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Citizens' Readiness to Use Electronic Voting System in Oyo State, Nigeria

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Abstract **- The right to vote, which is identified as one of the fundamental human rights, encourages civic consciousness through political participation. Elections in Nigeria have been found to record low turnout, which has been partly attributed to problems identified with the traditional voting system used in the county. This study investigated the perception of Oyo state citizens about e-voting system, as well as their readiness to use the system. Descriptive survey research design was adopted. Questionnaire data was collected from 390 respondents, while 20 respondents were also interviewed. Questionnaire data were analysed using the Statistical Package for Social Sciences and presented using descriptive statistics in form of frequency, percentage, mean and standard deviation. The interview data was analysed using Nvivo software, version 10. Findings reveal that citizens perceived the current voting system as stressful and not transparent, and that e-voting system would be better than the present voting system because of the advantages associated with technology use. The citizens are ready to use e-voting system, if adopted by Nigerian government. The study recommends that Nigerian government could adopt and implement e-voting system to reduce the huge financial expenses associated with conduct of elections, as well as some other challenges that have been associated with elections in Nigeria.**
Keywords: **Citizens' Readiness, Electronic Voting, Nigeria, Political Participation**

I. INTRODUCTION

The world is in the era of globalization as Information and Communication Technologies (ICT) is greatly affecting all aspects of life. ICT adoption and use is now considered one of the basic building blocks of modern society; consequently, many institutions have adopted and integrated the tools in their operations in order to meet up with the challenges of modernisation and globalisation. One of the areas ICT has been deployed is governance, resulting into many countries operating electronic democracy (e-democracy). E-democracy is umbrella term that covers many democratic activities carried out through electronic means (Garson, 2006), to improve efficiency, equity, and quality of democratic participation. The applications of e-democracy include mechanisms to inform, consult, interact and broadly engage citizens through ICT use in political processes. Clift (2004) explains that e-democracy builds on e-governance and focuses on the actions and innovations enabled by ICT, combined with higher level of democratic motivation and intent, to bring improvement into democratic processes, such as the electoral process. The electoral process is described as the pillar of democracy because it gives the right to govern by consent. The electoral systems formulate rules that translate individual votes into seats, and, therefore, affect the representation of society's interests in governance and policy making (Uzedhe & Okhaifoh, 2016).

Election is an important element of the electoral process where citizens decide how they wish to be governed and who will be their representatives (Ayo & Ekong, 2008). Elections guarantee political participation and competition, which in turn are pivotal to democratic transition and consolidation. Elections are also central to the institutionalisation of orderly succession in a democratic setting, creating a legal-administrative framework for handling inter-elite rivalries (Arnold, 1988). This means that elections are important for the institutionalisation of the three core foundations of democracy which are participation, competition and legitimacy (Staffan, 2004). In view of the fact that elections are central to democracy, they must not only be free and fair, but efficient, transparent, cost-efficient, and credible to the electorates in order for the results to be acceptable as Omotola (2010) opined that elections are meaningfully democratic if they are free, fair, participatory, competitive, and legitimate.

Voting is one significant way through which elections are conducted. It allows the citizens of a country to express their opinion of choice on their political preference in the electoral process. The act of voting is common in democratic societies and is used as a method through which people express willingness in choices of leadership. The traditional voting system has been used in carrying out election for decades. The process involves eligible voters casting their votes by inserting a ballot paper into a sealed box. Bertrand and Nana (2010) identify the process of traditional voting system as an expensive and complex venture which begins with the registration of political parties (and their candidates interested in participating) in the elections, and the voter registration period whereby citizens who are eligible are required to present themselves at the various registration centres and get registered for the upcoming elections. After registration, a voter's identity card is issued to the individual, which has to be kept safe until elections' days. It is, however, to be noted that although this process seems straightforward and easy, it is actually stressful and time consuming, thereby discouraging a large number of citizens to cast their votes. This traditional voting system involves hand-counted paper

ballots, which takes a lot of time and efforts to complete. This result in a number of problems which includes: unacceptable percentages of lost, stolen, or miscounted ballots; votes lost through unclear or invalid ballot marks; ballot box hijack, limited accommodations for people with disabilities, few to no means for voters to self-correct mistakes, and other malpractices. Achieng and Ruhode(2013), as well as Uzedhe and Okhaifoh (2016) identify other problems associated with the traditional voting system such as costs of physical ballot papers and other auxiliary expenses, electoral delays, stressful distribution of electoral materials and lack of confidence in the electoral management process.

These challenges, and many others, have been associated with the traditional voting system used in Nigeria, which have led to disputed general elections and consequently several litigations to challenge the outcome of elections at different levels across the country. Odusote (2014) observes that the Nigerian political and electoral process lacks transparency and is always characterised by banditry, rigging, ballot stuffing, candidate imposition and other vices because some candidates scheme to ensure a favourable outcome, by hook or crook. Jega & Ibeanu (2007); Kuye, Coker, Ogundeinde, and Coker (2013) also observe that elections in Nigeria have historically been conflict ridden. The current system of voting requires people to be present at polling units physically and queue for hours to get the chance to vote. Past elections have also been noted for violence, riot, molestation, abductions and assassinations. Other problems that manifest during elections in Nigeria include multiple voting, staffing of ballot boxes with ballot papers, absconding with ballot boxes, mutilation of election result sheets, and falsification of election results. Hence, election period in Nigeria is always a period of anxiety, palpable fear, and violence. These have made some Nigerians unwilling to participate in elections as some even migrate or relocate in anticipation of electoral violence.

The use of manual voting systems, such as the paper ballot, has not satisfied the need due to human errors, malpractices, and is also usually very expensive to run. In order to overcome some of these challenges, the concept of e-voting was introduced, where people are allowed to vote over the Internet. In actual fact, one of the aspects of e-democracy is the introduction of electronic voting (e-voting), which is gaining ground in many democratic settings. E-voting, describes as one of the pillars of e-democracy, refers to the use of computers or computerized voting equipment to ease and to tabulate ballots in an election in a trustable manner. The term is used for the variety of different ways of voting where the voter's intention is expressed and collected using the electronic methods.

Alomari (2016) defined e-voting as the application of appropriate ICTs, such as computers and the Internet, to provide citizens with an effective and efficient way to cast their votes electronically. It is a voting system in which the election data of registered citizens are captured, recorded, stored and processed as digital information for the purpose of conducting elections (Mensah, 2016). Today, different nations have turned to the use of e-voting systems as they have been able to modernise the electoral processes. Electorates are now able to cast their votes through electronic devices as against the traditional manual system.The e-voting system has many advantages over the traditional paper-centred way of voting. Many studies (e.g. Alausa & Akingbade, 2017; Ayo, Adebayo, & Sofoluwe, 2008; Inuwa & Oye, 2015; Ishaq, Osman, Shittu, & Jimoh, 2013; Kumar &Walia, 2011; Mensah, 2017; Uzedhe & Okhaifoh, 2016; Wolf, Nackerdien &Tuccinardi, 2011) have brought to fore various advantages associated with e-voting system. E-voting system helps reduce quite a lot of manpower and time in conducting elections and announcing results.

It saves materials required for printing and distributing ballots, thereby saving costs. The system also helps reduce electoral malpractices and many problems associated with the traditional voting, such as inconveniences, unfairness, non-mobility, fraud and manipulation by politicians, stress, violence, kidnapping, among others. It also helps to curb rigging, as well as prevent fraud during the transmission and tabulation of results.

In addition the system speeds up processing of results; increases the speed and accuracy of ballot tabulation; provides more accurate results as human error is excluded; provides efficient handling of complicated electoral systems formulae that require laborious counting procedures; and improves presentation of complicated ballot papers. Other benefits include easy accessibility and casting of ballots for voters thereby potentially increases participation and voters' turnout. It also provides accessibility for housebound voters, people with disabilities, as well as voters living abroad.

Above all, e-voting is more attuned to the needs of an increasingly technology driven and mobile society. Prior to 2015, elections in Nigeria had been conducted using the manual method of voting. Not surprisingly, these elections have always been plagued by irregularities, rigging, and other forms of electoral malpractices, as well as riots which often lead to loss of lives and properties. In 2015, during the general elections, Nigeria's electoral body, the Independent National Electoral Commission (INEC), introduced the use of biometric card reader for the verification of permanent voter's identification card. By taking this stride, the country joined the league of countries that have utilised biometric identification systems for voters' identification.

The decision to adopt the use of ICT tools was the result of part of the recommendations of the Registration and Election Review Committee, a committee of experts on electoral issues, inaugurated by INEC in 2011. Smart card readers (SCRs), a low power consumption technological device running on the android operating system, were utilised for accreditation of voters, via authenticating and confirming permanent voter's cards (PVC). The PVC has a

chip embedded into it to verify and authenticate prospective voters by comparing the biometrics, earlier obtained and stored in the database during registration, with that of the voter on the spot. This development made Nigerians to witness partial use of e-voting system to complement the manual method.

Before the general elections, INEC test-ran the smart card readers in twelve states of the federation. Unfortunately, most of the problems encountered during the test run were still experienced during the elections. For instance, some of the card readers broke down and were not able to perform their intended purposes. Others showed blank screens, while others had subscriber identification module (SIM) issues. Even at the centres where the card readers worked and were able to display the correct voter's information from the PVCs, the verification of voters using their biometrics was very difficult (Adebayo, 2015). Some centres also experienced electricity problems which made it difficult to charge the card readers.

It should be noted that the introduction of the biometric card readers into Nigeria's general elections did not totally eliminate multiple voting which is a problem associated with the traditional voting system. However, in spite of these shortcomings, the introduction of the biometric card reader gained a wide acceptance among Nigerian voters and increased voters' confidence in the electoral processes (Adebayo, 2015; Eribake, 2015). The deployment also rekindled the confidence of international observers and development partners in INEC. Reports from many accredited media organisations, as well as international observers like Commonwealth, European Union, African Union, Economic Community of West African States, National Democratic Institute, International Republican Institute, International IDEA, International Foundation for Electoral System, Election Observer Mission, etc. attest to the fact that the elections were more peaceful and credible than the previous elections (Nwangwu, 2015). It was, however, noted that the report of the just concluded Nigeria's elections in Nigeria in February 2019 reveal a very low voters turnout.

This apathy has been attributed to many of the challenges that have been highlighted. There is no doubt that the adoption of e-voting system may help alleviate some of the challenges associated with the current voting system in Nigeria. Studies (e.g. Alausa & Akingbade, 2017; Amuzie, 2015; Ayeni & Esan, 2018; Ayo, Adebiyi, & Sofoluwe, 2008; Inuwa & Oye, 2015; Okediran & Ganiyu, 2015; Osho, Yisa, & Jebutu, 2015) have highlighted the benefits of adopting e-voting for elections in Nigeria. Tella and Gbolahan (2012) study also gives an exposition into the perception of some academics regarding the suitability and adequacy of e-voting in the Nigeria polity. It is, however, noted that there has been no known empirical study to ascertain the readiness of the citizens in using the system. This is considered necessary in technology acceptance and in a country where ICT skill of citizens is still very low. It is on this premise that this study was constituted in order to know the perception of Nigerian citizens and their readiness to use the e-voting system so as to provide a basis for the INEC on the need to start thinking of implementing e-voting system in Nigeria.

The study answered the following research questions:

1. What are Oyo state citizens' perceptions about Nigeria's current voting system?
2. How do Oyo state citizens perceive e-voting system?
3. What are the citizens' perceptions about the adoption of the e-voting system in Nigeria?
4. Are Oyo State citizens' ready to use e-voting system?

II. METHODOLOGY

The study adopted the descriptive survey research design. The population consisted of all respondents who are of voting age (18 years and above) and were resident in Oyo state, Nigeria. The exact population for this category of people could not be obtained as the list of current eligible voters in Oyo State could not be got. The registration of voters done by the INEC for the 2019 elections only reveal about 2,934,107 registered voters as opposed to population of eligible voters in Oyo state which is 3,481,200. Hence, dependence on the list could leave out some eligible voters whose opinions and perceptions could be valuable for this study. Oyo state has 33 local government areas (LGAs) and 35 local council development areas

(LCDAs). Multistage sampling technique was used to select the samples. First, the LGAs and LCDAs were grouped into five geographical zones. The zones are Ibadan zone, Ogbomoso zone, Oyo zone, Oke-Ogun zone and Ibarapa zone. Two LGAs or LCDAs were randomly selected from each of the five zones through the ballot process. The LGAs and LCDAs selected are Ibadan South-West LGA, Lagelu LGA, Iseyin LG, Saki West LGA, Olorunsogo LGA, Ogbomoso Central LGA, Afijio LGA, Soro LCDA, Ibarapa East LGA and Ibarapa North-West LCDA. Thereafter, convenience sampling was used to select 50 respondents from each of the LGA or LCDA, giving a sample size of 500. In addition, interview sessions were conducted with 20citizens who were also conveniently selected from each of the LGA or LCDA. Preference was however given to citizens who were not literate and could to fill the questionnaire.

Data was collected with structured questionnaire and face-to-face interview. The questionnaire contains33 questions divided into five sections. The items measured on five-point Likert scales, were constructed by the researchers. Check-list questions were incorporated to ascertain respondents understanding of the questions. The interview complemented the questionnaire because interviews are generally useful in obtaining detailed information about personal feelings, perceptions and opinions. It allowed the respondents to express themselves in their own words and

gather more information that were not included by the researchers. The interview guide comprises 14 questions. Content and face validity of the instruments were established by two lecturers from Africa Regional Centre for Information Science and the department of Political Science, University of Ibadan. Pilot test was conducted with 28 respondents from Osogbo in Osun state, which is outside the scope of the study, to validate the questionnaire items. The internal consistency was established through Cronbach Alpha test of reliability with the overall alpha equals 0.704, which signifies that the instrument is reliable. The results for the constructs are as shown in Table I.

TABLE I CRONBACH ALPHA RESULTS

Items	Number of Measurement Items	Cronbach Alpha Results
Perception about the current voting system	5	0.792
Perception about e-voting system	5	0.787
Perception about adoption of e-voting system in Nigeria	8	0.736
Readiness to use	5	0.857

Copies of questionnaire were administered at the LGAs/LCDAs with the aid of research assistants. The researchers and the assistants visited offices, homes, schools, churches, banks and market places. Copies of questionnaire were given and respondents asked to fill and return immediately. Those that could not fill immediately gave appointments; hence, return visits were made to retrieve the questionnaire. Citizens who could not understand and fill the questionnaire were, however, interviewed and their responses were recorded using a phone recorder.

Data collected was done in April 2019, and lasted three weeks. However, data administration was a bit difficult and stressful due to the fact that some respondents refused to collect the instruments, some complained about the length of the instrument, while some said they were not interested. However, majority were happy with the study, hence showed enthusiasm. A total of 500 copies of questionnaire were administered, 434 were retrieved and 390 were properly filled and considered good for analysis. Twenty respondents were interviewed.

Questionnaire data were analysed using SPSS (Statistical Package for Social Sciences) and presented using descriptive statistics in form of frequency, percentage, mean and standard deviation. The interview data was analysed using Nvivo software, version 10. Before the data collection, ethical issues were put into consideration. This include providing adequate information about the study to respondents, obtaining informed consent from them, and making them understand they were not under compulsion to participate in the study.

The study also incorporated total confidentiality as respondents' were not asked to disclose their identities. The research was also devoid of any form of plagiarism as all sources were fully acknowledged. In addition, the researcher avoided faulty data gathering by ensuring that data were only collected from participants that met the requirements of the study.

III. RESULTS AND DISCUSSION OF FINDINGS

This section presents the results and discussion in line with the research objective and questions.

A. Results of frequency and percentage distribution of the variables

This presents the frequency and percentage distribution of the variables. Demographic distributions of the respondents are presented in Table II. Table II reveals that more males (52.6%) than females (47.4%) were represented in the study. Respondents within the age range 21-30 constituted the majority (33.1%). Most had employments (56.2%), with tertiary level of education (79.7%). In addition, all the LGAs/LCDAs had good representation, while majority (84.6%) had participated in previous voting exercises.

B. Answers to Research Questions

This section presents answers to the research questions. The responses were collected on 5-point Likert scale (strongly agree, agree, not sure, disagree, strongly disagreed), but compressed into the following three points (agree, not sure, disagree) to explain and interpret the results.

Research Question One: What are Oyo state citizens' perceptions about the current voting system?

The results for the first research question are presented in Table III. Findings reveal that majority of the citizens agreed to the items used to measure their perceptions: *the current voting system involves going through a lot of stress* (82.1%), *the current voting system is archaic and does not encourage mobility of voters* (80.9%), *the current voting system allows for rigging and manipulation of votes*

(72.7%) and *the current voting system is time wasting and tedious* (72.3%). In addition, 80.1% disagreed to the statement that *the current voting system encourages fairness in the results*.

The responses show clearly that the citizens had negative perception about the current voting system. The mean result shows that the item "*the current voting system involves going through a lot of stress*" has the highest mean score (4.03), while the item "*the current voting system encourages fairness in the results of the election*" was ranked lowest (1.97). This implies that majority of the respondents agreed that the current voting system involves going through a lot of stress, while fewer respondents agreed that the current voting system encourages fairness in the results of the election.

TABLE II FREQUENCY DISTRIBUTION OF DEMOGRAPHIC PROFILE OF RESPONDENTS

Demographic Variables	Frequency (N= 390)	Percentage
Sex		
Male	205	52.6
Female	185	47.4
Age		
18-20	73	18.7
21-30	129	33.1
31-40	83	21.3
41-50	70	17.9
51-60	33	8.5
Above 60	2	0.5
Work Status		
Student	142	36.4
Employed	219	56.2
Not Employed	29	7.4
Level of Education		
Primary School	7	1.8
Secondary School	69	17.7
Tertiary School	311	79.7
Didn't attend school	3	0.8
LGA/LCDA		
Ibadan South West LGA	34	8.7
Lagelu LGA	50	12.8
Saki West LGA	26	6.7
Iseyin LGA	40	10.3
Soro LCDA	48	12.3
Olorunsogo LGA	20	5.1
Ogbomoso Central LGA	30	7.7
Afijio LGA	42	10.8
Ibarapa East LGA	50	12.8
Ibarapa North West LCDA	50	12.8
Participation in previous voting exercises		
Yes	330	84.6
No	60	15.4

TABLE III PERCEPTION OF CITIZENS ABOUT NIGERIA'S CURRENT VOTING SYSTEM

	SA (%)	A (%)	NS (%)	D (%)	SD (%)	N	Mean	Std. Dev.
The current voting system involves going through a lot of stress	143 (37.5)	170 (44.6)	21 (5.5)	30 (7.9)	17 (4.5)	381	4.03	1.07
The current voting is archaic and does not encourage mobility of voters	145 (37.6)	167 (43.3)	21 (5.4)	44 (11.4)	9 (2.3)	385	4.02	1.05
The current voting system allows for rigging and manipulation of votes	122 (31.7)	158 (41.0)	34 (8.8)	50 (13.0)	21 (5.5)	385	3.81	1.18
The current voting system is time wasting and tedious	156 (40.4)	123 (31.9)	19 (4.9)	50 (13.0)	38 (9.8)	386	3.80	1.35
The current voting system encourages fairness in the results of the election	0	3 (0.8)	73 (19.1)	219 (57.3)	87 (22.8)	382	1.97	0.65

Legend:SA = Strongly Agree, A=Agree, NS = Not sure, D = Disagree, SD =Strongly Disagree

In addition, responses from the interview corroborated the questionnaire responses as majority of the respondents also had negative perceptions about the current voting system.

Some of their responses are presented in Figure 1, which include the word cloud representation and screenshot of their answer' categories (Figures 1a and 1b):

> It is not convenient because we have to stay on the queue under the sun to vote (Electrician, Age 24, Soro LCDA).
>
> It is time wasting and tedious (Trader, Age 29, Ibarapa East LCDA).
>
> To me, the present voting system is not efficient. It gives room for manipulations (Hair-dresser, Age 51, Olorunsogo LGA).
>
> It is somehow stressful and that's why I don't bother to get my voter's card. The issue of standing under the sun and at the end of the day, one's votes will be given to someone else or another party, that's why I have not been participating (Food vendor, Age 36, Iseyin LGA).

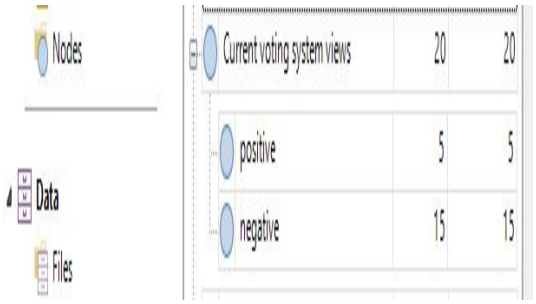

Fig. 1a Word cloud frequency for perceptions of citizens about the current Nigeria'svoting system

The central themes identified under the citizens' perception of the current voting system are stressful, manipulation, risky, time wasting, rigging, tedious, corruption, etc. which corroborate the responses from the questionnaire.

The findings reveal that voters in Oyo state see the present voting system as stressful, time wasting, tedious, full of manipulations, and not credible.

This implies that the current voting system in Nigeria is no longer acceptable to majority of the citizens in Oyo state. This may be the reason why there is usually apathy and low voters' turnout during elections in Nigeria as citizens have lost interest and confidence in the current voting system.

Therefore, it is expedient for the government to improve on the present voting system in order to boost electorates' confidence and encourage more voters' turnout, or consider the adoption of e-voting system because of its advantages.

Research Question Two: How do Oyo state citizens perceive e-voting system?

Findings from Table IV on the perceptions of the citizens about e-voting system reveal that majority of the respondents had positive perception about the e-voting system; 91.5% agreed that *e-voting allows citizens to cast their votes from anywhere*;

84.6% agreed that *e-voting has no fear of stress and riot that are usually associated with the current voting system;*83.1% agreed that *e-voting is not time-consuming*, while 74.3% agreed that *e-voting has no human manipulations on vote counts and electoral results*.

In the same vein, 82.0% disagreed that *e-voting is not transparent and the results cannot be accessed easily and quickly*. The mean resultsshow that the item "*e-voting will allow citizens to cast their votes from anywhere*"have the highest mean score (4.44), which further reveals the positive and favourable perceptions of majority of the citizens to e-voting system.

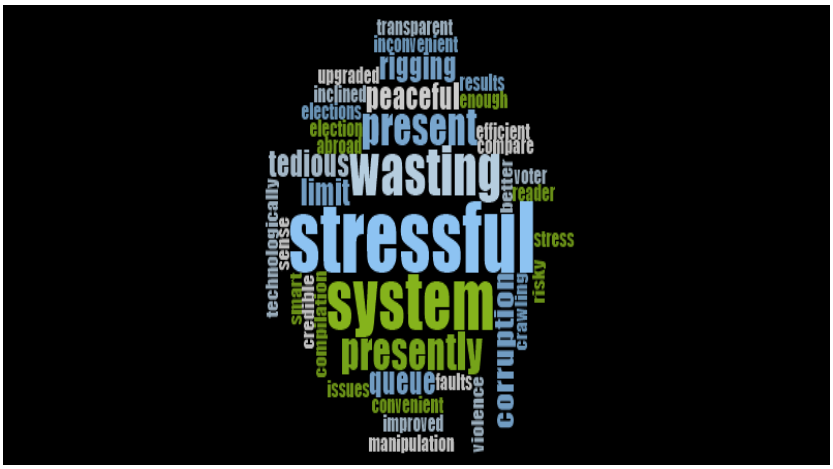

Fig. 1b Word cloud representation for perceptions of citizens about the current Nigeria's voting system

TABLE IV PERCEPTION OF CITIZENS ABOUT E-VOTING SYSTEM

	SA (%)	A (%)	NS (%)	D (%)	SD (%)	N	Mean	Std. Dev.
E-voting allows citizens to cast their votes from anywhere	226 (58.4)	128 (33.1)	16 (4.1)	11 (2.8)	6 (1.6)	387	4.44	0.83
With e-voting system, there is no fear of stress and riot that are usually associated with the current voting system	208 (53.3)	122 (31.3)	26 (6.7)	18 (4.6)	16 (4.1)	390	4.27	1.02
E-voting is not time-consuming	195 (50.6)	125 (32.5)	23 (6.0)	25 (6.5)	17 (4.4)	385	4.18	1.09
E-voting has no human manipulations on vote counts and electoral results	159 (41.3)	127 (33.0)	52 (13.5)	31 (8.0)	16 (4.2)	385	3.99	1.12
E-voting system is not transparent and the results cannot be accessed easily and quickly	6 (1.6)	11 (2.9)	52 (13.5)	216 (56.1)	100 (25.9)	385	1.92	0.66

Legend: SA = Strongly Agree, A=Agree, NS = Not sure, D = Disagree, SD = Strongly Disagree

In addition, responses from the interview reveal that majority of the respondents had positive perception about e-voting system.

Some of their responses are presented, which include the word frequency and word cloud representation (Figure 2a):

> E-voting system will make the voting process easy and fast. People can vote anywhere and there won't be violence (Trader, 49 years, Saki West LGA).
>
> There will be convenience and less stress for citizens with e-voting. People can cast their votes from anywhere (Trader, 33 years, Soro LCDA).
>
> I believe e-voting is good, fast and efficient because of the technologies that are involved (Plumber, 28 years, Ibadan South West LGA).
>
> The major benefit is transparency because votes are counted by machine and machines don't make mistake (Retiree, 67 years, Ibarapa East LCDA).
>
> I don't think e-voting system will allow for rigging. That, I think, is why our politicians don't like it to be used in Nigeria.
>
> But I think if our leaders like this country, they should adopt it for our elections (Police officer, 45 years, Ogbomoso Central LGA).

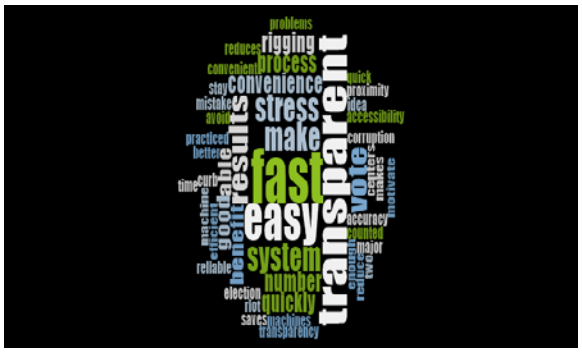

Fig.2a Word cloud representation for perception about e-voting system

The central themes identified under the citizens' perception of e-voting system are easy, fast, quickly, convenience, accuracy, transparency, accessibility, etc. which are in agreement with the responses from the questionnaire. It shows the citizens had positive and favourable disposition towards e-voting system. This corroborates the findings of Folarin, Ayo, Oni and Gberevbie (2014), where their study also found that citizens perceived e-voting to be of benefits such as reducing risk of mechanical error, ensuring that people's votes are counted correctly, increasing voter's comfort and needs and having timely election results. It also supports the findings of Herrnson*et al*, (2008) in Maryland, Michigan and New York, on voters' evaluations of e-voting systems, where the respondents the voters were more confident that their votes would be recorded accurately by the paperless touch-screen systems. A study by Tella and Gbolahan (2012) which was carried out among academic staff in the South West Nigerian universities also revealed the advantages of e-voting system which include ease of voting, ease of votes counting, electoral vote fraud prevention, and cost reduction.

Research Question Three: What are Oyo state citizens' perceptions about the adoption of the e-voting system in Nigeria?

Responses for research question three are presented in Table V. The results show that majority of the citizens had positive perceptions about the adoption of e-voting system in Nigeria. About 78.0% agreed that e-voting system will save Nigerian government a lot of money, 74.3% agreed that Nigeria is ripe to adopt e-voting system, 48.5% agreed that electoral body does not have the require skill set and ICT resources to support and manage e-voting implementation, 47.6% agreed that e-voting system is too technologically advanced to be encouraged in Nigeria, 49.6% agreed that e-voting system is only for literates and so not everyone can use it, 43.9% agreed that e-voting system involves a lot of technological expertise which the electoral body cannot provide, 42.4% agreed that e-voting system cannot solve electoral problems in Nigeria, while less than 1% agreed that e-voting system would decrease the turnout of voters. The item "*e-voting system will save the government a lot of money incurred from the present voting system" has the highest mean score* (3.99).

TABLE V PERCEPTION OF CITIZENS ABOUT THE ADOPTION OF E-VOTING SYSTEM

Items	**SA (%)**	**A (%)**	**NS (%)**	**D (%)**	**SD (%)**	**N**	**Mean**	**Std. Dev.**
E-voting system will save the government a lot of money incurred from the present voting system	139 (36.5)	159 (41.7)	41 (10.8)	23 (6.0)	19 (5.0)	381	3.99	1.08
Nigeria is ripe to adopt e-voting system	157 (40.5)	131 (33.8)	43 (11.1)	34 (8.8)	23 (5.9)	388	3.94	1.18
The electoral body does not have the require skill set and ICT resources to support and manage e-voting implementation	80 (21.1)	104 (27.4)	64 (16.9)	92 (24.3)	39 (10.3)	379	3.25	1.31
E-voting system is too technologically advanced to be encouraged in a country like Nigeria	97 (25.1)	87 (22.5)	33 (8.5)	122 (31.5)	48 (12.4)	387	3.16	1.42
E-voting system is only for literates and so not everyone can use it	63 (16.6)	125 (33.0)	32 (8.4)	121 (31.9)	38 (10.0)	379	3.14	1.30
E-voting system involves a lot of technological expertise which the electoral body cannot provide	71 (18.4)	98 (25.5)	65 (16.9)	114 (29.6)	37 (9.6)	385	3.14	1.29
E-voting system cannot solve electoral problems in Nigeria	67 (17.2)	98 (25.2)	51 (13.1)	128 (32.9)	45 (11.6)	389	3.04	1.32
E-voting system would decrease the turnout of voters to vote	1 (0.3)	2 (0.5)	56 (14.4)	231 (59.4)	99 (25.4)	389	1.91	0.66

Legend: SA = Strongly Agree, A=Agree, NS = Not sure, D = Disagree, SD = Strongly Disagree

In addition, responses from the interviews show that majority of the respondents had positive perceptions about the adoption of e-voting system in Nigeria. Some of the responses, including the word frequency and word cloud representation (Figures 3a and 3b) are presented:

I think Nigeria is ripe for e-voting system (Auto mechanic, 34 years, Ibadan South West LGA).

I think the adoption of e-voting in Nigeria is a good idea that will ensure credible, free and fair elections (Trader, 55 years, Saki West LGA).

I think it will be a good idea for Nigeria (Driver, 33 years, Saki West LGA).

Ohhhh, Nigeria's election problems are solved if the country could adopt e-voting. It will motivate a lot of people to vote (Fashion Designer, 41 years, Ibarapa East LCDA).

Adoption of e-voting in Nigeria will make Nigeria's elections credible and fair (Musician, 45 years, Ogbomoso Central LGA).

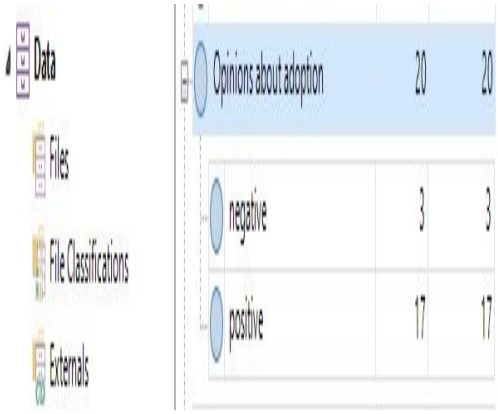

Fig.3a Word frequency for perception about the adoption of e-voting system

Fig.3b Word Cloud representation for perception about the adoption of e-voting system

Furthermore, the identified themes for citizens' perception about the adoption of e-voting system are good, idea, credible, adopt, fair, right, perfect, etc. which are in agreement with the responses from the questionnaire.

These findings are in line with the findings of some previous studies such as Anagreh and Abu-Shanab (2017); Asare-Nuamah and Darko (2016); Tella and Gbolahan (2012).

For instance, a study byAchieng and Ruhode (2013)found that South African perceived that an e-voting system is better than the paper based electoral system, and the implementation of e-voting system in South Africa was perceived as a progress and a modernisation of the electoral process, as it offers greater choice for people when casting their votes.

Peter and Agyepong (2016) also found that majority of Ghanaian university students agreed that e-voting was the best option for Ghana. Respondents in Tella and Gbolahan (2012) also supported e-voting to a great extent, as they found it relevant to the Nigeria electoral system.

Therefore, the introduction of e-voting system by the Nigerian government may not face much difficulty as the citizens have good disposition towards it.

Research Question Four: Are Oyo State citizens' ready to use e-voting system?

Frequency and percentage tabulations of the responses for research question four are presented in Table VI.

The responses of the citizens reveal that they were ready to use the e-voting system as 92.0% agreed that *they are ready to learn how to use e-voting system*, 90% agreed that they are *ready to support the use of e-voting to cast their votes if Nigeria adopts it*, 87% agreed that *voting via ICT is something they would do*, 88.7% agreed that they *will be very willing to use e-voting system rather than the current system*, and 84.4% agreed that they *would not hesitate to use e-voting system to cast their votes if introduced by Nigerian government*.

The mean scores also support this responses with the item 'I am ready to learn how to use e-voting system' having the highest mean value (4.26).

TABLE VI CITIZENS' READINESS TO USE E-VOTING SYSTEM

Items	SA (%)	A (%)	NS (%)	D (%)	SD (%)	N	Mean	Std. Dev.
I am ready to learn how to use e-voting system	158 (41.0)	196 (51.0)	13 (3.4)	9 (2.3)	9 (2.3)	385	4.26	0.83
I am ready to support the use of e-voting to cast my vote if Nigeria adopts it	163 (42.9)	179 (47.1)	17 (4.4)	12 (3.2)	9 (2.4)	380	4.25	0.87
Voting via ICT is something I would do	165 (43.1)	168 (43.9)	26 (6.8)	15 (3.9)	9 (2.3)	383	4.21	0.91
I will be very willing to use e-voting system rather than the current system	127 (33.2)	212 (55.5)	20 (5.2)	17 (4.5)	6 (1.6)	382	4.14	0.83
I would not hesitate to use e-voting system to cast my votes if introduced by Nigerian government	158 (41.0)	167 (43.4)	24 (6.2)	18 (4.7)	18 (4.7)	385	4.11	1.04

Legend: SA = Strongly Agree, A=Agree, NS = Not sure, D = Disagree, SD = Strongly Disagree

In addition, responses from the interview showed that majority of the respondents were ready to use e-voting system. Some of their responses are presented, including the word cloud representation and screenshot of their answers' categories:

> I am ready to use e-voting system because I can use ICTs very well (Trader,69 years, Soro LCDA)
>
> I am ready (Refuse collector, Age 33 years, Ibadan South-West LGA)
>
> I am very ready. This is long overdue (Marketer, 35 years, Iseyin LGA).
>
> I will need training and more information to make me decide if I am ready to use e-voting system (Draughtsman, 32 years, Saki West LGA)
>
> I am not ready because I really don't know how to use the Internet very well (Driver, 50 years, Afijio LGA)
>
> It all depends, if that is what the country wants, I will have no choice but to use it (Trader, 42 years, Lagelu LGA).

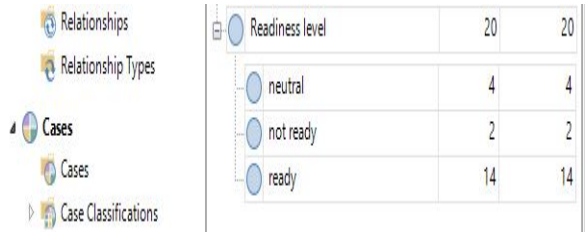

Fig.4a Word frequency for readiness of citizens to use e-voting system

Fig.4b Word cloud representation for readiness of citizens to use e-voting system

The word "ready" clearly stands out from the word cloud representation, which shows that the citizens were ready to use e-voting system. The implication is that the adoption of e-voting system in Nigeria will not be faced with resistance or apathy from the electorates. The system could be adopted by the government to increase voters' turnout during elections and also reduce some of the challenges associated with present voting system which have been highlighted.

IV. CONCLUSION

The study concludes that Oyo state citizens are favourably disposed to adoption and use of e-voting system in Nigeria. The citizens have also shown readiness to use the system, if adopted by the government. Election is a process involving many stakeholders who are expected to perform their expected functions at the right time. These stakeholders are the government, the electoral commission, political parties, security agents, civil society and the electorates. The stake is certainly not an easy one, but with proper focus and hard work, e-voting process can be achieved in Nigeria. Based on the foregoing, it is recommended that Nigerian government should consider adopting the use of e-voting system as other developed and developing countries have done. Even though the use of a particular e-voting solution may not fully satisfy the need of any nation, using an appropriate

e-voting framework will ensure transparency, while transparency in an electoral process will build trust and confidence of politicians and voters alike. Hence, implementation of e-voting in Nigeria elections will aid in minimizing elections irregularities thereby making the voting populace and the various political parties to have faith in the elections' results. Nigerian government need to be ready to also implement e-voting system by putting in place infrastructure such as constant electricity supply, accessibility to efficient communication network and Internet facilities, increased Internet bandwidth, low cost of internet subscription, improvement in high literacy level, computer self-efficacy among citizens, among others. These are very critical to successful implementation of e-voting system. Awareness and sensitisation should be created among the citizens through the mass media to provide more information about e-voting system and the benefits associated with its use. All citizens, including the literates and illiterates, should be trained on how to use the e-voting system in order to familiarise them with the way the system works. In addition, prior to the voting day, trial or mock voting should be done to familiarise voters with the system. Upon evaluation of the system at these times, improvements and adjustments can be made to further assure citizens of a smooth voting exercise.

It is hoped that when this is implemented, the INEC will go a long way in achieving her mission statement (to serve as an independent and effective election management body committed to the conduct of free, fair and credible elections for sustainable democracy in Nigeria) and vision statement (to be one of the best election management bodies in the world that meets the aspirations of the Nigerian people).The study has been able to give exposition into the perceptions of Oyo state citizens about the current and e-voting systems, as well as their readiness to use the system. The results of this study could provide baseline information to Nigerian government and other stakeholders in the electoral system, such as the INEC, for designing intervention strategies and policies that would make the electoral process in the country stress free and ensure the credibility of the process. There is no gainsaying the fact that this study significantly contributes to body of literature, although with some limitations. In the first place, the population of study is restricted Oyo state citizens, making the findings not general is able to all the 36 states in the federation. As a result of this limitation, the following suggestions are made for further studies. Future studies may expand the scope by investigating the readiness of citizens to use e-voting system in other states of the federation. A study on the readiness of the electoral body (INEC) to adopt and implement e-voting system in Nigeria could also be carried out.

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