Usability and Users' Satisfaction on Online Electronic Voting System

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ABSTRACT

This paper identifies the respondents' views towards e-Voting (electronic technology voting) such as the process, users' satisfaction, and relevancy, and to determine the usability criteria of e- voting's interface, in which it employs a quantitative method, using self-administered adapted questionnaires. The survey involves 250 respondents (voters), who immediately completed five Likert scales survey after they had voted for the committee members in two general elections: a social club for the university's staff (using Internet) and an organization for the female staff of the university (using the Intranet). The respondents were of different demographic backgrounds and they casted their online votes at two different periods (two years difference). The data were analysed using the SPSS software. The study found positive responses from most of the voters in which they expressed their satisfaction that e-Voting was convenient and easy to be used in the voting process, where the system illustrated relevant content and generated adequate procedures. Notably, the usability criteria of the interface of e-Voting as indicated by most respondents are between good to very good scales (navigation, graphic, user-friendliness and consistency, content, and transparency).

INTRODUCTION

In many parts of the world, the advancement of technology usage has changed the way we vote, where electronic voting has been deployed in many different types of elections throughout the world for several decades (Gibson, Krimmer, Teague, & Pomares, 2016). e-Voting or also known as electronic voting is a term that incorporates several types of voting, including both electronic means of casting a vote and electronic means of counting votes, such as punched cards, optical scan voting systems, and specialized voting kiosks (Elewa, Sammak, Abd El Rahman, & ElShishtawy, 2015). This method is perceived to reduce errors and improve the election method so that the process will be more appropriate and the integrity of the whole election process will be intact. One of the main issues of the existing manual voting such as paper-based is time-consuming where it takes a lot of time to cast a vote. Besides, it can also give results of fake voting, which is unreliable, and therefore, this traditional method needs to be upgraded and the need to shift from the manual voting system to a more sophisticated digitalized voting platform should be triggered. Fake voting relates to the issue of intelligibility, as mentioned by Munisami (2018), a paper-based polling system that is based on pens, stamps, punch cards or ballots can produce ambiguous results. He further elaborates that the chances of results manipulation from influencing authorities could also transpire if the process of manual voting is not conducted properly.

Electronic voting (e-Voting) is generally seen as a support tool for making the election process more efficient and effective. If e-Voting is properly applied and administered, this solution will ensure the safety of the ballot, accelerate the processing of results, and make voting processes to become easier. This paper aims to provide the users' views towards e-Voting (reconstructed by one of the researchers), in which include the voting process, the users' satisfaction levels and relevant involvement with the system, as well as to determine the usability criteria of e-Voting's interface as an enhancement. The results of the study will provide proper grounds that will guide the decision makers in customizing the proposed system to fit the voting needs, especially the adoption of such systems in a university's environment or other communal associations. Additionally, it will increase the voters' participation, lower the costs of running elections and improve the accuracy of the results.

This paper has been structured; commencing with an introduction, literature review that discusses the overview of electronic voting, the beneficial values from the adapted voting technology and a few of its challenges. The next section will be methodology, followed by the data analysis and discussion that project the empirical evidence for the study. The final section will provide the conclusion and future exploration in this area of study.

LITERATURE REVIEW

Electronic Voting: The Overview

Democracy as defined by Holcombe (2001) is a collective decision-making institution that stops single individuals from making decisions for the whole group. One of the most important activities within a democratic system is electing representatives to govern the country or to elect leaders, presidents, or committee members of an organisation. Jones (2003) lists the common or traditional voting system which consists of methods like paper ballots at polling centres, postal mail, lever voting machines, punch card and optical voting machines. Nonetheless, the main problem with such a system is time-consuming, where it takes a lot of time for the process of voting.

Historically, the use of mechanics in the voting area was introduced in the early 1890s with the invention of the Herman Hollerith punch card machinery for the US census (in Bellis, 2000), and later, the machinery was developed into electronic voting. Over the years, electronic voting is getting more popular where the electronic way of counting paper ballots has existed for some time, but the actual casting of electronic ballots has been the more recent trend. Habibu, Sharif and Nicholas (2017) have also listed various types of voting such as kiosks, the Internet, telephones, punch cards, and mark sense or optical scan ballots. As technology moves forward, the online system allows e-Voting to utilize a computer and the internet.

e-Voting is relatively a new concept based on its application and according to Stenbro (2010) as this system aims at reducing errors and improving the convenience and integrity of the election process. Gibson

(2001, p. 564) refers to e-Voting as "the casting a ballot via a broader range of electronic telecommunications technology including telephones, cable and satellite television, and computers without internet connection". Stenbro (2010) further describes e-Voting as a term that includes various types of voting, exploiting both electronic means of casting a vote and electronic means of counting votes. Besides, Bellis (2007) affirms that e-Voting also allows a group such as at a meeting or an electorate to decide or express an opinion, usually following discussions, debates, or election campaigns.

Several past academicians have noted that the e-Voting system has influenced the voters' capability to gain their right to vote and their willingness to receive the unaffected election results and outcomes (Aljarrah, Elrehail, & Aababneh, 2016; Singh, & Roy, 2014; Winchester et al., 2015). In a study by Norazah and Norbayah (2017), it is revealed that the young voters' commitment to vote was the strongest factor of the students' decision-making and satisfaction in the campus's e-Voting system. Using e-Voting to cast vote could enhance the youths' interests to vote and be committed, as the system can be assessed everywhere and are generally user-friendly as well as convenient. Most importantly, the rapid use of the Internet, mainly among youths, will act as a vehicle for improving communication, access to information and electronic commerce, which will lead to the claim that the Internet could be used as either a replacement to attendance voting or as an additional voting option (Suleiman, & Gwani, 2015). Moreover, Das (2015) states that India as the world's largest democracy with a community of 1.1 billion, has developed electronic voting machines (EVM) which are supported by the voters for elections as they can solve problems associated with the traditional paper-based voting system.

Beneficial Values of e-Voting

The main benefit of utilizing electronic voting technology at the polling stations is time, where this system can speed up the counting of ballots and provide improved accessibility for more voters, plus the disabled and the elderly. Habibu et al. (2017) imply that with the surge of mobile devices, online voting is a convenient option for many members, allowing them to access ballots anytime, anywhere. They add that the Internet could improve accessibility and provide an even more convenient

voting process which then, leading to improved voter turnout in elections. Thakur, Olugbara, Millham, Wesso and Sharif (2014) have pointed out that e-Voting promises an increase in participation and offers voters more options of convenience to vote, encourages more voters to cast their votes remotely, and has great potential to stimulatehigher voter turnout.

e-Voting also enhances the paperless concept and lessen the manual preparation. Tokaji (2005) states that using papers as ballots might cause errors due to paper ballots that are not clearly marked, or mistakes made by those who decipher and count them. According to Habibu et al. (2017) further, since that e-Voting utilizes electronic ballots, there are no rejected, mismarked, or invalid votes as the results are automatically calculated, eliminating the need for manual tabulation or dreaded recounts. Baguma and Eilu (2015) suggest cost-effectiveness as the benefit of e-Voting, especially when considering the production costs of printing, postage, and mailing ballots. This is also supported by Habibu et al. (2017) where the materials required for printing and ballots distributions are reduced, while the personnel required to assist in voting stations can be lessened.

According to Kohno, Stubblefield, Rubin and Wallach (2004), another vital aspect of e-Voting is empowerment as it permits members of the organization to have a voice in the leadership and decide upon the direction of their organization. They add that the members who vote will achieve a greater sense of value, ownership, and responsibility. Thus, e-Voting can enhance this beneficial value as this system might provide a higher level of trustworthiness among the voters and they will be committed and be accountable to voters. Eteng, Ahunanya and Umoren (2018) mentioned that occurrences of vote miscount were drastically reduced when using an e-Voting system since at the backend of this system resides a well-developed database.

Effective Features of E-Voting

An effective e-Voting system must consist of a few specific features or characteristics to make the voting process smoother. Due to its effectiveness, the voters can cast their votes quickly and conveniently, without acquiring or possessing any special skills, and this will lead to higher voter participation at the polls (Al-Ameen & Talab, 2013). Some of

the specific features as suggested by Eteng et al. (2018) are the system will be able to generate a more convenient voter and candidate registration interface, an efficient voting interface, vote storage and count, plus immediate result compilation. To add, effectiveness, user-friendly interface (UI), accuracy, real-time response and convenience are the features that should be considered when using electronic voting (Munusami, 2018).

Elewa et al. (2015) list out the requirements of e-Voting so that the system is effective to be used in any electoral process. The requirements are indicated in the table below.

Table 1: Requirements of e-Voting

Authenticity	Only eligible voters can participate.
Uniqueness	No voter should be able to vote more than once.
Reliability	The system should function without compromising votes, even if system failure occurs.
Accuracy	The votes are properly recorded.
Integrity	Votes cannot be edited or deleted.
Flexibility	The system should be usable by different types of voters (support multilingual voting ballots, accommodate disabilities by audio or visual features, support different input methods, etc.).
Convenience	Electoral systems should not require additional skills to be usable without unreasonable need for equipment.
Transparency	Voters should be able to understand the overall system
Secrecy	Votes should be kept secret and a voter must not have a record of voting choices.
Anonymity	Each voter has the right to cast his vote secretly, and no one should be able to relate a voter to his/her vote.
Freedom/ Non- Coercibility	The citizen must be able to vote without being forced by the government to vote for a particular candidate.
Audit/ Accountability	The system can verify that votes are properly counted.
Verifiability	The system must be tested by election officials.
Cost	The system should not be too expensive.

Since electronic voting is an area of growing interest, this paper includes a study of electronic voting or e-Voting during two of the university's elections to select the new Committee Members for two different staff's organisations. Viewing the features and requirements of the recommended e-Voting, the existing system has covered most of the specifications, which enables it to be an effective system to be used in both voting processes.

e-Voting System: Usability and Users' Satisfaction

Based on the literature surveyed in Olembo and Volkamer (2013), the ISO 9241-11 standard (ISO, 1998) from the International Organization for Standardization (ISO) has commonly been used to evaluate the usability of e-voting systems. According to the standard, usability is defined as 'the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use'. Other measures prescribed by the standard are the percentage of goals achieved, the percentage of users successfully completing a task and the average accuracy of completed tasks. The standard also includes efficiency, which consists of the resources used to achieve effectiveness in user tasks, time taken to perform a task, and mental or physical effort, materials, or financial cost of performing the task.

Olembo and Volkamer (2013) further clarify that the user's satisfaction focuses on the user's attitudes towards the system, and this is to be conducted by asking the users to report on their opinions of a given system. According to Rubin and Chisnell (2008), the attributes of usability, in addition to efficiency, effectiveness and satisfaction, are usefulness, learnability and accessibility. Besides, the three metrics of usability to assess the usability of voting systems include effectiveness, efficiency, and satisfaction, which are recommended by the National Institute of Standards and Technology (NIST) in Laskowski, Autry, Cugini, Killam and Yen (2004).

Challenges of e-Voting

In Achieng and Ruhode (2013), the literature suggests that countries such as Brazil and India have successfully implemented electronic voting systems and other countries are at various piloting stages to address many challenges associated with the manual paper-based systems such as the costs of the physical ballot paper and other overheads, electoral delays, distribution of electoral materials, and general lack of confidence in the electoral process. Nonetheless, internet-based voting systems are also facing challenges such as the systems are vulnerable to attack at three major points: the server, the client, and the communications infrastructure (Okediran & Olabiyisi, 2011). These risky occurrences might inevitably affect the users and the server.

The next challenge relates to the trustworthiness issue, where Lee, Park, Mambo and Kim (2010) claim that the current electronic voting systems are not sufficient to produce trustworthy elections as they do not provide any confirming evidence of their honesty. They claimed that the lack of trustworthiness is the main reason why e-Voting is not widely spread although e-voting is expected to be more efficient than traditional paper voting. Many experts too believe that the only way to assure voters that their intended votes are cast is to use paper receipts.

Mursi, Assassa, Abd Elhafez and Samra (2013) divide e-Voting systems into three main categories: namely hardware, software, and human factors. The security-relevant elements for hardware are the mechanical, electromechanical, and electrical parts. The security-relevant elements for software are the operating system, drivers, compilers, programs, databases, rules used in the program, procedures, and sequences (order of voting events, voting protocol, encryption techniques). Thus, Ondrisek (2009) further updates that the security-relevant elements for human factors are usability, rules, strategies (such as information flow, security management), politics, and other diverse aspects (such as transparency, acceptance, and trust), in which all parts of the system must be considered as equally important in terms of security risks. All these elements are prone to risks and vulnerable to security threats.

METHODOLOGY

The System

e-Voting system that has been utilised during the elections is an online voting system, reconstructed by using PHP programming language. The first election for the women's organization was conducted using Intranet (accessible locally within the organisation's network), where six computers were used in two different computer laboratories of the university. The voters would come to the selected venues, and they would click their votes on the respective computers. The process was monitored by selected electoral committee members as well as the developers of the system.

The second election for the social club was conducted recently, and the system used the Internet (changing the IP from intranet only to

internet access level). The voters could cast their votes at their own locations, given the situation of COVID-19, which hinders face to face meetings. The voters were given the link to log in and they were able to vote right away by clicking on the link, which leading to the system. The link was shared via the university's emails, WhatsApp, and Telegram. It is important to note that this system can be accessed anywhere with the Internet. The developers of the system and the chosen electoral committee members were present at the campus to monitor the electoral process.

For both occasions, the computerised e-Voting system offers a simple yet easy to use interface. Figure 1 illustrates a few of the user's interfaces when they log into the system. The voters would just click the candidate that they want to choose by clicking the 'vote' button. Each post has its own vote limit, depending on how many committee members are needed for each post as required by the organization or social club. Thus, the voters would be clicking the 'vote' symbol based on the number of vote limit.

In addition, before voting, the system administrator would key in all the staff data (staff ID number) into the database and the voters will key in this password to log in to the system. The e-Voting system uses Field-Level Encryption to store sensitive data. As a result of these procedures, the issue of trustworthiness can be improved. Venafi (2020) states that this method allows a developer to selectively encrypt individual fields of a document on the client-side before it is sent to the server, which will keep the encrypted data private from the providers hosting the database as well as any user that has direct access to the database. The login page is displayed below in Figure 2.
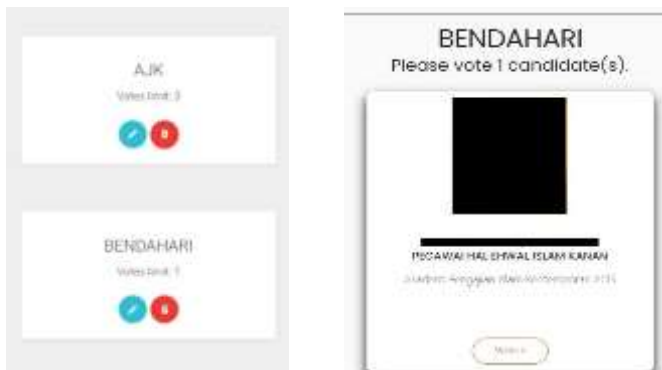
Figure 1: The System's Interfaces

Figure 2: User Login Page

Figure 3 below represents the system architecture that indicates the module and the flow of the processes involved in the system. Generally, the voter will directly interact with the online voting module and the voting result module can be accessed by the administrators and the election committee. In addition, this e-Voting comprises the voters' and candidates' information in the database, while the votes, calculation of the total number of votes and the results will also be stored in the database. A few of the security features of the system are:

i) an individual whose staff ID is not recorded in the database is not able to vote;
ii) a voter is not able to vote more than once;
iii) password authentication will check all unauthorized attempts;

iv)   authentication of session and session timeout are provided;
v)   password has been hashed (Field-Level encryption);
vi)   system uses a hosting server which has WAF (Web Application Firewall);
vii)   Hypertext Transfer Protocol Secure (https) with the Secure Socket Layer (SSL) is implemented in the hosting server; and
viii) faster electoral process.
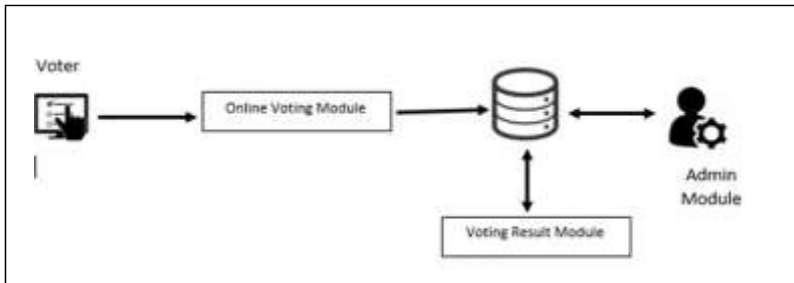
Figure 3: The System's Architecture

Survey on the System's Usability and Users' Satisfaction

For this study, the questionnaire which was adapted from Elewa et al. (2015), Mursi et al. (2013) and, Rubin and Chisnell (2008), consists of three sections. Section A requires the demographic profile of the voter who is also the respondent. Section 2 collects the voter's view towards the voting system and process, voter's satisfaction, voter's relevant involvement and e-Voting system's interface (navigation, graphic usage features, simplicity, content, and transparency features). Meanwhile, the last section allows the voters to make suggestions for system upgrades and usage of system interfaces (will be discussed in conclusion and recommendations).

As suggested by Laskowski et al. (2004), one approach in subjectively to measure the user's satisfaction is using a standardized instrument, usually in the form of a Likert scale. Thus, for Section 2 of the adapted questionnaire, the Likert scale statements are graded from strongly agree to strongly disagree and poor to excellent, corresponding to numbers one to five (1-5).

The survey involved 250 respondents or voters, in two general

elections: a social club for the university's staff and an organisation for the female staff of the university. Once the voters had voted, they were asked to complete a set of questionnaires, and these were collected immediately by the researchers. The elections were conducted at two different times, with a two-year gap. The completed collected questionnaire was then entered and analysed using Statistical Package for the Social Sciences (SPSS) computer program.

RESULTS AND DISCUSSION

A total of 250 respondents were involved in this study, in which they voted on two different dates (two separate elections to choose the committee members for an organization and a club respectively, specifically intended for the university's staff). Table 2 above shows the percentage distribution based on the demographic profiles of the respondents, where the turnout for the female voters stands at 66.4 per cent meanwhile the male voters' turnout was only 33.3 per cent. This can be explained due to the second election which involved only female staff of the university.

Besides that, almost half of the respondents who had casted the votes were aged between 31 – 40 years old, meanwhile 41.2 % of the voters were aged 41 and above. Viewing these age demographic details, this system seems to be applicable and suitable to be used by many voters of all levels of age as they can access the system easily, either via intranet or internet, and cast their votes without many issues.

Table 2 shows the perceptions of the voters towards the voting process while using the voting website. The results show that the online voting system had outstanding responses where most of the voters agreed that it was easy to use (98.4%), had clear instructions and guidance so this method was easy to understand and follow (96.4%). Moreover, they claimed that the real-time results of the voting process and the verification process were simple and efficient, especially to mark a candidate of their choice and this automation can be done easily. Nonetheless, half of the voters claimed that they need help to use the system. Fundamental requirements for a voting system are usability, correctness (completeness and reliability), privacy, verifiable and additional requirements like

fairness, efficiency and practicality which play very important roles in determining the success of a system (Wang, Mondal, Chan & Xie, 2017).

Table 2: Users' Views on e-Voting Process

Items	Strongly Disagree	Disagree	No opinion/ uncertain	Agree	Strongly Agree
The e-Voting voting system is easy to use.	0.8	0	0.8	28.0	70.4
Instructions and guidance are easy to understand and follow.	0.0	0.4	3.2	30.4	66.0
e-Voting makes it easier for me to mark a candidate of choice.	0.0	0.4	2.8	24.0	72.8
I think the voting process of e-Voting takes a quick time.	0.0	0.8	1.2	26.0	72.0
The verification process is simple and efficient.	0.0	0	4.4	28.8	66.8
My votes have been recorded well.	0.4	0.4	7.6	31.6	60.0
I believe this system keeps my vote confidential.	0.8	1.2	11.2	34.4	52.4
The candidate information displayed on the page is complete.	0.0	2.0	6.4	36.0	55.6
I need help in using this e-Voting system.	20.0	16.8	10.0	28.0	25.2
I do not understand what I really need to do.	46.8	13.2	8.0	15.6	16.4

The statistical results pertaining to the users' satisfaction while casting their votes via e-Voting is displayed in Table 3. More than half of the voters agreed that the e-Voting allowed them to select their preferred candidate and positively agreed that the voting process was conducted in a transparent and fair manner. Notably, most respondents gave good feedback towards the system usage where 96.4% 'strongly agreed' and 'agreed' with the statement (I will vote in the same way in the upcoming campus elections represented), which gives an indication that they will reuse the same platform in the future. In the words of Daimi, Snyder and James (2006), any errors in using the voting system will result in failure of the egalitarianism in choosing the right candidate, which will affect the integrity and disappointment of voters.

Table 3: Users' Satisfaction Levels in Using e-Voting

Items	Strongly Disagree	Disagree	No opinion/ uncertain	Agree	Strongly Agree
I am satisfied with the candidate I have voted.	0.4	0.0	3.2	37.2	59.2
I will vote in the same way in the upcoming campus elections.	0.0	0.0	3.6	35.6	60.8
I am sure I picked the right candidate.	0.0	0.4	5.2	33.2	61.2
I am satisfied with the political system on campus via e-Voting.	0.4	0.8	5.2	37.6	56.0
The voting process was conducted in a transparent and fair manner.	0.4	0.4	6.0	40.0	53.2
Enable controlled and comprehensive delivery.	0.0	0.0	6.0	39.2	54.8
The voting process is conducted ethically by e-Voting.	0.0	0.0	4.0	40.4	55.6

The results (in percentage) that portray the user's satisfaction levels towards e-Voting system are displayed in Table 4. Most of the respondents were optimistic towards this system and claimed that they had picked the right candidates, and were satisfied with the voting system, which is e-Voting and it was conducted in a transparent and ethical manner. Voters preferred electronic voting technology over the paper-based system because of its usefulness which include saving time, convenience of access, lower cost, reducing human error in the electoral process and increasing transparency in the elections (Achieng & Ruhode, 2013).

Table 4: Users' Views on the Relevancy and Involvement towards e-Voting

Items	Strongly Disagree	Disagree	No opinion/ uncertain	Agree	Strongly Agree
e-Voting is a relevant system for use.	0.0	0.4	6.0	37.2	56.4
This e-Voting is very important to me and my organization.	0.0	0.8	6.0	38.8	54.4
I am involved with the campus e-Voting process.	0.0	0.4	6.0	40.4	53.2
I am interested in e-campus voting.	0.0	0.4	4.8	42.4	52.4
This e-Voting has changed my perception and way of thinking.	0.0	0.4	8.0	40.0	51.6
No propaganda exists on this polling site.	1.6	0.8	10.0	35.6	52.0
e-Voting is in line with current needs.	0.0	0.0	4.8	38.4	56.8
e-Voting is the latest trend for this voting process.	0.0	0.0	3.2	37.2	59.6
The use of e-Voting for the process is very relevant in this organization.	0.0	0.0	3.2	40.4	56.4
e-Voting encourages more voters to come to vote.	0.0	0.4	8.8	38.0	52.8

Table 5 indicates the voters' relevancy and involvement towards the e-Voting system. More than 80% of the responses have shown a positive outlook where they claimed that the system is relevant and acknowledged its importance. Their interest towards the system were also high (nearly 100%) and they also agreed that the system could attract more voters to vote, and thus, will increase the voting percentages.

The results are encouraging as they are relevant to standard requirement of ISO 9241-11 standard (ISO, 1998) in Olembo and Volkamer (2013), in which usability is prescribed as the percentage of goals achieved, percentage of users successfully completing a task and average accuracy of completed tasks.

System interface of the voting system relates to how an individual user interacts with a digital component. It is essentially a series of visual

elements that a user uses for the interaction with the menu, browse through the candidate list, selection and vote a cast for the preferred candidate. Generally, the goal of any interface design is to ease the user's interaction with the device and the interface as smooth as possible.

Table 5: Users' Views Towards The E-Voting System's Interface (Navigation and Graphic Features)

Navigation							
Statement	Scale (percentage %)					Mean	Median
	1	2	3	4	5		
The main menu/navigation bar is organized.	0.0	0.0	4.4	48.4	47.2	4.43	4.000
Help for navigation (visible Links).	0.0	0.8	5.2	45.2	48.8	4.42	4.000
Easy access to web pages	0.0	0.0	5.6	42.8	51.6	4.46	5.000
Users easily manage polls online.	0.0	0.0	2.0	44.4	53.6	4.516	5.000
Fast access/access.	0.0	0.0	2.4	42.4	55.2	4.528	5.000
Graphics Usage							
Statement	Scale (percentage %)						
	1	2	3	4	5	Mean	Median
Image size and resolution.	0.0	0.8	2.8	44.4	52.0	4.476	5.000
Multimedia content (Animation or audio)	0.0	0.4	4.4	45.2	50.0	4.448	4.500
Colours, fonts, and text size	0.0	0.0	3.2	44.0	52.8	4.496	5.000
Different logos and icons.	0.0	0.0	4.8	42.8	52.4	4.476	5.000
Visual appeal / layout.	0.0	0.4	3.6	43.6	52.4	4.480	5.000

Notably, Table 6 reveals the users' views towards e-Voting interface, in terms of navigation and graphics features. From the list of the statements, the respondents were required to grade the interface from poor to excellent, agreeing to the scale numbers one (1) to five (5). The finding shows that 47.2% of the voters rated the available 'main menu/navigation bar' in the system as excellent.

This system also provides an easy-to-use user-interface where all choices of the candidate were displayed clearly (by scrolling down the list until the last few choices) while making the selection in using the command button was also commendable. More than half of the voters evaluated 'excellent' scale for the image sizes, resolution, multimedia elements and icon.

Table 6: Users' Views Towards E-Voting System's Interface (Simplicity, Content and Transparency Features)

Simplicity							
Statement	Scale (percentage %)					Mean	Median
	1	2	3	4	5		
Transparency of information (reducing search time)	0.0	0.4	4.8	42.0	52.8	4.472	5.000
The optimized website design is highly sought after.	0.0	0.4	4.8	42.0	52.8	4.488	5.000
Consistency in website design.	0.0	0.4	3.2	43.6	52.8	4.680	5.000
Ease of use (including first time users).	0.0	0.0	4.8	43.6	51.6	4.484	5.000
Features/functions are easy to understand.	0.0	0.0	4.8	42.0	53.2	4.484	5.000
Content							
	Scale (percentage %)					Mean	Median
Statement	1	2	3	4	5		
The system contains relevant information.	0.0	0.0	4.4	43.6	52.0	4.476	5.000
Meet user requirements.	0.0	0.0	4.0	43.2	52.8	4.488	5.000
I am interested to use this site in the future.	0.0	0.0	5.2	41.6	53.2	4.492	5.000
Good content quality.	0.0	0.0	5.2	41.6	53.2	4.480	5.000
Current information.	0.0	0.0	3.6	44.0	52.4	4.488	5.000
Transparency							
	Scale (percentage %)					Mean	Median
Statement	1	2	3	4	5		
Bad spots can be avoided.	0.0	0.4	5.2	38.0	56.4	4.504	5.000
The counting of votes can be run automatically.	0.0	0.0	3.6	38.0	58.4	4.548	5.000
Accountability can be applied.	0.0	0.4	3.6	39.2	56.8	4.524	5.000
Reliability and security.	0.4	1.2	3.6	39.6	55.2	4.480	5.000
Confidentiality of individual votes can be ascertained.	0.8	1.2	6.0	38.0	54.0	4.432	5.000

Table 6 displays the user's view towards the e-Voting system's interface features that are relevant to simplicity, content, and transparency. Most of the respondents graded the interface of e-Voting as simple as it offered the transparency of information (reducing searching time), and easily understood features or functions with no or minimal assistance. This minimalist feature will allow the sites to load faster, while consistency is essential for good web design with 52.8% respondents who rated this system excellent for that part. In terms of content, nearly all voters showed their strong agreement that the system has met their requirements and contained relevant and updated information.

Previously, a voting process faced many challenges such as misplaced votes, voting mismanagement, and obviously, the complex use of ballot papers that would slow down the voting process. Majority of the voters agreed (above 80%) with the accountability and confidentiality (transparency features) as every voter needed to log in and key in the unique staff identification number to vote. Identifying with unique voting number indicates that the online voting system concept is a better, effective, and more efficient way of voting in the institution (Quist, Amegatse & Dickson, 2016).

CONCLUSION AND RECOMMENDATIONS

In conclusion, the findings in this study reveal that the e-Voting system has demonstrated its capability to automate the election process, thus making it flexible, which might aid in reducing the unwanted human errors, showing scalability to outreach the voters, and easing the interpretation of the results. Most of the voters indicated positive perceptions towards the system (for both Intranet and Internet users), in terms of its usability and satisfaction. In addition, online voting also fulfils the user's needs as the result significantly shows positive acceptance towards the e-Voting platform, whereby the voters were mostly satisfied with the system by admitting that that 'the system is important and relevant' to be used in future voting. Generally, they also claimed that 'the system is effective' in terms of its clear graphic features and simplicity, as well as the system being reliable and accountable. As a result, highly efficient and ease of use of such system will lead to an effective voting system and increase vote casting percentages drastically.

This research has also demonstrated that e-Voting has many beneficial values over the manual voting system and to gain a decent application, the developer team should take into consideration all the factors for the users' views on the interface such as navigation, graphics, simplicity, relevant content, and transparency activities that could influence the voters, both positively and negatively. With respect to the limitation, the data may not be representative for the whole population because it only involves one social club for the university's staff and one organization for the female staff of the university.

For future recommendations, in terms of the system itself, some

of the comments emphasized on its security features and mobility. Security issues should be prioritized to fully utilize this method to its fullest. Thus, the developers should not just rely on the essential and functional requirements during the system design phase. It is also acknowledged by the voters that 'this system is efficient and relevant' to be used in campus' future election, but some features will need to be improved for better performance, such as clearer instructions on how to login and how to navigate the system (especially, for the first- time users), upgrading the system's security and adding effective multimedia content (animation or video to assist the voters for better navigation). Meanwhile, the empirical evidence for the structural modelling can also be developed by looking into the direct and moderating effect factors of the acceptance as part of the areas of improvement.

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