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Digitalisation of Elections

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This paper examines the digitalisation of elections by exploring its potential benefits and drawbacks. It begins by providing an overview of the current status of digital voting systems, including how they work and how they are being used in different countries. It then assesses the advantages and disadvantages of digital voting systems, including cost savings, improved accuracy, and increased accessibility. Additionally, it considers potential security risks associated with digital voting systems, such as fraudulent voting and the potential for manipulation, and suggests ways to mitigate these risks. Finally, it concludes with a discussion of the potential for digital voting systems to improve the fairness and accuracy of elections in the future.

Keywords: *digitalisation, digital election, e-voting, internet voting, ballot paper, technology, blockchain technology.*

INTRODUCTION: DIGITALISATION

Digitalization is one of the major trends that will have a lasting impact on society and business in the near and long term. There will be a substantial impact from digitalisation, which many experts have equated to the industrial revolution. Digitalisation is alluded to in this study as a more fundamental transformation than simply digitising current workflows or outputs. The conversion of analogue data (especially in subsequent uses of photos, video, and text) into digital form is referred to as digitization. Digital transformation, often known as digitalization,

is described in the literature as "the transformations brought about by the application of digital technology in every sphere of human civilization."¹ The "capacity to transform existing products or services into digital equivalents and hence offer advantages over tangible products" is another name for digitalisation. "The adoption or rise in use of digital or computer technology by an organisation, industry, country, etc." are the definitions of digitalisation given by Brennen and Kreiss.²

One of the major developments that will affect society and the entire industry in the short and long term is digitalisation, according to research. Digitalisation will have a significant influence; numerous authors have compared it even to the industrial revolution. Digitalisation is alluded to in this study as a more fundamental transformation than simply digitising current workflows or outputs. The conversion of analogue data (especially in subsequent uses of photos, video, and text) into digital form is referred to as digitization. According to the literature, "the changes related to the application of digital technology in all facets of human society" are referred to as digitalisation or digital transformation.³

IMPACT ON SOCIETY

The relationship between digitization and overall societal welfare is among the most intriguing and significant aspects of this topic. Through the medium of digital communications and applications, digitisation, as a social process, enables institutions to produce, collaborate, and create more broadly for the advantages and advancement of society.⁴ The mass digitisation of books and other dated and rare materials is a part of the digitization process. Many institutions such as libraries and cultural archives have begun digitisation initiatives to provide access to the history of societies, countries, cultures, and languages with the aim of preserving the knowledge

¹ Thomas Choukroun, 'Digitisation vs Digitalisation' (*You Sign*, 4 August 2022) <<https://yousign.com/blog/digitisation-vs-digitalisation>> accessed 25 November 2022

² *Ibid*

³ *Ibid*

⁴ Saima Khan, Dr. Shazia Khan & Mohsina Aftab, 'DIGITIZATION AND ITS IMPACT ON ECONOMY' (2015) 5(2) International Journal of Digital Library <http://www.ijodls.in/uploads/3/6/0/3/3603729/vol-5_issue-2.138-149.pdf> accessed 25 November 2022

contents for future generations or making them accessible to a much wider community than could ever access the physical objects.⁵

DIGITALISATION OF ELECTION

Elections are becoming more digitalized, much like the rest of society. Election digitalisation raises many queries and ethical quandaries, such as the validity of the electoral process, despite the many benefits of this process, including the inclusion of excluded voices, diaspora voting, and the organisation of elections in times of crisis.⁶ Therefore, it is not unexpected that e-voting adoption is still fairly delayed. IDEA International's research indicates that only 34 of the 178 countries it examined use electronic voting.⁷ In the 2019 EU elections, more than 43% of Estonia's electorate cast ballots electronically, making it one of the most advanced nations in the field. Estonia was the first nation to permit electronic voting in general elections in 2005. Germany, Norway, and Switzerland have all made attempts to introduce electronic voting, but these efforts have not yet been successful.⁸

VARIOUS MODELS OF DIGITALISATION OF ELECTION

In 209 of the 227 nations and territories of which the ACE Electoral Knowledge Network has data, votes are cast through hand-marking ballots. In certain jurisdictions, voters mark their choice on a paper ballot which includes a complete catalogue of candidates and/or parties by writing an X, cross, or checkmark. Voters choose a ballot for a certain political party, place the ballot in an envelope, and then place the envelope in a box in a few nations, such as Israel and Mali.

Some nations employ a variety of techniques. In around 10% of the nations and territories in which data is available, electronic voting machines are utilised in addition to paper ballots. Both huge nations like the U.S.A. and India as well as smaller nations like Singapore employ

⁵ *Ibid*

⁶ 'Elections in the Digital Age' (*Digital Watch Observatory*, 7 July 2022) <<https://dig.watch/trends/elections-digital-age>> accessed 25 November 2022

⁷ *Ibid*

⁸ *Ibid*

electronic voting machines. Four nations – Armenia, Canada, Estonia, and Switzerland – use internet voting. The latest presidential election in the Gambia, meanwhile, utilised a technique of dropping marbles into drums. The system was designed in the 1960s to combat the high rates of illiteracy.

METHODS OF VOTING

Election vendors provide a huge range of services, including online voting, by mail, in person, or over an electronic device. In certain circumstances, these services can be tailored to meet the specific requirements of an organisation. Not only will how members vote to be impacted by this choice, but it might also have a significant impact on the budget of the organisation.⁹

E-VOTING

Electronic voting systems are used in some of the best-known, while some initially small and historically peaceful countries also use online voting. Many countries are actively looking into e-voting technologies as a method to improve various political systems. E-voting is frequently seen as a way to strengthen democracy, increase trust in electoral administration, legitimise election results, and increase the overall effectiveness of the political system. Given how swiftly technology is evolving, election officials, observers, international organisations, vendors, and standardisation bodies are continuously updating their processes and methods.¹⁰

INTERNET VOTING

An innovative option that readily involves citizens in the political process is internet voting (i-Voting). Voters can use this system to cast their vote from any computer with an internet connection, from anywhere in the world.¹¹ To date, Estonia is still the only nation in the world

⁹ '4 Common Methods of Voting' (*Yes Elections*, 5 May 2019) <<https://www.yeselections.com/blog/4-common-methods-of-voting>> accessed 25 November 2022

¹⁰ 'Introducing Electronic Voting – EODS' (*IDEA*, December 2011) <<http://www.eods.eu/library/IDEA.Introducing-Electronic-Voting-Essential-Considerations.pdf>> accessed 25 November 2022

¹¹ 'E-Democracy & Open Data' (*e-Estonia*, 23 November 2022) <<https://e-estonia.com/solutions/e-governance/e-democracy/>> accessed 25 November 2022

where anyone can vote remotely using an electronic ballot during elections for the European Union parliament, local government councils, and the national parliament (the Riigikogu).¹² On the other hand, some nations restrict the ability of specific categories of people to vote online. Online voting is only available to voters who are overseas in nations like France, Panama, or Pakistan, for example.¹³

In 2003, France started testing internet voting for voters abroad; during the 2012 parliamentary elections, all citizens residing abroad were given this option for the first time. Online voting quickly became the primary preference for more than half of voters who were absent from the country.¹⁴ Other nations, like Armenia, further reserve this option for diplomatic and military personnel stationed abroad.¹⁵

EVM

A portable device used to conduct elections for the parliament, legislature, and local bodies like panchayats and municipalities is an electronic voting machine (EVM). The EVM is a microcontroller-based device used to modernise the voting process. It eliminates the possibility of incorrect votes, maintains complete voting data privacy, and allows for efficient and precise vote counting. The entire voting information stored in EVMs can also be removed if necessary and is preserved for years.¹⁶

When one candidate must be chosen from a large field of candidates, the electronic voting machine is a dependable method of conducting the election. The EVM is made to handle just one post and one vote.¹⁷ By using an EVM, a voter can select the NOTA option or cast their ballot for the candidate of their choice. Each electronic voting machine (EVM) features a None

¹² *Adrià Rodríguez Pérez*, 'Which Countries Use Online Voting?' (*Medium*, 26 November 2020) <<https://medium.com/edge-elections/which-countries-use-online-voting-3f7300ce2f0>> accessed 25 November 2022

¹³ *Ibid*

¹⁴ *Ibid*

¹⁵ *Ibid*

¹⁶ 'What is EVM' (*Business Standard*) <<https://www.business-standard.com/about/what-is-evm#collapse>> accessed 25 November 2022

¹⁷ *Ibid*

of the Above (NOTA) button that voters can click if they don't want to support any of the candidates.¹⁸

The Electronics Corporation of India (ECIL) and Bharat Electronics Limited (BEL), two central government agencies, and the Election Commission (EC) collaborated to build India's first electronic voting machines (EVMs) in 1989. In the 1999 elections for the Goa State Assembly, EVMs were utilised for the first time.¹⁹ With the introduction of EVMs, digitalisation ushered in a more dependable, secure, and safe election environment, replacing the antiquated paper ballot systems and lengthy wait times. However, technology and change present their difficulties. Some political parties and individuals question the reliability of EVMs, and this topic is always being discussed.²⁰

BALLOT

Voters must fill out a ballot paper (also known as an election paper) to exercise their right to vote. The candidates standing for an election are listed on the ballot papers, and voters can indicate their preferences accordingly. Paper ballots might be regarded as official records.²¹ The production and distribution of ballot papers must adhere to certain regulations to ensure the election is legitimate. For example, all voters must receive the same ballots (print, size, colour, etc.). Additionally, the font and size of the boxes presenting each candidate must match.²²

THE MODEL USED IN INDIA

Free and fair elections in electoral democracies translate voter choices into a political mandate that serves as the foundation for governing. Voting procedures that are more accurate and effective strengthen democratic institutions. According to the literature on democracy and development, more representation – which gives the disadvantaged and vulnerable groups in

¹⁸ *Ibid*

¹⁹ *Ibid*

²⁰ *Ibid*

²¹ 'Ballot Paper' (*Polyas*, 25 April 2017) <<https://www.polyas.com/election-glossary/ballot-paper>> accessed 25 November 2022

²² *Ibid*

society a voice – promotes development.²³ When EVMs are utilised for bigger populations, their efficacy and quick turnaround time are especially important. The expanse of India's most recent general election is evidence of how EVM technology lessens electoral fraud and simplifies the voting process.²⁴

BEST POSSIBLE MODEL

Networks have revolutionised not only how we live our daily lives, but also how we engage in politics. The term "Twitter Revolution" has evolved over the past five years as a result of uprisings and protests associated with significant use of the social networking site, Twitter, by protesters and demonstrators.²⁵ The civil unrest in Moldova in 2009, the Iranian election protest (Green Revolution, Facebook Revolution), the Tunisian revolution in 2011, also referred to as the Jasmine Revolution or Wikileaks Revolution, the Egyptian revolution in 2011, and the Euromaidan Revolution in Ukraine, which began during 2013, are a few examples of social network forced events with a high worldwide response by journalists and lawmakers.²⁶

Why can't we vote online when every everyday chore can now be completed on a mobile device via the Internet? While the use of voting kiosks is still being explored in some jurisdictions and does not always guarantee complete security and accurate results (such as the Florida Congressional Elections in November 2006), other states, like Estonia, have switched to i-voting, which uses a public network. Estonia utilises an i-voting system for parliamentary elections, although many other nations, including Canada, Sweden, Latvia, and Switzerland, use it or are testing it for municipal elections. Voters can "cast their votes from any Internet-connected device, from anywhere in the globe," according to the Estonian system. The Estonian method is

²³ Shamika Ravi, 'How Electronic Voting Machines Have Improved India's Democracy' (*Brookings*, 6 December 2019) <<https://www.brookings.edu/blog/techtank/2019/12/06/how-electronic-voting-machines-have-improved-indias-democracy/>> accessed 25 November 2022

²⁴ *Ibid*

²⁵ G. C. Hanschitz, 'Digitalization of Politics and Elections' in Elias G. Carayannis, David F. J. Campbell, Marios Panagiotis Efthymiopoulos (eds), *Handbook of Cyber-Development, Cyber-Democracy, and Cyber-Defense* (Springer International Publishing 2018)

²⁶ *Ibid*

straightforward, elegant, and secure in contrast to other countries' expensive and troublesome machinery-based electronic voting systems.²⁷

The voter can log onto the system with an Identity card or a Mobile-ID at a predetermined voting session and cast a ballot. Before the ballot is turned in to the National Electoral Commission for tallying, the voter's identity is deleted, guaranteeing anonymity. The likelihood of votes being bought or forced is a worry with any type of remote voting, together with conventional mail-in ballots. A solution to this problem adopted by Estonia was to permit voters to log on as much as they like throughout the pre-voting period. Voters always have the option of changing their Digitalisation of Politics and Elections vote later because each vote nullifies the previous one.²⁸ Estonia made headlines in 2007 as the inaugural nation to use i-voting for national elections after becoming the first nation in the world to conduct national elections using this procedure in 2005. 116 nations participated in the voting of Estonians around the world.²⁹

How safe is i-voting, though? According to Vrinkel, this security system in Estonia uses a national ID card that can be used from any remote location and a voting system designed to detect odd behaviour. Security officials, according to him, have not found any significant attempts to interfere with the votes. However, there are still concerns, such as whether the "known security vulnerabilities associated with the internet alone would be sufficient to cast doubt on election results"- The results of the Estonian voting system have Avi Rubin, a professor of computer science at Johns Hopkins University who specialises in computer security, alarmed. According to Rubin, the security of people's PCs is not improving. Malware is controlling them more and more.³⁰

A straightforward but efficient method, which is the foundation of the most widely used peer-to-peer electronic cash system in the world, Bitcoin, could provide the answer to security problems regarding i-voting. Bitcoin might change the i-Voting game: Online payments can be transmitted directly from one person to another without passing via a banking institution with

²⁷ *Ibid*

²⁸ G. C. Hanschitz (n 25)

²⁹ *Ibid*

³⁰ *Ibid*

Bitcoin, a purely peer-to-peer version of electronic cash," preventing double-spending. The blockchain is a record that cannot be modified without redoing the proof-of-work, and it serves as the network's timestamp for transactions by hashing them into a continuing chain of hash-based proof-of-work. The blockchain, a shared public ledger on which the whole Bitcoin network depends, is the secret to the security mechanism. The blockchain contains all verified transactions. On this platform, new transactions can be validated to be spending Bitcoins that are truly owned by the spender and Bitcoin wallets can determine their spendable balance. Cryptography is used to enforce the blockchain's integrity and chronological order. This means that there is no way to modify any data without distressing the entire network, as the entire network secures and documents all transactions by writing them down and connecting them.

IMPACT OF DIGITALISATION (PROS AND CONS)

Pros:

Easy to Access & Use

The entire voting process can be completed by pressing a button or tapping a screen, thanks to the availability of online voting on numerous platforms, including computers, tablets, and smartphones. This means that everybody, anywhere in the world can participate in the elections. The days of attempting to choose a date when everyone will be in town for the election taking up an entire meeting are long gone. Members might, for instance, log into the programme while away and vote while unwinding on the beach. Additionally, larger groups with members spread across the nation benefit from this.³¹

Secure

The majority of trustworthy election providers include cutting-edge security in their software. Common features include secret ballots, which keep ballots private, single-vote verification, which makes sure members don't accidentally vote more than once, ballot tracking, which keeps

³¹ 'What Are the Leading Benefits of Online Voting?' (*Yes Elections*, 23 December 2020)

<<https://www.yeselections.com/blog/what-are-the-leading-benefits-of-online-voting>> accessed 25 November 2022

track of the precise moment a ballot is processed, and a secure network to safeguard the entire process from nomination to tabulation. Additionally, some providers promise never to divulge member information to any outside organisations.³²

Accurate

Along with security, accuracy most certainly ranks as the top perk of online voting. One vote can be miscounted inconspicuously enough to give the wrong candidate the victory. Online voting security procedures ensure that every vote is quickly counted. Vote tracking keeps track of how often a vote is clicked or opened as well as the exact minute it is executed. Every step is tracked, and the company can get precise data right away. In case there are any doubts, the correctness can be double-checked because the final tabulation procedure is fully auditable.³³

Enhanced Participation & Engagement

Increased accessibility and ease of use will likely result in more members casting votes, especially if they can do so from the comfort of their couches using their cell phones. In addition to that, many alternatives for online voting software integrate social media, which can help your organisation boost involvement even further. A page will emerge after the voting is finished asking visitors to share their results on Facebook or LinkedIn. Only their vote will be made public in the newly created post. This might motivate further participants.³⁴

Lower Costs

By switching to online voting, your organisation can considerably cut costs. If you usually choose mail-in ballots, it saves you the cost of printing and mailing thousands of ballots. Renting a polling place and printing all of the papers needed that day can be avoided if in-person voting is the custom for your organisation. If you're curious about how an online election can save you money, read on.

³² *Ibid*

³³ *Ibid*

³⁴ What Are the Leading Benefits of Online Voting? (n 31)

Cons:

Online voting systems' security

One of the greatest problems of online voting systems is that they are less secure than traditional paper-based techniques due to the constant possibility that hackers will alter the results.³⁵ If one wants to boost election security, one should look for a solution that encrypts data. Independent security experts must assess the system. For instance, 256-bit encryption must be used to protect our online voting system, which is the same level of protection used by large banks. Elections remain private and secret as no user or voter information will be shared.³⁶

Not Enough Transparency

Online voting may also be less transparent than traditional methods. When utilising a traditional paper ballot, voters can watch the ballots being counted. However, since online voting is entirely electronic, it is more challenging to determine the results.³⁷ Finding an online voting system with transparency characteristics is crucial. A live election results page, for instance, is offered by some systems, allowing voters to view the results as they come in. The votes cast using our technology are auditable because our voting system also provides election audits. We also offer independent verification, where an impartial, outside accountant guarantees a fair election process.³⁸

CONCLUSION

We can use digital and mobile services wherever we are, thanks to our mobility. Social network-forced events are growing more and more significant, and the need for digital political participation is fueled by the consumption of information via PEDs. In the past ten years, electronic voting has become a significant concern, but it has been deemed hazardous. High-

³⁵ 'The Advantages and Disadvantages of Online Voting Systems' (*Election Buddy*, 20 April 2022) <<https://electionbuddy.com/blog/2022/04/20/the-advantages-and-disadvantages-of-online-voting-systems/>> accessed 25 November 2022

³⁶ *Ibid*

³⁷ *Ibid*

³⁸ *Ibid*

security transfers and other i-voting features, such as the benefit of social nudging through open social networks, are now made possible by new technology.

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