E-voting in Literature: Analyzing Nations' Interest

Sarah Elfattal
Department of Computer Science and
Engineering, American University of
Ras Al Khaimah, RAK, United Arab
Emirates
sarah.elfattal@aurak.ac.ae

Mohammed Awad
Department of Computer Science and
Engineering, American University of
Ras Al Khaimah, RAK, United Arab
Emirates
mohammed.awad@aurak.ac.ae

Shadi Ben Abderrahmen
Center for Information,
Communication and Networking
Education and Innovation (ICONET),
American University of Ras Al
Khaimah, RAK, United Arab Emirates
shadi.abderrahmen@aurak.ac.ae

ABSTRACT

Over the past two decades, we have seen how technological advancements have taken the world by storm. However, electronic voting (e-voting) machines are still not widely accepted. This paper analyzes research papers published on electronic voting in the Scopus database between 2000 and 2022. This research aims to analyze the number of studies conducted on e-voting systems and to determine whether the publication patterns match specific events on the timeline. The top five contributors to this research field (namely the United States, India, China, the United Kingdom, and Germany) were examined. Two of the main aspects of this paper are whether there is a trend between the number of papers published and the events occurring in a country and if more studies should be conducted regarding e-voting and its importance.

CCS CONCEPTS

• **General and reference** → Document types; Reference works; Document types; General literature; • **Social and professional topics** → User characteristics; Geographic characteristic.

KEYWORDS

E-voting, Electronic Voting, Electoral Systems, Voting Machines, Internet Voting, Scopus, Remote Voting, e-Democracy, e-Participation

1 INTRODUCTION

Voting, in its essence, is a crucial method for individuals to express their own opinions and ideas. It can be utilized in many fields of life, but its accuracy, security, and transparency should always be considered. Participating in choosing presidential candidates, government leaders, and decision-makers is the most significant

form of voting, as the outcome will affect the whole nation or entity for years to come. In the past, some voting methods resulted in long waiting lines, inaccuracies due to miscounting, and inefficiency due to misleading design.

Thus, electronic voting (e-voting) was introduced to overcome these limitations. Generally, electronic voting (e-voting) is a form of voting that integrates electronic machines to cast and count votes at a polling site [1]. In contrast, Internet voting (I-voting), as the name implies, entails accessing a specified application or website via the Internet to cast a ballot remotely [2]. There is a subtle difference between e-voting and I-voting. Mainly, e-voting requires the voter's physical presence at a polling place. On the other hand, Internet remote voting can be implemented at a supervised overseas site, such as an army base, or using a voter's device from the convenience of their home, as witnessed in Estonia [2]. However, e-voting has been loosely used to refer to any voting methods involving electronic devices in lieu of conventional paper ballots.

Theoretically, Electronic Voting Machines (EVMs)–electronic devices used to cast and calculate votes, outline ballots, and showcase the election results–are supposed to be easier to use and faster in terms of counting the number of votes and more accurate compared to the earlier vote-counting techniques. In reality, many of these machines have shown deficiencies in vote counting and in maintaining transparency, leading e-voting enthusiasts and academics to look for solutions to address such deficiencies [3]. There is a lot of research discussing solutions to make EVMs more reliable, but determining whether the conclusions reached are sufficient or if more examination is required, is our main concern.

A lot of effort was made by governments and organizations to ensure more secure elections and e-voting systems. For example, following the voting incidents in the 2000 elections in the United States, which will be discussed further later in this paper, the federal government established the Help America Vote Act (HAVA) program, which was majorly supported by President George W. Bush [4]. HAVA had various goals, but the main purpose was to fund states' purchases of electronic voting machines to replace older models before 2004 elections.

Evaluating the number of publications on any given topic is helpful, as it determines whether the number of research conducted is enough to advance in that domain [5]. The goal of this research paper is to showcase the number of e-voting related research papers published by the five top countries between the years 2000 and 2022 and the relationship between the number of these publications in a country and the e-voting related events as indexed by the Scopus database.

The rest of the paper is detailed as follows: The next section describes the motivation and reviews related work; Section 3 explains the research methodology; Section 4 shows the results and related analysis; and Section 5 delivers the conclusion.

2 MOTIVATION AND RELATED WORK

To our knowledge, no articles utilize Scopus data and aim to detect patterns between adopting e-voting in a country and researchers' interest in investigating that topic. However, some authors reviewed e-voting acceptance across the world. For example, Darmawan reviewed 78 studies conducted between 2005 and 2020 in many countries to determine how e-voting research has progressed over those 15 years [6]. In another study [7], Hapsara et al. reviewed 67 articles focusing on adopting e-voting in developing countries. The reviewed articles were published between 2000 and 2015 in English and indexed in different databases, including Scopus. The paper reported an increased interest in e-voting over the years.

On the other hand, several articles examined Scopus-generated data to determine interest in a given research area in different countries over time. For example, some studies analyzed Scopus to investigate topics such as tobacco use in the Middle East [5], research activities in Kazakhstan [8], and solar energy adoption in the Gulf [9].

3 METHODOLOGY

Scopus is an abstract and citation database that was launched in 2004 with an aim to provide easy access to researchers, students, and general users to worldwide academic publications in Science, Art, and Humanities as it features a large collection of peer-reviewed literature including books, scientific journals, and conference proceedings [5]. For this research, Scopus was utilized to determine the number of papers that have been published in the past 22 years on e-voting by countries of interest. The result was used to show if there is a lack in the number of studies conducted on e-voting. Interpreting the results found will determine if more studies and research related to e-voting are required to make it more secure and reliable. Scopus also provides different types of graphical data, which were used in this study to provide a relationship between the number of papers published and the effect of the events occurring in a country on these numbers.

Scopus offers cutting-edge search techniques that allow the user to choose different search parameters such as "Document Search," "Author Search," "Affiliation Search," and "Advanced Search." It also provides different search filters like "Article Title, Abstract, Keywords," "Source Title," "Year of Publication," etc. The filters and parameters provide control over the search results [4-6]. To achieve the objective of this research, the search parameter had to be chosen carefully for the results to be accurate and related to e-voting. The final search query titles used the following key terms: TITLE (e-vote) OR KEY (e-vote) OR TITLE (e-voting) OR KEY (e-voting) OR TITLE ("electronic voting") OR KEY ("electronic voting") OR TITLE ("electronic vote") OR KEY ("electronic vote") OR TITLE ("internet vote") OR KEY ("internet vote") OR TITLE ("internet voting") OR KEY ("internet voting"); the search using Scopus was not case sensitive, as approximately the same number of papers were yielded
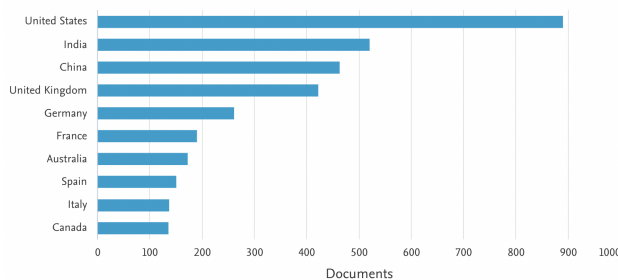

Figure 1: Bar graph for the Top 10 countries according to the number of publications from 2000 to 2022.

when searching using both upper and lower case letters for the different terms. The results using this search query gave accurate and title-related results. All the keywords used for the query must have been in English language, regardless of the fact that the research tackles different countries that utilize other languages than English.

4 RESULTS AND ANALYSIS

This section summarizes our findings and interpretations. The query mentioned in the last section resulted in 4,802 documents from over 100 countries. The total number of publications is quite reasonable compared to the number of countries that produced these publications. Figure 1 shows the top 10 countries using this query in the number of published articles. Also, Table 1 shows the exact number of papers each country published. As can be seen, The United States is in the lead, with 889 published documents, followed by India with 520 publications.

Scopus provides line graphs demonstrating the behavior of the number of documents published by each country over the years. These graphs were used to create a link between significant e-voting events that have occurred in each country and the trend the line graph exhibits. In this research, 5 countries have been closely studied. These countries are the United States, India, China, the United Kingdom, and Germany. The choice of countries was based on the fact that the combined number of papers published by these 5 countries is 2,552 papers, which accounts for more than 50% (exactly 53.14%) of the total number of publications from 2000 to 2022, which is 4,802 publications.

The next 5 subsections will tackle these countries and the events that we think have affected the behavior of the graphs as it will show the relation between the graph for each country and the event it encountered.

4.1 United States of America

As can be seen from Figure 2, the number of publications was the lowest in 2000. Since then, the number of publications has been on the rise despite fluctuating from one year to the next until it reached its peak in 2009 with 64 papers. After that, there was a decline before the number of publications rose again in 2018.

Table 1: Top 10 countries according to the number of publications from 2000 to 2022

Country	Documents Count
United States	889
India	520
China	462
United Kingdom	421
Germany	260
France	190
Australia	172
Spain	150
Italy	137
Canada	135

Per Scopus, the United States is dominating the field of e-voting in terms of the number of publications, with 889 documents published over the past 22 years. The US holds one of the largest presidential elections every four years, with over 100 million voters. For the elections to be more convenient and efficient, the USA uses EVMs, which have become an essential aspect of the elections. In the United States, electronic voting is implemented using various technologies, including web servers that present the vote count to the public, scanners that authenticate signatures on absentee ballot envelopes, touch screens for voters to mark choices, and scanners to read paper ballots [1]. In addition to voting machines, computer systems are also used to present the electoral rolls to poll site staff and keep track of registration counts of voters. A large number of manuscripts related to e-voting and EVMs were motivated by the nation's difficulties with the electoral system, especially in counting the total number of votes. Such complications and failures have led to questionable election results. Below, we highlight some notable events that may have influenced the number of documents published in the US.

In 2000, during the US presidential elections between Al Gore and George W. Bush, Florida reported several complications and glitches with the punch card voting machine used [10]. Inaccurate numbers of votes were recorded, resulting from the card not being fully punched by the machine, which was referred to as a ""hanging Chad."" As discussed in the introduction, the federal government established the Help America Vote Act (HAVA) program after these elections. The HAVA program provided a budget of $3.2 billion to enhance the elections and voting systems [11]. The roles of HAVA included replacing outdated voting equipment and recommending election administration standards for the states to act under.

Additionally, HAVA established the US Election Assistance Commission (EAC), a national election management body. HAVA's fundamental provision is inclusiveness, where all users are provided voting equipment. HAVA provided a deadline in 2006 for the nation's 10,072 local voting jurisdictions to act according to its provisions to implement new voting schemes that are up to the new benchmarks. These new standards have highlighted the requirement to permit voters with disabilities, including blind and visually impaired voters, to vote privately and independently [11]. Likewise, HAVA directed that all electronic voting systems must incorporate
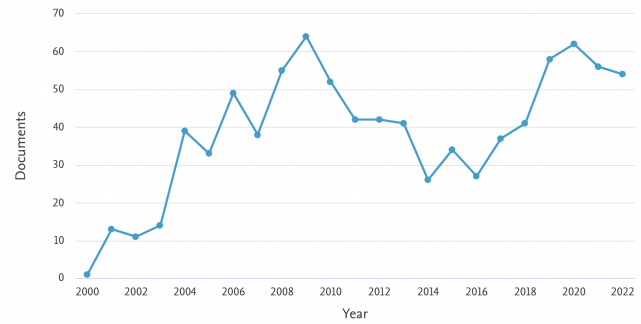
Figure 2: Line Graph for the number of papers published by year from the United States of America between 2000 and 2022.

a paper backup for redundancy and auditing [11]. All this triggered an increase in the number of published papers in 2001, which is the first peak along the trendline for the US, shown in Figure 2. As states began purchasing electronic voting machines in preparation for the 2004 elections, security experts reported various flaws in these systems. Several articles were published emphasizing concerns about using such systems. However, states had already adopted these machines and were prepared to use them in the 2004 elections.

Several corrective actions were taken following the 2004 general elections' various malfunctions. For example, the use of touchscreen voting machines was banned in California. Later in 2004, North Carolina announced that their EVMs had lost 4,438 votes in the General Election due to a malfunction. The manufacturer of these machines claimed that these machines could store up to 10,500 votes, while these machines have been only equipped to hold 3,005 votes [12]. These incidents were reported and investigated in various publications. Since then, many states have opted for less controversial voting machines such as paper ballots and optical scan scanners [13]. Also, paper audit trails became mandatory in several states. This may explain the decline in the following years (2008 onwards). However, the reports about foreign interference, the Democratic Party infiltration in 2016, and recent claims of election fraud in the latest elections may have contributed to a second wave of research interest.

4.2 India

As for India, as Figure 3 shows, no Scopus indexed studies on e-voting were published between 2000 and 2003. In fact, until 2011, the number of publications remained relatively low. The number of published articles slowly increased until 2017. After this, a significant increase is observed, reaching 100 papers in 2022.

India is the second largest country in terms of the number of papers published over the last two decades, as it is deliberated globally as the largest democratic country [14]. The use of electronics in elections is not a new concept in India. Experiments on whether to implement e-voting in India took place in 1982. By 2003, all the Indian states had already implemented e-voting and used the EVMs [14]. India's electronic voting machines have three versions, M1, M2, and M3. The latest version M3 was launched in 2013, which
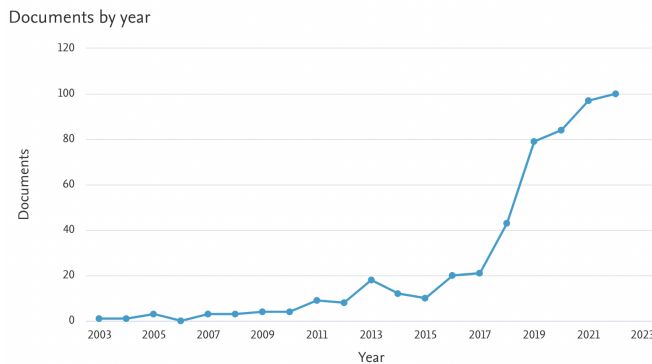
Documents by year

Figure 3: Line Graph for the number of papers published by year from India between 2000 and 2022.

Documents by year

Figure 4: Line Graph for the number of papers published by year from China between 2000 and 2022.

explains the slight increase in the published papers [15]. The M3 utilized the Voter-Verified Paper Audit Trail (VVPAT). As an extra layer of protection against tampering, M3 incorporated hardware and software components, ensuring that only a designated control unit can interface with the voting unit provided by the Election Commission [16 ,17].

We have noticed a steep increase in the number of published papers from 2017 to 2022, which might have been triggered by the "2019 allegations." In 2019, Syed Shuja, a security professional, argued that the EVMs used in India could be easily hacked and that there are many security concerns against their e-voting mechanisms [18]. This has probably driven the researchers to search more and investigate e-voting mechanisms, increasing the number of publications.

4.3 China

The number of publications that originated from China between 2001 and 2004 was low. However, this number has increased significantly since then. since 2017, the number of publications has remarkably increased, reaching the highest number (55) of papers published in 2020.

Unfortunately, we were unable to determine the e-voting system utilized in China. However, the impact of COVID-19 and the Zero COVID approach may have sparked the interest of Chinese researchers in exploring approaches that minimize contact and improve social distancing in e-voting, amongst other domains. This interest may have contributed to the spike shown in Figure 4.

4.4 United Kingdom

Figure 5 shows the number of e-voting publications affiliated with authors in the United Kingdom (UK). Generally, the number of published papers gradually increased until it peaked in 2020 with 37 research articles.

Numerous e-voting trials materialized between 2000 and 2004, specifically in May 2000, 2002, 2003, 2006, and June 2004, which explains the gradual increase in publications [19, 20]. These trials were conducted under the auspices of the Office of the e-Envoy and the UK Electoral Commission (EC) and included three sets of voting pilot agendas as numerous forms of electronic voting
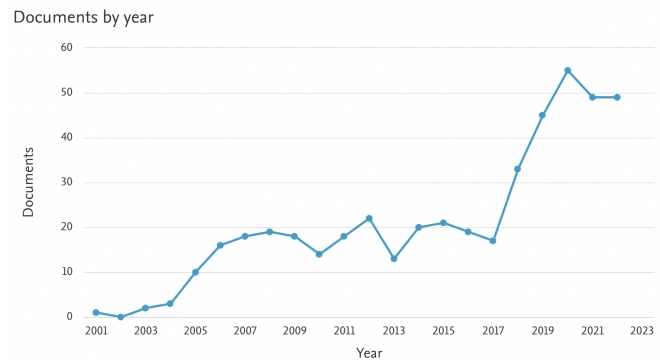
methods were examined [21]. In 2000, the Assembly and London's Mayoral elections were tallied using an optical scan voting system with software provided by UK-based Data and Research Services (DRS) PLC. Few years after, in 2004, a newer type of EVM was used for scanning and processing in the European Parliamentary, London Mayoral, and Assembly elections. The new machine was an optical character recognition machine produced by DRS as well [22].

In 2016, the UK Parliament declared that they are not planning to propose electronic voting for statutory elections, whether through Electronic Voting Machines (EVMs) in physical polling booths or remotely via the Internet. Consequently, EVMs were discontinued and no longer utilized. [19, 23].

In 2007, Scotland utilized optical scan voting systems to electronically tally paper ballots in the Scottish Council Elections and Parliament general elections [24, 25]. The UK Electoral Commission has discovered substantial errors in ballot design, resulting in over 150,000 substandard votes. The BBC then reported that 56,000 list ballots and 86,000 constituency were rejected. It was suggested that all these ballots were rejected due to voters being asked to cast their votes for both sections of the election on a single ballot paper, in preference to two independent ballots as it was in the previous elections [26-28]. Furthermore, Scotland has continued to implement e-voting and use EVMs for the next elections, as distinctive electoral systems are used for different types of elections [27-29]. Moreover, electronic voting was utilized in the 2012 and 2017 council elections with no issues reported. These events align with the publications' trends.

4.5 Germany

In Germany, as can be seen in Figure 6, initially, the number of documents published was low and inconsistent over the years, with an increase in 2003 and 2005. However, between 2006 and 2009, there was an increase in the count of papers, reaching the maximum number of 25 publications in 2009 over the period between 2000 and 2022. Between 2009 and 2010, the number of papers significantly dropped from 25 to 9 publications. After 2009, the graph varies continuously, reaching only ten papers published in 2022.
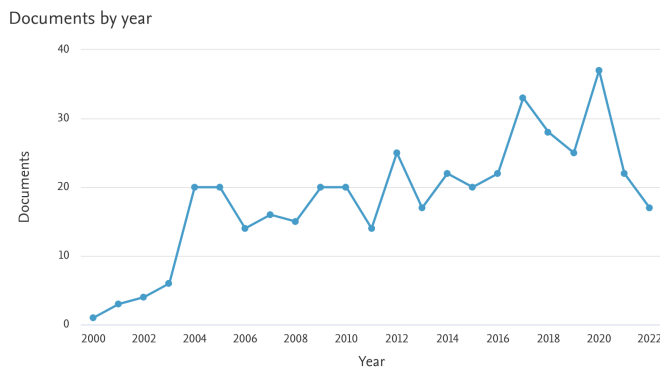
Documents by year

Figure 5: Line Graph for the number of papers published by year from the United Kingdom between 2000 and 2022.
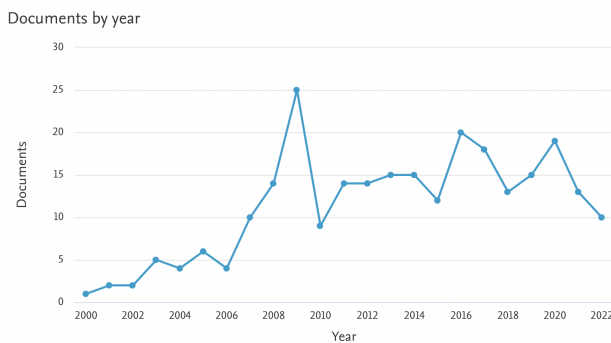
Documents by year

Figure 6: Line Graph for the number of papers published by year from Germany between 2000 and 2022.

According to the trend the graph is exhibiting, the number of publications can be linked to the events in Germany during this period. Initially, e-voting was not yet familiar to the country and was not a subject of focus for research which explains the low number of publications between 2000 and 2005. Back then, the only certified machines utilized for both national and local elections were the ESD1 and ESD2 voting machines [30]. These voting machines were manufactured by the Dutch Company Nedap and were tested for accreditation by the German National Metrology Institute PTB (Physikalisch-Technische Bundesanstalt) [30]. These two new machines were designed with distinctive voting systems to counter the hacking incident of the 5th of October 2006, of the ES3B by the Chaos Computer Club and a Dutch Citizen group [31]. The sharp surge in the number of publications between 2006 and 2009 can be linked to the trial study of 2005, where a plan of implementing an "optical scan voting system" based on a digital paper in the State Elections of Hamburg for 2008; new e-voting mechanisms were on the way of implementation, which made e-voting and EVMs a hot topic of research for many academics [32, 33].

Several events that took place in Germany in 2009 have likely contributed to the significant number of e-voting papers published in that year. In September 2009, Germany held federal elections, resulting in a new government formation. The German Federal

Constitutional Court thoroughly assessed the e-voting technologies used during the 2005 federal elections. The court uncovered that these EVMs were not entirely secure against manipulation or tampering.

Additionally, they did not allow the voters to decide whether or not their votes were "unfalsifiable recorded and included in the ascertainment of the election result" [17, 34]. Moreover, control measures to guarantee precise ballot counts and transparent safety were not essential for the Federal Voting Machine Regulation. All led to the conclusion that the e-voting mechanisms used did not meet the constitutional requirement of electoral transparency [17]. Thus, the court has declared e-voting techniques and EVMs that were used unconstitutional [17]. Finally, Germany ended electronic voting in 2009 [35, 36]. It is worth highlighting that 2009 witnessed the lowest recorded parliamentary voter turnout[1].

5 CONCLUSION

This study compared researchers' interest in e-voting and its status in that country. Our focus was on the top five countries that produced the highest number of publications in that research domain. Scopus shows publications from over 100 countries. However, over half of those publications originated from the US, India, China, the UK, and Germany. The International Institute for Democracy and Electoral Assistance shows that 144 of 178 countries, including Germany and the United Kingdom, do not use e-voting (as of 2019)[2]. However, the US and India are still using various forms of e-voting. Additional links between voter turnout and researchers' interest were noted.

It is essential to note that the relationship between events and the number of publications is not always straightforward, and other factors may also impact publishing trends. For example, with the rise of blockchains, many researchers proposed e-voting systems that employ such technology to overcome previously reported security concerns.

REFERENCES

[1] Mohammed Awad and Ernst L. Leiss. 2016. The Evolution of Voting: Analysis of Conventional and Electronic Voting Systems. International Journal of Applied Engineering Research. *Volume 11, Number 12.*

[2] Mohammed Awad and Ernst L. Leiss. 2011. Internet voting in the USA: analysis and commentary. Transforming Government: People, Process and Policy. *Volume 5, Number 1. pp.45-55.*

[3] Abdullahi L. Abba, Mohammed Awad, Zakaria Al-Qudah, and Abdul Halim Jallad. 2017. Security analysis of current voting systems. In 2017 International Conference on Electrical and Computing Technologies and Applications (ICECTA). pp. 1-6. IEEE. Ras Al Khaimah, United Arab Emirates.

[4] Earl Barr, Matt Bishop, and Mark Gondree. 2007. Fixing Federal E-Voting Standards, Communication of the ACM. *Volume 50, Number 3. pp. 10-24.* https://earlbarr.com/publications/votestds.pdf

[5] Sa'ed H. Zyoud *et al.* 2014. A Scopus-based examination of tobacco use publications in Middle Eastern Arab countries during the period 2003–2012. Harm Reduct J **11**, 14 (2014). https://doi.org/10.1186/1477-7517-11-14

[6] Ikhsan Darmawan. 2021. E-voting adoption in many countries: A literature review. Asian Journal of Comparative Politics, 6(4), 482-504. https://doi.org/10.1177/20578911211040584

[7] Manik Hapsara, Ahmed Imran, Timothy L. Turner. 2017. E-Voting in Developing Countries. In: *et al.* Electronic Voting. E-Vote-ID 2016. Lecture Notes in Computer Science, Volume 10141. Springer, Cham. https://doi.org/10.1007/978-3-319-52240-1_3

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[1]https://www.idea.int/data-tools/country-view/92/40
[2]https://www.idea.int/data-tools/question-view/742

[8] Bilal Akash, Ahmad M. Abu Abdo, Omar Akash, and Mousa S. Mohsen. 2016. A Scopus-based Analysis of Peer-Reviewed Literature Related to Solar Energy in GCC Countries, *Procedia Computer Science,* Volume 83, pp. 850-757.

[9] Marlen Yessirkepov, Bekaidar Nurmashev, Mariya Anartayeva. 2015. A Scopus-Based Analysis of Publication Activity in Kazakhstan from 2010 to 2015: Positive Trends, Concerns, and Possible Solution. J Korean Med Sci. 30:1915-1919

[10] "How we got here: A timeline of the Florida recount," *CNN,* 13-Dec-2000. [Online]. Available: http://edition.cnn.com/2000/ALLPOLITICS/stories/12/13/got.here/index.html.

[11] Conny B. McCormack. 2016. Electronic Voting around the World, *Democracy Rebooted.* https://www.jstor.org/stable/pdf/resrep03645.9.pdf?refreqid$=$excelsior%3A2b71feb9662cd964929ad4a6f626c78e&ab_segments$=$&origin$=$&initiator$=$

[12] Carrie J. D. Valle. 2017. "Historical Timeline of Electronic Voting Machines and Technology," *Medium,[online]*Available: https://medium.com/@carriedelvalle23/historical-timeline-of-electronic-machines-and-technology-8a17f198f86

[13] Mohammed Awad and Ernst L. Leiss. 2018. Did Technology Fail Us? Security Concerns in Safeguarding Democracy. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance (pp. 626-630). Galway, Ireland.

[14] Slamet Risnanto, Yahaya Bin Abd Rahim, Nanna S. Herman. 2020. Success Implementation of E-Voting Technology In Various Countries: A Review*. Proceedings of the 2nd Faculty of Industrial Technology International Congress International Conference Bandung, Indonesia,* pp. 151-152

[15] Subhajit Sengupta. 2017. All Questions About EVMs Are Answered Here. West Bengal Panchayat Elections 2023.

[16] Anubhuti Vishnoi. 2017. Election Commission plans to replace all pre-2006 EVMs with advanced M3 machines. The Economic Times. https://economictimes.indiatimes.com/articleshow/57484337.cms?utm_source$=$contentofinterest&utm_medium$=$text&utm_campaign$=$cppst&from$=$mdr

[17] Pallava Bagla. 2019. Zero Complaints Came Up After Lok Sabha Polls, Claims Expert Behind EVMs.https://www.ndtv.com/india-news/once-reviled-evm-emerges-clear-winner-in-lok-sabha-elections-2044362

[18] "Motivated slugfest: Election Commission slams man claiming EVMs can be hacked". India Today. 21 January 2019. *Retrieved 22 January 2019.*

[19] Miranda Olivier-Wright, Isobel White. 2008. Electronic Counting: May 2007 Electoral Pilot Schemes. The Electoral Commission, Aug-2007.

[20] GOV.UK Retrieved July 14, 2023, from https://www.justice.gov.uk/

[21] Thad Hall. Electronic Voting, *Electronic Democracy* https://www.jstor.org/stable/pdf/j.ctvddzwcg.10.pdf?refreqid$=$excelsior%

3A318d3a62a0d8367ec936ff46e53ce085&ab_segments$=$&origin$=$&initiator$=$

[22] 2004. Greater London Authority: A report from the 2004 Elections Review Committee. Greater London Authority. City Hall. The Queen's Walk. London SE1 2AA www.london.gov.uk

[23] UK Government Response, Retrieved July 14, 2023, from https://webrootsdemocracy.org/uk-govt-response-full/

[24] THE SCOTSMAN. Retrieved July 14, 2023, from https://www.scotsman.com/news/politics

[25] AQA Global Assessment Services: Worldwide solutions from the UK's leading exam board. Retrieved July 14, 2023 from https://www.aqa.org.uk/aqa-global-assessment-services

[26] The Electoral Commission: Scottish Election Reviews. Retrieved July 14, 2023 from https://web.archive.org/web/20080125232239/http://www.electoralcommission.org.uk/elections/scotelectionsreview.cfm

[27] "Consultation on Electoral Reform," *Demographics.* (December 2017). Retrieved July 14, 2023, from https://www.gov.scot/Publications/2017/12/4043/349117.

[28] "Scottish Elections 2007: The independent review of the Scottish Parliamentary and local government elections 3 May 2007." The Electoral Commission, Oct-2007. "Scottish Elections Review." The Electoral Commission.

[29] Scotland: Rejected votes more than thought. (May 2007). Retrieved July 14, 2023 from http://news.bbc.co.uk/1/hi/scotland/6637387.stm

[30] BVerfG, Judgment of the Second Senate of 3 March 2009 -2 BvC 3/07 -, paras. 1-166, https://www.bundesverfassungsgericht.de/SharedDocs/Entscheidungen/EN/2009/03/cs20090303_2bvc000307en.html

[31] EDRi: European e-voting machines cracked by Dutch group. (October 2006). Retrieved July 14, 2023 from https://edri.org/our-work/edrigramnumber4-19e-voting/

[32] Melanie Volkamer, Roland Vogt. 2007. New Generation of Voting Machines in Germany. The Hamburg Way to Verify Correctness.

[33] https://web.archive.org/web/20070929021509/http://fee.iavoss.org/2006/papers/fee-2006-iavoss-New-Generation-of-Voting-Machines-in-Germany.pdf

[34] Pilotstudie zum Digitalen Wahlstift. Freie und Hansestadt Hamburg Landeswahlleiter. 2005. https://www.hamburg.de/contentblob/104010/4b691a34d5c3a9e2783305ab52cdda55/data/pilotstudie.pdf

[35] Bundesverfassungsgericht. 2009. Docket Nos. 2 BvC 3/07 & 2 BvC 4/07. http://www.bundesverfassungsgericht.de/entscheidungen/rs20090303_2bvc000307en.html? Suchbegriff=voting (2012-22-02)

[36] National Democratic Institue: The Constitutionality of Electronic Voting in Germany. Retrieved July 14, 2023, from https://www.ndi.org/e-voting-guide/examples/constitutionality-of-electronic-voting-germany