prevent this perceived electoral fraud and make election results more acceptable to all parties. The purpose of this paper is to find out whether indeed e-voting can prevent vote rigging and make election results more acceptable. It will also look at the view that e-voting will result into higher voter turnout as seen in the hypothesis. The paper is organized into five sections. This introduction is followed by the review of related literature and the research methodology. The data collected is then analyzed with the help of SPSS which will also be followed by conclusion and further research.

LITERATURE REVIEW

2.0 INTRODUCTION

Electronic voting system which is usually known as on-line voting or internet voting refers to an electronic voting system which mainly consist the use of electronic ballots that would enable potential voters to transmit their secret voters ballot to officials of elections via the internet (Kocher & Schneiders 2001).

Due to the survival of the internet over the past years, scholars and for that matter inventors commence to capitalize on the efficiency of electronic voting in order to enhance appropriateness and convenience of voting system processes and also enhance the involvement of the people.

Thus, engineers have now consistently developed new technology to enhance the feasibility of the electronic system (Campbell 1983, Cowley & Gary 1998).

2.1 ADVANTAGES

Scholars of electronic voting have lamented that, the main merits of electronic voting includes, convenience, mobility, tally speed, less cost, flexibility and, voter participation.

- i. *Convenience.* With convenience, the availability of well-designed software can enable voters to use their voting equipments at their disposal coupled with little skill and time to complete the voting process.
- ii. *Mobility.* The mobility of electronic voting depicts that, at homes, specific polling stations or at any place where voters can get access to the internet, voters can conveniently cast their votes. Again since there are no restrictions on the location of voting, voters can even use the available mobile devices which include cell phones or PDA to vote.
- iii. *Tally Speed.* The computer can quickly calculate the election results as soon as the voting time is over. It is also assumed to be very quick and faster than the traditional ballot counting method which is manned by people.
- iv. *Less Cost.* Electronic voting system is assumed to save money since it helps to minimize expense for locations, personnel or staff expense as well as administration fee which contrasts to that of paper ballot voting. Though, initially, the investment expense of mounting the electronic voting system would be high but after the system is well mounted or established, the expense would be minimized and be much lower than that of paper ballot voting.
- v. *Flexibility.* Electronic voting system can be designed to aid a series of ballot question formats. Thus it could be used to gather people's views and opinions on elections.
- vi. *Voter Participation.* Since it has been stated earlier on that, it will generally encourage people who might not take it pleasure voting or unable to vote originally. Thus it will lead to the increase of participation of potential voters.

2.2. DISADVANTAGES

Upon all the merits accrued to electronic voting system, philosophers and various critics have agitated that, the unequal privilege to the internet and security issues are paramount demerits of the system.

- i. *Inequality Problem.* It is an established fact that people who receive very low salaries might not be able to afford electronic voting equipments and as such people who are not skilled to the usage of computer facility might not get the chance to vote.
- ii. *Vulnerable to Security.* With regards to security, it has power to be the major problem of electronic voting system. For now there have been several attacks which are very difficult to prevent completely. These attacks might crop from network, server's data base or webpage.
- iii. *Denial of Service Attack.* A denial of service depicts the situation whereby an attacker hinders a legitimate user from getting access to the resource. Thus an attacker may flood a network and hinders access to a service of a particular user.

Currently it is very difficult to wholly skip and evade such kind of attack. Hence, people can resort to methods such as ‘filtering router’s, disabling unused service, disabling IP broadcast’, and performing intrusion detection to enable the network more dependable.

- iv. *Virus*. The system is sometimes damaged by virus such as Trojan horse. The server can be protected against the attack of virus by the usage of more specific types of operating systems but for instance personal computers might not secure and withstand and they are mostly and easily attacked.

2.3 BASIC REQUIREMENTS/ELEMENTS

Any good electronic voting system should possess and meet the following requirements:

- i. *Authentication*. It depicts that only authorized and eligible voters should be allowed to vote via the system.
- ii. *Accuracy*. The final tally should consist every voted ballot which has been counted correctly within the tolerable extent of error.
- iii. *Integrity*. Votes casted should not be forged, modified or deleted without detection.
- iv. *Secrecy and Non-coercion*. In this sense, only voters should know whom they voted for and should be able to justify what particularly they voted for in order to minimize the risk of vote-buying activity and coercion.
- v. *Audit Trail*. The system should provide a mechanism for audit trail. An audit trail may aid to verify that, votes were counted correctly with all security systems in place.
- vi. *Transparency*. With this, the election process should be very open to the voters. This will ultimately make voters clearly comprehend the electronic system and attest to the fact that, their votes were counted correctly. This will generally improve the public trust towards electronic voting system.
- vii. *Simplicity*. Voters should be provided with a very simple user interface which is provided by the system which aids in handling efficiently with a very minimal effort.

2.4 RECEIPTS.

A receipt is simply a double edged sword in the electronic voting system. It helps to enhance voters trust and confidence if they can see that, their votes casted are duly counted correctly without any fraud in the final tally. In contrast, the receipt has been perceived to enhance the risk of violating the rule of secret-ballot. This in the sense that, several votes might prove how they voted by the use of their receipt. Again, since voters can prove how they voted with the receipt as evidence, the coercion behavior vote-buying activity may prevail.

2.4.1. RECEIPT FREE.

Receipt free mechanism also depicts that, a voter will neither obtain nor be able to get any receipt to evidently put ray to someone he voted for. Sako and Kilian used an untapped channel which is a physical assumption to apply receipt-free system. An untapped channel generally refers to a physical apparatus in which a message can be sent to a particular party by a voter and the

message is absolutely confidential and secret to all various parties. The demerit of receipt-free mechanism is that, it is very difficult to initiate untappable channel in this real world.

2.4.2. CHAUMIAN SECRET-BALLOT RECEIPTS.

In meeting, the utmost need of issuing receipts to potential voters without violating the rule of secret-ballot, several new technologies and algorithms have been initiated for this particular purpose. Chaumian secret-ballot receipt method helps to distinct unreadable layers, with a specific geographical encryption. Without this, it is assumed that, each layer consist the implicit and partial information of the receipt and it is after combining the various two layers that you will achieve a readable and exact content (Aldriah 1980).

2.5. VOTING PLACES.

There are several places where electronic voting can take place and such places include;

2.5.1. VOTING AT POLLING PLACES.

This avenue is usually virus free, provides reliable and easy handling of voting machines in the polling stations. It is perceived to providing the utmost security compared to other electronic voting stations.

2.5.2. VOTING AT HOME WITH VOTERS COMPUTER.

With this potential voters can conveniently cast their votes by the usage of their personal computers at home. Thus it is very difficult to circumvent third party's advertisement which might appear on the screen while voting. It is then appropriate to secure the voter's computer from the attacks of virus.

2.5.3. VOTING AT ANY PLACE WITH MOBILE DEVICE.

It depicts that voters can get access to the internet by using their devices at any place and cast their vote electronically. With this apart from using the laptop to vote by the voters, devices such as DPA, cell phones and various mobile devices could be used.

2.6. RELEVANT ISSUES.

There are specifically some expedient and prudent terms and jargons which characterized electronic voting which includes;

2.6.1. VOTER PARTICIPATION.

Doubts have been raised as to how electronic voting system can lure and increase voter involvement towards voting. Thus, it is perceived that some category of people would be lured to vote due to mobile and convenience but on the other hand, some people might not be much convinced to use the electronic voting system. Again, people are known to be illiterates, cannot use the facilities and physically challenged people would not find it convenient to involve themselves in such kind of voting.

2.6.2. VOTER INFORMATION.

A user interface which will influence potential voter's behavior should be available by the electronic voting web as well. It is perceived that, all aspect of traditional voting activity would be metamorphosed by the electronic voting system. Thus, the electronic voting system will ensure how to educate voters about the convenient usage of voting equipment, how to get access to the internet or website to vote and several relevant issues should be addressed administratively.

2.7. THE RISK OF E- VOTING

People may assume that the usage of information technology through a specified automating electronic manual voting process would ensure effectiveness and help difficulties that 2000 US presidential election suffered, but this series highlights two major distinct electronic voting systems which consists direct recording electronic (DRE) and internet voting systems. Currently, there has been a series of troubles of these mentioned systems in the whole wide world they operate(Newman 1994). Scholars of electronic voting have lamented that it will possess these subsequent good effects; huge participation for deprived communities, a remedy to potential voter indifference, massive appropriateness for voters with regards to location and voting time, physically challenged participation, saving of money and accuracy. (Mohen and Glidden 2001).Thus, several authors have agitated that, electronic voting breeds series of security issues. (Mercouri 2002, Neumann 2001). Series of ways to evaluate and access security risk in respect to organizational context especially OCTAVE approach (Alderts and Dorfoes 2003) highlighted assets to be protected, the kind of difficulty to these assets and the cost associated to these measures which are protective.

2.8 E-VOTING IN DEVELOPED COUNTRIES.

The very initial election conducted in USA brought about the right which was solely on ownership. It has been established that, about 4-6% of potential voters involved themselves in the initial few presidential elections. White males consisting 80% were involved in 1840 presidential election which happened when land ownership requirements were amended in 1880s. The 15th constitutional amendments provided eligibility to blacks the mandate and right to participate in voting whilst the 19th constitutional amendment granted women the right to vote. Thus, there have been series of voting laws enacted and passed as well. Again, the voting Right Act of 1965 as well as the Civil Rights Act of 1957 cancelled procedures that efficiently confirm a potential voter with regards to race as well as discriminatory literacy tests.

Act of 1993 is purposed at ensuring potential voters involvement in elections (Delk 2001). The word ballot emanated from balata which is an Italian word and means to a technique of ancient elections where containers were filled with ballots to portray votes. Initial ballot papers consist of mere newspaper advertisements, slips of papers or party's certified candidates printed party tickets. Perhaps, all these ballots and approved procedures merely did not ensure voting piracy or voting more than once. The Australian paper ballot in 1888 was used for elections in New York and Massachusetts. Australian ballots had three features which consist of consolidation, secrecy and officiality. Consolidation means candidates were listed from each party whilst secrecy

portrays that, voting were held in a voting ballot. Officiality also represents that, ballots were printed by the state.

2.14. BIOMETRIC VOTERS' REGISTRATION IN GHANA

Biometric technology is used to recognize or identify humans or persons based on one or more intrinsic traits. Biometric voters' registration is therefore the process of capturing information of voters including their unique physical traits or features for the purpose of compiling a voters' roll. During the registration, direct data entry equipment will be used to capture the person's details of applicants at all registration centers in the country. The equipment made up of a laptop computer, a fingerprint scanner, a digital camera and a color printer, are collectively referred to as a biometric registration kit or simply 'kit'. This technology helps to increase the credibility of the voters' roll and for that matter the electoral process but it should not become a stakeholder participation in the process.

2.15. PURPOSE OF VOTER REGISTRATION.

The voter registration process serves a number of important purposes which include the following:

- i. It provides a comprehensive list of all the registered voters. Only those persons whose names are on the voters' list will be able to vote in election.
- ii. It helps to establish the total number of registered voters.
- iii. It enhances controls of fraudulent attempt to vote, such as ineligible voting, impersonation or voting for others, double voting etc.
- iv. Provision of registration cards to all voters who register. These ID cards in addition to the physical features of voters captured in the biometric process serve to identify voters on the voters' roll.
- v. It facilitates planning for procurement and distribution of materials for voting.
- vi. It also provides the basis for ballot accounting at the close of voting and counting.

2.16. VOTER ELIGIBILITY

The legibility criteria for registering as a voter are:

- i. Must be a citizen of Ghana
- ii. Must be 18 years or above at the time of registration
- iii. Must be of sound mind
- iv. Must reside in the area where he or she seeks to register

2.17. REQUIREMENTS TO REGISTER

To be registered as a voter, a person must:

- a. Register in person at the nearest registration center during the period determined by the Electoral Commission.
- b. Not already registered at any other registration center.
- c. Be eligible.

2.18. THE REGISTRATION PROCESS

The biometric registration will be counted in all registration / polling centers. The process will not take place at the same time at all centers across the country. The Commission uses the cluster method in which one registration team is allocated to a cluster. Each team will be assigned a kit for the registration in the cluster. A cluster consists of a number of registration centers or polling stations in an electoral area. An electoral area may have more than one cluster depending on its size. The team will move and register voters in only in the registration centers of the cluster to which it has been assigned. This method will ensure that each region will have a number of kits (determined by the number of clusters) at the start of registration so that registration takes place simultaneously in all the ten regions of the country. The kits will then be deployed on rolling basis to cover all the registration centers in the region during the period of registration.

RESEARCH METHODOLOGY

Echtner and Ritchie (1991) assert that using structured and unstructured methodologies is vital to accurately measure the research phenomenon. Going by this assertion, both structured and unstructured approaches were used for this paper. To gain an insight, this study used a qualitative approach involving 116 respondents made up of representative from the various political parties namely New Patriotic Party (NPP), National Democratic Congress (NDC), Ghana National Party (GNP), Independence People Party (IPP), National Reform Party (NRP), United Ghana Movement (UGM), Great Consolidated Popular Party (GCPP), Progressive Peoples Party (PPP), Convention Peoples Party (CPP) United Front Party (UFP) and individual citizens. To ensure the authenticity of their stances, respondents were selected using purposive sampling. Questionnaires were used to collect all the necessary data from the management and students of the University College. With regards to the questionnaire, both open-ended and close-ended questions were used. This question style was adopted because it will facilitate ease understanding on the part of the respondents. It will also enable me to have a direct visual impression of the trend of events. A combination of Statistical tools or normal distribution curves and software packages such as SPSS were used to analyze the data through correlations and regression. Our sample size will consist of two political parties which include New Patriotic Party and the National Democratic Congress (NDC). Our justification for the selection of these two political parties is due to their dominance and their reputation as the two main leading political parties in Ghana. Our sampling technique will be based on judgmental or purposive sampling which is an aspect of non-probability sampling.

DATA PRESENTATION AND ANALYSIS

4.1.1 GENDER OF RESPONDENTS

TABLE 1

Out of the one hundred and sixteen (116) respondents, 88 representing 75.8% were male and 28 representing 24.1% were female. With this data, the researcher can say that the proportion of the population being male advocate the adoption and diffusion of electronic voting in Ghana. They perceive that, the adoption and diffusion of electronic voting will be of a greater help to the country Ghana and perhaps help reduce electronic rigging as well. They hold the view that, the adoption of electronic voting been replacing traditional voting is a great idea and will enhance free and fair elections. Alternatively they feel that, the adoption of electronic voting will help minimize queues, establish peace and harmony amongst the various political parties as well as influencing a lot of people to vote. This is reflected in the graph below:

FIGURE 1

4.1.2 EDUCATIONAL LEVELS OF RESPONDENTS

TABLE 2

FIGURE 2

The table above explains the educational background of the individuals. 11 people responded as Basic holders representing 9.4%, 12 responded as Junior High holders representing 10.3%, 22 responded as Senior High holders representing also 18.9%, 47 people also responded as Diploma holders representing 40.5% and 25 people representing 21.6%. This depicts that, the individuals with the qualification of Diploma are much concern with the adoption and diffusion of electronic voting in Ghana and hence, advocate its adoption. They hold the perception that, e-voting replacing and perhaps enhance people and harmony in the country as well.

Correlations and regression analyses between electronic voting, its impact on the election, time spend, voter turnout and fairness and accuracy result.

TABLE 3

As shown in Table, a Pearson correlation test indicates a strong positive relationship between the electronic voting and the impact on the election result (positive impact) ($r= 0.379, p<.01$). As determined by one-way ANOVA ($F= 4.981, p = .028$), there is a statistically significant difference between electronic voting and its impact on the result. In addition, it is statistical significantly good enough in predicting the outcome variable that electronic voting will bring positive impact. In other words, individuals believe the adoption and diffusion of e-voting in Ghana will have a very positive impact on the 2012 elections in Ghana. Since, we reject H_0 if $P \leq 0.05, (0.028 \leq 0.05)$. This makes the relationship to be reliable and can be used to make predictions that electronic voting will have positive impact on the 2012 elections in Ghana.

The Table also shows that, a Pearson correlation test indicates a weak positive relationship between the electronic voting and the time spent on the election process ($r= 0.112, p<.01$). As determined by one-way ANOVA ($F= 1.450, p = .0231$), there is a statistically significant

difference between electronic voting and time spent on the election process. Individual agree to expect to spend not less than 30 minutes for their voting using electronic voting

Therefore, it is statistical enough in predicting the outcome variable (time spend) that electronic voting will speed the election process. This makes the relationship to be reliable and can be used to make predictions that, electronic voting will speed elections process on the 2012 elections in Ghana.

As shown in table , there is significant relationship between the e-voting and voter turnout, on the other hand, indicates a negative relationship between e-voting and voter turnout($r = -.197, p < .01$).

At the last column of table shows that, Pearson correlation equation r indicates a weak positive relationship between the electronic voting and its fairness and accurate on the election result ($r = 0.365, p < .01$). Also ANOVA shows ($F = 4.326, p = .040$), there is a statistically significant difference between electronic voting and fairness and accurate result.

TABLE 4

With this table, the researcher can draw a conclusion that, 89 individuals representing 76.7% responded e-voting whereas 27 individuals representing 23.3% responded traditional ballot voting. The average response review (*mean 1.23, median 1, standard deviation 0.424*). This shows that respondent or potential individuals prefer the adoption of e-voting in the elections in Ghana.

Correlations between e-voting and its impact

TABLE 5

The coefficient of the above correlation analysis which is 0.379 shows that there is weak positive correlation between e-voting and positive impact. This means that changes in system of voting will correlated with impact of the result. Therefore one can conclude that e-voting and positive impact is strongly correlated. With regards to Sig (2-Tailed) value which is 0.001, we can conclude that there is statistically significant correlation between e-voting and positive impact.

TABLE 6

The coefficient of the above correlation analysis which is 0.112 shows that there is weak positive correlation between Electronic voting and time spend. This means that Electronic voting is correlate with time spend. Therefore we could conclude that Electronic voting and time spend are strongly correlated. In addition, Sig (2-Tailed) value which is 0.231, we can conclude that there is statistically significant correlation between Electronic voting and time spends.

Correlations between electronic voting and voter turnout

TABLE 7

The coefficient of the above correlation analysis $r = -0.19(*)$ shows that there is weak negative correlation between Electronic voting and voter turnout. In addition, Sig (2-Tailed) value which is 0.034, we can conclude that there is statistically significant correlation between electronic voting and voter turnout.

TABLE 8

From the table, Pearson correlation equation r indicates a weak positive relationship between electronic voting and its fairness and accurate on the election result ($r= 0.365, p<.01$)

5.1 CONCLUSION AND AREAS OF FURTHER RESEARCH

The entire research indicates that, the various stakeholders like the electoral commission, political parties, the government and individuals need to play a very pivotal role to ensure the proper enactment of the e-voting system in Ghana to make the system work effectively when introduced. One key finding of the study revealed that, the various political parties are in great support of the adoption and diffusion of the e-voting system in Ghana and that, they will do all they can to make the system effective. But on the other hand, some individuals are still ignorant and know less about the system and so they think they might contract some viral diseases such as cancer therefore education is the key to the success of this system. The Electoral Commission should also make sure that proper logistics and accoutrements are available and are put in order to curb any break down of system during the e-voting process. One can conclude that the success or failure of e-voting adoption depends on political education and logistics.

However, qualitative method was used for the research. Due to time constraint, the researcher was not able to use other methods for the research. Therefore, further study should include quantitative method in order to gain a detailed narrative and generally provide an elaborate account of individual respondents' perception.

Another area of attention should also unravel the role the government should play in order to ensure the e-voting system is implemented and sustained

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Table 1: The table below represents the sex distribution of the individuals.

Sex	Male	Female	Total
Respondents	88	28	116
Percentage	75.8%	24.2%	100

(Source: Field data Jan, 2013)

Figure 1: This graph depicts the gender distribution of the individual respondents.

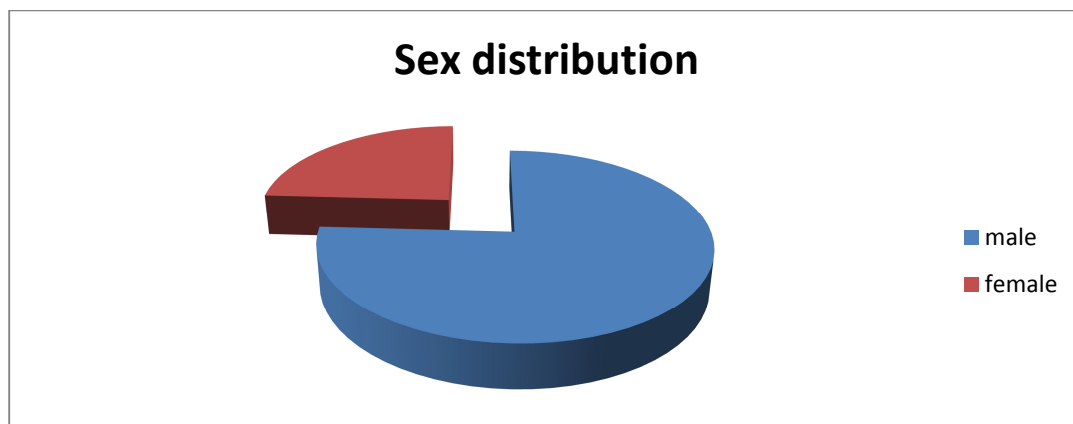


Table 2

Variables	Frequency	Percentage
Basic	11	9.4%
Junior High	12	10.3%
Senior High	22	18.9%
Diploma	47	40.5%
Degree	25	21.6%
Total	116	100

(Source: Field Data, Jan 2013)

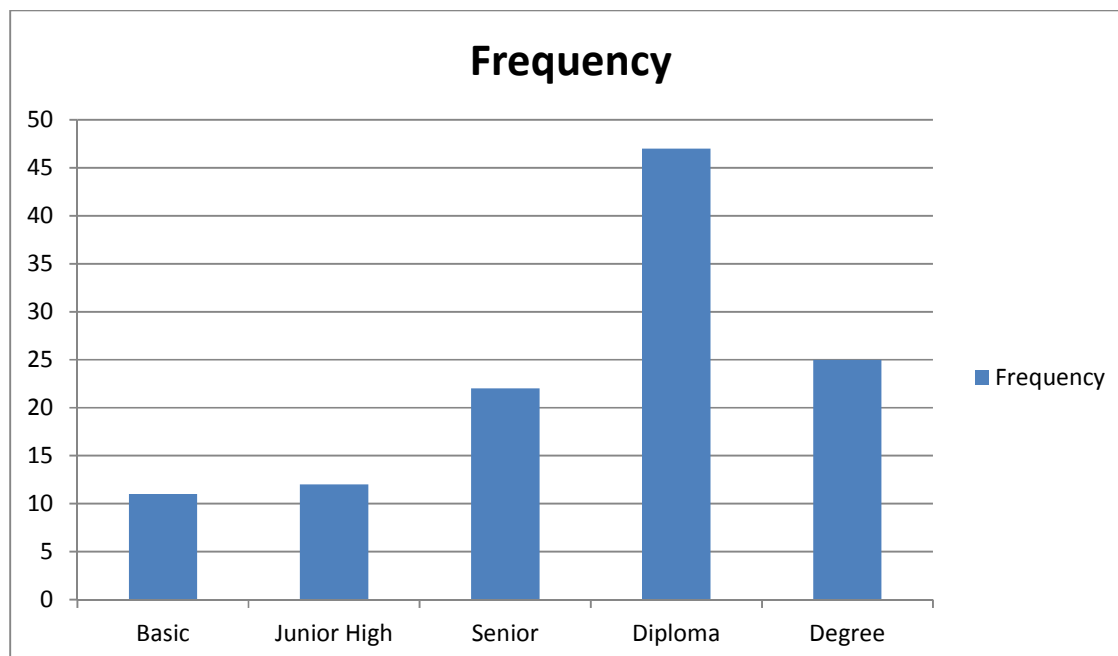


Table 3

e-voting	Star rating Pearson (2-tailed) r (<i>p</i>)	Location ANOVA-Test F(<i>p</i>)	Std error	t	Sig
Impact on the election	0.379(**) .001 116	4.9810; (0.028)	.093	8.154	.0289(a)
Time spend	0.112 0.231 116.	1.450; (.231)	0.140	8.538	0.231
Voter turnout	-.197(*) 0.34 116	4.754 ;(0.031)	0.111	11.921	0.031
Fairness and accuracy	.365(**) .000 116	4.326; (0.040)	.094	2.080	.040(a)

(Source: Field data Jan, 2013)

Table 4: The table shows the type of voting system respondents prefer.

Variables	Number of respondents	Percentage %	Mean	median	Std Dev.
E-voting	89	76.7	1.23	1	0.424
Traditional Ballot Voting	27	23.3			
Total	116	100			

(Source: Field data Jan, 2013)

Table5

		Electronic voting will help eradicate rigging in Ghana.	Impact of e-voting on the 2016 elections.
Electronic voting will help eradicate rigging in Ghana.	Pearson Correlation	1	.0379(**)
	Sig. (2-tailed)		.001
	N	116	116
impact of e-voting on the 2016 elections.	Pearson Correlation	.0379(**)	1
	Sig. (2-tailed)	.001	
	N	116	116

Table 6

Correlations between e- voting and time spend

		Electronic voting will help eradicate rigging in Ghana.	spend not less than 30 minutes
Electronic voting will help eradicate rigging in Ghana.	Pearson Correlation	1	.112
	Sig. (2-tailed)		.231
	N	116	116
spend not less than 30 minutes	Pearson Correlation	.112	1
	Sig. (2-tailed)	.231	
	N	116	116

Table 7

		Electronic voting will help eradicate rigging in Ghana.	e- voting will encourage people to vote
Electronic voting will help eradicate rigging in Ghana.	Pearson Correlation	1	-.197(*)
	Sig. (2-tailed)		.034
	N	116	116
e- voting will encourage people to vote	Pearson Correlation	-.197(*)	1
	Sig. (2-tailed)	.034	
	N	116	116

* Correlation is significant at the 0.05 level (2-tailed).

Correlations Table 8

		Electronic voting will help eradicate rigging in Ghana.	accuracy and fairness of e-voting on the elections results
Electronic voting will help eradicate rigging in Ghana.	Pearson Correlation	1	.365(**)
	Sig. (2-tailed)		.000
	N	116	116
accuracy and fairness of e-voting on the elections results	Pearson Correlation	.365(**)	1
	Sig. (2-tailed)	.000	
	N	116	116

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

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