COMPUTERIZATION OF ELECTORAL PROCESS (ELECTRONIC VOTING MACHINE OPTION)

BY

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PGD/MCS/2004/2005/1170

A PROJECT SUBMITTED TO THE DEPARTMENT OF

MATHEMATICS/ COMPUTER SCIENCE

IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF POST GRADUATE DIPLOMA
IN COMPUTER SCIENCE AT
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA,
NIGER STATE,

NIGERIA.

APRIL 2006

CERTIFICATE

This is to certify that OSUAGWU CHRISTIANA OBY, with Registration Number PGD/MCS/2004/2005/1170 in the department of Mathematics/Computer Science, School of Science and Science Education, Federal University of Technology, Minna, carried out this project work.

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Head of Department	
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DEDICATION

This project is dedicated to the Almighty God whose immensurable Grace enabled me to complete this work.

I also dedicate this project to my beloved Husband, who contributed greatly for the success of this project.

ACKNOWLEDGEMENT

With sincerity from my inner most being, I humbly praise and appreciate God the Almighty, whose love and mercies were more than sufficient enough for me throughout the entire programme. Be glorified forever!

I also wish to express my gratitude to Prof. K. R. Adeboye for his continuous academic support toward the success of this program.

My sincere thanks goes to Dr. Y. Abubakar; PGD Co-odinator, Dr. L. N. Ezeako; Head Of Department, Dr. Y. M. Aiyesim, and Dr. N. I. Akinwade, for their immeasurable assistance.

To my supervisor Mallam A. M. Bashiru whose guidance, contributions, constructive criticism and corrections made this project work a reality, thumbs up and am most grateful thank you.

To the entire PGD math/computer science department lecturer, words cannot express the extent the knowledge you impacted on me has improved my official productivity. May God increase you from glory to glory.

To my wonderful course mates, you are the very best.

To my very good friend, colleague, birth mate and Madam, Mrs Abimbola Michelle Oladunjoye. May God continue to shower His blessings on you and your entire family. Thank you.

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ABSTRACT

The New Oxford dictionary defines democracy as 'system of government by the whole population or all eligible members of a state, typically through elected representatives'. Abraham Lincoln defines democracy as the "government of the people for the people by the people". One thing that is common to all of these definitions is that the choice of people is an important variable in democracy.

The choice is often actualized by an electioneering process that is a process through which a democratic government is elected or de-elected. The election system must be sufficiently robust to withstand a variety of fraudulent behaviors and must be sufficiently transparent and comprehensible that voters and candidates can accept the results of an election. Unsurprisingly, history is littered with examples of elections being manipulated in order to influence their outcome.

Due to the history of elections being manipulated by way of rigging and other forms of malpractices often experienced, it has become imperative that a more credible way for election is the introduction of a more sophisticated election option.

The project looks at the issues of electioneering in a democratic system of government, the different existing voting systems, the proposed electronic voting machine and also offers recommendation for further studies on the proposed system.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In fact, in democracy the choice of people is an important variable. The choice is often actualized by an electioneering process. The electoral process is the process through which a democratic government is elected or de-elected. It is the only form of government that promises good governance.

Elections allow the populace to choose their representatives and express their preferences for how they will be governed. Naturally, the integrity of the election process is fundamental to the integrity of democracy itself. The election system must be sufficiently robust to withstand a variety of fraudulent behaviors and must be sufficiently transparent and comprehensible that voters and candidates can accept the results of an election. Unsurprisingly, history is littered with examples of elections being manipulated in order to influence their outcome.

The Independent National Electoral Commission (INEC) is charged with the responsibilities of regulating democratic process in Nigeria. This, the Commission has been doing (in her various nomenclatures) since the country attained Independence in 1960. After about 40 years of independence, Nigeria's democracy is still being described as nascent, obviously because it had continually been truncated by military interventions. Generally speaking a good number of these interventions were attributable to elections that are not considered free and fair. Considering the attributes of free and fair elections, it is hard to describe any of the elections conducted thus far

as free and fair. The annulled June 12 election is often cited as one of the freest and fairest of all the elections, even though it had its own shortcoming.

So when is an election free and fair? A difficult question to answer as the question of freeness and fairness is a subjective one – it means different things to different people. It is like the paradox of a grain which dates back to ancient Greeks – "take a grain of sand from a heap and you still have a heap. Take another grain of sand from it, and it still remains a heap, and so on. Eventually one grain is left. Is it still a heap? Remove it and you have nothing. Is that still a heap? If not, when did it cease being one?" It is indeed difficult to draw a line and say the election is Free and Fair. However it may be obvious when it is clearly neither free nor fair.

The questions we may need to ask ourselves are that were the 2003 election 'free and fair'? I believe we all know the answer, without saying anything, as an election should not only be free and fair but must be perceived as such by the electorates. So if the general perception is that the elections were not free and fair, who is then to blame? The Ad-Hoc staff? In my opinion the Commission must assume full responsibilities, and it is only when this is done that concerted effort can be made to remedy the situation.

The electoral process is made up of various tasks and responsibilities which make for the transparency of the system. A Voters roll that is free of multiple entries, a fairly delineated constituency, a level playing ground for campaigns, fairness in registration of parties, free and fair voting process amongst others are necessary for an election to be considered free and fair. The Independent National Electoral Commission had made concerted efforts in almost all the critical areas especially with the Electronic

voters roll which incorporates Biometric validation of voters. The instance of multiple registration use to be the easiest way by which politicians manipulate the process. It would appear however that as the Commission tries to close that gap they moved forward to tampering with the results sheets.

1.2 OBJECTIVE OF STUDY

The objective of a good computerized system will, of course, depend on the purpose for which the system will be used. The basic objective of this study is to coup the issue of election fraud and malpractices experience during election exercise.

In order to determine whether a system performs its tasks well, it is useful to develop a set of criteria for evaluating system performance. The following is one set of desirable characteristics for electronic polling systems:

A. Accuracy: *A system is accurate if:*

i. It is not possible for a vote to be altered,
ii. It is not possible for a valid vote to be eliminated from the final tally;
iii. It is not possible for an invalid vote to be counted in the final tally.

B. Democracy: *a system is democratic if:-*

i. It permits only eligible voters to vote;
ii. It ensures that each eligible voter can vote only once

C. Privacy: *A system is private if:-*

i. Neither election authorities nor anyone else can link any ballot to the voter who cast it;
ii. No voter can prove that he or she voted in a particular way.

D. Verifiability:

A system is verifiable if anyone can independently verify that all votes have been counted correctly.

E. Convenience:

A system is convenient if it allows voters cast their votes quickly, in one session, and with minimal equipment or special skills.

F. Mobility:

A system is mobile if there are no restrictions (other than Logistical ones) on the location from which a voter can cast a vote.

1.3 SIGNIFICANCE OF THE STUDY:

The significance of this study lies potentially on conducting a free and fair election that is credible, transparency and reliable. The project intends to boast the integrity of the INEC and also erase the negative impression most Nigerian have about the manual election process. It is agreed that a free and fair election is a *"sine qua non"* for an enduring democracy. This being the case, as a people; we must find a way to close this new gap of result manipulation so we can retain the confidence of the electorates, this and the above mentioned reasons are what this project is aimed at doing.

1.4 SCOPE AND LIMITATION OF THE STUDY

1.4.1 SCOPE:

This project does not intend to look at eliminating fraud in the entire electoral process. The scope of the study is basically to eliminate election fraud at the very point of voting. It is assumed here that before the voter goes into the voting compartment he must have been authenticated and proven eligible.

1.4.2 LIMITATION:

In carrying out this research work some unavoidable problems pose as limitations to the study which to an extent influenced the depth of the research. Primary among these problems are:

(a) **AFIS (Automatic Fingerprint Identification System):** The project does not provide the Automatic Fingerprint Identification system. In order words, voter's authentication will not be performed by this system.

(b) **Party Logo/ Candidate Name:** The system does not have the political party Logos as well as the candidate name linked to each party acronym. The system only provided the party acronyms of the registers party.

(c) **Insufficient Fund:** There were some difficulties in the funding of this research as it was funded from personal source.

(d) **Time Constraint**: This project was affected by time constraint. A study of this type requires a sufficient time in order to allow for extensive and detailed research.

Despite all these shortcomings, much effort was indeed made to ensure that these problems do not outweigh the desirability or need to carry out a sound research.

1.5 PROBLEM STATEMENT

For a long time now in the history of elections conducted by election commission, the annulled June 12 seems to be the only credibly election conducted so far. It has become imperative that the Nigerian citizen does not have faith in elections conducted in the country; it is as a result of this that this project was proposed in order to prove that we can still have a free and fair election in Nigeria.

1.6 DEFINITION OF TERMS

EVM: Electronic Voting Machines (EVM) are used to implement electronic voting. An Electronic Voting machine consists of two units- a Control Unit and a Balloting Unit – joined by a five –meter cable. The Control Unit is with the Presiding Officer or a Polling Officer and the Balloting Unit is placed inside the voting compartment. Instead of using a ballot paper, the polling Officer in – charge of the Control Unit will press the Ballot Button. This will enable the voter to cast his vote by pressing the button on the Balloting Unit against the candidate and symbol of his choice.

ELECTION FRAUD: Election fraud is the corruption exercise practiced in the process of casting votes.

ELECTION: The act of selecting a leader in a democratic method by voting.

INEC: Independent National Electoral Commission in charge with the responsibility of regulating democratic process in Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 EVOLUTION OF VOTING TECHNOLOGIES

The history of offline electronic voting began with the necessity to install secret balloting in the USA at the end of the 19th century. Secret balloting in the United States was first done in 1888 on a printed paper ballot. A few years later the voting machines appeared. In 1869, Thomas A. Edison proposed to record and count the votes cast by Congressmen by electromechanical machines. These devices were not intended to be used by the public, but it was, nevertheless, the first workable voting machine proposed for use in the United States.

Nearly twenty years after Edison's patent and years after the first secret balloting, Jacob H. Myers, at Rochester, New York, developed and built a mechanical voting machine for public use to "protect mechanically the voters from fraud, and make the process of casting the ballot perfectly plain, simple and secret". In April 15, 1892, this device was first used in the United States, in a town meeting in Lockport, New York. Mr. Myers continued to develop and improve his device and, in 1895, a company was formed in Jamestown, New York, to manufacture this machine.

Computers were first introduced to tabulate votes in the early 1960s.Voting machines, which utilized primitive, punch card computer processing came into widespread use in the 1960s in the USA.

A number of offline machines were invented. Several of them used punched cards, a form that from the 1960s and up through the 1980s was a dominating medium for data storage. The use of this medium was partly motivated by cost; there were large

quantities of punched card reader technology available in many countries, at low cost. Manufacturing of card based personal opinion collectors was easy. By the early 1960s, at numerous elections, it has been estimated that over 50% of voters in the United States cast their ballots on mechanical voting machines.

Throughout the 1980s serious questions were raised about both the accuracy of the vote tabulating programs and the vulnerability of the system to undetectable manipulation. Many of the criticisms were dismissed with cries of "sour grapes on the part of losing candidates". Human errors, procedural errors or innocent glitches in the programs were usually identified as the sources of the problems. There was no comprehensive or independent investigation done to gather all the facts and ask the right questions. What has been proven, however, is that vote tabulating programs do contain errors.

As technology for optical scanning became available on the market, in the 70s, this was believed to be major interface advancement for voting. However, many of these machines showed a lack of mechanical perfection, and it was only the later machine versions that could show real ease of use. In the 1990s, these machines had been developed to be very efficient, but at that time online technology - with touch screen or computer keyboard interfaces - had arrived to be a main systems competitor. Optical scanning did not get the chance to really take off for this type of applications.

Many court cases involving allegations of frauds were brought against vendors of electronic voting systems. There were no convictions. Was there ever any proof of tampering presented?

In 1995 electronic voting has been experimented with in Belgium, first in a pilot project, and afterwards generalized to half of the constituencies. In order to have a better voting count, voters voted with a magnetic card they introduced in a computer.

From the presidential election in the US in the year 2000, it has become evident that card oriented machines were used for what would likely be the last time. The experiences from this election show that the interest in more modern machinery is increasing rapidly.

On October 11 and 12, 2000 the Internet Policy Institute along with the University of Maryland conducted a workshop on Internet voting, sponsored by the National Science Foundation, examining the feasibility of online voting. Their findings and recommendations for research are contained in a report published in March 2001. It concludes that Internet voting from polling places is likely to be feasible in the near term and Internet voting from kiosks may be possible, but remote Internet voting from homes or offices should not be used for public elections on a wide scale until many very challenging technical and social science issues are resolved.

2.2 TYPES OF VOTING TECHNOLOGIES

2.2.1 Paper Ballot

The oldest technology is the paper ballot. To cast a vote, a person makes a mark next to the name of the preferred candidates or referendum options and, then, puts the ballot in a box. Paper ballots are counted manually. Paper ballots enjoyed a near universal status in the 19th Century; they remain widely used today in rural developing democracies.

2.2.2 Lever Machine

At the end of the 19th Century, mechanical lever machines were introduced in New York State, and by 1930 every major metropolitan area had adopted lever machinery. The lever machine consists of a steel booth that the voter steps into. A card in the booth lists the names of the candidates, parties, or referenda options, and below each option is a switch. Voters click the switch of their preferred options for each office or referendum. When they wish to make no further changes, they pull a large lever, which registers their votes on a counter located on the back of the machine. At the end of the voting day, the election precinct workers record the tallies from each of the machines. Lever machines automate both the casting of votes and the counting of votes through mechanical devices.

2.2.3 Punch Card

Punch card machines automated the counting process using the computer technology of the 1960s. Upon entering the polling place the voter is given a paper ballot in the form of a long piece of heavy stock paper. The paper has columns of small, perforated rectangles (or chads). There are two variants of the punch card – one, the DataVote, lists the names of the candidates on the card; the other (VotoMatic) does not. In the booth (for VotoMatics), the voter inserts the card into a slot and opens a booklet that lists the candidates for a given office. The voter uses a metal punch to punch out the rectangle beside the candidate of choice. The voter then turns the page, which lists the options for the next office and shifts the card to the next column of rectangles. When finished, the voter removes the card and puts it in the ballot box. At the end of the day, the election workers put the cards into a sorter that counts the number of perforations next to each candidate.

2.2.4 Optically Scanned Ballots

Optically scanned ballots, also known as "marksense" or "bubble" ballots, offer another method for automating the counting of paper ballots. The form of the optically scanned ballot is familiar to anyone who has taken a standardized test. The voter is given a paper ballot that lists the names of the candidates and the options for referenda, and next to each choice is small circle or an arrow with a gap between the fletching and the point. The voter darkens in the bubble next to the preferred option for each office or referendum, or draws a straight line connecting the two parts of the arrow. The ballot is placed in a box, and, at the end of the day, counted using an optical scanner. Some versions of this technology allow the voter to scan the ballot at the polling place to make sure that he or she voted as intended.

2.2.5 Direct Recording Electronic (DRE) Machines

Direct recording electronic devices, DREs for short, are electronic versions of the lever machines. In fact, the first widely used electronic machine (the Shouptronic 1242) was modeled on the lever machine and developed by one of the main lever machine manufacturers. The distinguishing feature of a DRE is that an electronic machine records the voter's intentions, rather than a piece of paper or mechanical device. To the extent that there is a paper trail it is generated by the machine, not the voter. Electronic machines vary along a couple of dimensions, having to do with the interface. First, there are many devices used to register the vote: the interfaces are either push button (e.g., the Shouptronic) or touch screen (e.g., Sequoia Pacific's Edge or Unilect's Patriot) or keypads (see the Brazillian machine). Second, the ballot design is either full-faced or paginated. With full-faced ballots, common among push button equipment, the voter sees the entire ballot at once. With paginated systems, common among touch screen devices, the voter views a page for each office or question on the ballot. A voting session goes roughly as follows. Upon entering the polling place, the voter is given a card that is inserted into the machine to activate the individual voting session. When finished the voter touches the name on the screen to register his or her preference and, typically, the voter may review the entire session (or ballot) to check the vote. Like lever machines it is not possible to vote twice for the same office (i.e., over vote). Each electronic machine tallies the votes locally and the tallies, usually on a disc, are sent to a central location.

Another type of Direct Recording Equipment is the Electronic Ballot which was used during the last Indian Elections.

AutoMARK Technical Systems (ATS), formerly Vogue elections Systems, has produced a machine that combines touch-screen technology and optical scan

technology – essentially a touch screen voting machine would produce an optical scan ballot. The system displays an optical-scan ballot on a touch screen; the marked ballot is returned and counted by an optical-scan machine- only a paper ballot is recorded. Another variant of the of this machine print out paper ballot with a bar code which is used for vote count. Votes are not stored electronically.

One of the major shortcomings of this DRE equipment is that most of them are not equipped with Voter –Verified Paper Audit Trail (VVPATs). This means in case of a dispute or a crash there in no manual hand count that can be done.

2.2.6 Electronic Voting Machines (EVM) used during the last election in INDIA.

The EVM, was said to be a product of years of Research and Development, is a portable instrument for conducting elections. The EVM comprises of two sub-units, namely the Control unit and the Balloting unit (please see figure below); the two units are interconnected by a five meter long cable. Electric power for these two units is derived from a power pack placed in the control Unit. In the polling booth, the Control unit is kept with the Presiding officer and the balloting unit is kept in a separate enclosure – the voting compartment, top enable the voter to cast his or her vote secretly. The EVM is designed to operate in Single Post, Single vote mode or Double Post, Single Vote mode based on the principle of one vote per post per person. Double Post, Single Vote enables the use of EVM for conducting 2 simultaneous elections.

The basic concept of the Electronic Voting Machine is that it is micro-processor based equipment designed to modernize the election process. It is said to be simple to operate and can be installed in a short time. There is no scope for invalid votes and

total secrecy of voting data is maintained. The EVM facilitates quick and easy counting.

In the EVM, one ballot paper per unit is used. This is fixed below the transparent acrylic sheet of the balloting unit and lists the names of the candidates and their symbols as in the traditional ballot paper. The EVM can be reused in subsequent elections by simply pressing a button to erase the votes recorded in the earlier poll and changing the ballot paper in the Balloting Unit. The voter has to only press a button against the candidate of his/her choice to cast a vote. An audio visual signal confirms to the voter that his vote has been recorded.

The use of the EVM was described as follows: The Balloting Unit has a ballot paper under a protective cover. Against each candidate and the relevant symbol, a button is available to record the choice of the voter. The process of casting a vote in the booth is the same as the traditional method, the voter: a) enters the booth and his /her identity is established by Electoral Identity card or voter slip, b) signs the register c) is given an ink mark on the index finger, d) the presiding officer presses the 'Ballot Button' on the Control Unit instead of given a ballot paper and asks the voter to proceed to the balloting unit enclosure, e) the voter presses a button against the candidate of his /her choice. The red light adjacent to the button glows briefly and is followed by a beep, indicating that the vote is recorded.

At the end of the poll, the Control unit and the Ballot unit are switched off and sealed in separate carrying cases in the presence of the candidates or their agents. These are then sent to secure storage centres till the counting day. On the counting day the Control Unit are taken to the counting centre. On pressing the result button, the total number of votes cast and individual votes recorded against each candidate are displayed sequentially.

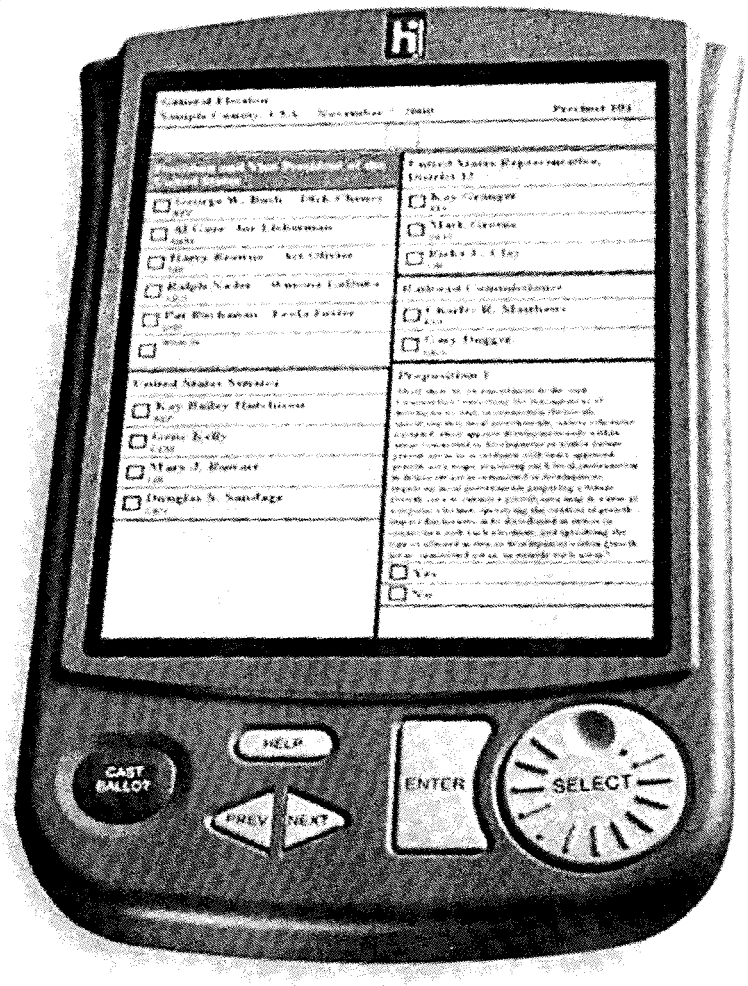
The EVM is state-of-the-art electronic equipment that cannot be tampered with. It incorporates a microchip that has fused firmware, which cannot be altered. In the event of a booth capture of the Presiding officer can disable the EVM by pressing the "CLOSE" button. Thereafter no further votes can be cast in the unit. On resumption of voting another unit must be used to continue the voting.

The EVM were first used in 1983, in one constituency. Large scale deployment in the conduct of elections started from 1998 onwards. The EVM was used exclusively in the last Indian general election and a total of about 1m units were deployed with very little breakdown.

The Key Success Features of the Indian model of the Electronic Voting Machine are:

- Transparency
- Simplicity
- Independence from Electrical Power
- Independence from Literacy
- Avoidance of External Connectivity
- Re-locatability & Re-usability

2.2.7 Hart Intercivic 'eSlate Electronic Voting System



2.2.7.1 A STATISTICAL REPORT ON USAGE OF VOTING EQUIPMENT

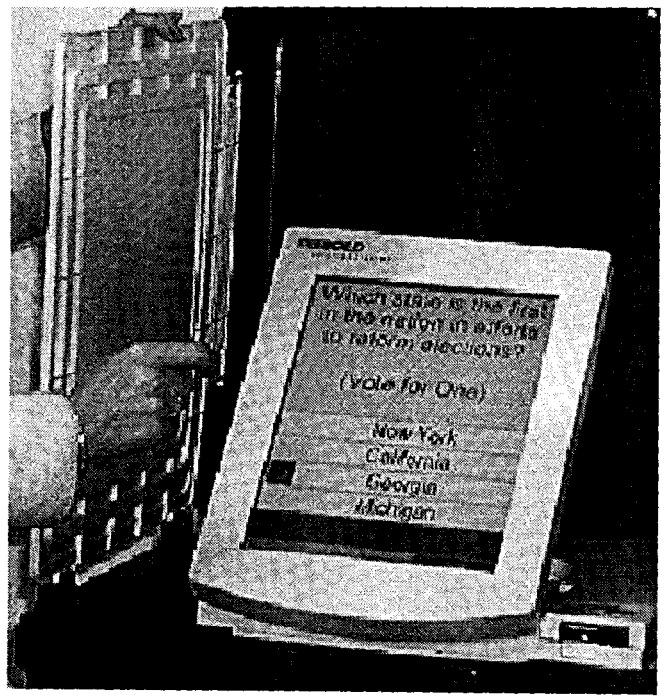
Usage of Voting Equipment in the 1980 and 2000 Elections

	Percent of Counties Using Technology		Percent of 2000 Population Covered by Technology	
	1980	**2000**	**1980**	**2000**
Paper Ballots	40.4	12.5	9.8	1.3
Lever Machines	36.4	14.7	43.9	17.8
Punch Card				
"*VotoMatic*"	17.0	17.5	30.0	30.9
"*DataVote*"	2.1	1.7	2.7	3.5
Optically scanned	0.8	40.2	9.8	27.5
Electronic (DRE)	0.2	8.9	2.3	10.7
Mixed	3.0	4.4	10.4	8.1

Usage of Voting Equipment in the 1980 and 2000 Elections in the United States of America.

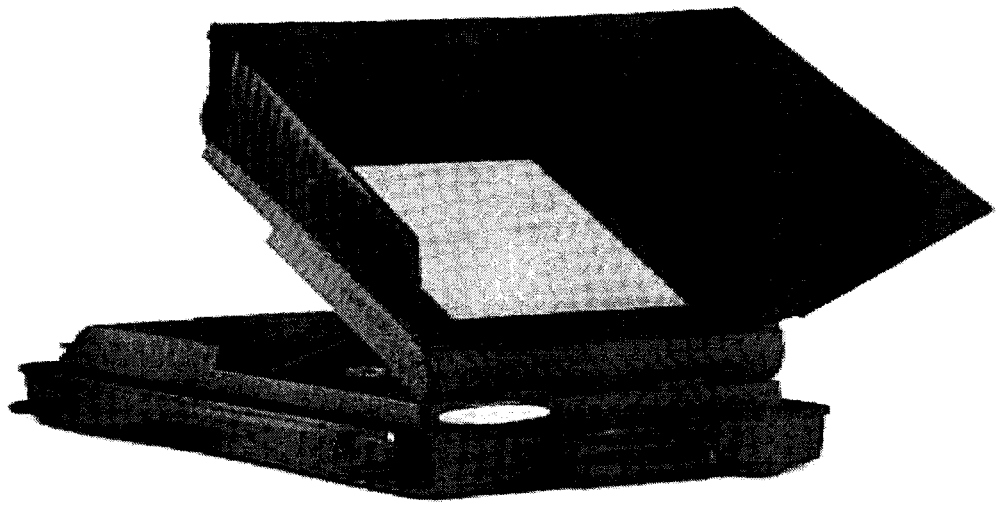
2.3 DIAGRAMS OF DIFFERENT ELECTRONIC VOTING MACHINES

2.3.1 DIRECT RECORDING EQUIPMENT

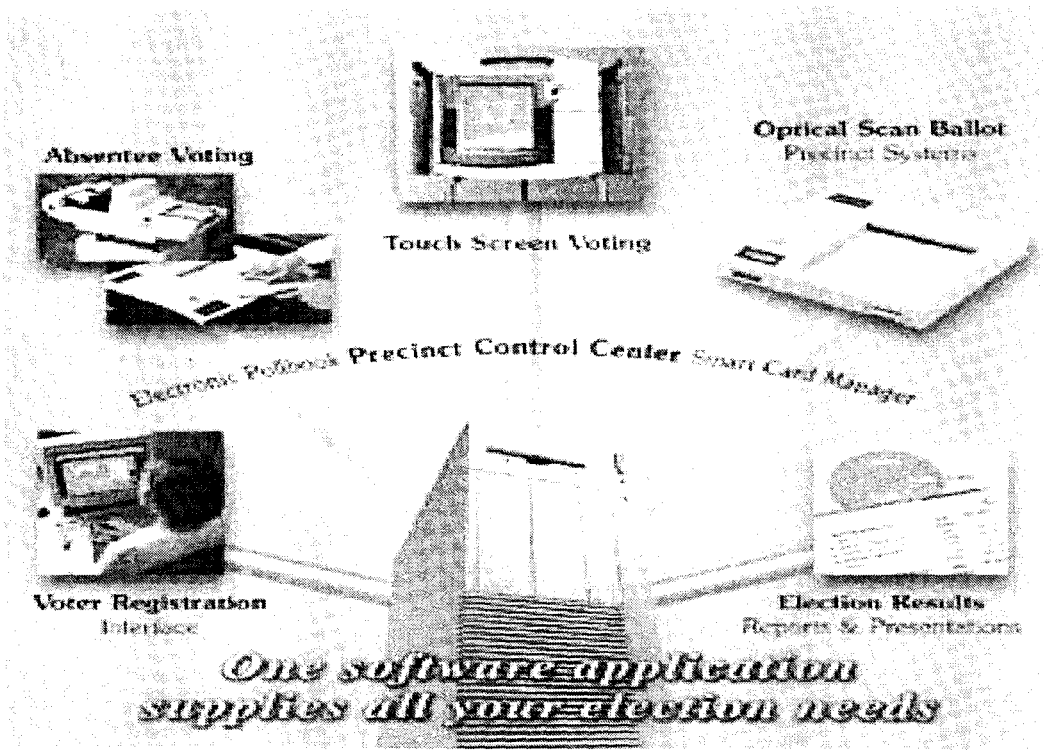


A Diebold AccuVote-TS voting machine (photo from http://www.sos.state.ga.us/). Note the smartcard reader in the lower-right hand corner.

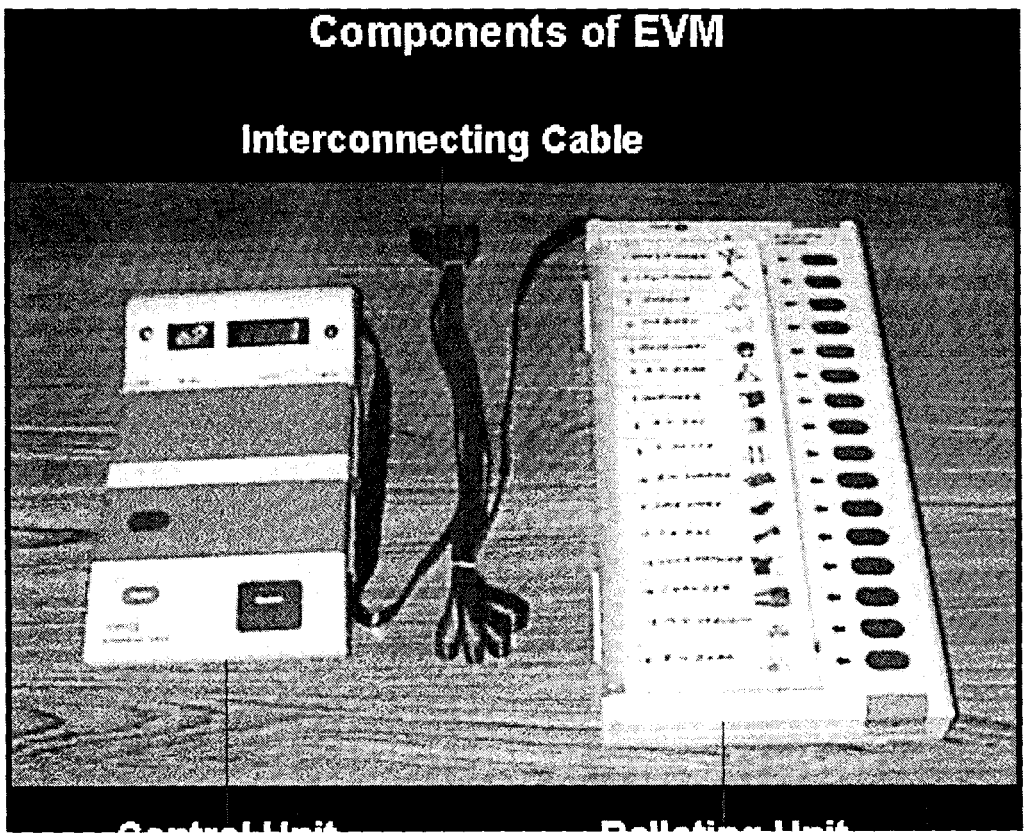
2.3.2 AVC EDGE VOTING MACHINE



2.4 DIAGRAM OF A SOFTWARE APPLICATION PROVIDING ELECTION NEEDS.



2.5 COMPONENTS AND INTERCONNECTING CABLES OF EVM



2.6 VOTING OPTIONS

2.6.1 Online Voting

Online voting systems are much more formal than online polling systems, because they seek (or should seek) to accurately reflect the voters' preferences. The class of online voting systems may be further divided by considering which parts of the system are used in combination with the network. An important aspect is whether the votes need to be cast at a polling station, (*polling-place online voting*) or may be cast from a remote location, being a PC in a public place, at home, at work, or a mobile phone, etc. (*remote online voting*).

2.6.2 THE VOTING TECHNOLOGY OPTION FOR INEC

In the foregoing, a review of various voting option was done to enable us understand what is available, what the risks are and what options to choose from. Suffice it to say here that most of these problems would have been ameliorated if a printing device that can print out a slip that would serve as an audit trail. It is also possible for the voter to leave the booth with a slip that shows that he/she has voted. The is called Verified Paper Audit Trail (VPATs). This means in case of a dispute or a crash there would be manual hand count alternative that can be done. This will certainly be a desirable option for our environment.

In spite of the apparent shortcoming of Direct Recoding Equipment it still the best option available compared to the other voting technologies. It must be noted here that due to the Florida misadventure in the US presidential elections of 2000, all states are being encouraged to modernize their Voting systems to avoid a repeat of the last

elections. It is in the light of the foregoing that a Direct Recording Equipment is being recommended for our use in INEC. Suffice it to say here that most of the DRE equipment designed in the United States cannot be suitable for our environment. This is because the design was without regard for power. Availability of power was assumed and secondly the systems were built for a society that is more literate than our own. Most Americans would know how to use Automated Teller Machines (ATMs), and so to use the DREs would be easier for a typical American. Due to the literacy level of our populace this is not the case with us in Nigeria.

India with an electorate population of more than 668 million and about 543 parliamentary constituencies with equally difficult terrains, similar rural Infrastructure and high number of illiterate populace conducted an all electronic election with about 725,000 Electronic Voting Machines used in every polling unit in India. Their environment and Voting population actually presented more daunting challenges than ours in Nigeria, hence the choice of their Model.

2.7 SECURITY BREACH ISSUES

2.7.1 Erroneous results.

Computer-related errors occur with alarming frequency in elections. Last year there were reports of uncounted votes in Toronto and doubly counted votes in Virginia and in Durham, North Carolina. Even the U.S. Congress had difficulties when 435 Representatives tallied 595 votes on a Strategic Defense Initiative measure. An election in Yonkers NY was reversed because of the presence of leftover test data that accumulated into the totals. Alabama and Georgia also reported irregularities. After a series of mishaps, Toronto has abandoned computerized elections altogether. Most of these cases were attributed to ``human error" and not ``computer error", and were

presumably due to operators and not programmers; however, in the absence of dependable accountability, who can tell.

2.7.2 Fraud

If wrong results can occur accidentally, they can also happen intentionally. Rigging has been suspected in various elections, but lawsuits have been unsuccessful, particularly in the absence of incisive audit trails. In many other cases, fraud could easily have taken place. For many years in Michigan, manual system overrides were necessary to complete the processing of non-computerized precincts. According to Lawrence Kestenbaum, the opportunities for rigging elections are manifold, including the installation of trapdoors and Trojan horses, child's play for vendors and knowledgeable election officials.

Existing standards for designing, testing, certifying, and operating computerized vote-counting systems are inadequate and voluntary, and provide few hard constraints, almost no accountability, and no independent expert evaluations. Vendors can hide behind a mask of secrecy with regard to their proprietary programs and practice, especially in the absence of controls. Poor software engineering is thus easy to hide. Local election officials are typically not sufficiently computer-literate to fully understand the risks. In many cases, the vendors run the elections.

2.7.3 The New York Story

The New York City spent more than 15 years and $17 million in search of an electronic system to replace its lever machines. At one point city officials even signed a contract with Sequoia-Pacific, a well-known manufacturer of voting equipment, but canceled it after experts, including Mercuri and Neumann, pointed out problems with the system, particularly in the area of security. In the end, the city gave up because,

according to Mercuri, no vendor could satisfy the security requirements in a specification that was "not really very strict" by her standards.

2.7.4 The Brazil Experience

Less than four hours into the tallying, the total of Lula's votes for president suddenly, and mysteriously, dropped from over a million to minus 41 thousand, on the main screen of the central tallying headquarters. After some screams, reboots to restore (in roughly five minutes) the "normal" count, a swift police blockade of the place during that time, a laconic official explanation for the incident as "caused by a formatting error", it was at the end established, against projections by most polling surveys, that a run-off ballot was due. Three weeks later Mr. Lula da Silva was, at his fourth run, finally declared president of Brazil, from January 1 2003 through December 31 2006, with roughly 62% of the valid votes. Lula thus became the first national leader ever elected solely through DREs before the run-off, his momentary negative vote count received practically no press coverage. Meanwhile, the mainstream media have begun reporting that Brazil's e-voting system -- now stripped of voter verification mechanisms -- is being promoted as a model.

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.1 SCOPE OF THE CHAPTER

This chapter explains the method of Data Collection, Software and Hardware requirement.

3.2 SOURCES OF DATA

There are basically two sources of Data or Information. These sources are Primary Source and Secondary Source. We also have different methods of data collection and they are Interview, Observation, Questionnaire and recorded method. In carrying out this research both primary and secondary data were used.

3.2.1 PRIMARY DATA

A primary data is that data that is originally and uniquely produced by the researcher. The instrument used in collecting primary data in this research is the Interview method. Here different categories of people were interviewed on issues relating to the subject matter. The Interview questions, Categories of interviewee and their response are attached as the appendix two.

3.2.2 SECONDARY DATA

A Secondary data is that data that is gotten from already existing sources. Secondary data was employed to a very large extent and they include published and unpublished information and Internet Downloads

We thus relied greatly on the information collected from the two sources for designing of the proposed system, arriving at a considerable conclusion and making of relevant recommendations.

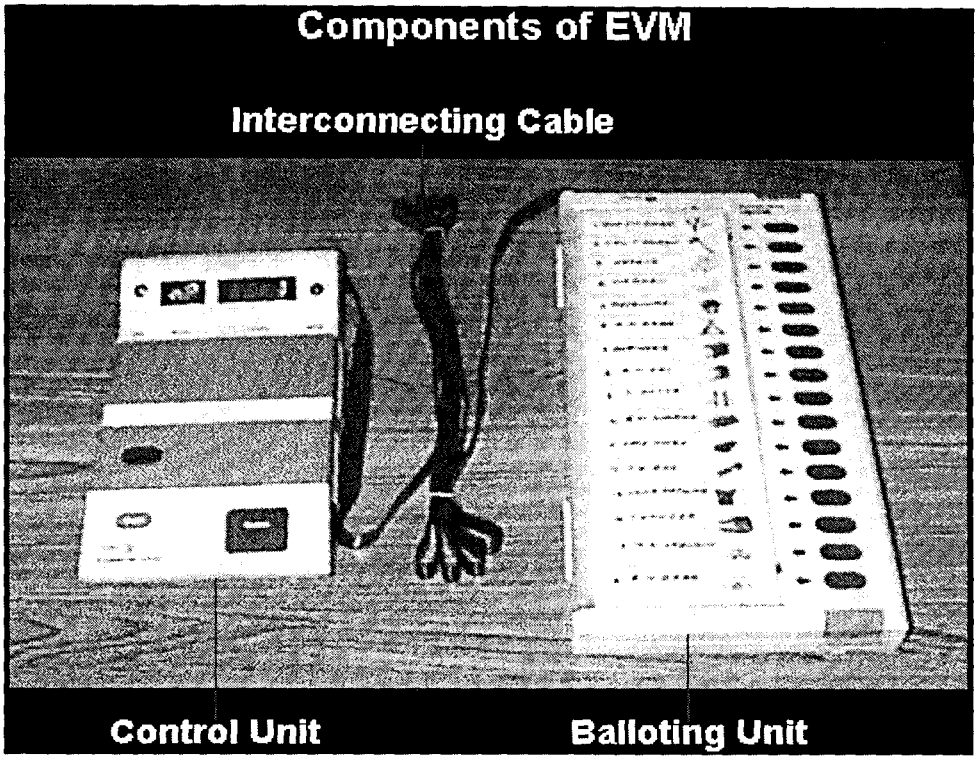
3.3 SOFTWARE REQUIREMENT

Software is a computer program written using any of the programming language to perform a specific task. In order terms, software connotes a working program or a set of program that performs some specific function(s).

The software required for this project was developed using Microsoft Access as Front-End with an addition of Visual Basic codes. This software will be deployed on a specified machine designed by an Engineer basically for the purpose of Electronic Voting.

3.4 HARDWARE REQUIREMENT

The hardware required for the deployment of the software will be a machine that will be designed by a system engineer which may look like the figure below.



3.5 EXISTING SYSTEM

In the existing system of election process, a voter is confirm eligible to vote if he/she has a voters card and the voter can only have a voters card if he/she is authenticated by AFIS (Automatic Fingerprint Identification System). In order words the voter does not have multiple fingerprints.

Haven passed this stage, at the polling station, the voter is checked by the polling officer to ascertain that his/her names are in the voters register, after which the voter is given a ballot paper containing all the political party logo, party acronym and party candidate to cast his/her vote by using right thumb to thumb print on the ballot in favour of the candidate of his/her choice which is dropped in a ballot box inside a secret compartment for onward collation at the end of the voting exercise.

After casting his/her voter, an indelible ink is drop on the left finger or as the case may be to show that that person has voted.

At the end of the voting exercise of that day the result from that polling unit is collated by the presiding officer and taken to the central collating center for further collation after which all results from the different local governments are taken to the INEC state headquarters' where the Resident Electoral Commissioner announces the winner of the election as in the case of a Gubernatorial Election but forwards Presidential state result to INEC Headquarters for the announcement of the winner by the INEC Chairman.

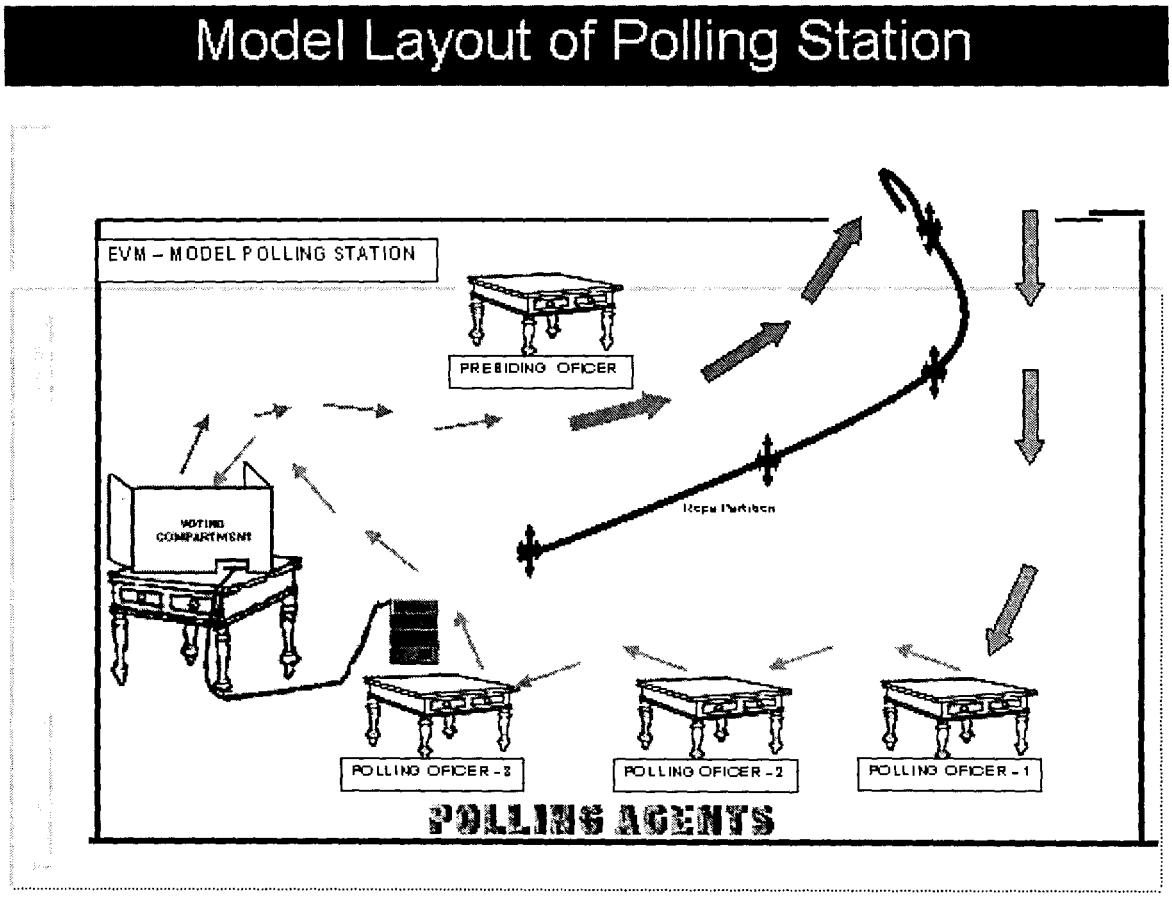
CHAPTER FOUR

SYSTEM IMPLEMENTATION

4.0 THE PROPOSED VOTING TECHNOLOGY OPTION (EVM)

4.1 LAYOUT REQUIREMENT:

The proposed Electronic Voting System will have a kind of model layout shown below.



4.2 VOTING PROCEDURE REQUIREMENT:

- The process is basically the same as the existing method
- The voter is identified by his/ her signature obtained and indelible ink mark put on the index finger.
- Instead of being given a ballot paper at this stage, a ballot is released by pressing a button on the control Unit.

- The voter then proceeds to the Voting Compartment where the Balloting Unit is kept and votes in secrecy.
- The balloting Unit has a conventional Ballot Paper (with names and symbols of the contestants) displayed and secured under a transparent protective cover.
- The voter simply presses a button against the candidate of his / her choice.
- At the end of the poll, the Control Unit and Ballot Unit are switched off and sealed in separate carrying cases in the presence of the candidates or their agents.
- The EVM has been specially designed to collect, record, store, count and display voting data accurately.
- Software security features are provided to ensure the integrity of the voting data.

4.3 MY EV1 SYSTEM

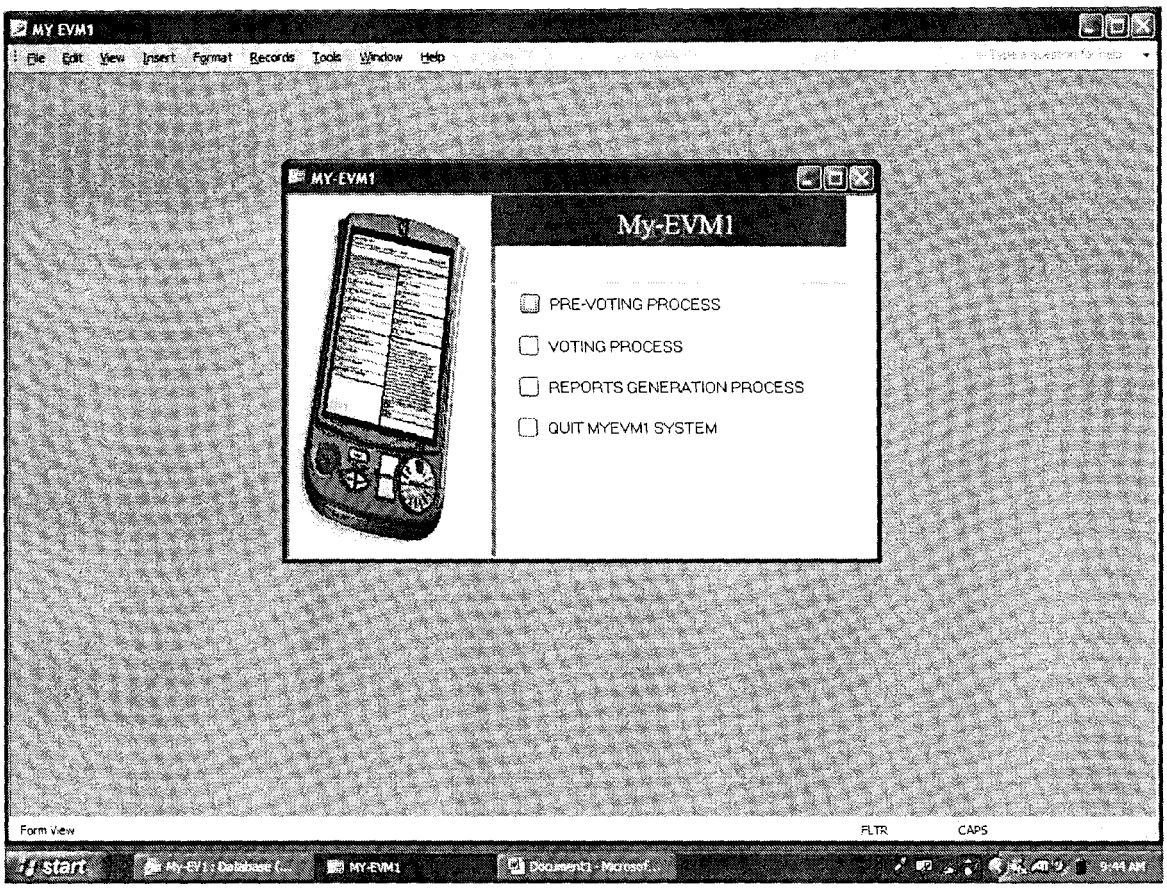
The EV1 System is an automated Electronic Voting System. It is a software application that automates the Electronic Voting Process. The whole Process comprises of different Sub Processes like Pre-Voting, Voting and Reports Generation Processes.

The system is designed on a Database Management System (DBMS) platform. The Software was developed in Microsoft Access (MS Access).

A brief description of the forms and tables used for the design is as follows:

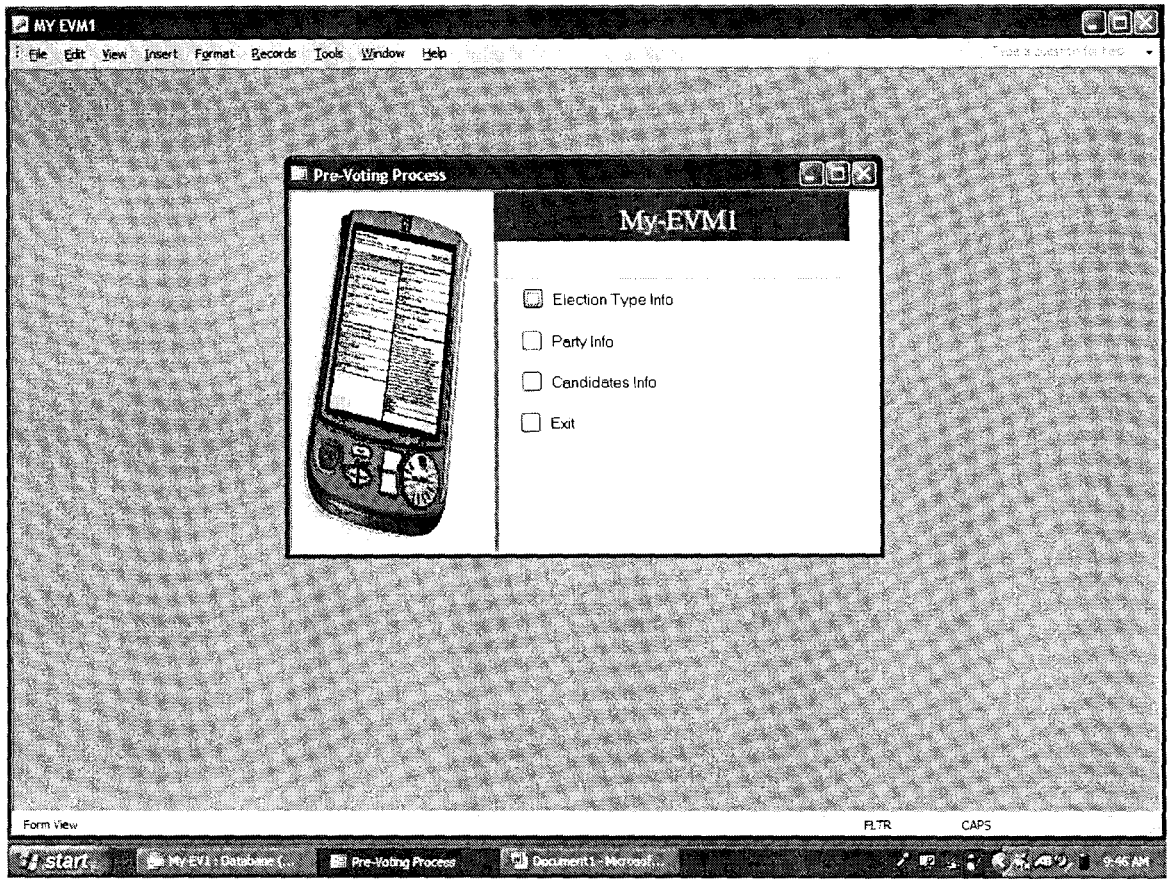
FORM SWITCHBOARD

This form is the entrance into the application, the main menu. It is the first screen that



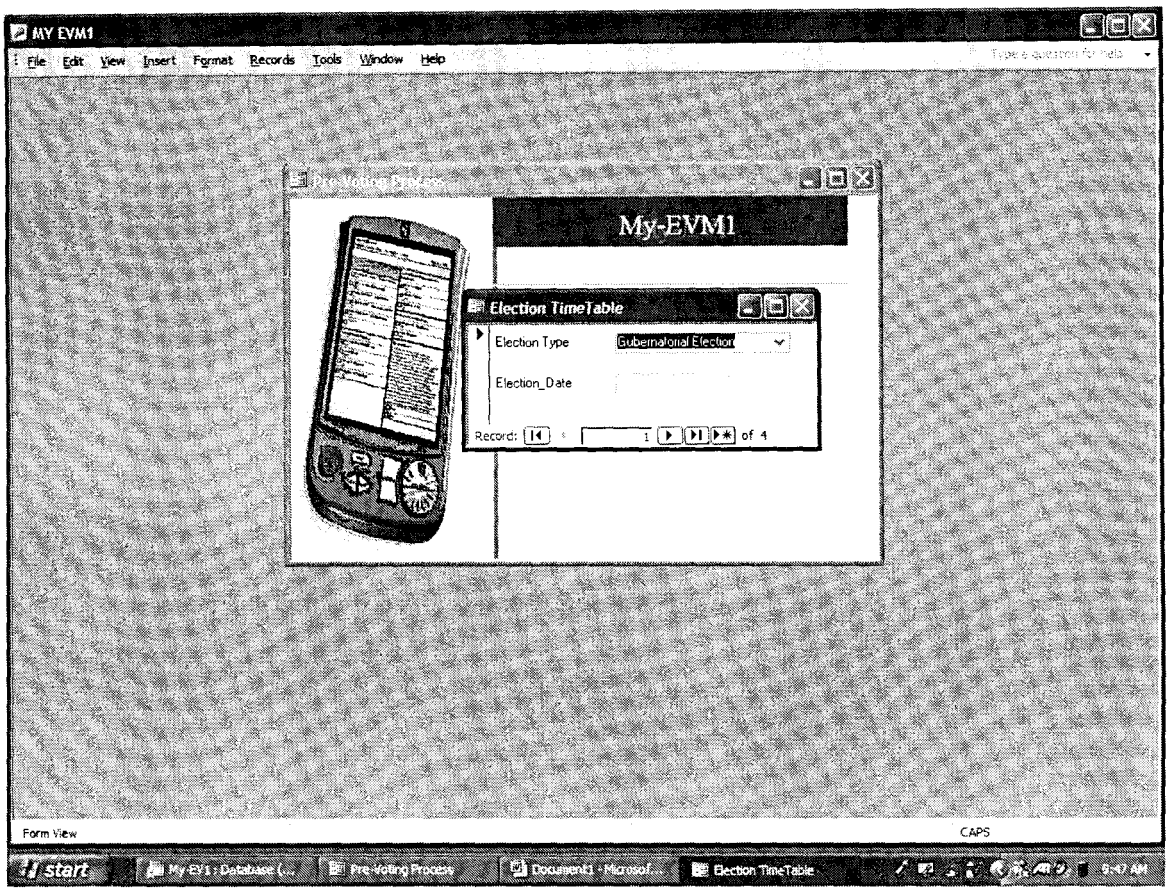
appears, launching the user into the system. It has four sub menus – Pre Voting, Voting, Reports Generation and a 'Quit' that takes one out of the system.

FORM PRE-VOTING PROCESS



This form shows the Pre-Voting Process sub-menu which consists of Election Type, Party Info, Candidates Info and the Exit buttons. These are the activities that take place before the Election Day.

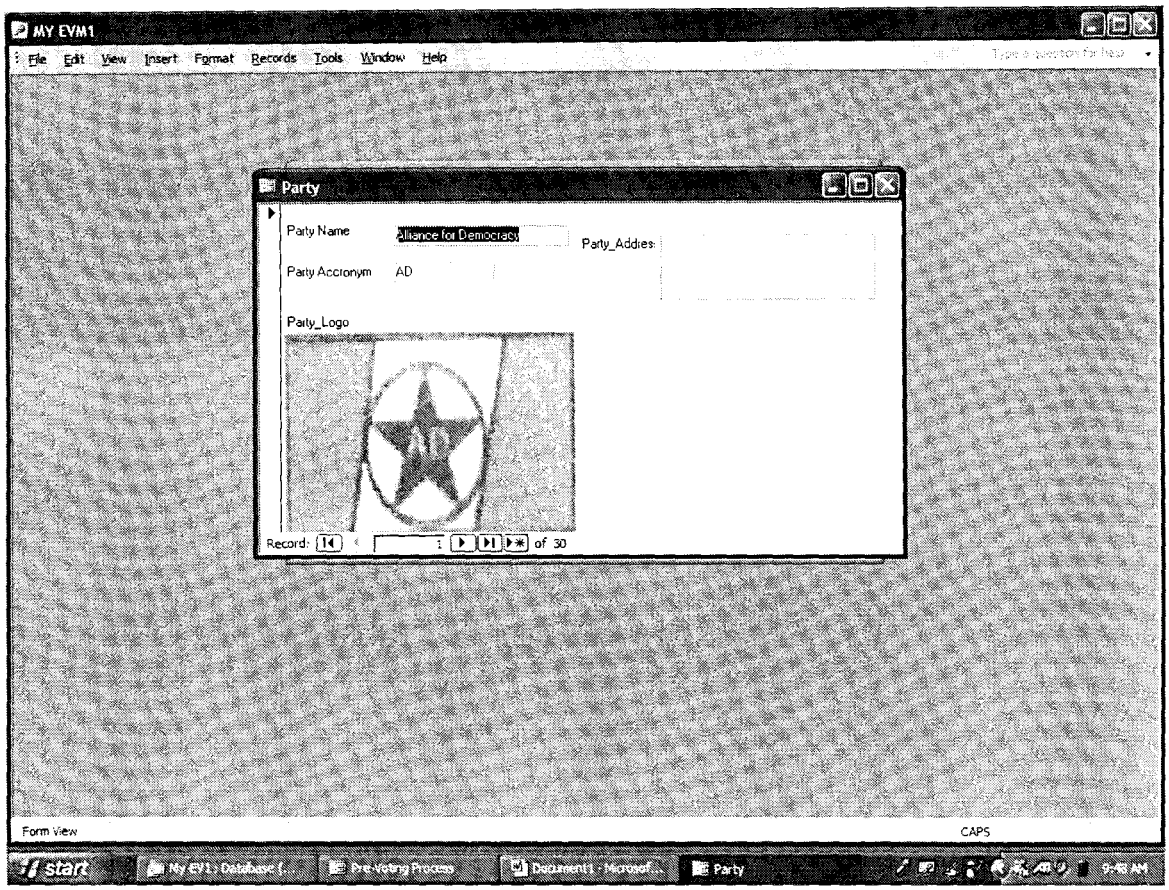
FORM ELECTION TYPE



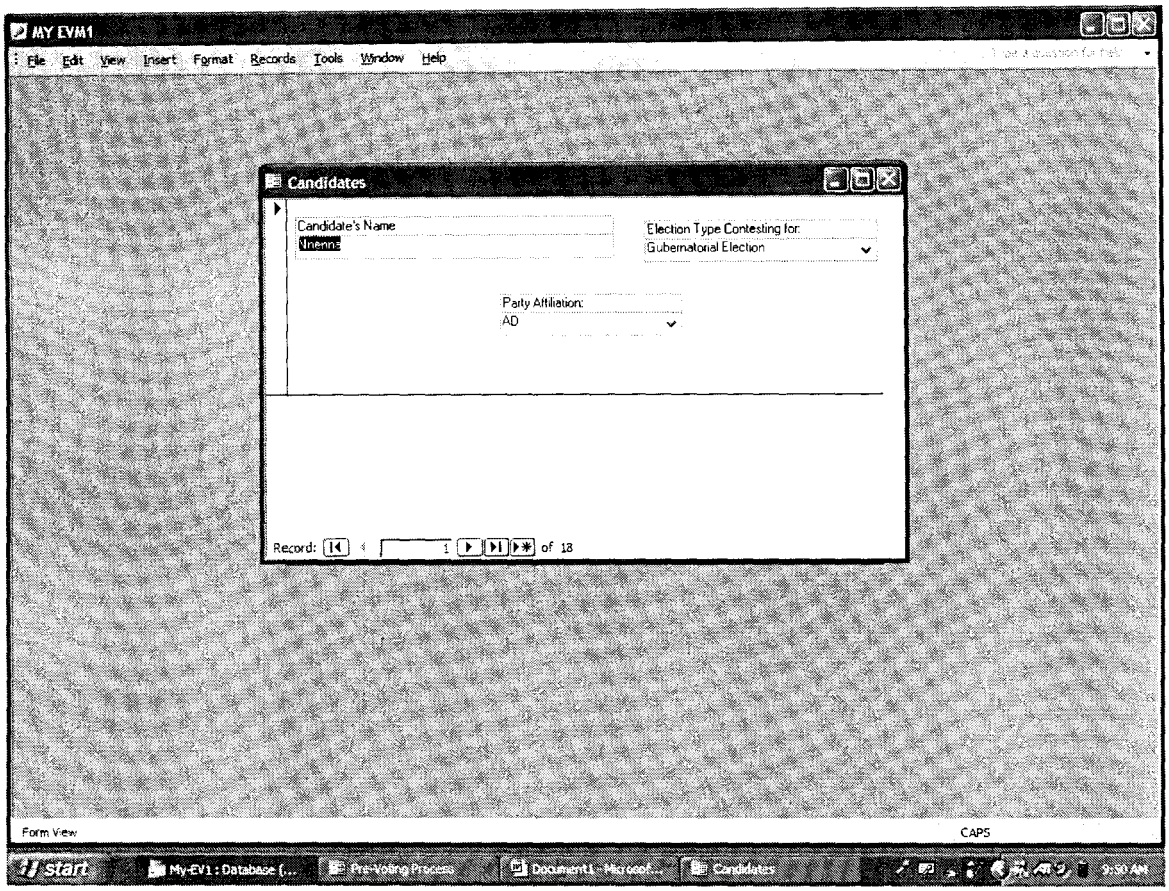
This form is used to set the election dates for each of the election type. On selection of the Election Type Info button, this screen is displayed. This screen shows the Election Type (Presidential, Gubernatorial, Senatorial, etc) and the Election Date that the election is to be conducted.

FORM PARTY

This form is the form used to input all political parties contesting for the elections. It captures information like the Party Name, Party Address, Party Acronym and Party Logo for all the registered political parties.

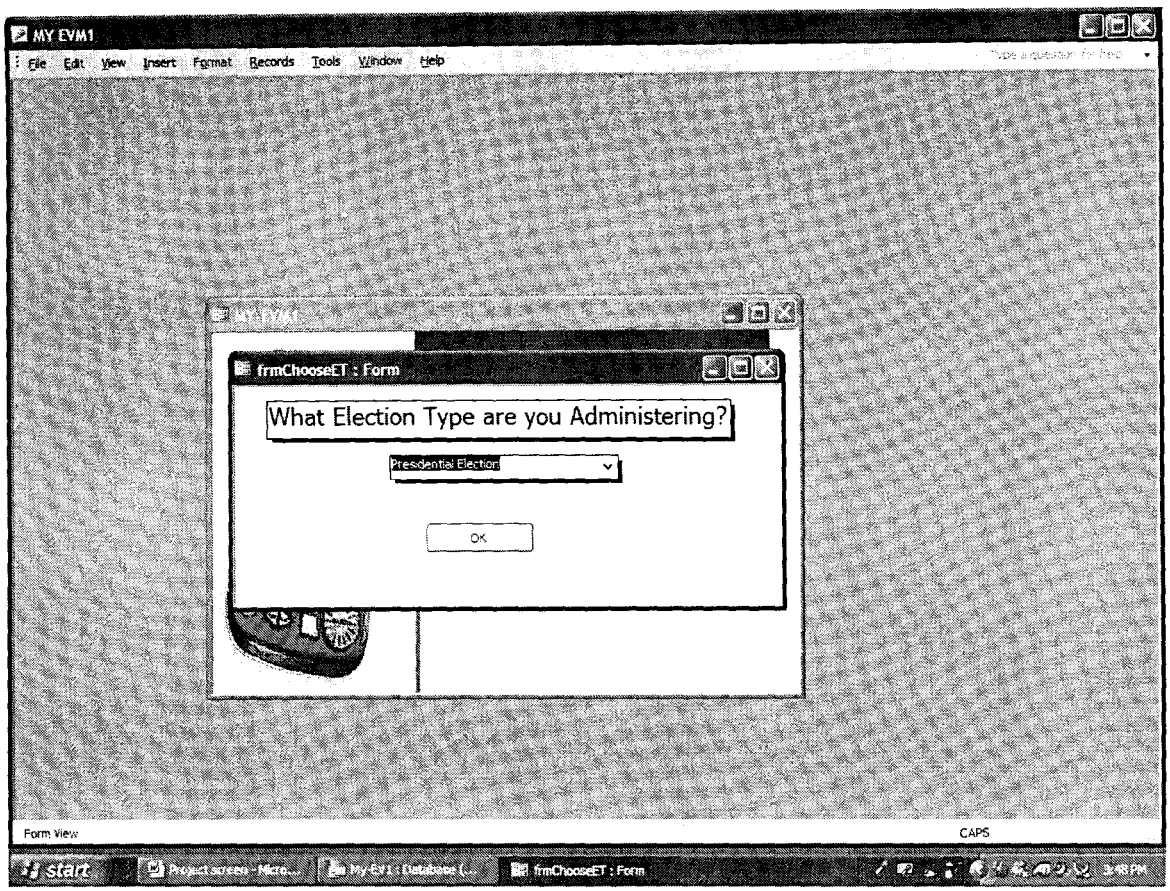


FORM CANDIDATES



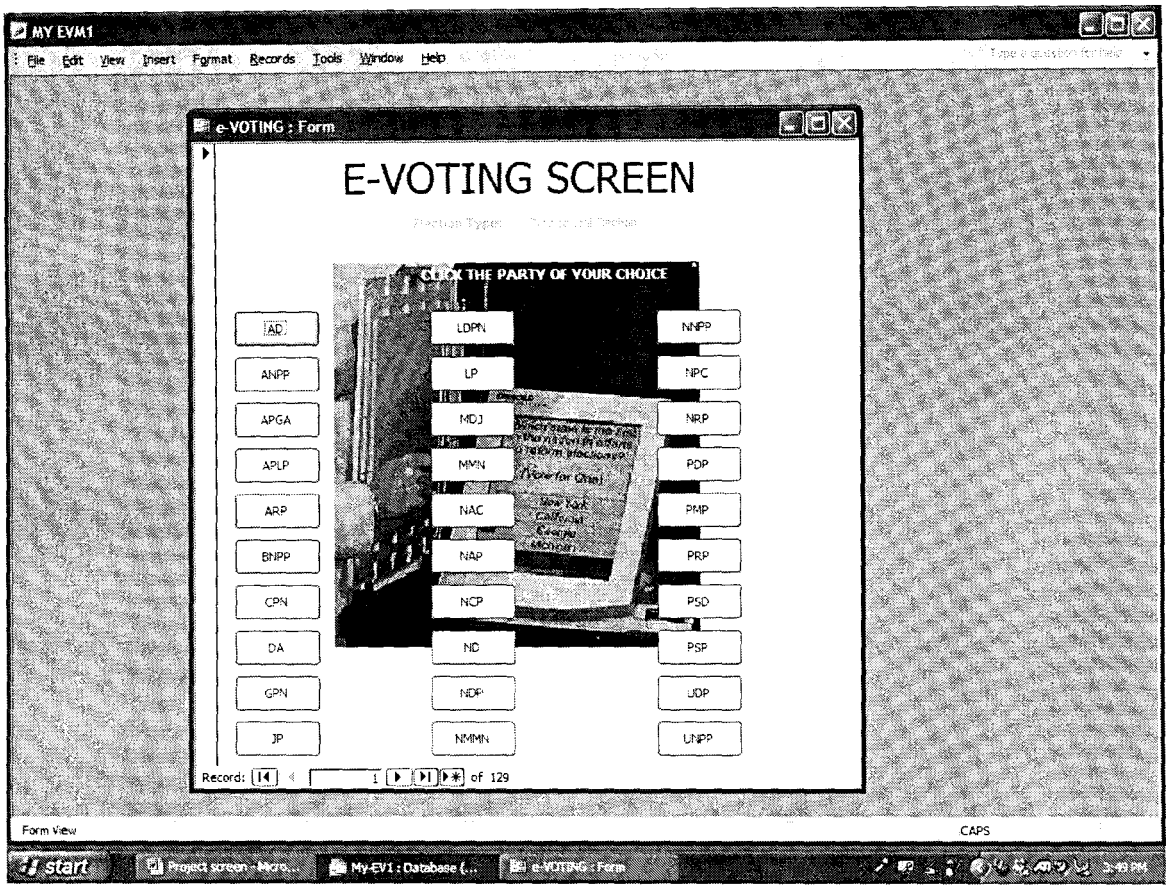
On selection of the Candidate button, the Candidate screen is displayed. Here the Candidate name, Election Type the candidate is contesting for and the particular party affiliation of that candidate is inputted from this screen. It is designed in such a way that no two candidates representing a party can be registered for an election. It ensures that ***only one candidate*** is registered for a party per election type.

FORM frmChooseET



This form allows the Presiding Officer or whoever is administering the Election to select the election type that is to be conducted. This machine is efficiently designed such that it can handle more than one election type and sort out the results amicably and correctly.

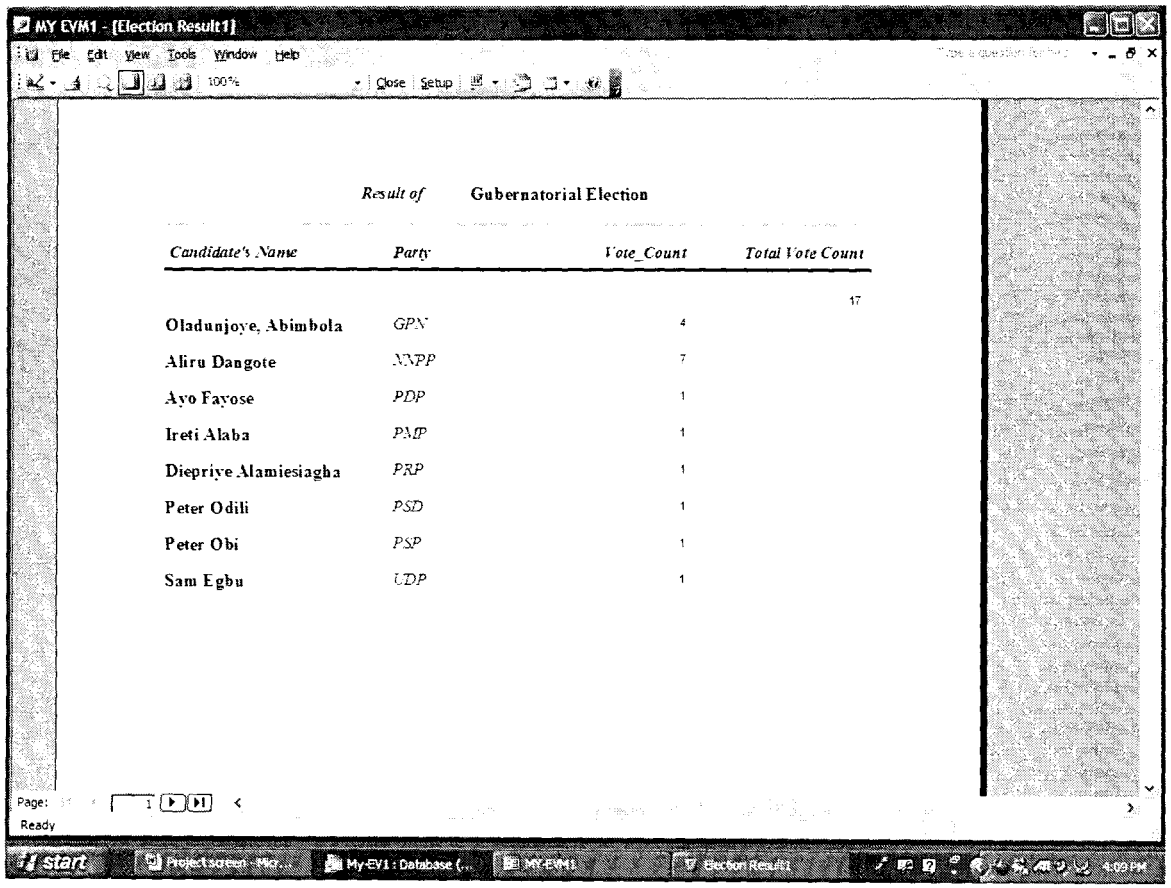
FORM e-VOTING



This is the e–Voting Screen. This is where the voter actually cast his vote by pressing the particular party name of his choice candidate. All the parties registered for the selected election type are displayed. After pressing a bottom of his choice, the other buttons are disabled and a beep sound is made if the voter tries to vote again. This is necessary so as to avoid multiple voting.

REPORTS GENERATION PROCESS

This is the only Post Voting process that takes place. After the close of polls for the day, the system counts the number of votes cast for each party on election type. It also sums and gives the total for each of the election type, displaying the total for each contestant against his name.



CHAPTER FIVE

5.0 GENERAL OVERVIEW

5.1 CONCLUSION

It is true that all the elections conducted in the past are done manually, however if Electronic Voting System is adapted, it will not only ensure a credibly and transparency election but also ensures the speedy production of election result as well as provide data for archiving purposes.

5.2 RECOMMENDATION

To Prevent Multiple Voting, Biometric Identification and voters photo on the voter's card is highly recommended.

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APPENDIX I

SOURCE CODES

FORM SWITCHBOARD

```
Option Compare Database

Private Sub Form_open(Cancel As Integer)
' Minimize the database window and initialize the form.

   ' Move to the switchboard page that is marked as the default.
   Me.Filter = "[ItemNumber] = 0 AND [Argument] = 'Default' "
   Me.FilterOn = True

End Sub

Private Sub Form_Current()
' Update the caption and fill in the list of options.

   Me.Caption = Nz(Me![ItemText], "")
   FillOptions

End Sub

Private Sub FillOptions()
' Fill in the options for this switchboard page.

   ' The number of buttons on the form.
   Const conNumButtons = 8

   Dim con As Object
   Dim rs As Object
   Dim stSql As String
   Dim intOption As Integer

   ' Set the focus to the first button on the form,
   ' and then hide all of the buttons on the form
   ' but the first.  You can't hide the field with the focus.
   Me![Option1].SetFocus
   For intOption = 2 To conNumButtons
      Me("Option" & intOption).Visible = False
      Me("OptionLabel" & intOption).Visible = False
   Next intOption

   ' Open the table of Switchboard Items, and find
   ' the first item for this Switchboard Page.
   Set con = Application.CurrentProject.Connection
   stSql = "SELECT * FROM [Switchboard Items]"
   stSql = stSql & " WHERE [ItemNumber] > 0 AND [SwitchboardID]=" &
Me![SwitchboardID]
```

```
    stSql = stSql & " ORDER BY [ItemNumber];"
    Set rs = CreateObject("ADODB.Recordset")
    rs.Open stSql, con, 1   ' 1 = adOpenKeyset

    ' If there are no options for this Switchboard Page,
    ' display a message.  Otherwise, fill the page with the items.
    If (rs.EOF) Then
       Me![OptionLabel1].Caption = "There are no items for this switchboard page"
    Else
       While (Not (rs.EOF))
          Me("Option" & rs![ItemNumber]).Visible = True
          Me("OptionLabel" & rs![ItemNumber]).Visible = True
          Me("OptionLabel" & rs![ItemNumber]).Caption = rs![ItemText]
          rs.MoveNext
       Wend
    End If

    ' Close the recordset and the database.
    rs.Close
    Set rs = Nothing
    Set con = Nothing

End Sub

Private Function HandleButtonClick(intBtn As Integer)
' This function is called when a button is clicked.
' intBtn indicates which button was clicked.

    ' Constants for the commands that can be executed.
    Const conCmdGotoSwitchboard = 1
    Const conCmdOpenFormAdd = 2
    Const conCmdOpenFormBrowse = 3
    Const conCmdOpenReport = 4
    Const conCmdCustomizeSwitchboard = 5
    Const conCmdExitApplication = 6
    Const conCmdRunMacro = 7
    Const conCmdRunCode = 8
    Const conCmdOpenPage = 9

    ' An error that is special cased.
    Const conErrDoCmdCancelled = 2501

    Dim con As Object
    Dim rs As Object
    Dim stSql As String

On Error GoTo HandleButtonClick_Err
```

```
    ' Find the item in the Switchboard Items table
    ' that corresponds to the button that was clicked.
    Set con = Application.CurrentProject.Connection
    Set rs = CreateObject("ADODB.Recordset")
    stSql = "SELECT * FROM [Switchboard Items] "
    stSql = stSql & "WHERE [SwitchboardID]=" & Me![SwitchboardID] & " AND
[ItemNumber]=" & intBtn
    rs.Open stSql, con, 1    ' 1 = adOpenKeyset

    ' If no item matches, report the error and exit the function.
    If (rs.EOF) Then
        MsgBox "There was an error reading the Switchboard Items table."
        rs.Close
        Set rs = Nothing
        Set con = Nothing
        Exit Function
    End If

    Select Case rs![Command]

        ' Go to another switchboard.
        Case conCmdGotoSwitchboard
            Me.Filter = "[ItemNumber] = 0 AND [SwitchboardID]=" & rs![Argument]

        ' Open a form in Add mode.
        Case conCmdOpenFormAdd
            DoCmd.OpenForm rs![Argument], , , , acAdd

        ' Open a form.
        Case conCmdOpenFormBrowse
            DoCmd.OpenForm rs![Argument]

        ' Open a report.
        Case conCmdOpenReport
            DoCmd.OpenReport rs![Argument], acPreview

        ' Customize the Switchboard.
        Case conCmdCustomizeSwitchboard
            ' Handle the case where the Switchboard Manager
            ' is not installed (e.g. Minimal Install).
            On Error Resume Next
            Application.Run "ACWZMAIN.sbm_Entry"
            If (Err <> 0) Then MsgBox "Command not available."
            On Error GoTo 0
            ' Update the form.
            Me.Filter = "[ItemNumber] = 0 AND [Argument] = 'Default' "
```

```
            Me.Caption = Nz(Me![ItemText], "")
            FillOptions

        ' Exit the application.
        Case conCmdExitApplication
            CloseCurrentDatabase

        ' Run a macro.
        Case conCmdRunMacro
            DoCmd.RunMacro rs![Argument]

        ' Run code.
        Case conCmdRunCode
            Application.Run rs![Argument]

        ' Open a Data Access Page
        Case conCmdOpenPage
            DoCmd.OpenDataAccessPage rs![Argument]

        ' Any other command is unrecognized.
        Case Else
            MsgBox "Unknown option."

    End Select

    ' Close the recordset and the database.
    rs.Close

HandleButtonClick_Exit:
On Error Resume Next
    Set rs = Nothing
    Set con = Nothing
    Exit Function

HandleButtonClick_Err:
    ' If the action was cancelled by the user for
    ' some reason, don't display an error message.
    ' Instead, resume on the next line.
    If (Err = conErrDoCmdCancelled) Then
        Resume Next
    Else
        MsgBox "There was an error executing the command.", vbCritical
        Resume HandleButtonClick_Exit
    End If

End Function
```

FORM e-VOTING

```
Option Compare Database
'Public ADChoice, ANPPChoice, APGAChoice, APLPChoice, ARPChoice, BNPPChoice,
CPNChoice As Integer
'Public DAChoice, GPNChoice, JPChoice As Integer

Private Sub cmdAD_Click()
    Party = "AD"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    DoCmd.GoToRecord , , acNewRec
    'ADChoice = ADChoice + 1
    'Beep
    Beeper
End Sub

ate Sub Beeper()
r i = 1 To 5
Beep
PauseTime = 0.25   ' Set duration.
Start = Timer   ' Set start time.
Do While Timer < Start + PauseTime
' DoEvents   ' Yield to other processes.
oop
i
b

Sub cmdANPP_Click()
= "ANPP"
_Count = 1
nd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
on_Type = ETChoice
nd.GoToRecord , , acNewRec

er

) cmdAPGA_Click()
"APGA"
acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
```

```
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdARP_Click()
    Party = "ARP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdBNPP_Click()
    Party = "BNPP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdCPN_Click()
    Party = "CPN"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdDA_Click()
    Party = "DA"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdGPN_Click()
    Party = "GPN"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdJP_Click()
```

```
    Party = "JP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdLP_Click()
    Party = "LP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    DoCmd.GoToRecord , , acNewRec
    Beeper
End Sub

Private Sub cmdLDPN_Click()
    Party = "LDPN"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    DoCmd.GoToRecord , , acNewRec
    Beeper
End Sub

Private Sub cmdMDJ_Click()
    Party = "MDJ"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdMMN_Click()
    Party = "MMN"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNAC_Click()
    Party = "NAC"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
```

```
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNAP_Click()
    Party = "NAP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNCP_Click()
    Party = "NCP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdND_Click()
    Party = "ND"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNDP_Click()
    Party = "NDP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNMMN_Click()
    Party = "NMMN"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdNNPP_Click()
    Party = "NNPP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
```

```
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub


Private Sub cmdNPC_Click()
    Party = "NPC"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    DoCmd.GoToRecord , , acNewRec
    Beeper
End Sub

Private Sub cmdNRP_Click()
    Party = "NRP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdPAC_Click()
    Party = "PAC"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdPDP_Click()
    Party = "PDP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    DoCmd.GoToRecord , , acNewRec
    Beeper
End Sub
Private Sub cmdPMP_Click()
    Party = "PMP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdPRP_Click()
```

```
    Party = "PRP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdPSD_Click()
    Party = "PSD"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdPSP_Click()
    Party = "PSP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdUDP_Click()
    Party = "UDP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub
Private Sub cmdUNPP_Click()
    Party = "UNPP"
    Vote_Count = 1
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    Election_Type = ETChoice
    Beeper
    DoCmd.GoToRecord , , acNewRec
End Sub

Private Sub Form_Load()
    Text21 = ETChoice
End Sub
```

FORM frmChooseET

```
Option Compare Database

Private Sub cmdOK_Click()
On Error GoTo Err_cmdOK_Click

    Dim stDocName As String
    Dim stLinkCriteria As String

    ETChoice = cboET
    stDocName = "e-VOTING"
    DoCmd.Close
    DoCmd.OpenForm stDocName, , , stLinkCriteria


Exit_cmdOK_Click:
    Exit Sub

Err_cmdOK_Click:
    MsgBox Err.Description
    Resume Exit_cmdOK_Click

End Sub
```

APPENDIX II

INTERVIEWEE & INTERVIEW QUESTIONS AND ANSWERS

INTERVIEW QUESTIONS AND ANSWERS

1. Does the present election system meet all election needs?

   (a) Yes (b) No (c) indifferent

2. Was the 2003 election free and Fair?

   (a) Yes (b) No (c) indifferent

3. Do you support the manual system of election?

   (a) Yes (b) No (c) indifferent

4. Do you support the Electronic Voting Machine Option?

   (a) Yes (b) No (c) indifferent

5. Do you think the EVM will reduce rigging?

   (a) Yes (b) No (c) indifferent

6. Do you think EVM will eliminate election fraud?

   (a) Yes (b) No (c) indifferent

7. Who is responsible for election fraud?

   (a) Ad-hoc Staff (b) INEC Staff (c) Political Parties