

PROJECT PROPOSAL

**TOPIC:**

DESIGN AND IMPLEMENTATION OF AN ONLINE ELECTION SYSTEM

FOR REGIONAL MARITIME UNIVERSITY (RMU).

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ABSTRACT

Electronic Voting has been attracting a lot of interest in the various tertiary institutions in Ghana. This is good as it establishes good administration. Voting is the process through which individuals convey their opinion and have the freedom to elect a leader of their choice to signify and address the student's issues. We are in the technological age, and problems being solved with the computer are widespread. The use of Electronic Voting Systems to solve election problems both in the country and tertiary institutions is increasing rapidly because it is able to give accurate results, is less costly in the long run, fast and very secure.

Background of the Study

Elections at Regional Maritime University College are conducted periodically to elect representatives of various bodies particularly the Student Representative Council (SRC) and other associations such as Association of Marine and Mechanical Engineering Students (AMMES), Marine Electrical Engineering Students Association (MEESA) etc. The electoral system at the university has evolved over the years; from paper-based voting to computerized voting using third party applications, e.g. Google forms. The latter and it challenges notwithstanding, brought great improvement to the electoral process, considering the problems associated with the former, e.g. the inflexible, slow and expensive nature that characterize the printing of ballot papers when it is close to elections, poses some challenges among others. E-voting is a generic term. It encompasses a variety of services, which includes the basic transmission of tabulated results. It can also include punched cards, optical scan voting systems and the transmission of ballots and votes through private computer networks, or the internet. When done right will yield many benefits, including speed, cost, trust, flexibility .This project is geared towards among others to bring about transparency of elections so far as the university is concern since it has been noted with great concern among students that, people in high authority pull strings to impose on them leaders they did not elect to bring about a lack of interest among equally qualified candidate for the various offices from contesting. This will increase enormously the number of contestants for the various offices bringing about competition. Voting is restricted to only the users of this system, in this case the voters. Not everybody can vote even though users who are not registered voters may have access to the system. In other to vote, one must meet basic and specific requirements as a student is to be registered or admitted by the school. This automatically qualifies you to partake in the Student Representative Council SRC elections. For the case of Association level elections, the voter must be an admitted student of that Association. Access to the system shall be strictly by biometric verification device with username and password as an alternative.

Problem Statement

Over the years, the elections at the Regional Maritime University have been marked by various issues. There have been multiple allegations and counter-allegations made against the candidates and their supporters, and the authorities have been accused of multiple election malpractices. Most of these allegations are against the authorities, and the candidates are usually accused of rigging the results.

This is due to a lack of transparency before, during, and after elections and the fact that the current system is a paper voting system. This can be solved with a properly designed and implemented online voting system solely owned and managed by the body tasked to handle elections. The design and implementation process should include the student body as well.

SIGNIFICANCE OF THE STUDY

The significances of online voting system including:

1) To engender trust among candidates and their supporters before, during, and after

Elections. Cases of election rigging will be minimized.

2) To provide better services to electorates.

3) To reduce the cost of elections in the long-term.

4) To give assurance to equally qualified candidates to vie for any office knowing they

will not be short-changed.

5) To reduce the human factor who can easily be compromised.

Research Questions

1. What are the weaknesses of the existing paper voting system in RMU?
2. What equipment and tools will be used to design and implement the system?

Methodology

During this project, information needed for this project will be gathered from various sources. In gathering and analyzing necessary data and information needed for the system, two major finding techniques will be used are as follows:

1. Primary source:

This refers to the source of gathering original data in which the researcher will conduct questionnaires and personal interviews.

1. Secondary source:

The secondary data will be obtained from journals, articles, library source and internet downloads.

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Study of Manual

Manuals and ballot papers will be examined, and much information on the system in question will be collected. The ballot papers will be collected, as well as information regarding voting and other requirements.

Literature Review

Election process plays a vital role in tertiary institutions and Regional Maritime University is no exception. Student Election is a process of electing worthy representatives who will lead the student body. In a democratic country and institution like Regional Maritime University, people choose their leaders by giving them valuable votes. The institution in question has a Voting System which has been used for several elections over the years. Recently, it was used to conduct an election for the Student Representative Council (SRC), 2021/2022 executives.

Manual way of conducting students elections in tertiary institutions in Ghana has gone on for some time now and for us to develop a good online voting system, it deemed necessary to take a critical study on elections conducted locally in care of the students Electoral Commission (EC) of University of Education, Winneba precisely, Kumasi campus. The election process is described as various candidates details printed in the form of a ballot then the Electoral Commissioner sets a date for the election. Various officers working with the Electoral Commissioner sets voting points called Polling Stations where students form a long queue to cast their votes. After the set time for the election to end is due, counting of the ballots takes place where all ballots cast by students (voters) are counted one after the other until the final ballot. Counting of the ballots mostly delays as the officers are sometimes confused with the numeration or voters do not agree with the number counted that is to say there is no trust in the counting. Tallying of the results takes a longer time as the results in one polling station will be waiting for the result in another polling station to be accumulated. This results in the delay of declaring the final results of the election. It takes about four to five days for the results of the election to be declared. Many of the times, the results declared even are challenged by the losing candidates as they believe there have been some infringements somewhere.

**REVIEW OF OTHER EXISTING E-VOTING SYSTEMS: KNUST & UG**

In this section, we review the performance of some e-voting systems already existing, with bases been their availability, access to the system and security. When developing any system including E-Voting system, user requirements are the primary objectives, the reason being that you cannot develop a perfect system without these requirements. Security is essential in this case. There are numerous electronic voting systems on the internet and local tertiary institutions like the Kwame Nkrumah University of Science & Technology (KUNST), University of Ghana (UG), to mention but few which were developed by professional Software Engineers. Encryption schemes via public key infrastructure and certificate are the most widely based on voting data and process security. This can be used together with biometric for secure authentication. The trust and success of the system cannot be achieved without a good and 10 strong security. The voting process, channels, data, communication channel, access control channel and all other voting tools and technologies need to be secured. Why we have to secure all these levels is that security in the E-voting system cannot be at one level; if we decide to secure only one level, we make the other levels very weak. Such systems are left at the mercies of hackers.

KWAME NKRUMAH UNIVERSITY OF SCIENCE & TECHNOLOGY – KNUST, KUMASI.

The institution uses one platform for all elections conducted on campus; from SRC, associations to university authority’s elections. About seven (7) years ago, the university faced a lot of challenges in electing leaders in the various organizations and as such there was the need for the introduction of an E-Voting System.

STRENGTHS OF THE SYSTEM

Their system had good strengths considering the following:

1) The system could be used to conduct two different elections at the same time.

2) The system could keep proper records of past elections.

3) The Electoral Commissioner (EC) is able to see and assess all computers on the network that are being used for the election and as such any foreign computer connected to it is detected easily.

4) In terms of security, it is highly secured with the use of a biometric fingerprint device which makes sure it is the right voter coming to vote.

DRAWBACKS OF THE SYSTEM

The drawbacks of the system were as follows:

1) The voter cannot vote at a place or on a device that does not have a fingerprint scan for verification.

2) Apart from the computers used at various polling stations for elections, no voter or whomsoever can connect other devices to the system and use for voting since all computers provided by the EC on election day are configured with IP addresses. Therefore the system is made to accept only votes coming from those computers.

3) Although the system is web-based, it cannot work outside the university’s campus.

Tools and Techniques

The projects feature will be developed using the PHP programming language. This was chosen

Because it is one of the simplest ways of creating software that can connect well with HTML and the database. The front end (interface) of the web application will be developed using CSS, HTML, JavaScript and some bootstrap code.

The database will be created using MYSQL which is a popular choice as a universal database software for local/client storage in application software such as web browsers.

Objectives of the Study

1. To review the already existing system of voting in Regional Maritime University.
2. Designing an electronic voting system for Regional Maritime University.
3. Implementing an electronic voting system in Regional Maritime University.
4. Validating the system.

SIGNIFICANCE OF THE STUDY

1) To engender trust among candidates and their supporters before, during, and after elections. Cases of election rigging will be minimized.

2) To provide better services to electorates.

3) To reduce the cost of elections in the long-term.

4) To give assurance to equally qualified candidates to vie for any office knowing they will not be short-changed.

5) To reduce the human factor who can easily be compromised.

Schedule Timeline

The project development will follow certain stages in the system development life cycle based on the selected hybrid methodology which are requirement gathering, analysis (requirement analysis), design, coding and testing, and delivery phase.

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| **PHASE** | **START** | **END** | **DURATION (weeks)** |
| Requirement Gathering | 17/09/2022 | 06/10/2022 | 3 |
| Analysis | 06/10/2022 | 27/10/2022 | 3 |
| Design | 30/10/2022 | 14/11/2022 | 2 |
| Coding and testing | 16/11/2022 | 11/01/2023 | 8 |
| Documentation | 18/01/2023 | 12/02/2023 | 3 |
| Delivery | 15/02/2023 | 22/02/2023 | 1 |

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|  | **WEEKS** | | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **PROCESS** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Requirements Gathering |  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Analysis |  |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Design |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |
| Coding and testing |  |  |  |  |  |  |  |  |  | | | | | | | |  |  |  |  |
| Documentation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | |  |
| Delivery |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Gantt chart showing the project schedule |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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REFERENCES

1. SinghKamlakar, “Online Voting System”, Lovely Professional University, (n.d). Retrieved From <https://www.academia.edu/9483312/Online_Voting_System>.
2. “Electronic Voting System Using Biometric Authentication”, n.d., Retrieved From https://www.ijrter.com/published\_special\_issues/31-03-2017/aadhar-basedelectronic-voting-system-using-biometric-authentication-and-iot.pdf.

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