

Electronic Voting System for Universiti Teknologi Malaysia's Campus Election (e-Undi Siswa)

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Abstract

Recently, it is vital for any administrative management to have an automated system to help them on daily work. Due to that, e-UndiSiswa was developed to help Urusetia Pilihanraya MPP in Universiti Teknologi Malaysia for managing the election process of the Student Representative Council. This is because the current system is run manually, takes longer time to process and not environmental friendly. In developing e-UndiSiswa, waterfall model was employed. The system development methodology was chosen as it provides the flexibility in developing the system. e-UndiSiswa was developed to overcome the problem faced by Urusetia Pilihanraya MPP to carry out the nomination process, student voting and counting process. This system has the functionality of generating reports which can be monitored in real-time. Hopefully, e-UndiSiswa will give a perceived impact to UTM campus election in future.

Keyword: E-voting, Campus Election, Web Application

1.0 Introduction

Voting system that used before this required students to register manually. Then the student is given two pieces of ballot paper which contains the list of faculty candidates and the general candidates who will be the student representative of Universiti Teknologi Malaysia. More guidelines on electroning voting were discussed by Douglas (2000). And Fujioka, Okamoto & Ohta (1992).

Previously, Mohd Sani (2010) developed a system for E-Vote System Electoral Student Representative Council of Universiti Teknologi Malaysia. However, additional functionalities are needed to be included such as Candidates Registration, Approval by *Majlis Perwakilan Mahasiswa*, Voting for all faculties, and reporting about all previous years voting processes. Therefore, the purpose of this system is to improve the electoral system. In addition, this system will ensure that the voting will be confidential and the voting process will run more transparently.

With the current rapid development and modernization, a system called 'eUndiSiswa' was developed to facilitate the process of voting students representatives in UTM. This system is computerized and has electronic-based security features to protect all the data that will be

processed. This system can be used for candidates registration and during the election day for *Majlis Perwakilan Mahasiswa Universiti Teknologi Malaysia (MPM UTM)*.

Prior studies and researches have revealed some issues in the manual method. The problems arise in traditional method of casting votes includes lack of voters turnout due to inability to leave the class to vote, time consuming where the voters have to queue up in order to wait for their turn and others. Data from *Pejabat Hal Ehwal Pelajar UTM* shows that the percentage of students who voted during the election in 2014 is only 72.42%.

In addition to that, time consuming for nominee registration is one of the issues of the current system. Manual voting system has the high probability of spoiled ballot. Spoiled ballot occurs due to human error when casting their vote manually for example, incomplete voting. It is good for election itself when there is no broken vote because this problem will affect the result for the election and also the candidates.

Currently, elections are held on campus run manually where voters must vote on the ballot paper prepared. However, the use of ballots is not too efficient because it requires a high cost. Apart from that, the use of papers will promote the greenhouse effect.

Votes cast by voters using a pencil or pen could potentially contribute to the spoiled ballot. This will affect the actual results that will be obtained and statistical counting of votes will not give actual results and cause wastage of votes.

In order to solve the problems in manual method of voting system, it is important to have the electronic voting system to replace the traditional one which can make the voting system becomes more convenient. These problems were leading for the development of UTM Electronic Polling System (eUndiSiswa).

2.0 Methodology

The methodology used to develop this system is waterfall model. At early stages, the project was divided into sequential phases with some overlaps. Next, we had to emphasize and measures on planning, time managements, target dateline, budgets and implementation of an entire system. Tight control is maintained over the life of the project through the use of extensive written documentation, as well as through formal reviews and approval/signoff by the user and information technology management occurring at the end of each phase before it can be pursue to the next phase.

Waterfall model can help users to obtain a better understanding of developments in information systems development in the text on the paper. This is because the system specification in text provided is clear and easily understood by users. In this methodology, the involvement of users in the initial phase in the development of systems to ensure the systems achieve the objectives required by the user.

3.0 Results

Table 1 Comparison between existing systems

	UPM Voting System	Indian Voting machine	UTM eUndiSiswa
Candidate Registration	X	X	/
Voting Security	X	X	/
Generate Report	/	X	/
Voting Summation	/	/	/

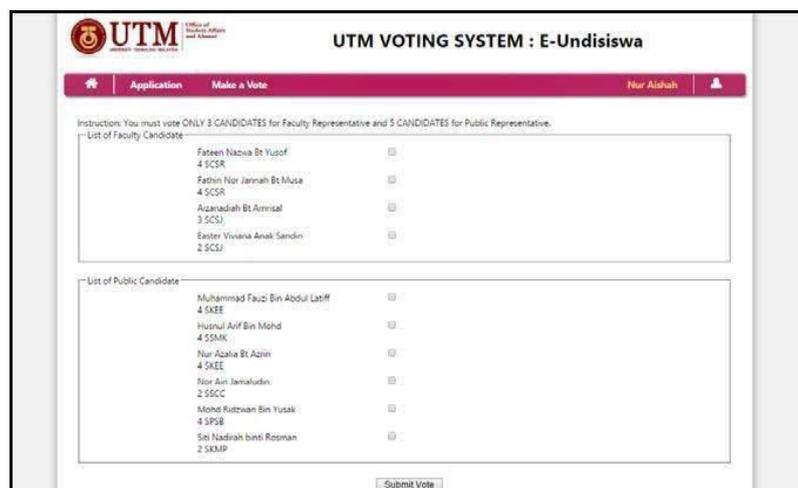


Figure 1 The interface design of 'ballot paper' in e-UndiSiswa

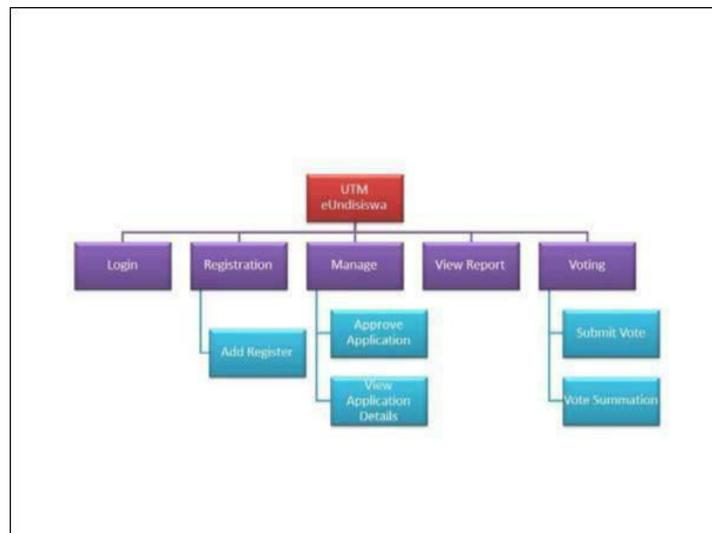


Figure 2 The module design of e-UndiSiswa

The results achieved through the development of this system is able to assist and enable the user to make an online voting. Furthermore, the system is also able to simplify the management of voting process in Universiti Teknologi Malaysia. The components such as databases and reports work well. In addition, each module was tested to work smoothly with each other.

4.0 Conclusion

The objective of the development of the Electronic Voting System for Universiti Teknologi Malaysia's Campus Election has been reached. In addition, the system helps the management of *Majlis Perwakilan Mahasiswa* to conduct the voting efficiently and monitor the process of voting for all faculties and all years.

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