

Electronic Voting in Indonesia: Head of Village Election

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Abstract

What if electronic voting performs in a rural area that has a limited condition of infrastructure and people who are peculiar with technology such as a computer? This article answers this question. Elections in Indonesia at national, province and district level are still used ballot paper. However, there is a village in Indonesia that use remote electronic voting system as a tool to vote head of the village. This research used the interview as a primary data collection and this research interviewed 17 key informants that directly involved in the village electronic voting. The research found the village voters more convenient in an electronic voting than the ballot paper system and the electronic voting can perform in a place that the people not familiar with modern technology. The unique finding of this research is the cost for electronic village election came from the village head candidates that shared the total cost of electronic voting. The other findings are electronic voting can be performed in an area with limited infrastructures and community that peculiar with technology. hence, it is possible for Indonesia to implement electronic voting in a level that higher than village voting, such as regent or mayor election.

Keywords: *Democracy, election, electronic voting, rural area, village*

Introduction

Indonesia as one of democracy countries performs general election to vote president and members of parliament every 5 years. Generally, the system of election is done manually by using ballot paper or it called manual voting. This voting system also performs in province and district to vote governor, regent, and mayor. On the other hand, villages in Indonesia have adopted village head election by voting, even before the presidential, governor and district elections are elected directly by voting. These elections mostly use a manual system. However, the manual system will lead people unwilling to participate in an election because they must spend their time in the election for voters queue (Inuwa and Oye, 2015). Therefore, in Indonesia when there is an election for president, parliament or governor and district, the government will take a policy that the election day is a day off for all public services, employees and schools. The day off policy aims to improve the number of voter turnouts.

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Apart from manual voting, there is another type of voting called is electronic voting (e-voting). Indonesia until recently has not used e-voting for election in a level of president, parliament, governor and sub-district, because many of Indonesian are not ready yet for e-voting and the system of e-voting as well. Indonesian who lives in the rural area is not familiar with modern technology such as computer and internet. This isa barrier that hinders implementation of e-voting is electricity infrastructure. Most of the rural areas in Indonesia still live in the dark, they have no electricity connection. In some of the remote areas, however, they have electricity connection yet they have no internet coverage and even cellular phone signal.

A rural area in Indonesia also has a problem with human resources. The rural area has a high school dropout, poverty, health problem, and unemployment. Hence, the human aspect becomes one of e-voting implementation obstacles. Despite barrier of e-voting implementation in Indonesia, we found an e-voting that performed in a village. This research was taken in 2016 to evaluate the REVS (Remote Electronic Voting System) process in a village in South Sumatra Province-Indonesia. The village that performed REVS has a limitation in infrastructure and the people are peculiar with sophisticated technology. Therefore, the implementation of REVS in this village is a unique and very challenging. Thus, this paper aimsto describe voters participation in REVS in a village that has a limitation of infrastructures and human resources. This article divided into five sections, first introduction that showed the background of this research, second review of the literature that showed of cutting edge of e-voting science in specifically REVS, third research method, fourth the research result and discussion including descriptions of the village and REVS process, fifth conclusion.

Review of Literature

The e-voting definition is very broad. Yet in this paper, the e-voting is an election that uses an electronic device (Kersting and Baldersheim, 2004). Another scholar called e-voting as e-democracy with a similar definition that is the application of ICT for a democratic process in government (Powell et al, 2012). The e-voting often mentions as a solution to avoid electoral fraud since the e-voting has higher accuracy to calculate election result (Douglas, 2011, Beaulieu, 2016). Moreover, e-voting not only accurate in calculate election result but also has a speed to calculate an election result (Travníček, 2014). That

must be taking into account that e-voting must use an electronic device and also technology. That need to emphasize, in electronic voting, human aspect plays a decisive role either in behavior or the ability to use the electronic tools for performing voting (Birch and Watt, 2004, Yao and Murphy 2007). The e-voting that discussed in this paper is categorized as a remote electronic voting system (REVS) since this e-voting has types that mentioned by Krimmer et al (2007) those are performed at a polling station, organized by the local organizing committee and after the election finished the election organizing committee will count the vote. E-voting is one of the innovations of ICT. Based on Irani et al (2007) that the innovation of ICT improves public service and give government easiness connection with their people. In order to implement e-voting, it needs certain technology, infrastructure and education of voters (Jillbert 2018). In addition, Jillbert (2018) also argued that to implement e-voting is easier in a developed country than developing country and Indonesia categorized as a developing country.

Methods

This research was carried out in Megang Sakti Village, South Sumatra Province Indonesia. This village consists of 2,456 people population and 1,803 people have a right to participate in village e-voting. This research is used the interview as primary data collection tools and desk study to analyze data of e-voting. The research interviewed seventeen key informants concerning village e-voting processes. The informants are head of village candidates (3 people), village secretary (1), village consultative board (1), village e-voting organizing committee (2), young voters (2), adult voters (4), elderly voters (4). All the informants interviewed one by one and one person at a time. This method is used to have clear and correct answers and to avoid an informant persuade another in terms of e-voting impression. All interview results analyzed by impression people use e-voting

Results and Discussions

In this section, before discussing regarding results and discussions, this section will give briefly depiction of village in Indonesia and village REVS process in the village where this research was taken.

1. Village Overview

Village in Indonesia is the smallest government level. There are more than seventy-four thousand villages in Indonesia. In Indonesian language, a village called as *Desa*. The village has autonomy right in politics and law yet should in line with the national constitution. In terms of politics, people in the village have a right to perform election to choose someone who will become head of the village. The election performs once every six years and the head of the village can have third term of service time or 18 years in service. Of course, every term must be done through a fair election. Head of the village is a prestigious position for the villager, thus upon there is a village election, the most influential people in a village will be enthusiastic to participate in the election. The person who has a right to participate as a voter in village election is above 17 years old or already married. This regulation is same with the national election.

Village government has a core role of the public service process similar to state government. They include legislative and executive bodies. However, they do not have a judicative position. Head of the village is an executive role and village assembly or in Indonesian language abbreviated as BPD is the legislative role. The village government can generate village rule and the process through the political process between Head of village and BPD. The village rule is used to regulate people and also as a legal basis of village budget document. Under the village, there are some sub-villages. The head of sub-village is elected by simple election among people who live in the same sub-village.

In terms of public facilities, every village normally has one elementary school and one public health center. However, not every school and the health facility in the village equipped with complete facilities and have a shortage number of teacher and health workers. For junior high school and secondary school are usually available in the sub-district and district, then the students from a village must go to the sub-district or district to study secondary school level. Often the distance from the village to sub-district and district are miles away and through back road. These are some reasons that most of the villages categorize as a rural area which is high poverty rate, poor infrastructure, school dropout rate and many other development problems. Since 2014, Indonesian government has a new policy regarding of village. They have sent more budget into the village through village budget policy. With this policy, the village can decide their own policy such as what infrastructure they want to build or what type of community development they want to

imply. The village creates policy based on what they need. However, unfortunately, most people in the village confuse to use the budget, they do not know what they must do with the budget and the village is remaining stuck in their underdevelopment situation.

2. Village REVS Process

This section will describe the processes of village e-voting. In the election day, people come to place where the election takes place, the voting place usually is in the village hall and every person must bring a personal identity and election invitation letter from the election organizing committee. The invitation distributed to people who have election right, a week until a day before the election day. Upon a person arrived in the village hall, first they have to go to the registration desk and shows their personal identity and handed over the election invitation letter to the registration officer. Then, they will verify those documents in order to ensure the data in personal identity matches with the election invitation letter and verified photo with the person.

After the documents verified, the registration officers will give a smart card to the voter as a tool for e-voting. Subsequently, the voter can proceed to the ballot room. However, if the ballot room full, the voter must wait in the waiting room which is provided in the election place. In the ballot room, the voter must insert the smart card into a card reader then a computer screen will show number, picture, and name of the head of village candidates. In order to select a candidate, the voter just touches one of the pictures or the names of candidates on the computer screen. Then the computer will show ask command "are you sure you want to choose this number, name, and picture of candidate" and under the ask command there is choice yes or no. Tap yes in computer screen if the voter would choose a particular candidate.

Afterward, the voter must take a paper from small printer inside the ballot room that prints name of a candidate that had been chosen by the voter. The next steps are the voter must put the paper into the box that provided in the election place and return the smart card to the election organizing committee. Finally, the voter must put one of their fingertips into an ink bottle, the ink cannot be erased from fingertip until 2-3 days. The ink sign in fingertip is to avoid people use their voting right more than once.

The election place is open at 7 AM and closes at 1 PM. When the election place is closed, the e-voting organizing committee starts to count the election result. The

counting process is open for public, so everyone can see this process. The head of village candidates normally attend this process. For a manual election, this process takes time because normally the process will finish 4-6 hours after the counting process starts. In e-voting, the counting process only needs half hour until an hour to finish the process.

Results

The result divided into three sections based on main topic questions. Those are the benefit of e-voting, program implementer and resources for e-voting. However, the interview questions not limited only the main topic questions.

a. The benefit of e-voting.

In the paper ballot system, it tends to raise some crucial problems. Many problems happened such as time problem that the result of the election comes out in a long time period. If the paper ballot election process finished in the noon, the results will come out 6 hours afterward. Moreover, often the results will be rejected by the candidates who lose or fewer voter numbers. Then, the voters' count process must be recalculated. According to the research, all informants stated that they are satisfied with the time of e-voting. The process of election by using e-voting is faster than manual election and almost no voters queue line even though there are 1,377 voters turnout (see table 1). The results of e-voting came out 30 minutes after the election processes closed and all candidates accepted the results of e-voting. Then the e-voting box that contains the name of candidates were chosen by voters was not necessary to open. The e-voting box will be open when there is a dispute regarding of election voter count. According to interviews with the candidates and the voters, they are satisfied with the result because they believe the e-voting system is secure from electoral fraud. Moreover, the committee of e-voting election mentioned in an interview that the e-voting is more simple than manual election since they do not need ballot paper which is often giving problems in an election, i.e. defective ballot papers, voters made wrong marked in ballot paper and time-consuming for counting ballot papers. It is often that village election is followed by a dispute that sometimes brings chaotic situation. Yet in this e-voting, we not found a dispute. All village citizens and the candidates satisfied with the election result.

Furthermore, the village e-voting increases the number of voters turn out. Below is data of voters turnout before and after e-voting.

Table 1: Table of voters turnout before e-voting and after e-voting

No.	Sub Village Number	Voters	
		2008	2014
1.	Sub Village I	204	224
2.	Sub Village II	195	223
3.	Sub Village III	290	309
4.	Sub Village IV	207	224
5.	Sub Village V	212	239
6.	Sub Village VI	320	350
7.	Sub Village VII	214	234
Total Voters		1,642	1,803
Total Voters Turnout		1,007	1,377

Source: Author's calculation from village hall documents, year 2016

Notes: 2008 is a year a village election based on the paper ballot and 2014 is a village election based on e-voting.

The table shows that the voters number increase 9.8 percent yet the total voters turnout increases significantly until 36.7 percent. One of the reasons the increasing of voters turn out is the villager voters enthusiastically participate in e-voting because e-voting is a new way in an election then the villager voters feel curious to participate in village e-voting.

Furthermore, this research surmises the increasing of voters turnout because with e-voting the queue line of voters was very short. Since the process of e-voting is simpler than manual voting and the e-voting organizing committee provided seven ballot rooms. Thus, the voters only spent a short time in ballot rooms and this gave an impact of voters short queue line. Then, the voters could immediately be back to their workplace and continue their work after the election finished. This condition made voters willing to participate in this election.

Based on interviews with the informants of this research that the majority reasons voters who did not participate in this e-voting. It was because they were not in the village when the election day, due they worked in the outside village and some voters studied higher education in the city that far from the village.

b. Program Implementer

The organizing committee of village e-voting is from the village where e-voting held. This organizing committee members form by village consultative board and the members should not have a connection with the village head candidates. However, in order

to make sure the e-voting process runs without election fraud. There is an oversight committee from district and sub-district government and the information and technology team who responsible for e-voting data security and e-voting equipment (computer, card reader, digital projector, printer, etc) is from district government as well. In detail of team members are 14 members in election organizing committee, two members of the district oversight committee, two members of the sub-district oversight committee and two members of information and technology/technical team. Since e-voting first time performs in this village, two weeks before the election day, the 14 members of e-voting organizing committee who are also villagers were given course and training about the process of e-voting in the district office. The duties of the e-voting organizing committee start from socialization and simulation of e-voting process until the announcement of who wins the election.

Of e-voting faced some difficulties which were rooted in infrastructural problem inside the village and high rate of citizens dropout. These situations lead to most people in the village peculiar with the latest technology such as internet, computer, and Android. In order to deal with this obstacle, two weeks before e-voting day, the e-voting organizing committee conducted a simulation of e-voting for the village voters.

This research found that the e-voting organizing committee members that are from the outside village were playing decisive roles in village e-voting. Their roles start from when they give socialization and simulation of e-voting for villagers. Then their roles continue in the election day. They manage including smart card, computer for e-voting, the security of the e-voting computer system, and the election counting process until finding the candidate that wins the election. The roles of members of the team from the outside village are the key factor for the voters and the candidates to believe no fraud election in this e-voting. The villagers perceive that the team members from outside village do not have vested interest with the candidates and the village. Thus, the fair election will be occurring.

c. E-voting Resources

The total cost of the e-voting is Rp. 53 million or € 3,738 (€1 = Rp. 14,178). This cost was for e-voting activities from simulation until announcement who could win the election. The cost spent on meeting expenses, printing/copy materials for meeting, organizing committee fee, technical team fee, equipment rents. For e-voting electronic

equipment such as computer desktop, computer laptop, computer screen, digital projector, screen projector, smart card, and smart card reader are free to rent from the district government.

This research found a unique phenomenon about the cost of e-voting. The cost was not spent by government, neither sub-district government, nor district government, and even nor the national government, yet the cost born by the three candidates of Head of village that participated in the election. The total cost of e-voting divided into three and each candidate born the same amount of money. All of the three candidates mentioned in the interview that they accepted to bear e-voting cost because this was mutual agreement among the candidates and e-voting organizing committee since the beginning of election process.

3. Blank Voters

The blank voter is a phenomenon in every tier election in Indonesia. Blank voters refer to someone who comes to the ballot yet they do not choose one of the candidates and/or one of the political parties, they just leave the ballot paper blank. Blank voters also refer to someone who comes to the ballot yet they mark all the candidates and/or all the political parties. So then the ballot paper that used by blank voters pronounce as fail ballot paper and count as abstain.

By using the e-voting system, it is impossible for a blank voter. In e-voting ballot room, every voter must choose one of the candidates then they can leave the ballot room. E-voting system also omits opportunity for the voter to choose more than one candidate. Thus, in this e-voting research was not found abstain voter. However, this research was not found a voter who complains because can be a blank voter.

Discussion

The discussion will discuss five aspects based on theory Yao and Murphy (2007) that e-voting must fulfill 5 aspects. Those are availability, easy to use, mobility, privacy, and accuracy. First is availability that means all voters have equal right. According to with village election document, in this e-voting, all voters from young until elderly voters have equal right. Furthermore, based on this research, no one village citizens that protest or complaint pertaining they do not get right to vote. However, this research does not check

about the vote right for disable person. Second is easy to use. As mentioned earlier that the villagers peculiar with technology including e-voting technology thus before the election there were training for organizing the committee and e-voting simulation for the voters. In result, the organizing committee and the voters can exert the e-voting technology very well. It can see from this e-voting that e-voting is possible to implement in the remote area and with the people who have peculiar with modern technology. With this result of this research, it is possible that e-voting performed in the tiers of government above Head of the village, such as district and city level. Third is mobility. The village e-voting guarantees of village mobility. The village voters only spent a little time in queue line and can get back to work after they vote (please see the benefit of e-voting section). Fourth is privacy. Of course, in this village of e-voting, every voter has privacy. The voters gave their vote in the close room, thus the secrecy is guaranteed. Fifth is accuracy. The accuracy is a condition of ballot count accurately. Since all voters and the candidates accepted the election results and no dispute after the election process, it can say that this e-voting fulfill the accuracy aspect.

Conclusion

This paper found that e-voting is possible to perform in a village that has infrastructure limitation and the people are not well educated. The village e-voting is accepted by the villagers because they believe e-voting reduced election fraud and has a speed and accuracy to calculate the election result. Therefore, village e-voting increases the number of voter turnout. The unique finding in this research is that the cost of village e-voting beard by the three candidates of the head of the village. The caveat of this research is not to check the security of e-voting computer system since this research performed after the election had done and none of the researchers who involved in this research is a computer scientist. Therefore, there is a possibility of election fraud through the computer system.

The recommendation of this research is Indonesia should initiate e-voting in every tier of government election. Based on this research, electronic voting is possible to implement in the remote area with some problems of the remote area. Indonesia with around seventy thousand villages inside it can initiate e-voting in every village and this is as a starting point to implement electronic voting at district level until the national level. Since Indonesia is a big country with wide area and big population, e-voting can reduce

Indonesia election budget. What will happen if Indonesia performs e-voting in the district, governor and presidential election can be for further research.

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