



# Contemporary Debates on Electoral Technologies in Pakistan

Challenges and Opportunities  
of Electronic Voting Machines (EVMs)

**Dr. Hasnain Bokhari**



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# Contents

- List of Abbreviations ..... i
- Foreword ..... v
- The Digital Turn in Governance and Electoral Processes ..... 1
  - Study Objectives ..... 4
  - Study Questions ..... 4
  - Theoretical Strands on eGovernment and Electoral Technologies ..... 4
  - Study Structure ..... 9
- Global Trends in Electoral Technologies ..... 11
  - Emergence and Evolution of Electoral Technologies ..... 13
  - Types of Electoral Technologies ..... 14
    - Electoral Registers (Digital Electoral Rolls) ..... 14
    - Electronic Voting Machines (EVMs) ..... 15
    - Internet Voting (iVoting) ..... 17
    - Global Positioning System (GPS) ..... 18
  - Countries Pursuing Electoral Technologies ..... 18
  - Countries that Discontinued Electronic Voting ..... 22
  - Future of Electoral Technologies ..... 24
- Preconditions for Electoral Technologies in Pakistan ..... 27
  - Section: 1 ICTs Development in Pakistan ..... 29
    - NADRA eGovernment initiatives ..... 30
    - Mobile Telecommunications as a Facilitator of eServices ..... 32
    - Digital Connectivity of Rural Areas through USF ..... 35
  - Section: 2 Electoral Technologies in Pakistan ..... 36
    - The Digitalisation of Electoral Rolls ..... 38
    - The ECP’s 8300 SMS App ..... 41

The Result Management System (RMS).....	43
Result Transmission System (RTS).....	46
Closing Remarks .....	47
<b>Contemporary Debates on Electoral Technologies in Pakistan .....</b>	<b>49</b>
The Cultural Dynamics of Electoral Technologies .....	50
Trust and the Electoral Integrity .....	51
Digital (i)Literacy and (in)Capabilities .....	54
Demographic Realities and the Digital Divide .....	56
Non-documentary Culture in Pakistan's Social Fabric .....	58
Political Discourses on Electoral Technologies .....	60
Rigging and Irregularities in Elections as a Root of Contention.....	61
Conflicting Political Party Positions on EVM .....	62
Collective Wisdom .....	66
Lack of Clarity and Consensus.....	68
Electoral Technologies and the Populist Politics .....	70
Technological Challenges of Electoral Technologies .....	71
Cybersecurity and Election Hacking.....	72
Biometric and Data Protection .....	78
Operational Capacity of Electoral Technologies.....	80
Scale and Magnitude .....	81
Financial Strains .....	83
Infrastructural Requirements for the EVM.....	84
Legislative Concerns about Electoral Technologies.....	85
Legislating the EVMs.....	86
The ECP's Legal Mandate .....	87
Human Rights and Electoral Technologies .....	88
<b>Contested and Discursive Views on EVM.....</b>	<b>93</b>
Dwindling Political Landscape .....	93
Sociocultural Undercurrents .....	96
Cybersecurity of the Electoral Process.....	98
Operational Concerns .....	100
Legal Conundrum .....	102

Past, Present and Future of EVM in Pakistan ..... 104

Appendix A 37 observations about EVM submitted by  
the ECP in 2021 Part -1 ..... 109

Appendix B Form 15: Request to add name in the electoral roll .. 111

Appendix C Form 16: Objection on the name entered in the  
electoral roll..... 112

Appendix D Form 17: Application for Correction of Data in  
Electoral Roll ..... 113

Appendix E Form 28: List of polling stations for a particular  
constituency ..... 114

Appendix F Form 45: Result of vote count in a particular  
constituency ..... 115

Appendix G Form 46: Ballot paper count for a particular  
constituency ..... 116

Appendix H Form 47: Non-consolidated election result in a  
particular constituency ..... 117

Appendix I Form 48: Consolidated results of the count  
furnished by the presiding officer..... 118

Appendix J Form 49: Final consolidated result ..... 119

**Bibliography ..... 120**



## List of Abbreviations

ANP	Awami National Party
ATM	Automated Teller Machine
BISP	Benazir Income Support Program
CERS	Computerisation of Electoral Rolls System
CNIC	Computerized National Identity Card
CRC	Child Registration Certificate
DEO	Data Entry Operation
DRE	Direct Recording Electronic
ECP	Election Commission of Pakistan
EGD	Electronic Government Directorate
EMB	Election Management Body
EU	European Union
EVCM	Electronic Vote Counting Machine
EVM	Electronic Voting Machine
e-Voting	Electronic Voting
FAFEN	Free and Fair Election Network
FER	Final Electoral Rolls
FIA	Federal Investigation Agency
FRC	Family Registration Certificate
GPS	Global Positioning System

ICTs	Information and Communication Technologies
INEC	Independent National Electoral Commission
ISPs	Internet Service Providers
IT	Information Technology
iVoting	Internet Voting
LBEs	Local Body Elections
LDI	Long Distance and International
MIS	Management Information System
MOST	Ministry of Science and Technology
MW	megawatt
NADRA	National Database and Registration Authority
NDO	National Database Organisation
NGOs	Non-Government Organisations
NUST	National University of Science and Technology
PCO	Population Census Organisation
PCOS	Precinct Count Optical Scan
PDM	Pakistan Democratic Movement
PECA	Prevention of Electronic Crimes Act
PILDAT	Pakistan Institute of Legislative Development and Transparency
PMU	Project Management Unit
PO	Presiding Officer
PPP	Pakistan's People's Party
PTA	Pakistan Telecommunication Authority
PTCL	Pakistan Telecommunication Limited

PTI	Pakistan Tehreek-e-Insaf
PML(N)	Pakistan Muslim League Nawaz
RMS	Result Management System
RO	Returning Officer
RTS	Result Transmission System
SMS	Short Message Service
UAE	United Arab Emirates
UN	United Nation
UNDP	United Nations Development Program
USA	United States of America
USD	United States Dollar
USF	Universal Service Fund
VVPAT	Voter Verification Paper Audit Trail
WLL	Wireless Local Loop





## Foreword

Pakistan has seen sustained growth in the sphere of eGovernment since 2000. It was barely imaginable in 1998 to foresee the progress in the digitalisation of public administrative processes in Pakistan. The history of electoral technologies in Pakistan shows that different institutions have emerged, new policies are enacted, and new laws are being discussed to steer the growth of technologies.

Since 2010, prospects of Electronic Voting Machines (EVMs) have been regularly discussed at different fora in Pakistan, such as by its regulator, the Election Commission of Pakistan (ECP), the parliament, independent thinktanks, civil society and media. In recent years, the debate on EVMs in Pakistan has gained more momentum which has polarised the political landscape in Pakistan and proved to be a continuous source of contention among political parties.

The study in your hands aims to bring together different perceptions on electoral technologies shared by various actors in Pakistan. It provides an overview on electoral technologies and its challenges in Pakistan. The study also explores the various positions on electronic voting machines. It elucidates the complexities by comprehensively highlighting electoral technologies' socio-political, economic, operational, technical and legal aspects. The study also intends to bring forth the global trends in electoral technologies. The broader objective is to bring forward the debate and diverse positions on the role, usability, and implications of EVMs, in the hope of better understanding the technological landscape of elections in Pakistan and the politics it involves.

We sincerely hope that the study will be recognized as an important contribution to not just understand the dynamics of electoral technologies, but also an effort to consolidate the democracy in Pakistan. We are thankful to the author Dr. Hasnain Bokhari for his excellent research work.

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## The Digital Turn in Governance and Electoral Processes

The ubiquity and pervasiveness of communication technologies are driving public sector organisations through major digital transformations. The growing influence of digital technologies is increasingly modernizing the way public administrations are perceived and function. The traditional means of government-to-citizen interaction directly impact how public services are conceived and delivered. The new devices of governance depend upon the processing power of computers, data warehouses, databases, algorithms and digital payments. Public administrations worldwide are witnessing a unique digital turn that promises to bring more transparency, improved effectiveness, and better efficiency in delivering electronic public services. The digital dividends of these new forms of digital practices in public administration are both directly and indirectly influencing the citizens' socioeconomic inclusion and development.

Technological advances are also continuously affecting elections around the world. Election Management Bodies (EMBs) increasingly rely on technology-based and technology-assisted processes to administer the electoral processes, in some cases entirely and in others only partially. Electoral technologies are slowly emerging as a vital instrument in the EMBs' framework and strategy. These technologies are used in vote casting, counting, result transmissions, and other stages of the electoral cycle. The ubiquitousness of communication technologies in the electoral exercise promises to bring more accuracy to the voter registration process. Electoral technologies such as electronic voting machines or internet-based technologies are proving effective in enhancing transparency and preventing electoral fraud. Other electoral technologies, such as vote-counting machines, help in reducing the likelihood of human error during the vote count. Additionally, the technology-based processes are also efficient in preparing the tabulation of election results collected from tens and thousands of polling stations around the country. The over-reliance on technology

does, however, present several challenges as well. Cybersecurity of electoral technologies, hacking of the election infrastructure, or manipulating election results by algorithmic tampering are some of the primary concerns that undermine the integrity of the electoral process and public trust in democratic institutions.

Since 2010, prospects of Electronic Voting Machines (EVMs) have been regularly discussed at different fora in Pakistan, such as by its regulator, the Election Commission of Pakistan (ECP), independent think tanks such as the Pakistan Institute of Legislative Development and Transparency (PILDAT) or the parliament. The debate on EVMs in Pakistan gained more momentum when the then-ruling party Pakistan Tehreek Insaaf (PTI), passed the legislation from the joint parliamentary session to introduce the EVMs for the general elections in 2023. The opposition parties denounced the legislation, yet the PTI passed this bill with a narrow margin of 18 votes. About half the house opposed the EVM legislation, which the opposition considered a 'black law' and 'unconstitutional'<sup>1</sup>. It was no surprise that when the PDM parties unseated the PTI government through a vote of no confidence, the condition to conduct the 2023 general election via EVMs was reversed by the parliament. Though the EVM legislation as of 2022 stood null and void, it heavily polarised the political landscape in Pakistan and proved to be a continuous source of contention among political parties. There was a lack of clarity regarding EVMs' feasibility and reliability in Pakistan's highly competitive electoral space. It is difficult to gain a comprehensive perspective on EVMs without understanding the acceptance, use, growth, and outreach of the electoral technologies.

Pakistan has seen sustained growth in the sphere of eGovernment since 2000. It was barely imaginable in 1998 to foresee the progress in the digitalisation of public administrative processes in Pakistan. The history of electoral technologies in Pakistan shows that different institutions have emerged, new policies are enacted, and new laws are being discussed to steer the growth of technologies. In newly developed public sector institutions, the National Database and Registration Authority (NADRA) has been acknowledged for its computerized citizen database, along with a host of other eGovernment services

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1. The News, "Development of EVMs Aimed at Election Rigging: Marriyum Aurangzeb," August 23, 2021, <https://www.thenews.com.pk/latest/882080-development-of-evms-is-aimed-at-election-rigging-marriyum-aurangzeb>.

revising the way government and citizens have interacted in Pakistan. There also have been several initiatives to digitally transform the electoral process in Pakistan. Similarly, there is an increase in collaborations between public and private sector organisations for digital authentication and electronic public service delivery. These collaborations have immensely helped the Election Commission of Pakistan (ECP) introduce various electoral technologies, from voter registration to the electronic transmission of results on election day. These digital initiatives have sparked many aspirations, and there are hopes that electoral technologies will enable more transparency, fairness, efficiency, and trust in the electoral process.

Nonetheless, the globally-shared fears of massive digitalisation overshadow Pakistan's technological progress in the past few years. Cybersecurity of critical infrastructures, data theft, and personal data protection and manipulation through algorithmic bias are slowly starting to plague the digitalisation debate in Pakistan. There are fears that such a rapid and unregulated growth of technology may lead to vulnerabilities in the sovereignty of Pakistani cyberspace. Due to the allegations of electoral fraud and pre- and post-poll rigging, Pakistani elections are always under scrutiny by independent observers<sup>2</sup>. These fears may become more reasonable if new forms of manipulation through digital means influence the election results in Pakistan. The apparent collapse of the result transmission system (RTS) in the 2018 elections offers a brief glimpse of how electoral technologies become politicized and controversial if there is a lack of trust in the EMBs. Apart from the political consensus, nationwide implementation of electoral technologies such as EVMs would also depend upon various sociotechnical variables such as standardized technology, the availability of electricity infrastructure and cultural adaptability to newer technologies.

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2. Ilhan Niaz, "The Need for Reforms in the Light of 2013 Report of the Election Commission of Pakistan.," *Journal of Social Sciences & Humanities (1994-7046)* 28, no. 1 (2020); Omar Waraich, "Putting Pakistan's Politicians to a Piety Test: Are You Muslim Enough?," *Time*, accessed December 10, 2022, <https://world.time.com/2013/04/08/putting-pakistans-politicians-to-a-piety-test-are-you-muslim-enough/>.

## **Study Objectives**

This study aims to bring together different perceptions on electoral technologies shared by various actors in Pakistan, such as politicians, civil society, public sector institutions such as NADRA or the ECP, independent researchers, technology experts, digital rights groups and media persons. It provides an overview of aspirations shared by different actors on electoral technologies in Pakistan and the challenges they deem detrimental to electoral integrity. In so doing, the study primarily explores the various positions on electronic voting machines. It elucidates the complexities by comprehensively highlighting electoral technologies' socio-political, economic, operational, technical and legal aspects. The study also intends to bring forth the global trends in electoral technologies. The broader objective is to bring forward the debate and diverse positions on the role, usability, and implications of EVMs, in the hope of better understanding the technological landscape of elections in Pakistan and the politics it involves. The study methodology is based on both in-person and web-based semi-structured interviews conducted during November and December 2022.

## **Study Questions**

This study seeks to answer the following questions: 1) What are the different types and forms of electoral technologies and how do they work? 2) What are the global trends in the uptake of electoral technologies? 3) How do the digitalisation trends form the preconditions for the growth of electoral technologies in Pakistan? 4) What are the different perceptions held by the respondents of this study on EVM implementation in Pakistan? 5) What are the aspirations and fears associated with EVMs? 6) How may the relevant cultural, technical, and economic realities be helpful in understanding the implementation of EVMs in Pakistan?

## **Theoretical Strands on eGovernment and Electoral Technologies**

In the past few decades, information and communication technologies (ICTs) are transforming public administration by innovating and

reinventing the bureaucratic processes and government's internal and external interactions<sup>3</sup>. The new ICT approaches, such as data science, machine learning, the Internet of Things, blockchain and biometric technologies have garnered significant interest for their feasibility in tech-led governance, promoting democratic culture and supporting election processes<sup>4</sup>. Both academia and the policy sector have termed such a digital transformation of the public sector as electronic government or eGovernment<sup>5</sup>. The emergence of new ICTs offers faster ways of communication, data storage, the retrieval and processing of data, and the exchange of information, which together provide new configurations of interaction for what eGovernment literature refers to as government-to-government (G2G), government-to-citizen (G2C) and government-to-business (G2B) relations<sup>6</sup>. One of the key developments within the G2C and G2B debate is the discovery and development of new and alternative service delivery channels<sup>7</sup>. Particularly in countries with low digital connectivity, governments prefer to do away with web-based electronic services and rely on multiple channels such as information kiosks, service centres or mobile phones<sup>8</sup>.

E-Government, as a set of techniques rooted in the modern ICTs, is becoming an essential driver for the modernisation of the public sector that helps achieve better results, especially in the field of electronic public service delivery<sup>9</sup>. Contextualizing eGovernment,

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3. Albert Meijer and Victor Bekkers, "A Metatheory of E-Government: Creating Some Order in a Fragmented Research Field," *Government Information Quarterly* 32, no. 3 (2015): 237–45.
  4. Miguel Arana-Catania et al., "Citizen Participation and Machine Learning for a Better Democracy," *Digital Government: Research and Practice* 2, no. 3 (2021): 1–22.
  5. Richard Heeks, "E-Government as a Carrier of Context," *Journal of Public Policy* 25, no. 1 (2005): 51–74.
  6. Donald F Norris, "E-Government 2020: Plus Ça Change, plus c'est La Meme Chose," *Public Administration Review* 70, no. S1 (2010): S180.
  7. Christopher G Reddick, "Comparing Citizens' Use of e-Government to Alternative Service Channels," in *Digital Democracy: Concepts, Methodologies, Tools, and Applications* (IGI Global, 2012), 1090–1104.
  8. Sujeet Kumar Sharma et al., "Challenges Common Service Centers (CSCs) Face in Delivering e-Government Services in Rural India," *Government Information Quarterly* 38, no. 2 (2021): 101573.
  9. Noore Alam Siddiquee, "E-Government and Innovations in Service Delivery: The Malaysian Experience," *Intl Journal of Public Administration* 31, no. 7 (2008): 797–815.

Dawes examines ICT-based public administration that serves five cross-sectional objectives to offer: (i) a policy framework, (ii) improved public services, (iii) high-quality and economical government operations, (iv) citizen engagement in democratic processes, and (v) administrative and structural reform<sup>10</sup>. For Dawes, the proliferation of and access to ICTs possess the potential to improve democratic processes. The G2C interactions enable citizens easier access to government information. With Web 2.0 technologies, citizens have the possibility to influence the public consultation and agenda-setting process. She argues that the digitalisation of public sector structures and processes has the potential to bring an institutional reform that can help improve transparency and trust in the government. Anttiroiko posits similar notions regarding technologies as a tool for mediation that carries a transformative potential to transform societies and support different phases of the democratic process<sup>11</sup>.

One of the crucial facets of eGovernment application is electronic participation (or eParticipation). E-Participation fosters civic engagement and enables a more active role of citizens in open and participatory governance<sup>12</sup>. Governments are attracting public engagement through their web portals, online discussion forums, decision support systems, and social media presence<sup>13</sup>. One of the significant examples of eParticipation is also electronic voting (or eVoting) which is attracting the attention of both governments and academia alike<sup>14</sup>. E-Voting demonstrates how far ICTs have come to instil their influence in the democratic process. E-Voting distinguishes itself from manual voting by enabling casting, counting, and tabulating

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10. Sharon S. Dawes, "The Evolution and Continuing Challenges of E-governance," *Public Administration Review* 68 (2008): 586–102.

11. Ari-Veikko Anttiroiko, "Building Strong E-Democracy: The Role of Technology in Developing Democracy for the Information Age," *Communications of the ACM* 46, no. 9 (2003): 121–28.

12. Rony Medaglia, "EParticipation Research: Moving Characterization Forward (2006–2011)," *Government Information Quarterly* 29, no. 3 (2012): 346–60.

13. Řystein Šcbř, Jeremy Rose, and Judith Molka-Danielsen, "EParticipation: Designing and Managing Political Discussion Forums," *Social Science Computer Review* 28, no. 4 (2010): 403–26.

14. Fernando Pinto, Marie Anne Macadar, and Gabriela Viale Pereira, "The Potential of EParticipation in Enlarging Individual Capabilities: A Conceptual Framework," *Information Technology for Development*, 2022, 1–23.



votes via electronic systems<sup>15</sup>. Avgerou et al. argue that one of the most significant advantages of electronic voting, particularly with electronic voting machines, is that they not only speed up the announcement of election results but also facilitate the disenfranchised population, particularly the vulnerable groups<sup>16</sup>. Electronic voting also helps election management bodies (EMBs) prevent electoral fraud, such as ballot stuffing<sup>17</sup>.

However, as Lippert and Ojumu and Avgerou et al. remind us, there are considerable challenges associated with eVoting. Due to the complex nature of information systems, eVoting may open the door to new types of electoral fraud and manipulation, undermining electoral integrity<sup>18</sup>. One of the biggest fears held in several countries is a new form of election manipulation which threaten the digital security of the entire electoral process. There are fears of attacks on election cybersecurity by non-state actors and foreign actors meddling with the outcome of election results<sup>19</sup>. Based on the diverse experiences with electronic voting, many countries such as Netherlands, Italy and Finland have opted to return to the hand counting of ballots. Germany's federal court has declared any form of electronic voting unconstitutional.

Notwithstanding the threats to the digital security of electoral technologies, it is pertinent to mention that eGovernment is perceived in different ways by governments worldwide. The rationales for such perceptions can be attributed, in part, to the unique cultural context, socioeconomic conditions, digital literacy and technological infrastructure. Heeks and van Dijk have long argued that several eGovernment projects collapse due to a lack of operational capacity

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15. Ikhsan Darmawan, "E-Voting Adoption in Many Countries: A Literature Review," *Asian Journal of Comparative Politics* 6, no. 4 (2021): 482–504.

16. Chrisanthi Avgerou, Silvia Masiero, and Angeliki Poulymenakou, "Trusting E-Voting amid Experiences of Electoral Malpractice: The Case of Indian Elections," *Journal of Information Technology* 34, no. 3 (2019): 263–89.

17. Rodrigo Schneider, "Free or Fair Elections? The Introduction of Electronic Voting in Brazil," *Economía* 21, no. 1 (2020): 73–100.

18. Susan K Lippert and Ekundayo B Ojumu, "Thinking Outside of the Ballot Box: Examining Public Trust in e-Voting Technology," *Journal of Organizational and End User Computing (JOEUC)* 20, no. 3 (2008): 57–80.

19. David P Fidler, "Transforming Election Cybersecurity," *Council on Foreign Relations* 17 (2017).

and persistent digital divides<sup>20</sup>. Alomari et al. highlight the importance of cultural dynamics, as technologies don't evolve in a vacuum. The sociocultural features of societies are the reflection of social capital and human values that need to be acknowledged in the development and implementation of technologies<sup>21</sup>. Similarly, ICTs involve regular investment in the infrastructure, resource personnel, hardware procurement and development of software applications<sup>22</sup>. Above all, there are also institutional dimensions of eGovernment. For countries with lower development indicators, eGovernment policies must be backed by laws and regulations<sup>23</sup>. Unless a legal basis exists for eGovernment, its adoption may face an existential risk or complete failure.

The themes of cultural dimensions of ICTs, political will and dialogue, technological infrastructure and its challenges, legal concerns and operational capacity in the study of eGovernment research served as a precursor for developing semi-structured interviews conducted with resource persons in Islamabad and Lahore during November and December 2022. The respondents of this study were asked questions related to these themes and the debates on EVMs projected by the electronic and print media.

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20. Liliana Fernández Gómez and Richard Heeks, "Measuring The Barriers To Big Data For Development: Design-Reality Gap Analysis In Colombia's Public Sector," *Development Informatics Working Paper*, no. 62 (2016); Anique Scheerder, Alexander Van Deursen, and Jan Van Dijk, "Determinants of Internet Skills, Uses and Outcomes. A Systematic Review of the Second-and Third-Level Digital Divide," *Telematics and Informatics* 34, no. 8 (2017): 1607–24.
  21. Mohammad Kamel Alomari, Kuldeep Sandhu, and Peter Woods, "Exploring Citizen Perceptions of Barriers to E-Government Adoption in a Developing Country," *Transforming Government: People, Process and Policy*, 2014.
  22. Meijer and Bekkers, "A Metatheory of E-Government: Creating Some Order in a Fragmented Research Field."
  23. Loukas Glyptis et al., "E-Government Implementation Challenges in Small Countries: The Project Manager's Perspective," *Technological Forecasting and Social Change* 152 (2020): 119880.

## Study Structure

The study is structured into six chapters.

**Chapter 1** is the present chapter that discusses the motivation and objectives of this study by outlining different research questions and theoretical strands in the study of eGovernment and electronic voting.

**Chapter 2** explains the emergence and evolution of electoral technologies around the world. It presents the variety of electoral technologies, their functions, adaptation and challenges. It discusses the status of iVoting and EVMs in different countries. It also discusses countries that are no longer pursuing electronic voting.

**Chapter 3** discusses the digitalisation trends in Pakistan, such as the growth of ICTs, digital infrastructure and the formation of new institutions that became a precursor for electoral technologies. It provides an overview of electoral technologies such as the digitalisation of electoral rolls, voter verification service via the 8300 SMS App, Result Transmission System (RTS), Result Management System (RMS), and EVMs.

**Chapter 4** brings forward the contemporary debates on EVMs in Pakistan. It presents the responses of different stakeholders and their perceptions about the future of electronic voting in Pakistan. It lays out various sub-themes that emerged from responses collected through semi-structured interviews.

**Chapter 5** presents the analysis and discussion of the sub-themes highlighted in Chapter 4. It also provides a critical overview of the electoral technologies attempted so far in Pakistan.

**Chapter 6** concludes the study by providing a summary of this study and offers an opportunity to view the future of electoral technologies in Pakistan.



## Global Trends in Electoral Technologies

Governments worldwide are rapidly employing new information and communication technologies (ICTs) to modernise their public administration. The use of these technologies aims at improving the efficiency of governance processes. It also helps improve government-to-citizen relationships through which both parties can more effectively and rapidly access each other. Using ICTs in public administration is known as eGovernment (or electronic government). The primary goal of eGovernment applications is to employ ICTs innovatively to improve the efficiency, effectiveness and quality of public services. Particularly with the commercialisation of the Internet, national governments are more inclined to develop web-based and mobile-based applications. In countries with lower internet adoption, multiple and alternative channels such as mobile phones, kiosk machines, and citizen facilitation centres are used for electronic public service delivery<sup>24</sup>.

Similarly, elections are also administered and conducted through technology-assisted and technology-based processes in different parts of the world. A crucial public sector institution regularly relying on modern ICTs and digital infrastructures are the Election Management Bodies (EMBs) responsible for supervising elections in their respective countries<sup>25</sup>. Although using ICTs in the election administration process is a prime example of eGovernment application, ICTs employed in elections are also known as electoral technologies<sup>26</sup>. The primary aim of electoral technologies is not limited to voting; instead, their outreach spreads over different stages of the electoral process. These processes include the creation of the electoral register, identifying or verifying

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24. Hasnain Bokhari, "Multi-Channel Electronic Public Service Delivery Mechanisms in Developing Countries: A Case Study of the e-Sahulat Programme in Pakistan," 2010, 243–48.

25. Countries use different names for their EMBs, some refer to them as national election commissions and some refer them to as election boards.

26. Mourine Achieng and Ephias Ruhode, "The Adoption and Challenges of Electronic Voting Technologies within the South African Context," *International Journal of Managing Information Technology* 5, no. 4 (November 2013): 12.

voters, casting or counting the votes, processing election results, and presenting the election outcome. The ICT-assisted electoral process can be referred to as an example of electoral technology regardless of any stage. Different countries employ different technologies at various stages of the electoral process depending upon their technological infrastructure, digital literacy and scale and magnitude of elections<sup>27</sup>. Electoral technologies help simplify and assist the election commissions in conducting elections more efficiently and effectively<sup>28</sup>.

One may ask, what purpose does the employment of ICTs serve for such an ambitious digitalisation project? Parts of the answer lie in the fact that the technologies are expected to fulfil the values of electoral integrity. These values include fairness (no person can learn the voting outcomes before the results are compiled/tallied), eligibility (only eligible voters are allowed to cast their vote), uniqueness (no voter is permitted to cast a vote more than once), privacy (no one can access information about the voters' choice of the vote), accuracy (all valid votes should be counted correctly), and efficiency (the counting of votes can be performed within a minimum amount of time)<sup>29</sup>. These norms of electoral integrity are the central building blocks for the quality of democracy in any country<sup>30</sup>. The election observation missions evaluate the implementation of these values, and every electoral technology is expected to guarantee these values.

Nevertheless, electoral technologies bring in numerous challenges. Since none of the ICTs is entirely foolproof, there are fears that these technologies could be tampered with. With increasing concerns about maintaining the cybersecurity of digital infrastructure and public

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27. D Nikam, D Shetiye, and D Bhoite, "A Critical Study of Electronic Voting Machine (EVM) Utilization in Election Procedure," *International Journal of Trend in Scientific Research and Development*, March 2019, 1–3.

28. Avgerou, Masiero, and Poulymenakou, "Trusting E-Voting amid Experiences of Electoral Malpractice: The Case of Indian Elections."

29. M Sudhakar and B Divya Soundarya Sai, "Biometric System Based Electronic Voting Machine Using Arm9 Microcontroller," *Journal of Electronics and Communication Engineering* 10, no. 1 (2015): 57–65.

30. Jessica Fortin-Rittberger, Philipp Harfst, and Sarah C Dingler, "The Costs of Electoral Fraud: Establishing the Link between Electoral Integrity, Winning an Election, and Satisfaction with Democracy," *Journal of Elections, Public Opinion and Parties* 27, no. 3 (2017): 350–68; Pippa Norris, "Does the World Agree about Standards of Electoral Integrity? Evidence for the Diffusion of Global Norms," *Electoral Studies* 32, no. 4 (July 10, 2013): 576–88.

databases, there are concerns that the elections could be manipulated or the entire process could also be hacked. On the other hand, there are also a plethora of other challenges, such as technological failures, operational costs, infrastructure requirements, and cultural adaptability with the new ICTs. Thus, electoral technologies are subject to severe criticism, particularly those associated with voting and vote-counting mechanisms. In extreme cases, it also leads to controversies and harsh political accusations<sup>31</sup>. Nevertheless, such contested positions also open the door to civil society dialogue, academic debates and political deliberation on seeking more clarity on these technologies and the challenges these present. This section aims to introduce different types of electoral technologies and provide an overview of global trends in the adoption of ICTs in the electoral process. This section also provides the current status of eVoting procedures by countries across the globe.

## Emergence and Evolution of Electoral Technologies

One of the earliest examples of electronic voting dates back to the 1960s when punch-card ballots were used in Georgia, USA. The punch-card ballots were later tallied using a computer program. The USA employed a more enhanced version of the machines, which were later termed electronic voting machines (EVMs)<sup>32</sup>. India first experimented with electronic voting in 1982 when EVMs were employed in the Parur Assembly Constituency's voting stations during the general election for the Kerala Legislative Assembly<sup>33</sup>. However, their use became controversial when EVM use was challenged in the highest court. The supreme court ruled that electronic recording of the votes significantly differed from the manual casting of the vote, and the provision of electronic voting needed to be provided with a legal cover in the law. Thus, the machines could no longer be used after

31. Soutik Biswas, "India Election 2019: Are Fears of a Mass Hack Credible?," January 25, 2019, <https://www.bbc.com/news/world-asia-india-46987319>.

32. Roy G. Saltman, "Effective Use of Computing Technology in Vote-Tallying" (National Bureau of Standards (U.S. Department of Commerce), 1975), <https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nbsspecialpublication500-30.pdf>.

33. D Nikam, D Shetiye, and D Bhoite, "A Critical Study of Electronic Voting Machine (EVM) Utilization in Election Procedure," *International Journal of Trend in Scientific Research and Development*, March 2019, 1–3.

1983. In 1989 a new section (61A) was added to the law that gave the election commission the authority to employ electronic voting devices<sup>34</sup>. In the late 1990s, particularly during 1998, India made wide use of EVMs on an experimental basis in some constituencies of the state assembly elections. Their use was later expanded in a phased manner for subsequent assembly elections. As a result, EVMs replaced the paper ballots for all state elections after 2001. It was also during the 1990s that electronic voting procedures spread across several countries such as Belgium, Brazil and the Netherlands<sup>35</sup>.

A more sophisticated and advanced version of EVMs is internet voting (or online voting) which the United States first used in 2000. Subsequently, several countries started to experiment with and implement online voting. There are 15 countries that have used or piloted internet voting for the elections of local councils, cantons, municipalities or overseas voters, diplomatic staff or military personnel. These include ten countries in Europe (Estonia, Finland, Norway, Switzerland, Armenia, Netherlands, United Kingdom, France and Spain), two in North America (USA and Canada), two in Latin America (Panama, Mexico), one each in South Asia (India) and the Gulf (UAE) and two in Australasia (New Zealand, Australia).

## Types of Electoral Technologies

### Electoral Registers (Digital Electoral Rolls)

One of the most complex and contentious aspects of the voting process continues to be voter registration<sup>36</sup>. Voter registration is significantly more difficult in countries without a credible population census or valid and unique identity documentation<sup>37</sup>. Due to the low

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34. Sisir Debnath, Mudit Kapoor, and Shamika Ravi, "The Impact of Electronic Voting Machines on Electoral Frauds, Democracy, and Development," *Democracy, and Development* (March 16, 2017), September 25, 2017, 59.

35. The International Foundation for Electoral Systems, "Internet Voting: Past, Present and Future," July 17, 2013, <https://www.ifes.org/news/internet-voting-past-present-and-future>.

36. The Electoral Knowledge Network, "Elections and Technology," accessed December 12, 2022, <https://aceproject.org/ace-en/topics/et/default>.

37. "Technology in Elections" (U.S. Election Assistance Commission), accessed December 14, 2022, [https://www.eac.gov/sites/default/files/eac\\_assets/1/6/EMG\\_chapt\\_17\\_august\\_26\\_2010.pdf](https://www.eac.gov/sites/default/files/eac_assets/1/6/EMG_chapt_17_august_26_2010.pdf).



quality of existing electoral registers, election authorities are constantly challenged to provide more reliable registration systems. Electoral rolls need to be regularly updated as people frequently move from city to country due to their familial or economic situation. Similarly, the life events such as new and deceased voters' data also require frequent validation to prepare the fresh voters list. With the increasing population across the globe, manual registration of voters is a gigantic task and prone to error. A number of countries have been employing several digital transformation models to digitise their voters' data using national identity card registers, census data or through their own civil registry systems. In the past few years, biometric technologies have made significant inroads into public administration systems. The use of biometric technologies such as fingerprint identification or face recognition technologies is often used to either digitise or assist in the digitalisation of electoral rolls<sup>38</sup>. For instance, in Sweden, computerised systems are used for generating voter lists.

### **Electronic Voting Machines (EVMs)**

One of the most prominent forms of electoral technology is the electronic voting machine (EVM), also referred to as the Direct Recording Electronic (DRE) voting machine. It is a paperless electronic device used for casting and counting votes. These machines are smaller in size, thus making them portable and installable at different locations. It has two modules, the voter identification module and the ballot casting module. In some EVM varieties, the two units are joined by a small wire, while in others, there is a wireless link between the control unit and the ballot unit to protect data. The voter identification module uses data from a central or local database to verify voter registration. Some electronic voting systems perform voter verification manually through I.D. cards. Similarly, biometric technologies perform identification in other machines, such as verification via thumb impressions.

After the voter verification, the polling officer in charge presses the ballot unit button allowing the voter to cast a vote by pressing a ballot-casting module. Since the entire procedure is electronically

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38. Martin Russell and Ionel Zamfir, "Digital Technology in Elections: Efficiency versus Credibility?" (European Parliamentary Research Service, September 2018), [https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/625178/EPRS\\_BRI\(2018\)625178\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/625178/EPRS_BRI(2018)625178_EN.pdf).

performed, the paraphernalia of the polling stations, such as the ballot papers, ballot boxes and stamping, is replaced by the ballot module or unit. It contains the political candidates' names, images or symbols and push buttons. Pressing one of the buttons ensures casting a vote for the desired candidate. The voter may be informed by a small light that appears right after the button is pressed, indicating that the vote has been cast. The ballot machines are simple to use and resemble an actual ballot. Furthermore, touch screens are not used to ensure the inclusion of the population with low levels of digital literacy. The voting machines are veiled behind secrecy screens to protect voters' privacy. Every action, from beginning to end, may have a time and date stamp. The control unit can store this information for several years.

Some EVMs also use a paper trail for verification of the voter, known as a voter verification paper audit trail (VVPAT). EVMs that use VVPAT require additional printing devices in the polling stations. EVMs require electricity but are also battery-operated, which ensures an uninterrupted voting process. Every EVM also has a specific storage capacity. Moreover, it is impossible to cast more than one vote by repeatedly pushing the button. The vote is recorded for that candidate as soon as a specific button on the ballot unit is pressed. The device is locked afterwards for the next voter, preventing it being used for double voting. No additional votes are counted, no matter how many times someone presses the ballot button once the vote is cast on the first attempt<sup>39</sup>.

Thus, the EVMs are used to ensure the principle of "one person, one vote", thereby significantly minimising bogus voting. Among some of the advantages that the EVM offers is increased voter accessibility. As the votes are recorded and counted automatically in the EVM, it also speeds up the ballot-counting process. This eventually reduces the number of personnel required to manually tally the ballots. Results can be reported and released more quickly, which is among the other anticipated advantages<sup>40</sup>. EVMs, once used in the elections, are then stored in a government warehouse for the next election. Although the EVM may bring a number of advantages, its adoption by

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39. Sudhakar and Sai, "Biometric System Based Electronic Voting Machine Using Arm9 Microcontroller."

40. "Benefits and Risks of E-Voting and on-Line Voting," Decentralisation, accessed December 12, 2022, <https://decentralization.gov.ua/en/news/12905>.

different countries has remained sluggish and has generated several controversies and debates. Their operational cost, the cybersecurity of the EVMs or the poor design of the machines are also among the common reasons for their slow uptake and use<sup>41</sup>.

### Internet Voting (iVoting)

The rapid expansion and commercialisation of the Internet across the globe have also inspired changes in the electoral and voting process. Internet voting or iVoting is the procedure by which votes are cast using the Internet as a communication medium. Votes can be cast either from public computers, voting kiosks in polling stations or, more commonly, from any Internet-connected computer, mobile or tablet device accessible to a voter. Internet voting saves the voter time and money by enabling him or her to vote independently from their home or other location, which may improve overall voter turnout. The citizens, particularly expatriate communities, those living abroad or those residing in rural areas far from polling stations, can benefit the most from iVoting<sup>42</sup>. Countries that have employed iVoting made it accessible mostly for overseas voters, military personnel, absentee voters, or voters with reduced mobilities<sup>43</sup>. However, iVoting is dependent on a number of factors. A sound infrastructure and widespread Internet penetration across the country are prerequisites. Similarly, it also requires a comprehensive legal framework that enables, supports and addresses the issues in iVoting. Likewise, the crucial aspects of iVoting include a digital identification system that remotely authenticates the legitimacy and credentials of the voter via an internet-enabled device. However, iVoting procedures do not end at the provision of infrastructure, legal structures and digital voter authentication mechanisms, instead, a significant part of the working iVoting system also depends upon the existing society, particularly the political culture and norms in the country<sup>44</sup>.

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41. Komminist Weldemariam, Richard A Kemmerer, and Adolfo Villafiorita, "Formal Analysis of an Electronic Voting System: An Experience Report," *Journal of Systems and Software* 84, no. 10 (2011): 1618–37.

42. "Benefits and Risks of E-Voting and on-Line Voting."

43. The International Foundation for Electoral Systems, "Internet Voting: Past, Present and Future."

44. R Michael Alvarez, Thad E Hall, and Alexander H Trechsel, "Internet Voting in Comparative Perspective: The Case of Estonia," *PS: Political Science & Politics* 42, no. 3 (2009): 497–505.

## Global Positioning System (GPS)

Although GPS alone is not an electoral technology per se, it is being commonly used in several technology-assisted elections. The primary task of the GPS is to help determine the geographical location of wherever the GPS device is installed. Initially designed for military use, GPS is now commonly used for civilian and commercial purposes. Mobile phones and tablets and the navigating software for digital maps make frequent use of GPS. Similarly, this technology also plays a vital role in administering elections. Election bodies deploy and retrieve the electronic voting equipment on election day using vendors or other government organisations. Election officials take precautionary measures for the equipment's security when it is in their warehouses. As it stands, the security of voting technology can result in both dangerous and favourable circumstances as discussed in the subsequent sections of this study. Installing GPS in the voting machines helps in establishing the voting systems' chain of custody after they leave the warehouse<sup>45</sup>. Similarly, GPS is also used to guide voters about the exact geographical location of the polling stations. A voter can receive the GPS data of the polling station directly on their mobile phone<sup>46</sup>.

## Countries Pursuing Electoral Technologies

Electronic voting is gaining popularity in several countries. There are countries that are conducting elections at the national level using EVMs and iVoting. The case studies from Brazil, India, and the USA provide suitable lessons. These countries are at the forefront of pursuing electoral technologies.

**Brazil:** Brazil's adoption of EVMs is driven by economic concerns and the prevention of fraudulent practices during the electoral process. Brazil has been conducting feasibility studies on electronic voting since 1986. Brazil's approach towards electoral technologies is inspired by the idea of a progressive and gradual adoption. Brazil

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45. "Technology in Elections."

46. "Where's My Polling Station: UNDP Helps Put Pakistan's Polling Stations on the Map - Pakistan.," November 29, 2015, <https://reliefweb.int/report/pakistan/wheres-my-polling-station-undp-helps-put-pakistan-s-polling-stations-map>.

has been working to build the internal capacity of its election management body (EMB), which has employed technologies to digitise the aggregation of election results. Prior to the approval of electronic voting in local and municipal elections in 1996, the EMB in Brazil conducted hardware and software testing that corresponded to its local technical capacities. These aspirations led the EMB in Brazil to wide-scale testing of technical equipment to ultimately decide the type of electronic voting machine best suited to its local conditions. Electronic voting was fully implemented for the general elections in Brazil in 2002<sup>47</sup>. The voting process is entirely electronic, as the voting machines do not print any paper receipts of individual ballots. The EVMs used in Brazil are also capable of retrieving the vote cast in case of any electronic recount. In the case of the EMB in Brazil, the Supreme Electoral Court invites technology experts prior to every election to vet the electoral technologies for any possible vulnerabilities<sup>48</sup>.

**India:** After undertaking test projects in 1982, India started using electronic voting machines on a national level in 2002<sup>49</sup>. The EVMs used in India are manufactured by Bharat Electronics in Bangalore and the Electronic Corporation of India in Hyderabad<sup>50</sup>. The conception of EVMs in India represents the magnitude of its election and the scale of its population size. Every EVM can carry up to 16 candidates, and connecting multiple EVMs can entertain a total of 64 candidates<sup>51</sup>. The EVMs designed in India also consider the electricity situation, and they can be powered through a 6-volt alkaline battery<sup>52</sup>. The EVMs

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47. The International Institute for Democracy and Electoral Assistance, "Introducing Electronic Voting: Essential Considerations," Policy Paper, December 2011, <https://www.idea.int/sites/default/files/publications/introducing-electronic-voting.pdf>.

48. Juliana Gragnani and Jake Horton, "Brazil Election: Do Voting Machines Lead to Fraud?," BBC News, October 3, 2022, <https://www.bbc.com/news/63061930>.

49. Shamika Ravi, "How Electronic Voting Machines Have Improved India's Democracy," December 6, 2019, <https://www.brookings.edu/blog/techtank/2019/12/06/how-electronic-voting-machines-have-improved-indias-democracy/>.

50. K. Maheswari and S S Dhenakaran, "Analysis of Voting Using EVM System," *International Journal for Modern Trends in Science and Technology* 3, no. 8 (August 2017): 32–36.

51. B Harshitha and Swamy N.S Veerabhadra, "MyVote - An Effective Online Voting System That Can Be Trusted," *Global Journal of Computer Science and Technology* 21, no. 1 (2021).

52. Matt Ford, "Indian Democracy Runs on Briefcase-Sized Voting Machines," *The Atlantic*, April 15, 2014, <https://www.theatlantic.com/international/archive/2014/04/indian-democracy-runs-on-briefcase-sized-voting-machines/360554/>.

introduced in 2001 wholly replaced the paper ballot. Since the EVMs did not produce any paper trail, the issues of audit, verification and assurance in the electoral process have caused a political debate. Therefore, since 2013, the Election Commission of India has also opted for Voter Verified Paper Audit Trail (VVPAT) machines that also leave a paper copy as proof of the votes cast<sup>53</sup>.

**Mongolia:** Although Mongolia does not use EVMs, it uses a host of other electoral technologies. Since 2012, Mongolia has been using ICTs in its electoral system to register candidates. It also uses biometric technologies for voter registration. What differentiates Mongolia's case from those of Brazil and India is the use of a Vote Counting Machine (VCM) instead of an EVM<sup>54</sup>. Similarly, the result of electronically counted votes is transmitted using a digital result transmission system. The ballot paper remains at the heart of the electoral exercise in Mongolia<sup>55</sup>. The voters mark their candidate choice with a permanent black marker. The votes are counted with the help of Precinct Count Optical Scan (PCOS) devices. When voting is finished, the machines immediately count the votes. The results are printed, verified and signed by the polling officers and observers and later sent to the central office via a mobile network.

**USA:** The use of electronic voting in the USA varies from state to state. The majority of registered voters in the USA use hand-marked paper ballots, which are counted by electronic scanners. The 2000 presidential election brought increased attention to the issue of voting technology, as the state of Florida experienced a contentious and highly publicized recount. This led to calls for more modern and reliable voting systems, and many jurisdictions began to replace their old voting equipment with newer electronic systems. Since then, the USA has been heavily investing in electronic voting machines. With the introduction of the Help America Vote Act (HAVA) in 2002, electronic voting in the USA

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53. The Economic Times, "What Is VVPAT?," February 5, 2020, <https://economictimes.indiatimes.com/news/elections/lok-sabha/india/what-is-vvpat/articleshow/68667136.cms>.

54. Wallis Stanfield, "Celebrating Three Decades of Democracy in Mongolia," International Republican Institute, accessed December 10, 2022, <https://www.iri.org/news/celebrating-three-decades-of-democracy-in-mongolia/>.

55. Asian Electoral Resource Center, "Election Management," accessed December 10, 2022, <https://aerc.anfrel.org/country/mongolia/election-management/>.

relies on direct-recording electronic (DRE) voting machines<sup>56</sup>. In 2016, about 23 percent of registered voters used DRE machines that do not issue any receipt/paper trail. In 2020 this percentage was reduced to 14 percent. Similarly, in some states, iVoting has also been introduced. In the Arizona Democratic Party primary election, iVoting was one of the alternatives for casting a vote. The election was held without a security breach, saw a twofold increase in turnout, and public opinion supported the introduction of state-wide iVoting<sup>57</sup>.

As mentioned earlier, internet voting is a more advanced form of electoral technology. Some countries have opted for online voting options in elections and/or referenda. However, they use it along with other methods. Estonia, Switzerland, and Canada have given voters a choice to vote through the Internet along with conventional voting methods<sup>58</sup>. iVoting is less prevalent in comparison to eVoting.

**Estonia:** Estonia is perhaps the only country that offers iVoting to the entire electorate. Estonia was the first country to use internet voting in national elections, starting in 2005. Voters have the option to cast their votes via the Internet in local and parliamentary elections. They either use their national identity card equipped with a computer-readable microchip or a mobile phone with a Mobile-ID application<sup>59</sup>.

**Switzerland:** In Switzerland, online voting has been piloted in local referendums in ten cantons. The rationales for adoption in Switzerland were to improve voter convenience and boost voter turnout, which is relatively low<sup>60</sup>. Given that Switzerland holds referendums roughly four times each year, which might lead to voter fatigue, the requirements for implementing online voting were stringent. Additionally, with about 90 percent of all votes cast by postal ballot, unsupervised voting is both frequent and preferred to paper-based voting at the polls.

**Canada:** In Canada, online voting has been used at the municipal

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56. Matt Zdun, "Machine Politics," Reuters, August 23, 2022, <https://www.reuters.com/graphics/USA-ELECTION/VOTING/mypmnewdlvr/>.

57. Frederic I. Solop, "Electronic Voting in the United States: At the Leading Edge or Lagging Behind?," in *Electronic Voting and Democracy: A Comparative Analysis* (New York: Palgrave Macmillan, 2004), 61–74.

58. "Benefits and Risks of E-Voting and on-Line Voting."

59. Ibid.

60. Ibid.

level in some provinces, where municipalities have been allowed to organise such procedures. There is no national standard for online voting<sup>61</sup>. iVoting was used in 2003 and 2006 in Markham, Ontario during municipal elections. Similarly, it was also tested in the cities of Edmonton, Halifax and Toronto. Nevertheless, iVoting has not been widely adopted at the federal level.

## Countries that Discontinued Electronic Voting

Although several countries have utilised electoral technologies such as electronic voting machines for elections, many of these countries have started to abandon their use. The reasons for quitting these technologies vary from country to country. For some, it is because of issues of trust; for others, it is cost, public pressure, legal obligations, foreign vendors, or cultural acclimatisation with the conventional methods of voting. The following are a few countries (among several others) that have ceased to use electronic voting.

**Germany:** Germany used electronic voting in 1999 for European elections. However, the scale of eVoting increased during the parliamentary elections in 2002 and 2005. Nevertheless, a petition was filed against eVoting in the 2005 election in the German Constitutional Court. The petitioners termed eVoting manipulatable as the eVoting did not generate any paper trail. The petitioners claimed there is no proof of how an EVM would handle the vote once the button is pressed. The Constitutional Court said in its judgement that the voting and vote-counting process should be open to public observation, and that the traditional method did not require any expert knowledge compared to the machine's vote handling and counting. The court ruled in favour of petitioners in 2009 and forbade the government from pursuing electronic voting in Germany<sup>62</sup>.

**Ireland:** Ireland decided to resort to electronic voting in the late 1990s. In the 2002 general election, eVoting was piloted in three constituencies

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61. Jordi Barrat i Esteve, Ben Goldsmith, and John Turner, "International Experience with E-Voting: Norwegian E-Vote Project" (International Foundation for Electoral Systems, 2012), <https://www.parliament.uk/globalassets/documents/speaker/digital-democracy/IFESIVreport.pdf>.

62. Deutsche Welle, "E-Voting Judgment," March 3, 2009, <https://www.dw.com/en/german-court-rules-e-voting-unconstitutional/a-4069101>.



of Dublin North, Dublin West, and Meath. Ireland planned to utilise electronic voting in 2004 for all constituencies for local and European elections – to which purpose machines were procured from the Dutch company Nedap at a cost of about 50 million<sup>63</sup>. Nevertheless, there was a backlash against the use of electronic voting, citing safety and reliability issues with the voting machines. A commission was set up to investigate the precision and confidentiality of the envisioned system<sup>64</sup>. Nevertheless, the machines were not upgraded, and in 2007, Ireland returned to the manual voting method. By 2009, the electronic voting project was officially abandoned, and the procured machines were never used. The machines were later sold by the government for 9.30 each<sup>65</sup>.

**Netherlands:** Electronic voting machines have been widely used in Dutch elections since the 1990s. After decades of employing digital voting methods, such technologies drew harsh criticism in 2006. The parliament asked the government to create two independent commissions to examine the past and future of electronic voting in response to a group of computer experts known as "We Do Not Trust Voting Computers", who voiced concerns about the lack of security and auditability mechanisms in these machines<sup>66</sup>. In April 2007, the first commission criticised electronic voting in its report "Voting Machines: An Orphaned File." The committee concluded that the Ministry of Interior lacked technical competence, which led to officials being unduly dependent on external players, particularly technology suppliers. The government did not respond to indicators that should have caused alarm. The report concluded that the voting machines' certification and testing were conducted using out-of-date criteria and that the results of these tests ought to have been made public. The investigation noticed that the legislative framework was insufficient in addressing the details of electronic voting, notably the

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63. Jonathan Lundell, "Second Report of the Irish Commission on Electronic Voting," *Voting Matters* 23 (2007): 13–17.

64. Ibid.

65. Independent News, "€54m Voting Machines Scrapped for €9 Each," June 29, 2012, <https://www.independent.ie/irish-news/54m-voting-machines-scrapped-for-9-each-26870212.html>.

66. Bart Jacobs and Wolter Pieters, "Electronic Voting in the Netherlands: From Early Adoption to Early Abolishment," in *Foundations of Security Analysis and Design V* (Springer, 2009), 121–44.

security concerns<sup>67</sup>. The second commission stated that the security and administration of election-related technology were not adequately regulated and that the requirements for such equipment had not been adequately set in its September 2007 report "Voting with Confidence." Additionally, it stated that the current electronic voting devices lacked adequate transparency and verification<sup>68</sup>. The reports of the commissions were immediately made public. The government decided to entirely revert voting and counting in the Netherlands to paper-based, manual procedures.

## Future of Electoral Technologies

The examples presented in this chapter illustrate how technology has been gradually integrated into various aspects of governance, especially elections. Based on their technical capacity, cultural contexts, legal provisions, and the magnitude of the electoral process, different countries have pursued electoral technologies at different scales. Instead of laborious and error-prone manual voter lists, the computerisation of electoral rolls assists EMBs in avoiding mistakes. Vote-counting machines are used for the quick counting of votes and the tabulation of results. In electronic voting machines, casting and counting votes are combined into a single device. iVoting is a more advanced voting method, allowing voters to cast their votes from the comfort of their homes rather than visiting polling places. There is a wide range of experience with electoral technology in different countries. Machines for counting votes have been used in Mongolia for several years. Electronic voting machines are more widely used in Brazil, India, and the United States. Several countries, including Estonia, Switzerland, and Canada, tested internet voting at different scales. Furthermore, countries are also facing obstacles in implementing these technologies. Germany, for example, faced legal obstacles, and the Philippines faced weak indigenous capacity and a reliance on foreign vendors. In the Netherlands and Ireland, voting

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67. National Democratic Institute, "Re-Evaluation of the Use of Electronic Voting in the Netherlands," Text, November 25, 2013, <https://www.ndi.org/e-voting-guide/examples/re-evaluation-of-e-voting-netherlands>.

68. Leontine Loeber, "E-Voting in the Netherlands; Past, Current, Future," in *Proceedings of the 6th International Conference on Electronic Voting (EVOTE)*. TUT Press, Tallinn, 2014, 43–46.

secrecy and security dominated the agenda. As computing power and technological infrastructure improve, new forms of electoral technology are expected to dominate future discussions. These advancements will, however, generate new and critical discourses of trust in the machines since fairness and transparency will remain integral components of the desired electoral process.



## Preconditions for Electoral Technologies in Pakistan

The adoption and uptake of electoral technologies depend on the digital ecosystem and the level of digitalisation in the country. The transformative power of internet connectivity is essential in driving digital growth to reach critical mass. Digitalisation, therefore, is one of the prerequisites for the successful implementation of electoral technologies. Nevertheless, the fact remains that the digitalisation process is gradual and does not occur overnight. Communication technologies' disruptive potential (and the challenges they present) trigger non-linear progress. Their scale, impact and influence vary for both the public and private sectors.

Digitalisation's tangible advantages depend on the solid technological trajectories that evolve over time. These trajectories of technical advancement are embodied in and represented by crucial social, institutional and technical variables. Such an ambitious pursuit of undertaking a digital transformation of society relies on a robust and sustainable technology infrastructure. It depends upon the availability of eGovernment applications for public service delivery that are omnipresent and accessible over multiple communication channels, be it the internet or mobile-based applications. Digital identities and data centres are at the core of digital aspirations that promise seamless authentication and verification mechanisms. In this scenario, mobile phones and broadband services assume the crucial role of carriers of uninterrupted and sovereign data exchange. A multivariate bouquet of technological and societal concerns thrives in a vibrant digital culture that resonates across the social strata. The vibrancy of such digital cultures is characterised by an interplay of various institutional and regulatory variables that legitimise their existence.

When Pakistan's digitalisation sector is put to the test, it has seen unprecedented growth and technological innovation, especially between 2005 and 2015. Every citizen in Pakistan carries a biometric digital identity card that is mandatory for any business transaction and

for bank accounts or mobile SIM cards. Manual passports are entirely replaced by their machine-readable and digital variants. Payment of public utility services is not only thoroughly digitalised but payable through multiple channels. These trajectories of technological promise assume a significant position in the digitalisation project because the choice of electoral technologies would draw inspiration and technical guidance from historical development patterns.

Similarly, the predictions of Pakistan's eCommerce market resemble that of an investment-friendly and technologically ripe country. For instance, the projected growth of its eCommerce market is expected to reach US \$6,800m in 2022, which translates into a 70m consumer base. The telecommunications sector prides itself on an enviable subscriber base of 80m. With such promising digital features, electoral technologies such as EVMs could have seen implementation by now. On the contrary, EVMs instigated such a wide-scale controversy that the concept led to parliamentary unrest on both sides of the benches in 2021-22.

This section aims to introduce the preconditions pertinent to the development of electoral technologies. It tries to chronologically highlight the technological developments essential to understanding electoral technologies within the Pakistani context. Similarly, it is also necessary to critically discuss these preconditions as they eventually became the precursor to some of the electoral technologies currently in practice in Pakistan. Electoral technologies cannot be understood without studying ICT developments in Pakistan. Although there are several instances within the ICT development, for the scope of this study, this section looks at the three key ICT developments that can eventually influence the growth of electoral technologies. These include general ICT trends, the formation of the digital identity institution NADRA and innovation in the mobile telecommunication industry.

## Section: 1

### ICTs Development in Pakistan

Digital connectivity, also referred to as teledensity, is at the heart of any online and eGovernment application, which includes the availability of wired and wireless communication networks. Historically, the teledensity indicators in Pakistan have been extremely low. In statistical terms, in the 1990s, there were less than 1 million telephone subscribers in Pakistan. However, the teledensity improved during the 1990s partially due to the deregulation of the telecommunication sector<sup>69</sup>. In 1996, the Pakistan Telecommunication Authority (PTA) was established to regulate, maintain and oversee the provision of telecom services<sup>70</sup>. The deregulation of the telecommunication sector led to the issuance of new licenses for Long Distance and International (LDI) and Local and Wireless Local Loop (LL, including WLL) services<sup>71</sup>. Similarly, the PTA also issued licenses to the data network operators and Internet Service Providers (ISPs) to promote the internet<sup>72</sup>. From a copper wire telephone line network, Pakistan shifted towards faster networks run on fibre optic cables. Similarly, mobile network operators have been gradually moving from 2G to 3G and now to 4G networks.

The ICT developments in Pakistan post-2000 also experienced the development of new institutions. For instance, the National Database Registration Administration (NADRA) was set up in 2000 to create a computerised database to develop a unique digital identity for every citizen. Pakistan's first IT policy, initiated in 2000, paved the way for developing eGovernment applications and the growth of the local

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69. Robert E Looney, "Telecommunications Policy in Pakistan," 1998.

70. Pakistan Telecommunication Authority (PTA), "The Gazette of Pakistan. Act No. XVII Of 1996.," 1996, [https://www.pta.gov.pk/media/telecom\\_act\\_170510.pdf](https://www.pta.gov.pk/media/telecom_act_170510.pdf).

71. S Ansari and S Saleem, ".Pk," Digital Review of Asia Pacific 2009-2010 (Ottawa: International Development Research Centre), accessed December 19, 2022, <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/38550/IDL-38550.pdf?sequence=1&isAllowed=y>, accessed December 19, 2022, <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/38550/IDL-38550.pdf?sequence=1&isAllowed=y>.", "plainCitation": "S Ansari and S Saleem, ".Pk," Digital Review of Asia Pacific 2009-2010 (Ottawa: International Development Research Centre

72. Pakistan Telecommunication Authority (PTA), "Annual Report 2002-03" (Islamabad, 2003), [https://www.pta.gov.pk/media/annual\\_report.pdf](https://www.pta.gov.pk/media/annual_report.pdf).

software industry. In 2002, an electronic transaction ordinance was passed to clear the path for initiating electronic transactions. In 2005, the Electronic Government Directorate (EGD) was established as a subdivision of the IT ministry to develop and oversee eGovernment projects. National and provincial Information Technology Boards were also established to initiate online public services at the regional scale. Foreign direct investment during this period also played a significant role, particularly in the telecommunication sector. Between 2004 through to 2011, the telecom shares in foreign direct investment in Pakistan remained at over 22 percent.

The banking sector benefited from the electronic infrastructure, and from a handful of ATMs, it further flourished by establishing a network of ATMs across Pakistan. As a financial regulator, the State Bank of Pakistan incentivised the banking sector by allowing banks to engage in branchless banking and expand their consumer base by approving the Branchless Banking regulation. The Electronic Fund Transfer Act of 2007 authorised the banking sector to launch online banking services. Pakistan transitioned from two mobile network operators in the 1990s to as many as five operators in 2005. These initiatives provided a solid foundation for Pakistan to flourish within the digital ecosystem and learn from mistakes along the way to improve the quality of electronic services in Pakistan.

### **NADRA eGovernment initiatives**

Be it an electronic voting machine or biometric voting machine, the scenarios within the polling booth require the availability of a voters' list and biometric or digital authentication of the voter before s/he can proceed to the polling booth. Similarly, as a part of the preparation for elections, the regulator, such as the election commission, would also require a digital repository of the citizen databank based on electoral rolls so that the voters could be assigned to their respective constituencies. The primary element in both the prepoll and the election phase is the availability of a digital database of the entire population. NADRA can be considered one of the cornerstones of the digital landscape in Pakistan, particularly for the development of electoral technologies, as we shall see in this study.

NADRA's inception is based on developing a comprehensive computerised citizen database. It was initially launched as a National



Database Organisation (NDO), mandated as an attached department under the Ministry of Interior. Although, the NDO's primary role was not to produce computerised identity cards. NDO was set to manage the data collected during the fifth national census in 1998<sup>73</sup>. However, in 2000, NDO was renamed as the National Database and Registration Authority (NADRA) through a presidential ordinance to develop scalable and digital database management systems at the national level.

The *Computerized National Identity Card* (CNIC) project by NADRA can be seen as one of Pakistan's first eGovernment applications. The nationwide availability of NADRA offices provided a unique opportunity to digitally authenticate a person anywhere in the country<sup>74</sup>. Currently, the CNIC is used as one of the significant identification mechanisms to conduct day-to-day business activities such as opening a bank account, purchasing a mobile SIM card or during the sale and purchase of the real estate<sup>75</sup>. More recently, digital authentication provided via CNIC is also used by money exchange dealers. After successfully launching its CNIC project, NADRA also ventured into the digitalisation of civil registry applications. These include computerised birth, death, marriage and divorce certificates, Child Registration Certificates (CRCs), and Family Registration Certificates (FRCs). NADRA has also been subjected to continued media scrutiny, but it has consolidated its position with several national and international eGovernment projects.

Apart from the citizen database and civil registry projects, NADRA also ventured into digital financial services early on. In 2004, NADRA started developing its eCommerce platform through which citizens could authenticate themselves via their CNIC and perform various financial activities such as money transfers or utility bill payments. Initially, NADRA developed an ATM-styled standalone machine operable via a touch screen mechanism called NADRA Kiosk<sup>76</sup>. Later in 2006, NADRA

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73. Sardar Muhammad Maqbool, "Nadra's Role in National Identity Perspective," *The News*, January 23, 2018, <https://www.thenews.com.pk/print/271727-nadra-s-role-in-national-identity-perspective>.

74. Daily Dawn, "Nadra's Hi-Tech System Opens Today," July 29, 2003, <https://www.dawn.com/news/132510>.

75. Daily Dawn, "Biometric Verification," June 15, 2019, <https://www.dawn.com/news/1488370>.

76. Daily Dawn, "Nadra to Sign MoU with SNGPL," April 17, 2005, <https://www.dawn.com/news/389472/nadra-to-sign-mou-with-sngpl>.

commercialised the software used in the kiosk project by renaming it as e-Sahulat. It provided licenses to small and medium retailers and shopkeepers interested in providing financial and verification services. Perhaps slightly unrelated to the scope of electoral technologies, the kiosk and e-Sahulat projects placed NADRA in a unique position as a digital authenticator. It provided public and private sector entities with an opportunity to rely on NADRA's digital ecosystem to build future services around its CNIC and verification system<sup>77</sup>. As we shall see in the following sections, NADRA emerged as one of the key institutions to support the conception, development and initiation of electoral technologies pursued by the Election Commission of Pakistan.

### **Mobile Telecommunications as a Facilitator of eServices**

The mobile telecommunication sector is another crucial facilitator of electoral technologies, as this study would like to show. The telecommunications sector has carved out its niche as not only the carrier of voice and data communication but also as being able to offer its own indigenously developed electronic public services solutions for mobile banking, utility bill payments and the transfer of funds using branchless banking mechanisms<sup>78</sup>. The constant innovation in the telecommunications sector has provided different possibilities for the nature of digital communication in Pakistan. Part of the reason for this lies in the sluggish growth of internet penetration and also the deregulation of the telecommunications sector that paved the path for foreign telecommunication companies to start their services in Pakistan. Deregulation in media and telecommunications policy during the decade from 2000 brought foreign and local investment into the telecom market, resulting in affordable mobile phones and a subsequent surge in even more mobile phone subscribers in Pakistan. This growth in mobile phone users eventually surpassed the total number of internet users in the country<sup>79</sup>.

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77. The News, "NADRA Launches Online Registration for CNIC: Guideline to Apply Online," November 27, 2019, <https://www.thenews.com.pk/latest/575182-nadra-launches-online-registration-for-cnic-guideline-to-apply-online>.

78. The News, "Easypaisa Revolutionises Inclusion," May 27, 2016, <https://www.thenews.com.pk/print/122997-Easypaisa-revolutionises-inclusion>.

79. Business Recorder, "Telecom Sector Attracts US\$ 12bn Investments in Seven Years," June 17, 2014, <https://www.brecorder.com/2014/06/17/179565/>.

By the end of 1999, there were altogether fewer than 0.3 million consumers who used the available network operators of Mobilink, Paktel and Instaphone<sup>80</sup>. However, the telecommunications landscape changed when the Pakistan Telecommunication Authority (PTA) awarded licenses to three additional network operators. These included a subsidiary of Pakistan Telecommunication Limited (PTCL) named Ufone in 2001, and Warid Telecom and Norway-based Telenor in 2004<sup>81</sup>. Within five years, the 0.3 million subscription base of mobile phone consumers increased to 33.9 million in 2005<sup>82</sup>. Commercial competitiveness among the network operators started bringing mobile phones to every Pakistani household, and mobile phones became a necessity rather than a luxury article. As a result, the Pakistani electronics market was flooded with a variety of mobile phones, from brand new to second-hand ones, to suit everyone's budget and convenience<sup>83</sup>. The mobile phone varieties range from feature phones to smartphones in the price range of PKR 1800 (USD 8), going up to PKR 400,000 (1800 USD). The arrival of 3G and 4G networks significantly boosted the telecom subscriber base. Pakistan's telecommunications sector experienced technological leapfrogging, with over 80 mobile phone subscribers per 100 inhabitants as of 2022. Inexpensive voice and data plans coupled with pre- and postpaid subscription plans made mobile phones more lucrative than fixed telephone and internet subscriptions. The Figure 1 depicts the leapfrogging in Pakistan's telecom sector as Pakistan's consumer base continues to beat the internet and fixed telephone line subscribers.

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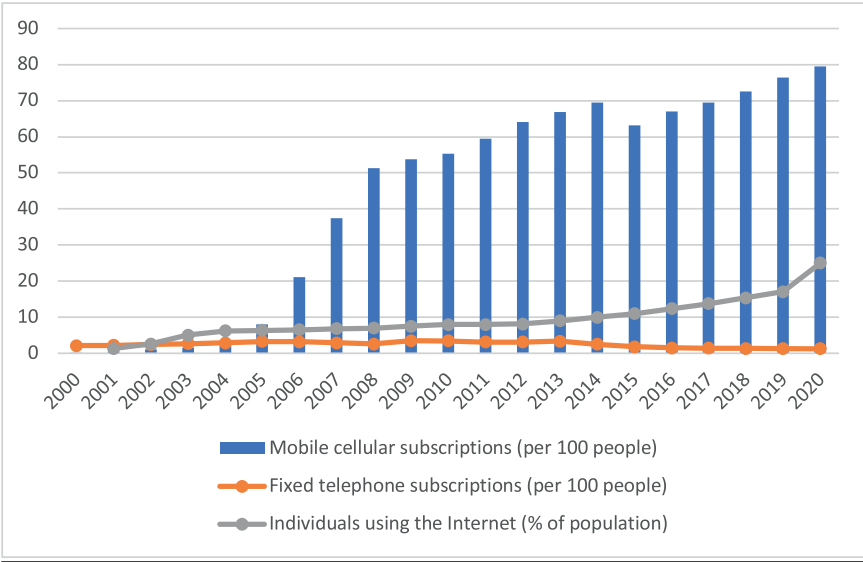
80. Pakistan Telecommunication Authority (PTA), "Annual Report (2004-05) - Annex-9," 2005, 9, <https://www.pta.gov.pk/annual-reports/ann-rep-05.pdf>.

81. Business Recorder, "Mobilink Continues to Grow despite Increasing Competition," June 17, 2005, <https://fp.brecorder.com/2005/06/20050617282489/>.

82. Pakistan Telecommunication Authority (PTA), "Annual Report - 2009-10," 2009-10, accessed December 12, 2022, [https://www.pta.gov.pk/annual-reports/pta\\_ann\\_rep\\_2010.pdf](https://www.pta.gov.pk/annual-reports/pta_ann_rep_2010.pdf).

83. Shahnawaz Malik, Imran Sharif Chaudhry, and Qaiser Abbas, "Socio-Economic Impact of Cellular Phones Growth in Pakistan: An Empirical Analysis," *Pakistan Journal of Social Sciences* (PJSS) 29, no. 1 (2009).

Figure 1: Technological Leapfrogging and Teledensity in Pakistan (2000 – 2020)<sup>84</sup>



A large subscriber base has provided network operators with the opportunity to create innovative and electronic services that align with the socioeconomic and cultural patterns of Pakistani society. One of the prominent examples of such innovation is financial services via branchless banking mechanisms. Mobile phones no longer only operate as devices for voice and internet data. Instead, the mobile phone number can also act as a bank account number. Almost all network operators either themselves own banks or collaborate with commercial banks to provide banking services that do not require visiting the banks. Similarly, due to the digitisation of all utility service providers, monthly payments for utility services can be paid off via mobile phones. There is also a whole range of other information services that are accessible via mobile phones. This has enabled network operators to serve as a reliable medium that can also be used for the provision of electronic public services and even as a facilitator in administering the election process, as we shall see in the section on ECP’s 8300 SMS App.

84. The World Bank, “World Development Indicators,” 2022, <https://databank.worldbank.org/source/world-development-indicators>.

## Digital Connectivity of Rural Areas through USF

Although the ICT developments discussed in the earlier sections sound very promising, Pakistan's population is still mainly rural. The urban and rural population ratio has remained at about 60 percent rural and 40 percent urban<sup>85</sup>. Nevertheless, Pakistan's infrastructural and socio-economic development has been mostly favourable to its urban centres<sup>86</sup>. This disparity is also reflected in the digital landscape, particularly in the rural areas of Pakistan. Similarly, for any electoral technology to work in Pakistan, it would have to adhere to the digital infrastructure that is representative of Pakistan's population as a whole. Constant efforts have been made to upscale the digital infrastructure, particularly for rural areas, through initiatives such as the Universal Service Fund (USF).

The USF was initiated in 2006 with support from the Ministry of Information Technology. The primary objective of the USF is to digitalise rural communities by laying down the telecommunications infrastructure with the help of mobile network operators in Pakistan. The USF provides guidance to the network operators for fair utilisation of the fund for improving the teledensity across the rural areas of Pakistan. The USF brings together public and private telecommunication network operators who contribute 1.5 percent of their adjusted revenues. At its inception, the government of Pakistan's role was that of a facilitator with no financial contribution to the fund<sup>87</sup>. However, since 2016, the USF also receives government grants, spreading its network across Pakistan. Most of its projects focus on establishing high-speed broadband and optic fibre cable networks across Pakistan's unserved and underserved rural areas. These projects are eventually implemented by the network operators such as Jazz, Ufone, Telenor and Zong.

This section has outlined some of the ICT trends in Pakistan since 2000 that serves as a precondition to initiate eGovernment services

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85. A Hassan and M Raza, "Migration and Small Towns in Pakistan (Working Paper 15)" (IIED. Working Paper Series on Rural-Urban Interactions and Livelihood ..., 2009).

86. Feroz Ahmed, "Pakistan: Ethnic Fragmentation or National Integration?," *The Pakistan Development Review*, 1996, 631–45.

87. International Telecommunication Union, "Universal Service Fund and Digital Inclusion for All," September 2013, [https://www.itu.int/en/ITU-D/Digital-Inclusion/Documents/USF\\_final-en.pdf](https://www.itu.int/en/ITU-D/Digital-Inclusion/Documents/USF_final-en.pdf).

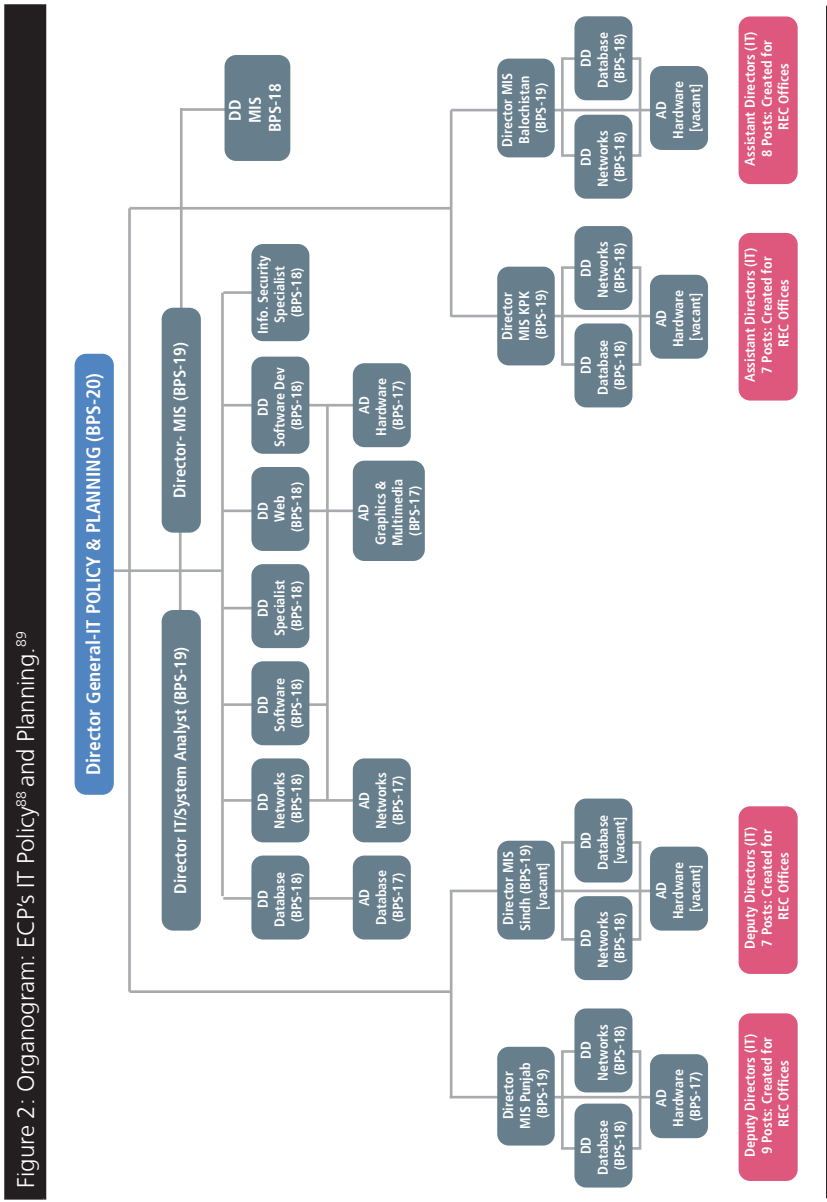
and to use these for the innovation and development of electoral technologies in Pakistan. The following section takes an in-depth look at several electoral technologies that the ECP has pursued in Pakistan.

## **Section: 2**

### **Electoral Technologies in Pakistan**

Administration of elections in Pakistan is perhaps one of the most extensive electoral exercises in the world as the elections of federal and all provincially assemblies are conducted on the same day. The administration and organisation of elections fall under the ambit of the Election Commission of Pakistan (ECP), which operates as an independent and autonomous institution mandated by the constitution of Pakistan. Article 218 of Pakistan's constitution requires the ECP "to organise and conduct the election and to make such arrangements as are necessary to ensure that the election is conducted honestly, justly, fairly and in accordance with law". Moreover, according to the election law, the results must be counted and announced by 2 a.m. on the following day.

Headquartered in Islamabad, the ECP, as a regulator, has been pursuing various digitalisation initiatives over the past few decades. The ECP's in-house IT Policy and Planning division, led by a high-ranking civil servant (BPS-20 rank), who supervises all the digitalisation transformation projects. The entire IT division within the ECP is led by the Director of IT/System Analyst and the Director of Management Information Systems (MIS), who jointly oversee the database, communication networks, web and software development, along with the information security of the ECP computer systems. In addition to the IT division in Islamabad, the Director General of IT Policy and Planning also oversees the MIS, database, network and hardware teams at the provincial level (see organogram of the ECP's IT Policy and Planning units in the Figure 2). In addition to the permanent IT division, ECP has also established a project management unit (PMU) in its headquarters that also oversees the technology projects.



88. The Basic Pay Scale (BPS) numbers indicate the rank of the civil servants in these posts. BPS 20 is the third highest civil service grade in Pakistan. See for instance, Feisal Khan, "Combating Corruption in Pakistan," *Asian Education and Development Studies* 5, no. 2 (2016): 195–210.

89. Election Commission of Pakistan, "Responsibilities of IT Wing," 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3342>.

In recent years, the ECP has undertaken several digitalisation projects to improve the efficiency and effectiveness of the electoral exercise in Pakistan. One of the most notable digitalisation projects by the ECP has been the Computerized Electoral Rolls Systems (CERS) and the 8300 SMS App. More recently, the ECP has also created the Result Management System (RMS) and Result Transmission System (RTS) for efficient election results delivery and announcement. The technological trends in Pakistan laid out in earlier sections of this chapter are of paramount importance as they function as preconditions for the inception and development of electoral technologies pursued by the ECP. These preconditions reflect Pakistan's digital journey of innovative and indigenous electronic solutions provided through mobile phones. Similarly, they also reflect the digital collaboration of public and private sector organisations jointly working to produce locally developed electoral technologies. The omnipresent nature of mobile phones paved the way for innovation in electronic services in Pakistan, where NADRA played the role of the digital authenticator. The following sections provide an overview of the electoral technologies that have been developed in Pakistan.

## **The Digitalisation of Electoral Rolls**

As of October 2022, there are a little over 122 million voters in Pakistan, including 66.4 million male and 55.7 million female voters. Administering and managing voters of this magnitude and then preparing the voters' list based on their constituencies is a colossal exercise. One of the earliest electoral technologies developed by the ECP was the digitalisation of the voters' list. Voter lists are also known as electoral rolls, which enlist all eligible voters residing in a constituency. These lists ensure the verification of the voters' identity on election day. The ECP relies on the same electoral roll for the general and local elections. In a paper-based scenario, it becomes difficult to easily verify any duplicates or substantiate the entry of new voters in the voter list. Since 2000, the ECP has been continuously pursuing the digital transformation of electoral rolls. The rationale behind digitising the electoral rolls lies in the problems encountered in the paper-based electoral rolls<sup>90</sup>. The

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90. Robert Evans, "Delegation to Observe the Parliamentary Elections in the Islamic Republic of Pakistan (14 - 21 February 2008)" (European Parliament), accessed December 12, 2022, [https://www.europarl.europa.eu/cmsdata/212681/Election\\_report\\_Pakistan\\_18\\_February\\_2008.pdf](https://www.europarl.europa.eu/cmsdata/212681/Election_report_Pakistan_18_February_2008.pdf).



digitisation of electoral rolls in Pakistan presents one of the unique examples of digital transformation of election administration and also the beginning of electoral technologies in Pakistan.

Historically, voter lists have been subjected to severe criticism in Pakistan. Often electoral fraud has been associated with tampering with the voter lists<sup>91</sup>. Part of the reason is that the voter lists are based on the citizen's national identity cards. As NADRA started rolling out the CNIC in 2000, the manual and non-computerised identity cards were deemed invalid. Nevertheless, for a certain time period, the ECP relied on both manual and computerised identity cards in preparing the electoral rolls. This led to the voters' list that carried instances of both old and new identity cards<sup>92</sup>. For instance, in 2007, the eligible voters were estimated to be 60 million. This figure contained 12 million fewer voters than in the election in 2002. This led to the development of electoral rolls that carried erroneous data with a number of technical inaccuracies. However, independent election observers and media termed it an example of election fraud or pre-poll rigging<sup>93</sup>. To avoid the discrepancies in the electoral roll, the ECP decided to collaborate with NADRA after 2008. The primary motivation for this collaboration was to correlate the ECP's database with NADRA's more frequently updated database to remove any duplicate entries from the voters' list<sup>94</sup>. The computerisation of the electoral rolls system (CERS) led to the development of CERS-I, which took place in two stages, CERS-I and CERS-II.

In 2011, parliament approved a bill that made the NADRA's CNIC mandatory for voter registration and casting votes<sup>95</sup>. Parliament's approval opened a new digital collaboration between public-sector organisations, the ECP and NADRA, to refine the electoral rolls<sup>96</sup>. In

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91. Tahir Kamran, "Electoral Politics in Pakistan (1955-1969)," *Pakistan Vision* 10, no. 1 (2009): 82–97.

92. Hasnain Bokhari, *Information and Communication Technologies in Pakistan: History and Analysis of Electronic Public Services (2000-2012)* (Hamburg: disserta Verlag, 2020).

93. Ebad Pasha, "Election Rigging 101: How to Steal a Mandate," *Daily Dawn*, July 19, 2018, <https://www.dawn.com/news/1416841/election-rigging-101-how-to-steal-a-mandate>.

94. The Express Tribune, "Electoral Process: NADRA Starts Dispatching Electoral Rolls," April 20, 2013, <https://tribune.com.pk/story/538060/electoral-process-nadra-starts-dispatching-electoral-rolls>.

95. Daily Dawn, "Bill Making CNIC Mandatory for Voting Adopted," March 29, 2011, <https://www.dawn.com/news/617001/bill-making-cnic-mandatory-for-voting-adopted>.

96. Daily Dawn, "ECP to Finalize Data Entry in Electoral Rolls by April 14," April 2, 2012, 14, <https://www.dawn.com/news/707342/ecp-to-finalize-data-entry-in-electoral-rolls-by-april-14>.

2011, the ECP and NADRA formally signed a contract to revise electoral rolls by updating the CERS-I developed in 2006<sup>97</sup>. NADRA augmented and supplied additional information from its CNIC database to the ECP data for every voter<sup>98</sup>. This inter-sectoral and inter-agency collaboration to prepare the electoral rolls based on digital databases became the basis for CERS II. The Population Census Organisation (PCO) data for the electoral areas based on new census blocks also became helpful<sup>99</sup>. NADRA relied on this data to verify the electoral rolls with its CNIC data<sup>100</sup>. The entire exercise led to the creation of a new database in 2012 that included voters based on newly defined electoral areas<sup>101</sup>.

NADRA and the ECP's collaboration led to some interesting findings that led to the discovery of various discrepancies. There were about 81 million registered voters in Pakistan based on CERS-1. NADRA found about 15 million entries for which it did not have any data in its citizen database. Moreover, NADRA also discovered about 9 million duplicate entries. It also found 13 million invalidities, such as those of deceased voters<sup>102</sup>. The correlation of two public sector databases led to the removal of about 37 million entries representing almost 45% of the total voters. Due to NADRA's citizen database, the Final Electoral Rolls (FER) of 2013 also included a picture of the voting citizen that could verify their physical presence at the polling station. Since 2013, NADRA and the ECP regularly collaborate on matching their databases. For instance, prior to the general elections in 2018, the ECP revised the computerised electoral rolls based on the fresh CNICs issued by NADRA up to September 2016. This exercise again helped the ECP to register about 4 million voters and remove 140,000 voters from the rolls. As a result of this exercise, the

97. "E-Electoral Rolls Soon: ECP," January 28, 2007, <https://fp.brecorder.com/2007/01/20070128522704/>.

98. Pakistan Today, "Harnessing Technology for Electoral Transparency," November 13, 2011, <https://archive.pakistantoday.com.pk/2011/11/13/harnessing-technology-for-electoral-transparency/>.

99. "Over 80m Voters Registered in New Electoral Lists," August 1, 2012, <https://archive.pakistantoday.com.pk/2012/08/01/over-80m-voters-registered-in-new-electoral-lists/>.

100. "ECP One Step Closer to 'One CNIC, One Vote' Goal," August 19, 2011, <https://tribune.com.pk/story/234741/ecp-one-step-closer-to-one-cnic-one-vote-goal/>.

101. Daily Dawn, "ECP Starts Rolls Display, SMS Service for Voters Verification," February 29, 2012, <https://www.dawn.com/news/699161/ecp-starts-rolls-display-sms-service-for-voters-verification>.

102. Daily Dawn, "Nadra Chief Briefs EU Team on Steps to Ensure Fair Polls," April 24, 2013, <https://www.dawn.com/news/793880>.

number of registered voters in the country reached nearly 97 million, which was again revised in 2022 with a total of 122 million voters.

### **The ECP's 8300 SMS App**

Another electoral technology initiated by the ECP which is worth mentioning is its SMS service provided by the number 8300. After developing computerised electoral rolls, the ECP widely publicised these through a print and electronic media campaign. To create awareness about the launch of the new electoral rolls, the ECP collaborated with civil society and media organisations as well as through their regional offices to display the paper-based electoral rolls so that citizens could ratify any alterations and make corrections<sup>103</sup>.

To facilitate the voters' entry into the CERS, ECP decided to rely on digital verification without visiting the election offices. Instead of relying on the web-based solution, the ECP chose to tap Pakistan's large consumer base of mobile phone subscribers. The ECP started working on a digital mechanism through which mobile users could verify their electoral entries. The idea was to accommodate every citizen across the country who did not even have a smartphone or internet connection. This led to the inception of a voter verification system via the widely-available text messaging service through which voters could verify themselves via SMS<sup>104</sup>. The ECP's motivation behind this voter verification service is to offer validated, transparent and accountable elections. The SMS verification service was initiated in February 2012, whereas the ECP simultaneously provided paper-based electoral rolls along with the SMS verification facility to provide citizens with their voting details<sup>105</sup>.

The SMS application initiated by the ECP required any voter interested in verifying his/her electoral entry to send her/his 13-digit CNIC number via SMS to the number '8300'<sup>106</sup>. In response to this SMS,

103. Tariq Malik, "Technology and Democracy," *The Express Tribune*, June 11, 2013, <https://tribune.com.pk/story/561966/technology-and-democracy>.

104. Election Commission of Pakistan, "ECP Newsletter Issue-1," accessed December 12, 2022, <https://www.ecp.gov.pk/Documents/Newsletter.pdf>.

105. Iftikhar A. Khan, "Citizens Use SMS to Verify Their Votes," *Daily Dawn*, accessed December 12, 2022, <https://www.dawn.com/news/699224>.

106. The Express Tribune, "Voter Verification: ECP Launches SMS Service," February 29, 2012, <https://tribune.com.pk/story/343403/voter-verification-ecp-launches-sms-service>.

every potential voter receives information in the Urdu language via SMS. The information in this SMS displays the CNIC number, electoral area name, block code, tehsil/district and serial number<sup>107</sup>. For privacy reasons, any personal details such as name or residential address were excluded from the SMS (see Figure 3). The architecture of this SMS application has been kept simple. An information exchange can be initiated by sending a short code (8300) via SMS. NADRA, on its part, again provided its services to the ECP to use its middleware and SMS Gateway. Pakistan's mobile network operators complied to reserve the shortcode 8300 for the ECP. In practical terms, as soon as any mobile network receives an SMS on 8300, it forwards the message to the NADRA SMS gateway. If the message contains 13 digits of CNIC, the voter information is sent back to the desired mobile phone owner.

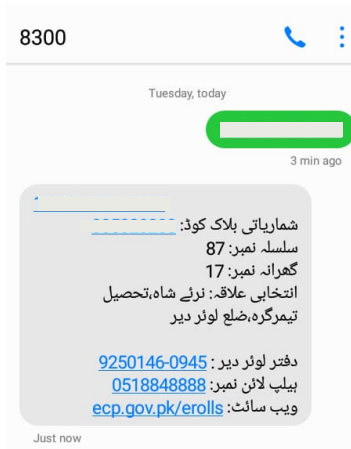
The response to the verification in 2012 was in six figures as the total number of citizens who sent SMS to 8300 exceeded 7 million. These numbers continued to rise and reached about 16 million in April 2013. In 2013, ECP declared that voters who digitally verified themselves via the 8300 SMS App were over 55 million<sup>108</sup>. The ECP has used the 8300 SMS App for every general election since 2013, which eventually helps the voters seek information about their allocated polling stations<sup>109</sup>. The voter verification SMS service also earned the ECP a Guinness Book of World Records reference<sup>110</sup>.

107. The Express Tribune, "B," March 22, 2013, <https://tribune.com.pk/story/524655/5-year-roundup-by-polls-scorecard-puts-pml-n-ahead-of-ppp/>.

108. Pakistan Press Foundation, "55m Text Messages Sent to ECP," accessed December 12, 2022, <https://www.pakistanpressfoundation.org/55m-text-messages-sent-to-ecp-companies-make-billions/>.

109. International Foundation for Electoral Systems, "Using a Gender Lens to Examine Pakistan's Historic Election," accessed December 12, 2022, <https://www.ifes.org/news/using-gender-lens-examine-pakistans-historic-election>.

110. The Express Tribune, "ECP 'SMS Voters' Verification Service May Break World Record," March 15, 2012, <https://tribune.com.pk/story/350452/ecp-sms-voters-verification-service-may-break-world-record>.

Figure 3: SMS Response from the ECP's 8300 SMS App<sup>111</sup>

ECP's SMS result on smartphone



ECP's SMS result on feature phone

**Source:** Author

## The Result Management System (RMS)

Pakistan's experimentation with and implementation of electoral technologies has gradually continued after the digitalisation of electoral rolls and the verification of constituencies with the 8300 SMS App. For the tabulation of the vote count against the political candidate and the swift announcement of results, the ECP decided to work on another electoral technology named the Results Management System in 2013<sup>112</sup>. With the assistance of the United Nations Development Programme in Pakistan, the ECP developed a computer programme for Result Management that would assist the Returning Officer (RO). As per the ECP regulations, the RO is responsible for accepting and scrutinising nomination papers from political candidates<sup>113</sup>. The RO is

111. Screenshots of responses received via the 8300 SMS App on both the smartphone and a feature phone. As soon as a citizen sends the 13-digit CNIC to 8300, ECP's SMS App sends constituency details registered against the CNIC including the telephone numbers of ECP's helpline
112. Election Commission of Pakistan, "Report on the General Elections - 2013: Volume 1," 2013, <https://www.ecp.gov.pk/Documents/General%20Elections%202013%20report/Election%20Report%202013%20Volume-I.pdf>.
113. Election Commission of Pakistan, "Handbook for Returning Officers," March 2018, [https://www.ecp.gov.pk/Documents/generalelections2018/training/Handbook%20for%20Returning%20Officers\(ROs\).pdf](https://www.ecp.gov.pk/Documents/generalelections2018/training/Handbook%20for%20Returning%20Officers(ROs).pdf).

also responsible for administering oaths from presiding officers and selecting suitable public buildings for polling stations with impartial staff. One of the crucial tasks of the RO is to also to collect results from the presiding officer and communicate both provisional and consolidated results received from the presiding officer.

The motivation for developing the RMS was to create a computerised system to record the candidate names, voter registration numbers, polling station names and numbers, and the number of votes cast for each candidate under the supervision of the RO. This enables the RO to quickly generate draft forms that would otherwise take hours to fill out by hand in the past. The Data Entry Operator (DEO) available at the disposal of the RO creates form 47 for the RO by entering data from Form 45 (see Table 1 for different forms used in the RMS). The scanned copy of the forms is dispatched in the RMS and sent to the Provincial Election Commission and the ECP<sup>114</sup>. RMS makes it possible for the ECP to electronically prepare the entire election results. The outcome may therefore be audited and verified<sup>115</sup>. This is enabled by the precise and effective consolidation of results. The election results, including information on the candidates, a list of the voting stations, and the outcomes, can be recorded by the ROs. The RMS enables the ECP to produce more accurate reports on voter turnout, election outcomes based on voting stations, and voting statistics broken down by gender<sup>116</sup>.

The RMS facilitates the ROs in three different ways: (1) It helps input information like the polling station's name, its address, and the number of registered voters in the voting scheme. (Draft Form-28 is the main output of the Polling Scheme module). (2) It also helps prepare the list of contesting candidates that the RO can record in the RMS by giving out candidate information, such as their name, party symbol, election constituency etc., in the draft Form 33. Data input on election night

114. The News, "UNDP Defends ECP on Result Management System," July 28, 2018, <https://www.thenews.com.pk/print/347204-undp-defends-ecp-on-result-management-system>.

115. Bilal Ahmed, "ECP's Result Management System Will Ensure Transparency in Elections," December 29, 2017, <https://www.aajenglish.tv/news/10397663/ecp-designs-new-system-to-ensure-transparency-in-electoral-process>.

116. Election Commission of Pakistan, "Elections Result Management -2018: Delivering Swift, Systematic, Transparent Election Results in 2018," accessed December 12, 2022, [https://www.ecp.gov.pk/Documents/generalelections2018/training/RMS\\_RTS%20English%20Brochure%20Seperate%20Pages.pdf](https://www.ecp.gov.pk/Documents/generalelections2018/training/RMS_RTS%20English%20Brochure%20Seperate%20Pages.pdf).

is expedited significantly by having the candidate names in the RMS. (3) The third element of the RMS is recording the results received from polling stations by the RO in hard copy on election night in the form of Form 45. The DEOs enter the data in the RMS to produce draft forms 47, 48, and 49<sup>117</sup>. All RMS outputs are the draft forms which the RO needs to review for their correctness and completeness. S/he must stamp and sign the form to authenticate its validity<sup>118</sup>. The results of the RMS are received by the ECP electronically in its server<sup>119</sup>.

Table 1: List of election-related forms prepared and required by the ECP for the RMS

Nr.	Form Nr.	Purpose
1	15	Request to add name in the electoral roll <sup>120</sup>
2	16	Objection on the name entered in the electoral roll <sup>121</sup>
3	17	Application for correction of data in the electoral roll <sup>122</sup>
4	28	List of polling stations for a particular constituency <sup>123</sup>
5	45	Result of vote count in a particular constituency <sup>124</sup>

117. Ibid.

118. Ibid.

119. Interview with UN's Governance Unit Head.

120. Election Commission of Pakistan, "Form 15: Request to Add Name in the Electoral Roll," accessed December 12, 2022, <http://www.ecp.gov.pk/documents/er/Form%2015%20Urdu%2001-02-2022.pdf>, <http://www.ecp.gov.pk/documents/er/Form%2015%20Urdu%2001-02-2022.pdf>, "plainCitation": "Election Commission of Pakistan, "Form 15: Request to Add Name in the Electoral Roll," accessed December 12, 2022, <http://www.ecp.gov.pk/documents/er/Form%2015%20Urdu%2001-02-2022.pdf>."}, {"noteIndex": 120}, {"citationItems": [{"id": 1239, "uris": ["http://zotero.org/groups/4878594/items/9IEJA6QE"], "itemData": {"id": 1239, "type": "document", "title": "Form 15: Request to add name in the electoral roll", "URL": "http://www.ecp.gov.pk/documents/er/Form%2015%20Urdu%2001-02-2022.pdf", "author": [{"family": "Election Commission of Pakistan", "given": ""}], "accessed": {"date-parts": ["2022", 12, 12]}}, {"schema": "https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]}

121. Election Commission of Pakistan, "Form 16: Objection on the Name Entered in the Electoral Roll," accessed December 12, 2022, <http://www.ecp.gov.pk/documents/er/Form%2016%20Urdu%2001-02-2022.pdf>.

122. Election Commission of Pakistan, "Form 17: Application for Correction of Data in Electoral Roll," accessed December 12, 2022, <https://www.ecp.gov.pk/documents/er/Form%2017%20Urdu%2001-02-2022.pdf>.

123. Election Commission of Pakistan, "Form 28: List of Polling Stations for a Particular Constituency," accessed December 12, 2022, <https://www.ecp.gov.pk/Documents/generalelections2018/draft%20polling%20scheme/Punjab/monday/Lahore%20NA.pdf>.

124. Election Commission of Pakistan, "Form 45: Result of Vote Count in a Particular Constituency," accessed December 12, 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3223>.

6	46	Ballot paper count for a particular constituency <sup>125</sup>
7	47	Non-consolidated election result in a particular constituency <sup>126</sup>
8	48	Consolidated results of the count furnished by the presiding officer <sup>127</sup>
9	49	Final consolidated result <sup>128</sup>

### Result Transmission System (RTS)

The Elections Act's Section 13 of the ECP mandates the commission to develop a transparent results management system for the timely counting, tabulation, compilation, transmission, dissemination, and posting of results in the official gazette and the ECP's website<sup>129</sup>. Furthermore, it also states that before submitting the original documents required by Section 90, the Presiding Officer (PO) shall take a picture of the result count and electronically submit the result to the RO and the ECP, depending on the digital connectivity and availability of the internet connection. The ECP piloted the RTS for the PS-114 Karachi by-election and the NA-4 (Peshawar) election in 2018.

The ECP collaborated with NADRA again to develop another electoral technology called the Result Transmission System (RTS). The basic purpose of the RTS is to enable the election staff from every polling station to electronically transmit the election results to the ECP. The presiding officers use the RTS by uploading the scanned copy of the form to be sent to the ECP server. According to the ECP, RTS software is installed in the smartphones of all POs, who are eligible to transmit Form 45 (containing tabulated polling station results) via their smartphone to the ECP on election day. In July 2018, around 170,000 POs and other authorities received training on utilising this

125. Election Commission of Pakistan, "Form 46: Ballot Paper Count for a Particular Constituency," 46, accessed December 12, 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3223>.

126. Election Commission of Pakistan, "Form 47: Non-Consolidated Election Result in a Particular Constituency," accessed December 12, 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3223>.

127. Election Commission of Pakistan, "Form 48: Consolidated Results of the Count Furnished by the Presiding Officer," accessed December 12, 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3223>.

128. Election Commission of Pakistan, "Form 49: Final Consolidated Result," accessed December 12, 2022, <https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3223>.

129. The Gazette of Pakistan, "Acts, Ordinances, President's Orders and Regulations," October 2, 2017, <https://www.ecp.gov.pk/Documents/laws2017/Election%20Act%202017.pdf>.



smartphone application. The RTS also uses GPS to log the result's position and upload time<sup>130</sup>.

Nevertheless, the RTS met with a critical response from the media and the political parties. The RTS was plagued with technical failures, causing delays in the transmission of results. Polling staff faced difficulties in using the system that also contributed to the delays in the transmission of results. The lack of internet connectivity in some districts further hindered the smooth relay of the results. In its response, the ECP conceded the failure of the RTS, thereby hinting that multiple tests may have been necessary before introducing the RTS<sup>131</sup>.

On the other hand, the failure of RTS was interpreted by the political parties as evidence of a disputed and doubtful electoral process<sup>132</sup>.

### Closing Remarks

As evident from this chapter, Pakistan is undergoing a massive digitalisation phase. The establishment of new institutions, such as NADRA, has revolutionized the electronic delivery of public services. Over the past few years, mobile network operators have made significant progress in developing new information, financial, and eGovernment services in addition to voice and data services. These developments serve as important preconditions for the conception of electoral technologies, and as a result, this digital transformation has gradually begun to affect electoral processes as well. The ECP is gradually progressing in terms of testing and implementing a variety of electoral technologies. These include the digitalisation of electoral rolls and the 8300 SMS App for the verification of voters and constituencies. In order to tabulate election results electronically, the ECP has attempted to rely on the RMS system. The ECP has also begun using RTS since the beginning of 2018, but its response has been met with severe criticism. Nevertheless, it appears that the ECP

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130. Ramsha Jahangir, "ECP Takes Digital Measures to Assist Voters," *Daily Dawn*, July 19, 2018, <https://www.dawn.com/news/1421047>.

131. Iftikhar A. Khan, "Under-Fire ECP Puts Blame on Result Transmission System," *Daily Dawn*, July 27, 2018, <https://www.dawn.com/news/1423180>.

132. Tariq Butt, "A Brief History of Chief Election Commissioners in Pakistan," *Geo News*, December 7, 2019, <https://www.geo.tv/latest/260591-a-brief-history-of-chief-election-commissioners-in-pakistan>.

will continue to improve its electoral technologies, as demonstrated by the 8300 SMS App and the CERS. The debate over the use of electronic voting machines has been gathering momentum since 2010. The following chapter discusses the contemporary debates on EVMs in Pakistan in order to assess the challenges and opportunities that it presents for aiding the electoral process.

## Contemporary Debates on Electoral Technologies in Pakistan

Pakistan has been making gradual inroads in pursuing electoral technologies since 2008. The preconditions discussed in the last chapter seem to provide a necessary ground for taking up an electoral technology such as EVMs in Pakistan. Several instances discussed in the previous chapter give a broad overview of the ICTs and electoral technologies that assist the electoral process for its regulator, the ECP. Nevertheless, the implementation of EVMs has become a significant bone of contention among political parties and civil society groups. Pakistani media, for its part, has frequently depicted different facets of EVMs regularly. However, the debates that have been generated from these individual instances and commentaries that are routinely produced in the media highlight a host of different issues in implementing the use of EVMs in Pakistan. There appears to be a lack of clarity on how these electronic voting machines will be utilized. It also appears that there seems to be confusion about the meanings and impacts of different variants of electronic voting. Who exactly will take official ownership if EVMs are to be used? Who will provide the legal cover? There appears to be a lack of consensus among the parliamentarians in Pakistan about the status of EVMs. Technologies, as argued, do not operate in isolation. They imitate our aspirations, but the ICTs also need to correspond to sociocultural contexts. Not only monetary but also operational costs are involved in setting up the culture of electronic voting.

This chapter provides a comprehensive overview of the technical, political, cultural, operational and legal challenges in utilizing EVMs in Pakistan. For this matter, one-on-one semi-structured interviews were conducted in Pakistan. These include the representatives of national-level political parties such as the Pakistan Muslim League (N), the Pakistan People's Party (PPP), the Pakistan Tehreek Insaf (PTI), and the Awami National Party (ANP), as well as civil society networks, research think tanks and advocacy NGOs such as the Free and Fair Election Network (FAFEN), the Pakistan Institute of Legislative Development

and Transparency (PILDAT), the Bytes4all and Digital Rights Foundation, public sector organisations such as the National Database and Registration Authority (NADRA) and the Election Commission of Pakistan (ECP), and independent researchers and representatives from media and multilateral institutions such as the United Nations Development Program (UNDP). The interviews were conducted during November and December 2022 focused on the cross-cutting themes of technological challenges, political aspirations, and the legislative and operational requirements of utilizing EVMs in Pakistan.

Every interview lasted 30 minutes to one hour and was conducted in Islamabad or Lahore. The responses received from the interviewees led to the discovery of several other sub-themes. These include demography, digital literacy and the digital divide, data protection issues, political dialogue or the lack thereof, and consensus, trust and transparency. The following sub-sections reflect what, in the respondents' opinions, are also the preconditions for initiating the nationwide use of EVMs in Pakistan.

## The Cultural Dynamics of Electoral Technologies

There are two broad theoretical positions in pursuing, developing and implementing communication technologies, for instance, for electronic public services. Firstly, there is technological determinism which maintains that technologies are universal and equally applicable everywhere<sup>133</sup>. The alternative position is social constructivism which argues that the successful implementation of any technology largely depends upon the social contexts in which the technology is applied<sup>134</sup>. The social constructivist approach towards technologies argues that there is no one-size-fits-all approach. The technologies can lead to different results and impacts in different cultural situations. Therefore, cultural dynamics serve as a critical consideration in the successful implementation of technology. The relationship between technology and culture thus works both ways<sup>135</sup>. Technologies from

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133. Anita Say Chan, *Networking Peripheries: Technological Futures and the Myth of Digital Universalism* (MIT Press, 2014).

134. Langdon Winner, "Do Artifacts Have Politics?," in *Computer Ethics*, ed. John Weckert (Routledge, 2021), 177–92.

135. Andrew Murphie and John Potts, *Culture and Technology*, 1st ed. (New York: Palgrave Macmillan, 2003).

the printing press to the Internet and social media have different cultural manifestations and social ramifications. On the other hand, technologies also result or, at times, evolve based on cultural shifts and complex societal dynamics<sup>136</sup>.

These dynamics may reflect people's perceptions, attitudes, norms, societal values, or even the divides that exist in society. Understanding these dynamics informs our position and perception towards the technologies and may lead to the disqualification of either technology or our perceptions. Such an attitudinal and perceptual approach can also help us to understand society's trust or mistrust towards technologies. If a technology inspires trust, it will likely be accepted and adopted. If it provokes doubts or speculations, it is likely to be abandoned. Another parameter of technological uptake is comparing people pursuing the same task manually to those with technical assistance. Deconstructing the cultural contours of society provides us with hints about the social divides and technological challenges that are often the reflections or outgrowths of social problems.

Culture, therefore, is also a necessary precursor of an analysis of electoral technologies because culture constitutes an essential precondition, the foundation on which the architecture of electoral technology is to be built. Nonetheless, culture is often completely ignored or receives a peripheral treatment in pursuing projects as important as electoral technologies. Cultural and social dynamics, such as trust in technologies and people's digital capabilities, were some of the starting points for the interviewees of this study. The respondents were also asked about their perception of technologies, if they are equally accessible to everyone, or if a digital divide (or even multiple digital divides) exists in society. Similarly, how do they broadly view Pakistan's social attitude toward digitalisation?

### **Trust and the Electoral Integrity**

Trust and the reliability of election results are the core foundations of electoral integrity<sup>137</sup>. A fundamental aspect of democratic

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136. Ibid.

137. Marlene Mauk, "Electoral Integrity Matters: How Electoral Process Conditions the Relationship between Political Losing and Political Trust," *Quality & Quantity*, 2020, 1–20.

consolidation is establishing trust between the government and the stakeholders<sup>138</sup>. This is especially true while engaging in online collaboration, providing eServices, and taking other digitalisation measures. The legitimacy of a technology-led transformation will be questioned when governments fail to establish its trustworthiness and, therefore, may not be supported<sup>139</sup>. Thus, one of the most important cultural factors that comes across as a significant hurdle in implementing electoral technologies is trust, as highlighted by the respondents. Trust is considered an essential element in developing technologies as consequential as electoral factors. However, it appears that the socio-political and cultural setup in Pakistan severely lacks trust. It is also evident in the way elections are conducted in Pakistan. Consider Zafarullah Khan's remarks:

"In Pakistan, there is minimal trust in the electoral process. Take India, for example. India follows a staggered approach in conducting elections. Their elections are conducted over several weeks, but votes are only counted on one day when the election process is over. Unfortunately, we have not been able to develop such a political culture."<sup>140</sup>

The issue of a trust deficit can also be sensed in the constitutional provision in Pakistan to conclude the election process in a single day. This is highlighted in a comment by Rana Kaiser Ishaque:

"In Pakistan, if the results are declared even on the same election day, their legitimacy is often questioned. When we compare elections in India, their elections take place in a staggered manner, whereas the results are not announced on the same day. Yet, the trust and transparency of election results are not as disputed as in the case of Pakistan."<sup>141</sup>

138. Francisco Cantú and Omar García-Ponce, "Partisan Losers' Effects: Perceptions of Electoral Integrity in Mexico," *Electoral Studies* 39 (2015): 1–14.

139. Loukas Glyptisa, Michael Christofib, Demetris Vrontisb, Manlio Del Giudicec,d,e, and Salomi Dimitrioua, Panayiota Michael, "E-Government Implementation Challenges in Small Countries The Project Manager's Perspective," *Technological Forecasting & Social Change* 152 (March 2020), <https://www.sciencedirect.com/science/article/abs/pii/S0040162519317391?via%3Dihub>.

140. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047), In-person, November 1, 2022.

141. Interview with Rana Kaiser Ishaque (Chief, Democratic Governance Unit, UNDP Pakistan), In-person, November 11, 2022.

Similarly, the trust issue leaves Pakistan undecided if it wants to indigenously produce an electoral technology such as EVMs or procure it from a foreign vendor. Nonetheless, the trust in technologies is not equally shared among the different institutions in Pakistan. Zafarullah Khan argues that:

“Will the voting machines be domestically made? The question is, who will manufacture these machines? Academics or some other institution? If it is an institution that the political parties don’t agree with, then it may lead to further trust issues.”<sup>142</sup>

In contrast, trust and its lack thereof may not necessarily be seen as a challenge for electoral digitalisation. At times the conspicuousness of the manual procedures may prove as a motive for digitalisation. For a case in point, PTI’s Sibghatullah Virk reflects on some thoughts on trust issues during the vote-counting process:

“When we speak of EVMs, there are strong perceptions about them. The question is, what triggers such strong perceptions? One common assertion in Pakistan is that since the votes are manually counted, there is always a doubt that these manual votes could be manipulated. For instance, the media reported that some votes were found doubly stamped during the vote count, leaving the vote invalid. So, when we look at these machines, we feel that these are safer systems than manual counting, and machines can bring transparency to the counting process. So, the assertion is that machines can be considered foolproof. Unlike other countries where elections take place in a staggered manner, in Pakistan, voting and counting occur on the same day. Based on our historical experience, there is always a danger of post-poll rigging. Most manoeuvring is only possible in the post-poll scenario. We lack trust and reliability in our election process, so we need a credible system to ensure trust and transparency, which is why we proposed using EVMs.”<sup>143</sup>

Whether the “trust” factor leads to digitalisation or a retreat from digitalisation is up for debate; nonetheless, trust-building and its continuance is considered a core value by institutions such as the ECP

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142. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

143. Interview with Sibghatullah Virk (PTI), Zoom, November 8, 2022.

and NADRA. On the issue of trust, NADRA's chairman, Mr. Tariq Malik, commented:

“For a country like Pakistan, where there is a serious trust deficit in the society, our responsibility is to ensure that our technologies are trustworthy. Therefore, trust is of utmost importance to our institution. That is why NADRA has emphasised the unique identification number of individuals. Every individual is represented by a unique identification number such as their CNIC, which enables voter's authentication through a one CNIC-one vote principle.”<sup>144</sup>

### **Digital (i)Literacy and (in)Capabilities**

Technologies do not operate independently; their operation depends on the capabilities and skills of people. Basic technological skills are becoming a prerequisite to navigating the technology-rich 21st century. Electoral technologies such as EVMs require direct contact with the technology. The question is how far Pakistan has progressed in digital skills and basic technical literacy indicators. The Director of Bytes for All, Mr. Shahzad Ahmad, critically viewed the progress on digital literacy in Pakistan:

“When handling electoral technology such as the EVM and RTS systems, one also needs to understand the technical and human resources involved in conducting the elections. The staff that the ECP hires for the polling station on voting day comprise primary and secondary school teachers. Any pursuit of EVMs, or as we saw in the case of RTS, will heavily depend on their digital capabilities.”<sup>145</sup>

The PTI's Sibghatullah Virk underscored similar thoughts:

“Digital literacy in Pakistan is extremely low. Political parties have severe reservations about EVMs. This resistance appears to stem from other parties' fear of the digital world. Because of our current digital literacy standards, a paper trail is always considered a safer route.”<sup>146</sup>

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144. Interview with Tariq Malik (Chairman: NADARA), In-person, November 11, 2022.

145. Interview with Shahzad Ahmad (Bytes For All), In-person, November 2, 2022.

146. Interview with Sibghatullah Virk (PTI).



Furthermore, digital literacy is not a particular course, which can be taught to the masses so that in the end they will all be digitally literate. Digital Literacy is not a fixed discipline, but it is a continuous process that keeps growing and evolving. Similarly, it has many faces. Digital literacy in one area cannot be assumed to provide digital capabilities in other areas. Majid Nizami argues that:

“We often compare the use of EVMs with mobile phone use. The argument goes that since people can use a mobile phone and become content creators on social media, it is automatically assumed that they can also understand the value and use of EVMs. But we must make an important distinction: not everyone is a content creator. Not everyone is a smartphone user. So, this comparison between EVMs and the mobile phone seems far-fetched.”<sup>147</sup>

The argument about the variety of digital capacities and its lack thereof is well summed up by Amjad Qammar:

“If we look at the status of technologies and automation within our ministries, the uptake of technology and service structure seems extremely problematic. The ministerial staff often cannot handle slightly complex issues related to technology. On the other hand, if we look at the operationalisation of EVMs, it will require contact with the machine. It is often observed in Pakistan that many people feel challenged communicating with the machine themselves. For example, they eventually rely on middle persons to operate the banking terminals or the ATMs, even if the information provided by the machine is in Urdu. These aspects based on service structures, technological update, current elections process, and their systems makes the use of EVMs slightly complicated because EVMs works when structures are properly built. For example, it is possible to use Facebook and YouTube and watch videos through those providers, but operating and dealing with online services is an entirely different digital capacity; for instance, NADRA has several services that can be accessed online. However, people still prefer walking up to NADRA offices and waiting in queues when online services are available.”<sup>148</sup>

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147. Interview with Majid Siddique Nizami (Senior Journalist), In-person, November 4, 2022.

148. Interview with Amjad Qammar (Bytes For All), In-person, November 2, 2022.

There is a two-way relationship between technology use and literacy; one enhances the other. Furthermore, it may seem problematic to assume that one must acquire digital literacy before implementing and experiencing the electoral technologies.

“Digital literacy starts when actual technology arises. Most political parties that seem to have digital monopolies have their voter base in urban centres, but the majority population in Pakistan is in rural centres.”<sup>149</sup>

## Demographic Realities and the Digital Divide

The global division between developed and underdeveloped countries is also reflected in the technological sphere. The developed world predominantly constitutes the digital haves, while the underdeveloped world forms the digital have-nots. Haroon Baloch is of the view that:

“We are living in a world of technological extremes. On the one hand, some countries have declared the Internet a human or fundamental right. On the other hand, there are countries like Pakistan where we still have infrastructural issues and poor technological acceptance.”<sup>150</sup>

Pakistan suffers from the problem of unequal digitalisation. The digital haves and have-nots do not merely exist at the world level, but they also exist within a state. For instance, far-flung areas still do not have access to the Internet, or the quality of the Internet is very low compared to the urban centres. Therefore, this divide in the realm of access to digital resources is a significant obstacle to implementing electoral technologies. Zafar Ullah Khan narrates one of his personal anecdotes that:

“I was a member of the parliamentary committee meeting on the RTS. I asked if it would be possible for the election officer in a far-flung area such as Noushki (a northwestern district in Balochistan province) to transmit election results via the Internet. Do we have enough internet outreach in the country? On our persistence, the election commission representatives said we would use the technology as long as it worked, and if it did not, we would resort to our manual methods.”<sup>151</sup>

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149. Interview with Shahzad Ahmad (Bytes For All).

150. Interview with Haroon Baloch (Bytes For All), In-person, November 2, 2022.

151. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

The digital divide may not be an independent problem but a mere expansion or outgrowth of other divides like the gender divide, ethnic divide, and social divide. Therefore, the cross-cutting or intersectionality of the digital divide should be considered along with the other mentioned categories for a holistic analysis of the problem. The ANP's Afrasiab Khattak lent his voice to marginalised communities that:

“Election campaigning is done through media these days. But when we look at our demography, our population is quite heterogeneous. We have to consider all segments of society. This includes marginalised, socially excluded groups as well as women voters. These are our demographic realities. The question here is, no matter what technology we use, the technology must be able to support all demographic groups. We must take into account the socially marginalised demographic groups. If we look geographically, we will find several examples from north to south, from Chitral to Turbat. Our technologies must be able to assist everyone. For example, in 2009 and 2010, the Taliban insurgency in the Swat valley badly affected the lives of local inhabitants and caused the internal displacements of families. We discussed what would be the safest way to mainstream the Internally-displaced Persons (IDPs). We agreed that we could rely on technological assistance. We decided that every single family must have a bank account, and they should be provided with a smart card so that we can help them with cash transfers. The technology-assisted cash transfer program worked very well. The other relevant examples are the Benazir Income Support Program (BISP), the first tech-based cash support for low-income groups. Of course, technology does not provide a complete solution, but it assists in several areas of governance and social welfare.”<sup>152</sup>

Shmyla Khan feels that women are underrepresented in the digitalisation debate among marginalised groups. She fears that this trend may continue in the EVM debate as well.

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152. Interview with Afrasiab Khattak (ANP), In-person, November 11, 2022.

"If we look at the use of technologies among marginalised groups, there are issues of accessibility and digital literacy. It is often observed that females are not allowed to use mobile devices. In several households, they are not allowed to possess a gadget. There is a norm in Pakistani society that the male child receives preferential treatment, particularly in economic and academic opportunities. The same applies to access to technologies as well. Thus, the biggest issue is that of access. Women are locked out. Some do not even possess a CNIC. However, the ECP and NADRA have worked a lot on that issue"<sup>153</sup>.

However, she is also optimistic about electoral technologies such as the 8300 SMS App:

"Electoral technologies are also very beneficial. Particularly, the 8300 SMS app is useful because people can instantly access it and receive the result of their voter registration data. Technology has also tried to bridge several gaps here"<sup>154</sup>.

### **Non-documentary Culture in Pakistan's Social Fabric**

In any cultural analysis of technology, it is essential to excavate social trends and attitudes toward technology. Are these trends technology-friendly or technology-averse? Zafarullah Khan thinks the social fabric of Pakistan is not essentially an enabler of technology:

"Society's sociology is not complimentary. We have not evolved as a society that keeps or thinks of documentation. There has not been a culture of birth and death registration for a long time. Governments depend upon such vital civic data for any welfare, social, or economic policy. Walking into the rural heartland, you will encounter several cultural myths. One such cultural myth is that machines cause impotence."<sup>155</sup>

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153. Interview with Shmyla Khan (Digital Rights Foundation), WebEx, December 5, 2022.

154. Ibid.

155. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

Majid Nizami also appeared doubtful and raised the question:

“Pakistan is a very heterogenous and diverse country. Most of the public is unaware of their electoral duty and rights, let alone the electoral process. The crucial question would be whether EVMs are culturally viable and acceptable for a diverse country such as Pakistan.”<sup>156</sup>

The Digital Rights Foundation in Pakistan conducts several workshops on digital security in schools, colleges and community groups and with a community-based organisation. Shmyla Khan believes that it gives them a chance to analyse people’s media usage, mainly social media. Her observations echo Nizami and Khan’s earlier comments on cultural viability and a non-documentary culture.

“We feel that many people do not know how to use social media apps properly. Due to the graphical abilities of the apps, people know the buttons, and they press them to operate that. Some people do not even know how the algorithmic bias of social media apps only shows the content that people want to see. They keep clicking the content that is suggested by the apps. This goes for communication apps as well. You will be surprised to know that many people do not know how to participate in written communication. As a result, they mostly use the voice feature because it does not require typing. Based on these observations, I do not think there is enough digital literacy in Pakistan. Those who are online, even they are not fully capable of handling the technologies. We have also observed that many times, people end up seeking the assistance of another person. Electoral processes are already complicated. When we add the machine factor to the story, we need to completely understand how this machine works. Moreover, it would already make the entire process more technical. There is a fear that it might lead to a lower turn out if the electronic voting machines are introduced”<sup>157</sup>.

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156. Interview with Majid Siddique Nizami (Senior Journalist).

157. Interview with Shmyla Khan (Digital Rights Foundation).

## Political Discourses on Electoral Technologies

Pakistan's political reality reflects in the choices and behaviours the political parties have exhibited. When the PTI government tabled the EVM bill and got it approved by the parliament in 2021, it stirred up a political storm and heated discussion from the political parties in Pakistan, both on the left and right sides of the political spectrum. The two major parties, the PPP and PML-N, completely rejected the EVM implementation. It is important to note what led the PTI to lend its vehement support in opting for EVM. Elections in Pakistan, be it general, provincial assemblies or even by-elections, have mostly ended up attracting criticism. Political opponents blame each other for pre-poll or post-poll rigging, and sometimes these allegations lead to a vote recount. In several instances, political parties take matters to court. Whatever the verdict of the court may be, political parties continue to highlight irregularities and refuse to accept each other's mandates<sup>158</sup>.

The PTI's consistent support for the EVM stems from the issues of electoral fraud and rigging that have become a norm for the electoral exercise in Pakistan. The PTI tasked the Ministry of Science and Technology to develop EVMs locally. In August 2021, a briefing on electronic voting was organised at the Prime Minister's House for Imran Khan. One of the key aspects of this briefing also reflected the issues of mistrust in the election results. Shibli Faraz, the then Minister of Science and Technology, claimed that the EVMs would eliminate the chances of rigging<sup>159</sup>. In the case of the EVMs, the PTI's presidential nominee and the President of Pakistan, Dr. Arif Alvi's office, has been extending its support to accelerate the progress on the EVMs (Note that the President of Pakistan, who is the head of the state and carries a ceremonial status, acts on the advice of the Prime Minister, whereas the executive powers are exercised by the Prime Minister). He even went to the extent of organising weekly meetings to monitor the progress of eVoting and EVMs. Dr. Alvi's backing of the EVM project also reflects the political realities of Pakistani elections. He

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158. Jahanzeb Hussain and Mahnoor Bari, "Rigging Is Alleged Each Time. But the Sheer Scale of It Is What Casts a Shadow on These Elections," *Daily Dawn*, July 26, 2018, <https://www.dawn.com/news/1422775>.

159. Amir Wasim, Jamal Shahid, "PM Imran given Demo of Pak-Made Electronic Voting Machine," *Daily Dawn*, August 6, 2021, <https://www.dawn.com/news/1639056/pm-imran-given-demo-of-pak-made-electronic-voting-machine>.

has underscored the similar thoughts shared by other PTI politicians, that is, to ensure the credibility of the entire electoral process by using the EVMs<sup>160</sup>. The following sections provide an overview of the status of dialogue between political actors, what perceptions and clarities they have, and what they agree on regarding the use of electoral technologies in Pakistan.

### **Rigging and Irregularities in Elections as a Root of Contention**

Three general elections (2008, 2013 and 2018) have taken place in Pakistan after Musharraf's pseudo-martial law ended in 2008. After every electoral exercise, mainstream political parties blamed each other for electoral rigging. Particularly after the 2013 general election, the PTI demanded the recounting of the votes in certain constituencies and later, in 2014, staged a four-month-long sit-in in Islamabad to register their protest against the widespread rigging in elections<sup>161</sup>. However, the allegations of electoral fraud are not new. Zafarullah Khan believes that the problem is deeply rooted in the polity of Pakistan:

“Every polity has its history. From the beginning, it is unfortunate that the elections in Pakistan have been manipulated. In the very first election of Pakistan in the 1950s in the provinces, there was a hue and cry of *dhandly* (rigging). After the 1956 constitution, there was going to be an election, which did not happen. The 1962 and 1965 elections were on limited franchise (Basic Democracy). The 1970 election was the first election on all-adult franchises.”<sup>162</sup>

After the 2013's general elections, Imran Khan refused to accept the election results for some constituencies. Farhatullah Babar opined that this non-acceptance of results goes back to the 1970s, but we need to understand that issues of rigging appear when the political processes are abruptly halted or in some case completely terminated:

160. Ministry of Information Technology and Telecommunication, “Alvi Wants More Production with High-Tech Security Features,” accessed December 12, 2022, <https://moitt.gov.pk/NewsDetail/NTI3MzQwMmMtNGY2NC00OTFlTmNDktYzQ5NzFIYWY5MmRm>.

161. Farhat Haq, “Democracy 101: Think Outside the Container,” *Daily Dawn*, September 4, 2014, <https://www.dawn.com/news/1129833>.

162. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

“Whenever election results are declared, it has become a trend that political parties do not accept each other mandates. This happens when there is a discontinuity in the political process. Looking at the history of elections in Pakistan, the proponents of EVMs should perhaps take this into account. Pakistan has been a source of many political issues. After every general election, there are speculations and allegations of election manipulation. The election manipulation started after 1970 with the idea of one person, one vote, and it has been there since then. The longstanding call for free and fair elections has been there since the beginning. We need to remind ourselves of these critical aspects whenever we want to experiment with our electoral process. The PPP takes these concerns very seriously. These aspects will still dominate our discussion with the implementation of EVMs, which is why the PPP has so far been cautious.”<sup>163</sup>

### **Conflicting Political Party Positions on EVM**

The ECP as a regulator can only administer the elections, but EVMs, and for that matter, any electoral technology's implementation, is subject to the consensus among political parties and parliament's approval. However, the party positions seem very divided on electoral technologies, particularly on EVMs. Farhatullah Babar argues that the PTI has been the only advocate of EVM, while all other parties have shown strong reservations.

“It appears that only the PTI is the buyer of EVMs. The PTI believes that the EVMs can solve the problem of electoral irregularities on election day. However, other mainstream parties or even the smaller parties have not shown any interest in the EVMs. Imran Khan is my opponent, and maybe he honestly believes that EVMs can solve all the problems. But I think his advisers or people close to him have not briefed him completely over EVMs.”<sup>164</sup>

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163. Interview with Farhatullah Babar (Secretary General: PPPP), In-person, November 11, 2022.

164. Ibid.



The PTI has so far projected itself as a very technology-friendly party. Part of its reasons for this stance stem from PTI's frequent use of social media, which they have extensively used for election campaigns:

"PTI is the first party which employed social media strategies to establish a dominant footprint for narrative placement and communication among people. Other political parties still rely on conventional media and old methods of communication with their constituencies. PTI has effectively used technologies. If we look at the indicators of the previous elections, we will see that voter turnout has increased from 33 percent in 2013 to 53-54 percent in 2018. This is a quantum jump. The PTI has inspired young and new voters who want to join the PTI."<sup>165</sup>

Political communication through social media has been the PTI's trademark, and after assuming the government, it also expected ministries to launch their individual social media presence:

"During the PTI government, we tried to make the cabinet office almost paperless by introducing ICTs in the cabinet division. Communication has been transformed from paper to entirely digital. Government and ministries were advised to initiate their own social media pages. None of the ministries had adopted such a strategy before the PTI came into power. The PTI also launched a public grievances portal where people could contact the prime minister's office to lodge their complaints. The PTI tries to employ technologies for maximum reliance. We believe that technology brings efficiency and effectiveness."<sup>166</sup>

Similarly, a representative working for a European mission in Pakistan who wished to remain anonymous remarked:

"One aspect that favours the PTI is its awareness campaign about voting. The way the PTI has used social media is unprecedented, as it also has a positive impact on voter turnout. Social media helped the PTI to engage with its voters."<sup>167</sup>

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165. Interview with Sibghatullah Virk (PTI).

166. Ibid.

167. Interview with a representative of a European Country, In-person, November 4, 2022.

The Pakistan People's Party's representatives claimed that their party has a welcoming attitude towards technology. Nonetheless, they are also cautious, particularly regarding technologies related to the crucial election process.

"PPP is very pro-technology. The entire debate on EVMs started during the PPP government in 2008. We were open to listening to what this technology can do as we believe in technology's future. It is assisting the employment sector and the banking industry. We have to resort to technology for its assistance, but technology is a double-edged sword. PPP believes that technology must be given a chance to ensure free and fair elections, but it is only possible after a thorough analysis of technology and a comprehensive political dialogue."<sup>168</sup>

However, Zafarullah Khan said that it appears that the PPP may not be a proactive advocate of electoral technologies because their support base is different:

"Benazir Bhutto had strong inclinations towards technology. Nobody afterwards has advocated for it – you can check the PPP's manifesto. Moreover, their support base is mostly rural; most do not have access to the Internet."<sup>169</sup>

Farhatullah Babar maintained that it is the controversies around the electoral process that make the PPP cautious about electoral technologies such as EVMs:

"PPP's parliamentarians are of the opinion that there have always been controversies around the electoral process. It is necessary for our ticket holders that there is a paper trail in the vote casting process. I believe the ballot paper is very necessary for a country like Pakistan where irregularities stain elections' history."<sup>170</sup>

The PPP thinks that the PTI's vigorous support for EVMs is due to their lack of understanding of the dangerous consequences that it may create for the polity of Pakistan.

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168. Interview with Farhatullah Babar (Secretary General: PPPP).

169. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

170. Interview with Farhatullah Babar (Secretary General: PPPP).

“In terms of the PTI’s and Imran Khan’s vehement support for EVMs, they may have good intentions, but their lack of knowledge regarding EVMs is very dangerous. They seem to believe that EVMs can ensure electoral integrity and that the technology is non-manipulatable. However, it appears that they themselves are not sure.”<sup>171</sup>

Similarly, the PML(N) believes that the legislation on EVMs was done in indecent haste. Political parties were not taken into confidence, and the legislation was passed without any consideration for due deliberation and consensus from the stakeholders:

“The way the PTI tried to hurriedly process the EVM legislation does not represent a democratic discourse. What is most concerning is that they even bypassed the regulator, the ECP, altogether. This is why such haphazard legislation would result in objections and reservations. As you may recall that the ECP had 37 reservations about the EVMs. This kind of haphazardness, non-seriousness, and unpreparedness reflect in the PTI’s populist politics as well. The use of digital media is one thing, but you need to see the impact it leaves. It can also incite hate and provoke mob mentality. This kind of non-serious attitude also reflects in the PTI’s followership, and even the educated community seems to be blinded.”<sup>172</sup>

Both the PPP and PML(N) do not seem to be in favour of EVMs. However, there is a view that they did not communicate their narratives and point of views to the public as successfully as the PTI did:

“Perhaps the PTI and Imran Khan think that the manual system of election/paper ballots is manipulatable. Both the PPP and PML-N have not been able to create and manage an effective narrative in response to the PTI’s favouritism towards EVMs. There are so many aspects of EVMs that both political parties are surely aware of such as election hacking and machine manipulation, but they have not been able to communicate that to the public.”<sup>173</sup>

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171. Ibid.

172. Interview with Ahsan Iqbal (Secretary General: PML-N), In-person, November 10, 2022.

173. Interview with Nazeer Ahmad Mahar (Executive Director: The Research Initiative), In-person, November 3, 2022.

## Collective Wisdom

Despite differing party positions, there has not been any formal dialogue on EVMs. The lack of a political conversation seems to be a cause as well as a consequence of the lack of political dialogue. Because of public bickering between the political parties, they have not been able to establish any common ground. The relationship goes both ways. Nazeer Mahar opined:

“Since 2018, major political parties have not been able to develop an environment of dialogue. There is a lack of trust among political parties about the use of technologies in electoral exercises. The results of the piloting exercise of EVMs do not seem credible and trustworthy.”<sup>174</sup>

Similarly, Mudassar Rizvi also thinks that there is a lack of political debate. The pilot studies conducted on EVMs cannot be taken as a guarantee for the successful utilization of EVMs.

“There has been a lack of consultations with political stakeholders. The Free and Fair Election Network (FAFEN) is not anti-technology, but there are concerns that if you want to introduce an electoral technology that has the potential to negatively influence the ballot, then such technology needs to be thoroughly tested. We cannot rely on one or two examples. The pilot studies conducted seems like pseudo-pilots.”<sup>175</sup>

Zafarullah Khan also had similar thoughts on the quality of the pilot studies that were conducted:

‘We conducted two bye-elections in which EVMs were used as samples, but I do not think that experiment was very successful.’<sup>176</sup>

Lastly, parliament, which is the national level floor to debate these issues, seems to have failed in offering its primary duty to create a constructive debate on electoral technologies:

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174. Ibid.

175. Interview with Mudassar Rizvi (FAFEN), In-person, November 3, 2022.

176. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

"The use of EVMs as such is not a simple issue. In a country where the RTS has failed, one needs to see what we, as politicians, have done about the failures of the RTS. Because there was no inquiry conducted. Even parliament failed to discuss it."<sup>177</sup>

Thus, dialogue and its lack are critical aspects of the implementation of electronic voting machines:

"A dialogue is necessary among all stakeholders from all angles associated with EVMs, such as technology, ballot secrecy and cyber security, financial aspects, and cultural aspects, but it is not done yet."<sup>178</sup>

Afrasiab Khattak believes that political dialogues are necessary for promoting democratic norms and trust-building:

"If we take the example of electoral technology such as EVMs, I find a huge trust deficit among political parties. We have to consider the dubious election processes of the past as people do not seem to entirely trust the state institutions. If you implement technology-assisted elections and a result management system, you will need dialogue at several levels. Dialogue would be necessary not only among the political parties but also within the political parties. Similarly, the second level of dialogue would be necessary at the civil society level. Then you also need a dialogue at the press and media level."<sup>179</sup>

Khattak also feels that it is unfortunate that our political culture lacks collective wisdom, which is crucial to overcome not only the challenges of electoral technologies but also overcome structural inequalities that continue to increase in Pakistan:

"If EVMs have become a certain elephant in the room, it needs to be addressed, but the precondition should be that we need collective wisdom. For that collective wisdom to work, the result of dialogue should necessarily follow legislation.

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177. Interview with Farhatullah Babar (Secretary General: PPPP).

178. Interview with a representative of a European Country.

179. Interview with Afrasiab Khattak (ANP).

Such preconditions and legislation must consider the existing disparities in Pakistan, technology's outreach and accessibility among rural voters or even within the urban centres. We need to keep an account of ruptures and disruptive technologies.”<sup>180</sup>

### **Lack of Clarity and Consensus**

In the politically charged environment of Pakistan, it is difficult to find evidence for a substantial and constructive debate among the political parties<sup>181</sup>. In the absence of dialogue, clarity fades, and any consensus appears as an impossible goal, as evident in the case of EVMs. Mudassar Rizvi raises fundamental questions about the clarity of the software and hardware infrastructure of the EVMs:

“What machines are we talking about? Will they be produced by a local university, or will Pakistan have to import these from abroad? What would or should these machines exactly do? How are they going to count the votes? What technology will be used inside the machine? Above all, how will electoral law be re-adjusted?

Rizvi argued that introducing EVMs is a “Recipe for Disaster” unless these questions are scrutinised<sup>182</sup>.

This lack of consensus does not only exist among the political parties but when the EVM legislation was passed by the parliament, the ECP and the government did not seem to be on the same page:

“Who would implement the EVMs? The regulator, the ECP? or we, the parliamentarians? When the EVM law was passed through the parliament during the PTI government, it is important to notice the position that the regulator (the ECP) took. The ECP was of the opinion not to pursue EVMs in such a way. Technology has to be eventually employed, but it should

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180. Ibid.

181. Daily Dawn, “Govt Pleading with Opposition for Dialogue, Says Maryam Nawaz,” January 25, 2021, <https://www.dawn.com/news/1603574/govt-pleading-with-opposition-for-dialogue-says-maryam-nawaz>; Azfar-ul Ashfaq, “Kamal Calls for Grand National Dialogue to Save Pakistan,” Daily Dawn, November 9, 2020, <https://www.dawn.com/news/1589357>.

182. Interview with Mudassar Rizvi (FAFEN).

be in a manner that ensures transparency and consensus. The ECP has already raised a number of reservations during the PTI's government about the practicality of EVMs. If the ECP is not on-board, no matter how much regulation is done, it would be fruitless because the regulator's voice is not heard, which is mandatory. If the ECP agrees to the utilization of EVMs, then a pilot study of EVMs would also be necessary. The ECP should be involved in deciding the vendor."<sup>183</sup>

He also raised a very pertinent question. For such an important electoral technology, it is important to distinguish the actors and their roles and responsibility:

"During the PTI government, the Ministry of Science and Technology claimed that they had already tested the EVMs. But is MoST a regulator? How can you let off such an important argument in the debate on EVMs?"<sup>184</sup>

The lack of consensus on EVMs prevailed in parliamentary sessions, and the PTI government passed EVM legislation without any consensus or debate. However, when the PML(N) took over the government in April 2022, they passed another law to undo the PTI's legislation:

"No consensus has been established on EVMs to date. The PML(N) government withdrew the EVM legislation at the outset when it came to power because there was no consensus on these laws."<sup>185</sup>

Rizvi added that:

"EVMs are not a need-based technology. EVMs seems to be highly politicised. Political scoring became more prominent than discussing their technological merits. Their technological merits have not been transformed into political merits. No expert debate was created. The PTI used it as spin-doctrine. Technologies should never be introduced in this manner, particularly in democracies, and choosing future governments. As a result, no consensus has been established on EVMs."<sup>186</sup>

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183. Interview with Farhatullah Babar (Secretary General: PPPP).

184. Ibid.

185. Interview with Mudassir Rizvi (FAFEN).

186. Ibid.

## Electoral Technologies and the Populist Politics

One of the prominent characteristics that populist leaders often resort to is their dichotomous and binary understanding of narratives that mostly surround saving and protecting an ordinary person or country from corrupt elites<sup>187</sup>. This can be witnessed from any populist whose narratives are generally built on an us-versus-them ideology. Shmyla Khan at the Digital Rights Foundation feels that the PTI treated the EVM issue within their known binary narratives that machines will be saviours since manual casting and counting of votes has mostly led to electoral fraud. However, the danger of this binary treatment leaves significantly less room for critical analysis:

“There are two issues here at play. When we engage with the PTI and their focal persons, they are very good at adapting to technologies. Particularly, their social media presence is very creative and innovative. The second argument here is that if we review the PTI’s ideological position, their entire narrative stands on populist politics. They argue that the existing systems are inherently corrupt. This is reflected and embodied in the speeches of PTI’s leaders. They have a very nuanced and uncritical understanding of technologies. They think that technology can solve these issues. Their narrative shows that if we eliminate the human element, then technology will solve the problem because everyone is corrupt. Their entire ideological narrative is also reflected in their approach towards electronic voting. The PTI must have also heard of all these criticisms of technological bias. Most of the PTI leaders have attended the Supreme Court hearings on the issue of a vote recount. When the issue of voter verification came up in court, there were discussions on technological capacity and cybersecurity. I am not sure if they want to look at these issues”<sup>188</sup>.

Civil society and not-for-profit groups feel that without clarity and dialogue, any effort towards EVM implementation will be futile:

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187. Afiya Shehrbano Zia, “Pious, Populist, Political Masculinities in Pakistan and India,” *South Asian Popular Culture* 20, no. 2 (2022): 181–99.

188. Interview with Shmyla Khan (Digital Rights Foundation).



"In civil society and not-for-profit groups, there is a consensus that electronic voting will not solve all these problems. Every civil society organisation has tried to analyse the case of electronic voting from their own perspectives, be it capacity, or the technical, transparency, gender and digital divides. If the elections of all provincial assemblies and national assembly are conducted on the same day and if the results are announced within 24 hours, then we feel and believe that electronic voting is an unnecessary obsession"<sup>189</sup>.

## Technological Challenges of Electoral Technologies

The inception and development of any eGovernment application go hand in hand with the deployment of a complex ICT infrastructure. Particularly in the presence of legacy computer systems, the integration of newer systems can be very challenging. However, in the case of conventional and manual systems, the opportunity cost can rise exponentially, and so does the installation of new technological infrastructure. These technical challenges and technological solutions have to correspond to the local sociocultural contexts, as the previous sections have tried to argue. In this regard, the propensity of these challenges increases as the evaluation of the design and operation of the technology starts. Social and political measures may provide some of the answers, but most of the solutions would have to rely on technological know-how, expertise and developments<sup>190</sup>. Before taking electoral technologies into consideration, assurances on the issues of information security and privacy might be necessary until these technological obstacles are addressed and procedures become more transparent<sup>191</sup>. Therefore, before implementing any voting machines, it becomes essential to investigate the complex technical intricacies, such as if these machines can be manipulatable and hackable. How will they ensure ballot secrecy and transparency? How will the privacy

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189. Ibid.

190. Gabriel Marcuzzo do Canto Cavalheiro and Luiz Antonio Joia, "Towards a Heuristic Frame for Transferring E-Government Technology," *Government Information Quarterly* 31, no. 1 (2014): 195–207.

191. Loukas Glyptisa, Michael Christofib, Demetris Vrontisb, Manlio Del Giudicec,d,e, and Salomi Dimitrioua, Panayiota Michael, "E-Government Implementation Challenges in Small Countries The Project Manager's Perspective."

of such a large amount of data consumed by these machines be guaranteed? The following section explores respondents' answers to these and more similar questions.

## Cybersecurity and Election Hacking

In the past few years, election hacking has emerged as the most precarious side effect of over-digitalisation in the eGovernment debate. Election hacking with the assistance of technology would mean bleak prospects for the growth of democratic culture and democracy itself<sup>192</sup>. Currently, the entire world is crippled with malicious cyber-attacks, data leaks, and cyber espionage, leaving cyberspace extremely vulnerable. An electoral technology such as EVMs must be evaluated for its merits of safety from the cybersecurity perspective. For instance, are these machines manipulatable? Can they be hacked? How can the cybersecurity of machines be ensured?

It appears that there are not enough satisfactory answers to these questions. At the same time, society seems unprepared to confront these questions within the electoral technology debate. Majid Nizami argued that:

“There is not enough debate on the issue of hacking. Can EVMs be hacked? If yes, who will ensure the transparency of the machines? The other issue is that of voter and ballot secrecy. It should be important that the voter is not traceable and her or his anonymity is maintained, and this is solely the state's responsibility. If EVMs are introduced, the state must be prepared for any kind of repercussions. Options A, B, C, and D should be available to the state. To understand machine manipulation, sometimes, one does not need to be a cybersecurity expert. For instance, what happens when someone drops an adhesive liquid on the voting machine? Can you imagine the outcome? The button of a certain candidate will be stuck, and this will again lead to the problem of rigging.”<sup>193</sup>

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192. David P Fidler, “The US Election Hacks, Cybersecurity, and International Law,” *American Journal of International Law* 110 (2016): 337–42.

193. Interview with Majid Siddique Nizami (Senior Journalist).

Farhatullah Babar raised similar concerns about the cybersecurity of elections:

“When we look at the case of cyber security, I am afraid we are not giving it the due importance that it requires. In a country where, until recently, data protection law did not exist, how can you go adopting a technology use that will determine the future government?”<sup>194</sup>

These concerns also resonated with the opinion of the European representative:

“Cyber security is an important aspect of EVMs, and there are only open questions. What happens if the EVM is hacked? What happens if the voters’ data is no longer accessible? Who and how would the transparency be ensured? This requires detailed deliberations, which are not done yet.”<sup>195</sup>

Ahsan Iqbal too raised a hypothetical scenario related to the manipulation of EVMs, which is worth pondering:

“Consider the election day scenario of EVM machines. What happens if an EVM machine in an important constituency is left with a certain flaw? Imagine if it will function at a certain hour of the election day, but at crucial hours it might malfunction. How will we ensure that every EVM machine has been vetted and accounted for? What mechanism would ensure the legitimacy and transparency of all these machines that will be developed for conducting elections in Pakistan?”<sup>196</sup>

While the digital data in NADRA servers may remain safe, however, in a society like Pakistan, CNIC copies are used frequently for any documentation. This invites the risk of data thefts through manual processes at the horizontal level and, ultimately, the risk of cybersecurity failure at the vertical level, as echoed by Ahsan Iqbal:

“Cyber security and Internet Security need to be understood from horizontal and vertical levels. Both horizontal and vertical

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194. Interview with Farhatullah Babar (Secretary General: PPPP).

195. Interview with a representative of a European Country.

196. Interview with Ahsan Iqbal (Secretary General: PML-N).

levels need to complement each other. That is, the same or similar level of security protocols must be implemented both at the horizontal and vertical levels.”<sup>197</sup>

In the current digitalisation scenario of Pakistan, where most of the databases are linked to each other, electoral technologies are immensely benefiting from biometric identification and verification. Nevertheless, in the highly digitalised scenario, cybersecurity of the voter's identity and protecting the voter's secrecy may become extremely difficult. Shmyla Khan at the Digital Rights Foundation is extremely cautious about the biometric feature of voting machines.

“There are different kinds of electronic voting machines. If we take the biometric voting machine, its results may lead to a number of consequences. Our stance is that if any kind of voting machine is linked to a biometric database, it is inherently tied to a person. You can verify but also identify a person. That's where it leads to a host of problem related to data privacy. If electronic voting machines can identify a person, we will face a serious issue of voter secrecy. Electronic voting in such a scenario would lead to unimaginable consequences for a country like Pakistan. Imagine a bigger-scale scenario where biometric identity is connected to so many different databases. We are not only talking about the identity of the voter, but it would lead to the identification of banking details, mobile phones numbers, types of mobile phones or details of residence.”<sup>198</sup>

Such risks will perhaps always loom around the technological debates. However, it might appear too drastic to abandon the technology use. Instead, in this constant dialogue with the pervasive nature of technologies, the answers may be available partly within the technology and the local context. Sibghatullah Virk sounded a similar optimism:

“For EVMs, one has to think of the placement of a security regime for such technologies. There is hardly any technology that does not falter, but there are always solutions. Ideally,

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197. Ibid.

198. Interview with Shmyla Khan (Digital Rights Foundation).

we want an EVM that is customisable to our local needs, particularly one that helps in casting and counting votes, as that's where the problem happens."<sup>199</sup>

Similar optimism is reflected in the views of Afrasiab Khattak:

"If it is to be believed that the RTS had malfunctioned or if the technologies are manipulatable, should we stop using them? I would say we should not stop pursuing their use. Every progress and development also has its drawbacks. Does that mean that we shall stop pursuing progress? Technology also has problems, but it also assists. It does not mean that we shall stop pursuing it. We need to keep addressing the drawbacks that technology may have."<sup>200</sup>

### **Ballot Secrecy and Transparency**

Ballot secrecy is a basic electoral norm that is protected under the constitution. It ensures that a voter can participate in a democratic exercise, such as an electoral process, without any risk of intimidation. It also ensures that a vote remains untraceable so that the voter's vote cannot be traced back to the voter. Similarly, it also guarantees the principle of accuracy that all the votes are accurately counted<sup>201</sup>. From the electoral technology perspective, if voters are not aware of the functioning of EVMs, this may lead to a range of serious issues. Within a weak state apparatus, when data protection and privacy rights are not entirely guaranteed, voters may become suspicious of EVMs if their identities could be traced back to their ballot choices<sup>202</sup>.

On the issue of transparency and ballot secrecy within the EVM context, Muhammad Qureshi at the ECP believes that voter secrecy is a fundamental element of the electoral process:

"The ECP as a regulator not only has the role of administering and conducting the elections throughout Pakistan, but it

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199. Interview with Sibghatullah Virk (PTI).

200. Interview with Afrasiab Khattak (ANP).

201. Sarah Birch, Paul Cockshott, and Karen Renaud, "Putting Electronic Voting under the Microscope," *The Political Quarterly* 85, no. 2 (2014): 187–94.

202. Alan S Gerber et al., "Is There a Secret Ballot? Ballot Secrecy Perceptions and Their Implications for Voting Behaviour," *British Journal of Political Science* 43, no. 1 (2013): 77–102.

also ensures that the electoral integrity and respect for the person's vote is protected whenever elections are conducted. Therefore, it is important for the ECP to ensure that the three aspects are always respected within an electoral process with or without technology, i.e., transparency, anonymity, and ballot secrecy."<sup>203</sup>

The political parties themselves also hold ballot secrecy as very important for the evolution of the political process in Pakistan:

"There has not been a single election in Pakistan where the results are not contested and disputed. Therefore, ballot secrecy will remain of prime importance for a country like Pakistan, where transparency and legitimacy of elections have often been questioned."<sup>204</sup>

The technological solutions that have been employed in Pakistan have been able to bring more transparency to day-to-day business activities. On the relationship between technology and transparency, Shahzad Ahmad stated that:

"Does technology ensure accountability and transparency? I would, yes. There are some good examples. For instance, due to NADRA-based digital identity systems, it has become difficult or almost impossible to change (forge) data on the identity card yourself. Due to the digitalisation of driver's licenses, any manipulation or backdating is no longer possible. These aspects of technology are ensuring transparency and accountability in the systems."<sup>205</sup>

However, it appears that the critical views of technology have slowly started to dominate, albeit among select sections of Pakistan's population:

"The question remains if technology promotes transparency. Some may say yes, it does. But one needs to also understand the politically charged environment of Pakistan, where there

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203. Interview with Muhammad Khizer Aziz (Director General: Information Technology; ECP), In-person, November 11, 2022.

204. Interview with Ahsan Iqbal (Secretary General: PML-N).

205. Interview with Shahzad Ahmad (Bytes For All).

is a constant power struggle and power play. No one is ready to concede or give others a political space. Regarding ballot secrecy, it is of utmost importance for a country like Pakistan that voters' identity remains discreet because the traceability of the vote can cause problems or even violence. The concern is that these EVMs should not be able to trace the voter."<sup>206</sup>

Farhatullah Babar likewise asked for some clarifications on the transparency related to EVMs:

"If we aim for free and fair elections, then we need to look at A) the political party point of view and B) the voter's point of view. We also need to investigate the fundamental aspects like transparency from legislators' and political workers' points of view. I must know that the procedure is transparent. It is very important for elections in the Pakistani context that there is a mechanism for verification of the vote and secrecy of the ballot. The idea of voter choice being auditable, verifiable, and anonymous needs to be clarified within the EVM context. Where do the boundaries of these variables start and stop?"<sup>207</sup>

There are also voices that advocate evaluating the technological solutions at their design and inception levels. Transparency in the machines can be ensured when their designs are more democratic and transparent:

"If electronic voting has to succeed, you have to build a transparent design solution. It is perhaps a matter of more data minimisation. Our inherent issue is voters' secrecy. It is the foundation of the electoral process. Everything will fall crumbling down if one does not ensure that"<sup>208</sup>.

Similarly, there are also concerns about the transparency of elections. Pakistan seems to be wedged in a praetorian trap that keeps repeating its circle<sup>209</sup>. Thus, the issue of electoral transparency seems to lie outside the parameters of the electoral process and the ECP itself. In

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206. Interview with a representative of a European Country.

207. Interview with Farhatullah Babar (Secretary General: PPP).

208. Interview with Shmyla Khan (Digital Rights Foundation).

209. Iftikhar H Malik, "Pakistan at 75: Grappling with Praetorianism and Populism," *The Round Table* 111, no. 6 (2022): 672–84.

such a situation, EVMs or not, any electoral technology might not be useful:

“There is a popular perception that state institutions sometimes interfere in the election process. We shall be asking ourselves what would be the role of EVMs if this popular assertion is to be believed. Then there may be a chance that EVMs will not lead to a free and fair election, and perhaps EVMs are unnecessary. For any discourse on electoral reform, it would require that the state agencies must be made accountable. Because if this does not happen and even if the EVM law is approved, the fear of being unable to successfully conduct free and fair elections would persist.”<sup>210</sup>

However, the PTI views technology as the ultimate solution to getting rid of problems such as electoral fraud and rigging:

“One must understand the political and electoral environment of Pakistan. According to FAFEN [the Free and Fair Election Network], there are 163 methods of rigging, and Pakistan used 60 percent of these methods in post-poll rigging. These range from the time of casting the ballot to double stamping the ballot. Elections in Pakistan are a complex process when we consider the prepoll and post-poll atmosphere in Pakistan. From stamping to ballot casting, there has to be a paper trail and machines that can count the votes. We can’t shy away from technologies which are available for such purposes.”<sup>211</sup>

## Biometric and Data Protection

The assurance of an appropriate level of security for information linked to an individual is known as privacy<sup>212</sup>. Consequently, the adoption of eVoting depends heavily on privacy and secrecy. A significant dimension of electoral technologies is that they may use biometrics and Big Data approaches. The question is how we will ensure the privacy and protection of such a considerable amount of data:

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210. Interview with Farhatullah Babar (Secretary General: PPPP).

211. Interview with Sibghatullah Virk (PTI).

212. Subhajit Basu, “E-government and Developing Countries: An Overview,” *International Review of Law, Computers & Technology* 18, no. 1 (2004): 109–32.



"If we use electronic biometric machines, there is data of 125 million thumb impressions and hence a risk of digital security. If we use a biometric system, then from the time-stamp, we can find the link between the voter and the ballot, and hence it influences ballot secrecy. If a software code is used in the machine, will it be public property?"<sup>213</sup>

Moreover, there are questions like, can such data be used for national security purposes? Or is privacy the basic right of the people and should not be breached? Mudassir Rizvi provides an important analogy about the technologies:

"Technology is a black box. Do we need to treat it as a black box? or should it be more open and responsive?"<sup>214</sup>

Similarly, Rizvi raised the question, if there is a software code used in the machine, will it be public property?<sup>215</sup>

Another aspect highlighted by Zafarullah Khan is the lack of biometric verification of a large number of CNICs. In such circumstances, how will the right to vote of these people be ensured:

"I enquired from NADRA, are there still some CNICs that are not biometrically verified? And the answer is Yes."<sup>216</sup>

Shmyla Khan highlights a bleak scenario and a harsh reality of big technology firms that have continuously faced the challenge of machine vulnerabilities that have cost them millions of dollars.

"In a country like Pakistan, where the issue of electoral rigging has been discussed over decades, what if voting machines lead to some sort of technical error? How will we hold machines accountable? It would then become a question of more data and digital ethics. Would we hold the ECP responsible for that? Or the vendor who designed the machine? Imagine if the voting data is not calculated properly. Many multimillion-dollar social media and technology companies have experienced data

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213. Interview with Mudassir Rizvi (FAFEN).

214. Ibid.

215. Ibid.

216. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

breaches. Their systems have also collapsed, and as a result, a lot of consumer data was stolen and sold on several websites. So what would happen if our electronic voting machines also crashed? Above all, we also need to clarify if they would be connected to the Internet. Anything that's connected to the Internet is not secure and prone to hacking and vulnerabilities. We also need to keep digital connectivity in mind as well as realize that these machines need to reach across the entire geographical spectrum. Then we also have the issue of cost. Looking at the strained economic situation, will we be able to afford such a big investment? To digitalise the entire process as important as elections in Pakistan can be extremely difficult and dangerous".<sup>217</sup>

Along with these challenges related to biometrics, it also offers some opportunities. For instance, consider the following scenario highlighted by Sibghatullah Virk:

"When people come to cast a vote, indelible ink is used to mark the voter's presence. Similarly, voters also register their thumbprints on paper. Today technologies have advanced, and NADRA can use its database to verify the voters by running a database scan on all the thumbprints collected on election day to identify any discrepancies." <sup>218</sup>

## Operational Capacity of Electoral Technologies

The extent and quality of a communication infrastructure define and impact the use of eGovernment services. Implementation and the subsequent adoption of eServices are hindered by a poor communication infrastructure and capacity<sup>219</sup>. Electoral technologies such as EVMs are not only machines that merely work on their own. For an optimal implementation of electoral technologies, it is imperative to build a sustainable and suitable operational environment that would provide an ardent and supportive environment. Apart from

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217. Interview with Shmyla Khan (Digital Rights Foundation).

218. Interview with Sibghatullah Virk (PTI).

219. Karen Layne and Jungwoo Lee, "Developing Fully Functional E-Government: A Four Stage Model," *Government Information Quarterly* 18, no. 2 (2001): 122–36.

overcoming cultural, political and technical challenges, implementation of EVMs requires resources, infrastructures and organisational support to support its operational capacity. Most eGovernment projects that stumble in their lifecycle are known to suffer from operational issues, lack clear planning and procedures, or have incomprehensive policies and regulations, weak leadership and management, and a lax security policy<sup>220</sup>.

The operational capacity to implement an ambitious project such as utilizing EVMs requires a series of analyses. For a country of more than 200 million people, the magnitude needs to be determined to analyse the scale of implementing electoral technologies. Financial affordances would immediately follow suit to calculate the cost it would have on the exchequer. Maintenance, storage and security of EVMs would depend upon how many machines need to be manufactured and who would provide the storage space so that they can be used for the next elections as well. The operational clues lead to the determination of human resource that needs to be hired and trained to operate these machines. Lastly, if the machines run on electricity, then adequate infrastructure like electricity may be required.

### **Scale and Magnitude**

Implementing electoral technologies such as EVMs in Pakistan will be a huge challenge simply because of the scale of elections. Farhatullah Babar reminds us of basic facts that will determine the future decision:

“The PTI seemed to be hurrying to conduct the next elections via EVMs. By the time they passed the EVM bill in the parliament, around one year was left to start organising the next elections. But are we aware of basic need analysis? In the 2018 elections, there were 85,000 polling stations and 242000 polling booths. If we conduct the next elections on EVMs, that would mean that we will need at least 170,000 machines. We might even need more if the total number of candidates exceeds the limit given in EVMs. But that’s not all. We would also require additional paraphernalia, such as printing machines and the backup systems that come

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220. Albert Meijer, “E-Governance Innovation: Barriers and Strategies,” *Government Information Quarterly* 32, no. 2 (2015): 198–206.

with EVMs. In the end, it would not be just about the EVM machine.”<sup>221</sup>

Besides, Pakistan is the fifth most populous country in the world. Administering general elections is considered one of the most extensive electoral exercises in the world:

“To incorporate technologies in elections, we first need to see the context we are dealing with in Pakistan. When we look at the elections in Pakistan, they are extremely complicated. Perhaps, the elections in Pakistan are the biggest electoral exercise in the world.”<sup>222</sup>

Such a vast scale for implementing electoral technologies requires a strong institutional capacity as Quratulain Fatima pointed out:

“There are, of course, concerns about the capacity to develop and manage the EVMs. We would require sufficient resources. Besides, the entire election exercise in Pakistan, in comparison to other countries, is the biggest exercise. In India elections take place in different stages whereas in Pakistan the ECP is required to declare the results by 2 a.m. on the day after voting at the latest.”<sup>223</sup>

This problem of magnitude is further explained by Farhatullah Babar, quoting a scenario from manufacturing EVMs in less than one year:

“The Telephone Industries of Pakistan (TIP), based in Haripur, is Pakistan’s premier organisation that has more than 50 years of manufacturing experience of building telephone and exchange instruments. We enquired from the TIP’s basic technologies unit since they are the ones with the capacity to build such equipment. We asked them if they had to manufacture equipment for EVMs then how long it might take to produce machines locally. If their factory worked on a 24/7 basis and there were no labour strikes and no electricity interruptions, and then even in one year, it would not be possible to produce sufficient EVMs and the related paraphernalia.”<sup>224</sup>

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221. Interview with Farhatullah Babar (Secretary General: PPPP).

222. Interview with Nazeer Ahmad Mahar (Executive Director: The Research Initiative).

223. Interview with Quratulain Fatima (ECP), In-person, November 4, 2022.

224. Interview with Farhatullah Babar (Secretary General: PPPP).

## Financial Strains

Investing in ICT resources, such as hardware and software systems, communication networks, and broadband is a crucial step in the implementation of eGovernment. The budget of a country is another economic element that influences the complete execution of eGovernment projects. Most often, governments depend on donors, or they only have project-based budgets, which prevents them from implementing expensive and long-term eGovernment projects. Considering the case of the developed world, the adoption of eGovernment is commonly enabled and facilitated in Central and Eastern EU nations by the co-financing of the investment necessary for its implementation by multiple fund units sponsored by the EU<sup>225</sup>. Therefore, the budget is probably the most determining factor in the pursuit of electoral technologies. A country may aim for any electoral technology, but it ultimately comes down to whether it can afford it or not. Consider the following comment by Farhatullah Babar in order to obtain an understanding of the financial challenge Pakistan will encounter when using EVMs:

“The 2018 generation elections had cost the exchequer an amount of around 21 billion Pakistani rupees. If we want our elections to be conducted via EVMs, then we are looking at more than one million US dollars [i.e., some 284 million rupees]. This amount does not include packaging and training of staff. If the ECP were to take over the entire process, then it would also have to invest in human resources. Training the staff would also incur considerable costs.”<sup>226</sup>

This massive sum of money incites questions like how Pakistan will be able to afford EVMs:

“How can Pakistan financially afford EVMs? Will Pakistan take a loan for this project? The operational cost of Overseas Voting alone is 64,000 rupees per vote.”<sup>227</sup>

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225. Loukas Glyptisa, Michael Christofib, Demetris Vrontisb, Manlio Del Giudicec,d,e, and Salomi Dimitrioua, Panayiota Michael, “E-Government Implementation Challenges in Small Countries The Project Manager’s Perspective.”

226. Interview with Farhatullah Babar (Secretary General: PPPP).

227. Interview with Zafarullah Khan (Chief Executive: Ideas for Vision 2047).

According to the ECP's own projected figures, the 2023 general election may cost over a thousand times more than the total cost of the last three elections. If the ECP were to employ electronic voting mechanisms, the total cost of elections might be over Rs. 400 billion, which is similar to the budget of Balochistan Province<sup>228</sup>. If Pakistan were to rely on a third-party vendor, then the budget for the EVMs alone would be Rs. 230 billion.

### **Infrastructural Requirements for the EVM**

Pakistan is an energy-strained country. The electricity shortfall in Pakistan reached 5,944 megawatts (MW) in 2022. The total power generation capacity dropped to 23,556 MW against the demand of 29,500 MW. If Pakistan chooses to go for paper trail-based EVMs, then every polling station would require multiple printers connected to the electricity. This brings us to a critical question regarding the supporting infrastructure to implement EVMs. As Quratulain Fatima pointed out:

“Unfortunately, Pakistan does not have one of the best electricity infrastructures. If and when EVMs are introduced, we would have to plan in advance if the EVMs would run on electricity or battery.”<sup>229</sup>

Thus, if the power outage causes a hindrance in the election process, this will lead to not only questions but also speculations and controversies:

“If the voting machines are deployed, they or the connected equipment would be dependent on a constant electricity supply. Do we have that kind of infrastructure in Pakistan that will ensure an uninterrupted power supply on election day for more than 24 hours for all the polling stations across the country? If a certain machine goes down due to power failure, people will not only blame the technology, but it will generate a new form of debate about vote rigging and controversy.”<sup>230</sup>

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228. Zahid Gishkori, “EVMs to Make 2023 Elections Most Expensive in Pak History,” *The News International*, December 16, 2021, <https://www.thenews.com.pk/print/917132-evms-to-make-2023-elections-most-expensive-in-pak-history>.

229. Interview with Quratulain Fatima (ECP).

230. Interview with a representative of a European Country.

NADRA's citizen database is a foundation for electoral technologies such as the 8300 SMS app and the digitalisation of electoral rolls. NADRA's operational capacity is perhaps the most extensive among public-sector organisations in Pakistan, which it has earned due to citizen registration across the entire country. Nevertheless, even NADRA seems extremely reluctant to extend its assistance in developing the hardware for EVMs:

“For the EVM project, NADRA has already communicated to the ECP and other relevant institutions that election administration is a highly sensitive project. It involves an important hardware component. However, NADRA's expertise lies in software development and not hardware. Our software services, such as CNIC, e-Sahulat, veriSys, and BISP, are among the world-famous eGovernment products. Our experience with hardware products such as kiosk machines has not been very successful. This is why we would rather focus on our software projects than EVMs”<sup>231</sup>.

## Legislative Concerns about Electoral Technologies

Along with the social, political, technical and operational factors, the use and growth of electoral technologies require a sound legal cover under which these would operate. These legal instruments may need to be mandated by different state institutions, such as parliament and election management bodies. Their functioning would have to adhere to the international standards coupled with approvals from the legal statutes and policies, lest the adoption of such an eGovernment application would be in jeopardy without legal foundations<sup>232</sup>. The lack of openness in the decision-making process and legal cover would compromise citizens' rights and data security parameters, thereby causing severe mistrust in the electoral process<sup>233</sup>. In the case of Pakistan, it is pertinent to enquire how the constitutional

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231. Interview with Tariq Malik (Chairman: NADARA).

232. José Esteves and Rhoda C. Joseph, “A Comprehensive Framework for the Assessment of eGovernment Projects,” *Government Information Quarterly* 25, no. 1 (2008): 118–32.

233. Jyoti Choudrie, Vishanth Weerakkody, and Stephen Jones, “Realising E-government in the UK: Rural and Urban Challenges,” *Journal of Enterprise Information Management*, 2005.

clauses protect the integrity of elections. What is the regulator's (the ECP) mandate that would oversee the implementation of electoral technologies? Will the implementation of technology require any electoral reforms? These are the critical questions in the debate on EVMs and other electoral technologies.

## Legislating the EVMs

While implementing electoral technologies, it is vital to question the legal standpoint about the voter's privacy and particularly within the EVM scenario, digital secrecy would be of paramount importance. How does the technology guarantee the legal aspects of the voting process? Zafarullah Khan shared the following view:

"The Constitution of Pakistan uses the word secret ballot. I am not sure if machines can ensure that. The Constitution says that the voter can be traceable up to a certain stage, that is, up to the voter registration and verification. However, the Constitution also says it should not be traceable whom I voted for. It further mentions that only the people who are entitled to vote shall vote."<sup>234</sup>

Another crucial legal dimension in the technology-led electoral process is whose prerogative it is to implement the EVMs. How can the EVMs be provided with legal cover in Pakistan? On the first question, Zafarullah Khan mentioned:

"It is the prerogative of the parliament to decide the implementation of EVMs, not the Election Commission of Pakistan. The constitutional design of the ECP is different."<sup>235</sup>

On the second question, Farhatullah Babar argued:

"Election laws and legislation will be required for EVMs. When I say "legislation", I mean through a proper political and parliamentary process. In a parliamentary democracy like Pakistan, it cannot be that one person takes a unilateral decision about a certain electoral technology, and the entire country shall follow suit."<sup>236</sup>

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234. Interview with Zafarullah Khan, September 11, 2022.

235. Ibid.

236. Interview with Farhatullah Babar (Secretary General: PPPP).



Similarly, the NADRA chairman Tariq Malik opined:

“To implement public service technologies, we need legal instruments and basis. In the case of EVMs, electoral laws would have to be revisited and may likely be revised.”<sup>237</sup>

### **The ECP's Legal Mandate**

Based on the ECP's 3<sup>rd</sup> Strategic Plan 2019-2023, Information, Communication, and Electoral Technologies have been termed as a strategic pillar and listed among the corresponding strategic goals and actions<sup>238</sup>. After developing digital electoral rolls, the RMS, RTS and 8300 SMS App, the ECP wishes to strengthen the utilisation of existing technologies and explore the areas of mobile apps and web-based tools that could enable it to pursue electronic voting and online solutions for overseas voting. On the ECP's part, it can produce feasibility studies on new electoral technologies, but it is dependent on the decisions deliberated by the parliament.

On the ECP's mandate Zafarullah Khan said:

“Three amendments, that is, 18th, 20th, and 22<sup>nd</sup>, in the Constitution of Pakistan have strengthened the ECP. Now the ECP is in a better position to take bold decisions. It is more independent and cannot be removed arbitrarily. Through the 2017 Election Act, parliament empowers the ECP to digitalise, to make gradual technological experimentation.”<sup>239</sup>

Nazeer Mahar opined that the centralisation of the ECP is problematic. We have to think of its devolution:

“The election in Pakistan is perhaps the biggest election exercise in the world. For such a big election exercise, it is extremely problematic to have an election commission that is highly centralised. With the 18th amendment, the ECP mandate has now multiplied, but the ECP may have to work

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237. Interview with Tariq Malik (Chairman: NADARA).

238. Election Commission of Pakistan, “3rd Strategic Plan 2019-2023,” accessed December 12, 2022, <https://www.ecp.gov.pk/ECP%203rd%20Strategic%20Plan%20copy%20for%20Website.pdf>.

239. Interview with Zafarullah Khan.

hard to get electoral technologies mandated by the relevant authorities.”<sup>240</sup>

As the digitalisation of government processes progresses in Pakistan, there are more interagency collaborations, as depicted in the section. As a result, there is more connectivity among citizen databases in Pakistan, such as those held by NADRA, the telecommunication operators, banks, union councils or even the ECP. This brings the ECP itself into a precarious situation to be also concerned about digital security and privacy of its data. Shmyla Khan believes that the distinction must be made if technologies are there to assist us or to make us feel less secure.

“We have not been able to implement laws on digital security and data privacy. There have been several data breaches, but they are hardly reported, and there is no debate about that. There is practically no mechanism to ensure data privacy and security. We must understand that the technologies are there to make us feel secure, or should they rather make us feel less secure?”<sup>241</sup>

## Human Rights and Electoral Technologies

The rapid developments in the information and communication technologies are increasingly revising the concept of the way we have seen and perceived privacy and data protection in conventional contexts. Technologies are like a double-edged sword. On the one hand, ICTs can be used to collect, analyse, and disseminate information. On the other hand, they can also be used to easily disguise or even obstruct. Therefore, it is necessary to initiate debates on the accountability of ICT designs so that the responsibilities and roles in this human and technology debate are more clearly defined. Particularly within the discussion on electoral technologies, such arguments also need to be seen from a human rights perspective. It needs to be seen if someone's right to cast a vote is not compromised when we move to electronic voting. To a question on how to evaluate electoral technologies to ensure and support human rights and democratic values, Shmyla Khan argued that:

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240. Interview with Nazeer Ahmad Mahar (Executive Director: The Research Initiative).

241. Interview with Shmyla Khan (Digital Rights Foundation).

"It happens a lot of times, particularly within the digitalisation debate, that we look for simplistic answers. Technologies have become an important aspect of our daily lives, but we cannot let technologies decide on our behalf. We need to qualify and review technologies from a human rights perspective. Those who design the technologies and those who implement them need to put an extra emphasis on the human rights perspective; otherwise, technological use will be limited and restrained. Within the electoral context, the purpose of the ICTs needs to be kept simple, accessible, and transparent. Within the context of Pakistan, we need to see how technologies can make voter registration more accessible by keeping the process simple. The goal is to make voting and other electoral processes more accessible."<sup>242</sup>

Twenty years ago, it may not have been conceivable that the right to the Internet would be termed a human right. However, United Nations Human Rights Council has declared access to content and access to the physical and technical infrastructure functioning on the Internet as an essential human right. Since all the conventional and modern infrastructures are moving to the Internet, it would be necessary to continuously bridge the digital gaps. Otherwise, several states with weak infrastructure might constantly violate human rights.

"When we view the electoral technologies from a human rights perspective, the debate gets more complicated. If we look at Pakistan, we realise that the technologies are not evenly accessible. They are dependent on several factors. These include geography, literacy and gender. Remember that Pakistan is among those countries with a big gender digital divide. Technologies implemented here will have to operate within the Pakistani cultural context. The socioeconomic reality of Pakistan is that there are severe structural inequalities. These inequalities will be reflected in the usage patterns as well. This leaves us with a new set of questions. From the user/designer perspective, the question is how thoughtful are our technological interventions? How accessible are our technologies?"<sup>243</sup>

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242. Ibid.

243. Ibid.

On the overly pervasive nature of technologies, Khan feels that there is so much data collected about us, but there are no legal instruments to protect us:

“We must acknowledge that our institutions do realise that the technologies are not accessible to every citizen because they also understand that there are design issues. However, the common argument goes that instead of not providing access to everyone, we can at least provide technologies to those who have access to it. The DRF [Digital Rights Foundation] feels that the debate on design and control has to be initiated in Pakistan. After all, it is the government and the state that initiate the technological tools and tech-led interventions. We feel that the technologies are developed with an idea of a control mechanism and less transparency. If you have to sign up for an electronic service via a computer or mobile app, you must be prepared to give up a number of your rights. A lot of information about the person and his/her device is collected when s/he uses any eService. Besides, Pakistan still does not have any law on data protection.”<sup>244</sup>

The PTI government and its several leaders were of a staunch belief that the entire purpose of pursuing EVMs is to end vote rigging and bring more transparency to the electoral process. However, Shmyla Khan believes that the issue of transparency is not restricted only to the electoral process debate; instead, it also extends to issues of human rights and the transparency of the EVM itself. Khan argued that the technologies are there to assist but for an electoral technology, let's not forget to keep the technological design as transparent as possible:

“If we want to pursue electronic voting, being able to vote should not make us give up our basic rights. I do not think that the government think of these issues. The issue has impacted several countries. Throughout the world, targeted advertisements on social media and websites try to collect information about us. This has also been a big issue in the US election. People are not yet thinking along those lines, which is very unfortunate. A human rights perspective on technology may be helpful here as it advocates for accessibility for all.

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244. Ibid.

There is a lot to gain from technologies, and their use can bring an extraordinary advantage. But one must think of transparency when designing an intervention. Technologies can solve many problems, for instance, electoral fraud.”<sup>245</sup>

This chapter has outlined stakeholders' different views about the opportunities and challenges of using EVMs in Pakistan. A total of 18 respondents were interviewed in person during November and December 2022 in Lahore and Islamabad. The interviewees were asked questions based on the five major themes of electoral technologies: cultural dynamics, political discourses, technological challenges, operational capacity and legislative concerns. The respondents' explanations led to the identification of 18 sub-themes, which are the concerns that the respondents believe will impede the implementation of EVMs in Pakistan. The table below summarises all the themes discovered in this study.

**Table 2: List of subthemes discovered as a part of interviews with the stakeholders**

Nr.	Main Theme	Sub Theme
1	Cultural Dynamics of Electoral Technologies	i. Trust and the Electoral Integrity
		ii. Digital (il)Literacy and (in)Capabilities
		iii. Demographic Realities and the Digital Divide
		iv. Non-documentary Culture in Pakistan's Social Fabric
2	Political Discourses on Electoral Technologies	v. Rigging & Irregularities in Elections as a Root of Contention
		vi. Conflicting Political Party Positions on EVMs
		vii. Collective Wisdom
		viii. Lack of Clarity and Consensus
		ix. Electoral Technologies and the Populist Politics
3	Technological Challenges of Electoral Technologies	x. Cybersecurity and Election Hacking
		xi. Ballot Secrecy and Transparency
		xii. Biometric and Data Protection
4	Operational Capacity of Electoral Technologies	xiii. Scale and Magnitude
		xiv. Financial Strains
		xv. Infrastructural Requirements for the EVMs
5	Legislative Concerns about Electoral Technologies	xvi. Legislating the EVMs
		xvii. The ECP's Legal Mandate
		xviii. Human Rights and Electoral Technologies

245. Ibid.



## Contested and Discursive Views on EVM

This study aimed to examine the opportunities and challenges associated with the implementation of electronic voting machines in Pakistan. It relied on five major themes to interview respondents and solicit their opinions on EVMs. These themes led to the identification of 18 sub-themes, which are primarily composed of concerns that the respondents believe will impede the implementation of EVMs in the near future. Based on the respondents' feedback, there appear to be more challenges, cultural barriers, and legal obstacles in the implementation of EVMs in Pakistan. Nevertheless, there is a consensus among all the respondents that the ECP's digitalisation of electoral rolls is one of the landmark electoral technologies. They also maintained that the ECP's electoral technology for voter verification and constituency identification through the 8300 SMS App is among the ground-breaking achievements of digital transformation in elections. However, respondents felt that electronic voting might be too early for a country like Pakistan. They questioned if EVMs would benefit Pakistan's highly polarized political environment. 80 percent of respondents repeatedly spoke of an electoral technology for result transmission that collapsed in the 2018 elections. They feared that if the RTS, whose scale is much smaller than the EVMs, could collapse, then implementing EVMs without nationwide pilot studies may result in colossal problems. In 2021, when the PTI government tasked the Ministry of Science and Technology (MoST) to develop and test the EVMs, the ECP issued 37 observations about the functioning and use of the EVMs for future election(s). In the ECP's own words, some of these observations were prerequisites which it believed did not fulfil the criteria of full-scale implementation of EVMs in Pakistan<sup>246</sup>.

### Dwindling Political Landscape

Pakistan's political realities differ significantly between its rural and urban areas. The feudal system still plays an integral part in elections

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246. Interview with Muhammad Khizer Aziz (Director General: Information Technology; ECP).

in rural Pakistan<sup>247</sup>. The landowners have a decisive impact on the electoral pattern for who their communities and families will vote for<sup>248</sup>. There is still a low turnout of female voters. Election security is another concern, as assaults and election-related violence are often reported in almost every election resulting in fatalities<sup>249</sup>. Pakistan's political culture has massively transformed since 2013. The global wave of populism has also influenced the dialogue culture in Pakistan. The PTI's brand of populist politics leaves significantly less space for political dialogue and deliberation<sup>250</sup>. The lack of consensus was also visible in the parliamentary ethics of the PTI and opposition parties. From 2018 to 2021, the PTI passed 77 presidential ordinances, which is perhaps the highest for any government in the country's history<sup>251</sup>. It indicates how severely a political dialogue on important issues was missing, which became evident from the EVM legislation. Respondents of this study felt that the EVM bill was passed from the parliament in indecent haste when the PTI introduced amendments in The Elections (Amendment) Bill, 2021 and the Elections (Second Amendment) Bill, 2021, governing the use of electronic voting machines. The amendments enabled employing electronic voting machines and extending voting rights to Pakistanis living abroad<sup>252</sup>. The proposed legislation mandated the ECP to procure electronic voting equipment for general elections. Two hundred and twenty-one legislators voted in favour of the move to table the electoral changes, while 203 opposed it<sup>253</sup>.

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247. M Rashiduzzaman, "Election Politics in Pakistan Villages," *Journal of Commonwealth & Comparative Politics* 4, no. 3 (1966): 191–200.

248. Ahmed Usman, "Marginalized Voters and Supporters: Biradari System, Caste Hierarchy and Rights to Political Participation in Rural Punjab," *Journal of Political Studies* 23, no. 2 (2016): 515.

249. Niloufer Siddiqui, "Political Parties and Violence in Karachi, Pakistan," *Comparative Political Studies* 0, no. 0 (2022): 1–31.

250. Zia, "Pious, Populist, Political Masculinities in Pakistan and India"; Syed Moazzam Hashmi, "Cult Politics, A Common Thread That Runs Through MQM And PTI," *The Friday Times*, October 11, 2022, <https://www.thefridaytimes.com/2022/10/11/cult-politics-a-common-thread-that-runs-through-mqm-and-pti/>.

251. "PTI Govt Issued '77 Ordinances,'" *The Express Tribune*, December 8, 2022, <https://tribune.com.pk/story/2390055/pti-govt-issued-77-ordinances>.

252. Business Recorder, "Joint Session of Parliament Passes Bill on Use of EVMs," November 17, 2021, <https://www.brecorder.com/news/40133967>.

253. Ibid.



Over 90 percent of respondents contacted for this study believed that the PTI government may have had good intentions about the EVMs as it also aims to tackle the issue of electoral fraud. But they also felt that the PTI's knowledge about cultural viability and technical feasibility regarding EVMs seemed very limited. Respondents of this study often referred to a host of observations that the regulator, that is, the ECP, had itself issued on the EVMs. As a result of political deadlock, the coalition government comprising the Pakistan Democratic Movement (PDM) alliance, including the PML-N, PPP, MQM and others, passed another election (Amendment) Bill, 2022, eliminating the use of electronic voting machines (EVMs). Consequently, it also prevented overseas Pakistanis from participating in the upcoming general election<sup>254</sup>. Nevertheless, the PDM alliance seems to have shown interest in both electronic voting and iVoting. It encouraged the ECP to carry out pilot projects for overseas Pakistanis voting in by-elections under the amended Section 94 of the Election Act to evaluate the technical effectiveness, privacy, security, and financial viability of the new voting process. After the bill was introduced in the Senate, the Parliamentary Committee on Electoral Reforms, led by Senator Taj Haider, held multiple meetings with the ECP, FAFEN, PILDAT, and a Spanish consulting firm to evaluate the EVM's implementation. The committee, however, concluded that using EVMs on such a broad scale as of 2022 was not viable<sup>255</sup>.

Once the Ministry of Science and Technology (MoST) tested the EVMs in 2021, the ECP submitted its observations about the EVMs to the Senate Standing Committee on Parliamentary Affairs headed by senator Taj Haider<sup>256</sup>. The ECP believed that the implementation of EVMs would be impossible, given the lack of consensus among the stakeholders<sup>257</sup>. It argued that there is a lack of trust in the EVMs

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254. The Express tribune, "NA Amends Election Laws to Stop EVMs Use," May 26, 2022, <https://tribune.com.pk/story/2358414/na-amends-election-laws-to-stop-evms-use>.

255. Ibid.

256. Iftikhar A. Khan, "ECP Raises 37 Objections to EVM Introduction," *Daily Dawn*, September 8, 2021, <https://www.dawn.com/news/1645100>.

257. See section xvii in Benazir Shah, "A Document Submitted by the ECP to the Senate Committee Today, Which Identifies the Challenges of the Electronic Voting Machines," Twitter, September 7, 2021, [https://twitter.com/Benazir\\_Shah/status/1435217927616225280](https://twitter.com/Benazir_Shah/status/1435217927616225280).

tested in 2021 by civil society institutions, media and NGOs<sup>258</sup>. The ECP believed that EVMs might be unable to prevent low voter turnout or election fraud (electronic ballot stuffing, vote buying) given the law-and-order situation and political and electoral violence that the elections are generally prone to in Pakistan<sup>259</sup>. The ECP also cited examples of European countries such as Germany, Netherlands, Ireland, Italy and Finland which abandoned their EVM projects due to lack of transparency<sup>260</sup>.

## Sociocultural Undercurrents

Pakistani society is faced with extremely fragile, sectarian, ethnic and linguistic divides. These divides unleash their wrath in various shapes and forms. The frequent episodes of social and political engineering have left the already divided society with severe mistrust and a lack of confidence in the state institutions. Pakistan's struggle for consistent democratic rule has also left a strong imprint on its political culture that has so far failed to witness a single prime minister complete her/his five-year term<sup>261</sup>. Electoral processes are part and parcel of a democratic society. Unfortunately, Pakistan's election history is rife with allegations of pre- and post-poll rigging that has severely hampered trust in elections. The entire electoral exercise of conducting elections on the same day for national and provincial assemblies manifests political parties' apprehension of not leaving the vote count to another day. Unlike other countries such as India, where elections take place in a staggered manner, Pakistani election results have to be announced within hours of the vote casting.

The PTI's advocacy for EVMs is also rooted in the mistrust in election results and the belief that the manual vote count could be manipulated. The PTI seems to find a safer refuge in the EVMs as it believes that the machines can offer a safer system than manual counting and that machines can bring transparency to the counting process. These social undercurrents of mistrust are also reflected in the conception of a

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258. Ibid. see section xxix in Appendix A

259. Ibid. see section xxxi in Appendix A

260. Ibid. see section xxxvi and xxxvii in Appendix A

261. Ayesha Jalal, *The Struggle for Pakistan: A Muslim Homeland and Global Politics* (Harvard University Press, 2014).

centralized citizen database of the NADRA that emphasizes the unique identification of citizens with only one unique number. The electronic result transmission and announcement technology, RTS, has not been able to earn the trust of political parties. As the respondents of this study have articulated, the apparent failure of the RTS, and how it has been projected in media and reiterated in the public discourse, brings back the integrity debate between manual versus digitalized systems.

Digital literacy has emerged as a significant subtheme in this study. The majority population in Pakistan lives in rural centres. But the technologies have not made strong inroads in rural areas. Pakistani society juggles traditional approaches and modern technology-based rules to what Bassam Tibi described as a half-modernity<sup>262</sup>. People are hesitant to operate machines alone and rely on someone else's assistance to operate the automated terminals or the ATMs. For example, it is possible to use Facebook and YouTube and watch videos but managing and dealing with online services is an entirely different digital capacity. NADRA, for instance, offers several web-based services, but people still prefer to personally walk up to NADRA offices and wait in queues<sup>263</sup>. There is a considerable population in Pakistan's heterogeneous and diverse society that is sometimes not aware of their electoral duty and rights. The respondents of this study questioned if it would be culturally viable and acceptable for a diverse country such as Pakistan to implement EVMs in such a short time<sup>264</sup>.

In its observations submitted to the Senate's Standing Committee, the ECP also felt that the nationwide implementation of EVMs would be challenging given low literacy rates, and lack of voter education and public awareness<sup>265</sup>. It argued that the EVMs would not be able to win the public's trust and confidence if the EVMs were rolled-out in haste<sup>266</sup>.

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262. Bassām Tibī, *Islamischer Fundamentalismus, Moderne Wissenschaft Und Technologie* (Suhrkamp, 1992).

263. Interview with Shahzad Ahmad (Bytes For All).

264. Interview with Majid Siddique Nizami (Senior Journalist).

265. Shah, "37 Reservations Issued by ECP on EVMs." see section xvi in Appendix A

266. Ibid. see section xxvii in Appendix A

## Cybersecurity of the Electoral Process

Ballot secrecy and anonymity is an essential feature of liberal democracies. It is the state's responsibility that the vote is not traceable to its voter and that her or his anonymity is maintained. The ECP as a regulator, has an essential role in ensuring that the electoral integrity and respect for the person's vote are protected. In its own words, the ECP ensures that the three aspects are always respected within an electoral process with or without advanced technology, i.e., transparency, anonymity, and ballot secrecy. NADRA's biometric feature of identifying more than 90 percent of the population with a thumb impression has entirely changed Pakistan's digital landscape. A biometric feature inside the polling station can immensely help protect the elections from any kind of electoral fraud<sup>267</sup>. However, the respondents of this study have expressed strong reservations about the use of biometric voting machines, seeing them as threatening the values of ballot secrecy and anonymity.

The respondents of this study remind us of the consequences of using a biometric voting machine. More than 90 percent of respondents believe that if EVMs are to be employed in future elections, their boundaries need to be identified to ensure voter choice is auditable, verifiable, and anonymous. In Pakistan, banks, telecommunication operators or money changers use biometric verification mechanisms on a daily basis for citizen identification via thumb impressions. This biometric identification and verification is enabled by NADRA's citizen database. If any kind of voting machine is linked to a biometric database, there is a possibility that the vote could be traced back to a specific person. Voter secrecy in this scenario would be the first casualty in the electoral process, followed by a compromise on basic election principles of ballot secrecy, transparency and anonymity.

Respondents of this study are equally concerned about the state of cybersecurity in Pakistan, and they feel that there is almost no debate on the issues of hacking and the cybersecurity of critical infrastructures and elections. There are concerns about how and who will ensure the transparency of EVM machines if they are hacked. These fears are perhaps not entirely wrong, as Pakistan's ranking on

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267. Nicolas Martin and David Picherit, "Electoral Fraud and Manipulation in India and Pakistan," *Commonwealth & Comparative Politics* 58, no. 1 (2020): 1–20.

the global cybersecurity index has never been very promising. In the International Telecommunication Union's Global Cybersecurity Index of 2020, Pakistan ranked 79 tailing behind Iran (54), Zambia (73) and Bangladesh (53) with a score of 64.88<sup>268</sup>. Even though NADRA's citizen database is hosted on internationally certified secure servers and the CNIC developed by NADRA has verification and smart features yet, the culture of submitting photocopies of the CNIC for any transaction is a norm in Pakistan<sup>269</sup>. A photocopy of any CNIC means that anyone who gets hold of this copy has access to a person's personal information, including residential and, in the case of females, even marital information. These manual practices in the presence of digitalized solutions make the cybersecurity environment vulnerable. A growing number of data breaches and cybersecurity incidents have been occurring in Pakistan in both private and public sector institutions such as banks, electricity providers and ride-sharing apps<sup>270</sup>. Due to the lack of awareness about the consequences of over-digitalisation, data theft via home delivery apps is becoming increasingly common, and new hacking mechanisms such as phishing calls are robbing people of their funds<sup>271</sup>.

Respondents of this study strongly felt that voter secrecy becomes even more vital in the digital age as it functions as a foundation of the electoral process; otherwise, the entire process may fall crumbling down if one's data privacy and the cybersecurity of EVMs is not ensured. Respondents also believed that every instance of progress and development carries its own obstacles and shortcomings. In the context of the RTS controversy and EVMs, respondents argued

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268. International Telecommunication Union, "Global Cybersecurity Index 2020 Measuring Commitment to Cybersecurity," 2021, [https://www.itu.int/dms\\_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf](https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf).

269. NADRA's chairperson Tariq Malik feels the digital IDs were rolled out in 2012 and yet photocopies are still used. See for example Malik's Twitter exchange with Abdul Moiz Jaferi, "CNICs r the Perfect Example of Where We Can Already Be & Where We End up Instead," Twitter, July 30, 2020, <https://twitter.com/jaferii/status/1288774638630100992>.

270. Ayaz Hussain Abbasi, "The Growing Threat of Cyber-Fraud," *The Express Tribune*, May 8, 2022, <https://tribune.com.pk/story/2355657/the-growing-threat-of-cyber-fraud>.

271. Financial scams via phishing are becoming common instances of social engineering. The phenomenon is not only impacting Pakistan but India as well. In popular media, the issue has been widely discussed in the web series titled *Jamtara – Sabka Number Ayega*. Also see, Daily Dawn, "Here's How You Can Protect Your Bank Account from a Socially Engineered Attack," July 21, 2020, <https://www.dawn.com/news/1569960>.

in favour of digital transformation so that we must keep pursuing new technologies, but at the same time, we would need to constantly address the issues, threats and consequences that technologies may present.

In its observations submitted to the Senate's Standing Committee, the ECP argued that large-scale pilot studies of EVMs have not been done, and it would thus make it difficult to ensure the security and chain of custody of EVMs<sup>272</sup>. The ECP also specified in its response that the safety of the EVMs may be jeopardized as the ECP would be dependent on the machine vendors<sup>273</sup>. There is a possibility of election fraud as vendors would have to provide support for maintenance, configuration, and reconfiguration in the period between elections.

## Operational Concerns

Pakistan is the fifth most populous country in the world, with a population of over 220 million. The magnitude of its big electorate and the scale of the entire election exercise make the administration and management of elections very challenging. Most of the respondents of this study felt that contextual analysis of EVM use is fundamental. The way the PTI passed the EVM law without any consensus seems inconsiderate of the scale and magnitude of the election exercise in Pakistan. There were roughly 85,000 polling stations and 242,000 polling booths in the general elections of 2018. In the absence of political consensus, respondents of this study questioned the financial viability that if the next elections are conducted via EVMs within a year, the ECP would need at least 170,000 EVMs, which is also a very conservative figure.

Similarly, there has been a lack of clarity about the choice of EVMs suitable for Pakistan. If Pakistan were to follow the case of Brazil, India or the USA, it may need a direct-recording (DRE) electronic voting machine. DREs take the voter's input via a button and carry a memory component and a computing mechanism to record and calculate the total number of voters. Depending on the total number of candidates per constituency, it may well be that multiple EVMs need to be

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272. Shah, "37 Reservations Issued by ECP on EVMs." see section vii in Appendix A

273. Ibid. see section xxxii in Appendix A

interconnected. If Pakistan wants to use a hybrid approach of both manual and automated solutions, it may have to opt for the electronic counting machine, as in the case of Mongolia. However, respondents of this study felt that regardless of the choice of EVM, there are unanswered questions regarding the procurement or manufacturing of EVMs.

The EVM demonstrated in August 2021 by the then Minister of Science and Technology, Shibli Faraz, was developed by the Islamabad-based higher education institution<sup>274</sup>. Unlike the EVMs in India, which are also battery operable, there was a lack of clarity if the machines could also be operable on the battery as the demonstrated one was connected to the electricity source. The respondents of this study also questioned if Pakistan's infrastructural capacity offers an uninterrupted power supply on election day for all the polling stations across the country. Pakistan's energy sector already struggles to produce and provide a constant energy supply. As of August 2022, the electricity shortfall reached 5,944 megawatts. The total power generation capacity dropped to 23,556 MW against the demand of 29,500 megawatts<sup>275</sup>. Most of the Pakistani electorate resides in rural areas, which not only have a crippled electricity infrastructure but also face power breakdowns for long hours. In April 2022 alone, rural regions of Pakistan were out of electricity for more than 12 hours<sup>276</sup>. Even the metropolises such as Lahore faced hourly power outages.

The respondents of this study felt that if a machine went down due to power outages, the promise of transparent and fair elections would be in jeopardy as people would not only blame the technology, but it would generate a new form of debate about election rigging. These operational concerns do not yet include the monetary aspect of the EVMs. The 2018 general elections cost the exchequer an amount of four billion Pakistani rupees. If Pakistan were to opt for EVMs, the total

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274. Abdul Qadir, "Here Is How the Locally-Made Electronic Voting Machine Will Work!," *Ary News*, August 12, 2021, <https://arynews.tv/watch-here-is-how-the-locally-made-electronic-voting-machine-will-work/>.

275. "Pakistan's Electricity Shortfall Reaches 5,944 MW," August 10, 2022, <https://www.nation.com.pk/10-Aug-2022/pakistan-s-electricity-shortfall-reaches-5-944-mw>.

276. Khalid Hasnain, "4,500MW Power Shortfall Causes Hours-Long Outages," *Daily Dawn*, April 1, 2022, <https://www.dawn.com/news/1682822/4500mw-power-shortfall-causes-hours-long-outages>.

cost might be around Rs. 100 billion<sup>277</sup>. This would involve prices for various components such as Voter Identification Units, Control Units, Ballot Units, Printers, and RTS Modules. If the costs of supporting staff and warehouses where EVMs need to be stored are also included, the total may exceed Rs. 100 billion<sup>278</sup>.

In its response to the Senate's Standing Committee, the ECP highlighted several operational concerns regarding the EVMs. Since the elections for the national and provincial assemblies are held on the same day and the results are also announced within hours, the use of an electronic voting machine for the same-day election in Pakistan presents transportation and logistical challenges<sup>279</sup>. Given the scale and magnitude of elections in Pakistan, it is at present demographically and geographically impossible to conduct elections via EVMs<sup>280</sup>. Regarding the PTI's wish to conduct the general election of 2023 via EVMs, the ECP maintained its observations that there was a lack of time for large-scale implementation of EVMs in upcoming general elections<sup>281</sup>.

## Legal Conundrum

When the PTI government tabled the amendment in the electoral law in 2021, it faced severe resistance from the opposition parties as the legislation mandated the ECP to procure the EVMs for the next general election. The PTI managed to pass this bill with a very narrow margin of 18 votes, as 203 parliamentarians opposed the EVM law, whereas 221 members voted for it<sup>282</sup>. It seemed apparent that when the PDM coalition parties comprising PPP, PML-N, MQM, and

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277. Tariq Butt, "Electronic Voting Machines: Use of Prohibitively Costly EVMs May Cause More Controversies," *The News International*, May 8, 2021, <https://www.thenews.com.pk/print/832324-electronic-voting-machines-use-of-prohibitively-costly-evms-may-cause-more-controversies>.

278. Benazir Shah, "Just How Feasible Is It for Pakistan to Use Electronic Voting Machines during Elections?," *Geo News*, July 13, 2021, <https://www.geo.tv/latest/359818-just-how-feasible-is-it-for-pakistan-to-use-electronic-voting-machines-during-elections>.

279. Shah, "37 Reservations Issued by ECP on EVMs." see section xxiv in Appendix A

280. Ibid. see section xxv in Appendix A

281. Ibid. see section i in Appendix A

282. Ahmed Bilal Mehboob, "EVM Law: What Next?," *Dawn*, December 5, 2021, <https://www.dawn.com/news/1662044>.



others unseated Imran Khan in a vote of no confidence, they would be likely to revoke the EVM law once they assume executive power. As expected, on 26 May 2022, the PDM government passed the bill in the National Assembly to amend the Elections Act 2017<sup>283</sup>. The amendment reversed the EVM law introduced by the PTI that provided a provision for the ECP to implement electronic voting. Nevertheless, the ECP may continue with its experiments with EVMs and other electoral technologies, as the use of Information, Communication, and Electoral Technologies are among the 11 strategic pillars of the 3rd Strategic Plan 2019-2023 of the ECP<sup>284</sup>.

The respondents of this study, however, emphasized overarching legal and policy concerns around electoral technologies. Having a law that enables EVM implementation alone is not sufficient. This would require further legislative and policy-making efforts in the areas that directly impact the voters and electoral technologies. For instance, up to 2022, the personal data protection law has not been implemented. The Ministry of Information Technology and Telecommunication produced a consultation draft that was never tabled in the parliament<sup>285</sup>. As one of the respondents put it, the technologies are there to assist and make us feel safer than the reverse. The absence of any data protection law leaves the data's legal situation of more than 220 million people vulnerable.

The overall goal of electoral technologies is to make voting and related electoral exercise more accessible and simpler. However, the study's respondents feel that human rights aspects do not seem to receive due attention in the legal debate about EVMs. Although Pakistan has made tremendous growth in telecommunications, there are still regions where digital connectivity has not been reached. These regions have neither access to nor experience with the technologies. On the other hand, Pakistan has a significant gender digital divide. Both the design of the electoral technologies, as the respondents of this study

283. Samaa News, "PTI Laws on EVMs, Overseas Pakistanis' Voting Rights Reversed as NA Approves Amendment," May 26, 2022, <https://www.samaaenglish.tv/news/40009479/pakistan-pti-laws-on-evms-overseas-pakistanis-voting-rights-reversed-as-na-approves-amendment>.

284. Election Commission of Pakistan, "3rd Strategic Plan 2019-2023."

285. Ministry of Information Technology and Telecommunication, "Personal Data Protection Bill 2021: Consultation Draft v.25.08.2021" (2021), [https://moitt.gov.pk/SiteImage/Misc/files/25821%20DPA%20Bill%20Consultation%20Draft\(1\).pdf](https://moitt.gov.pk/SiteImage/Misc/files/25821%20DPA%20Bill%20Consultation%20Draft(1).pdf).

have argued, and the entire electoral technologies debate must also be viewed from the human rights perspective. The technologies must be kept simple, accessible and transparent; otherwise, the chances are that EVM-like electoral technologies may even reduce voter turnout instead of increasing it.

The ECP also addressed many procedural and legislative difficulties in responding to the Senate's Standing Committee about the EVMs. The ECP argued that the EVMs tested by the MoST do not ensure ballot secrecy, and there is a possibility that the voter's anonymity would be compromised<sup>286</sup>. The ECP could not substantiate the government's claim the software is not hackable<sup>287</sup>. The ECP also maintained in its report that legal amendments are necessary if elections have to be conducted via EVMs<sup>288</sup>. Similarly, the ECP also brought forth past experiences of change in ballot papers on the court orders<sup>289</sup>. It argued that it could not be substantiated if EVMs can perform the data integration and configuration in ballot papers in case the court issues an 11th-hour notice. Since election results are often disputed in Pakistan, and political parties challenge the results in the courts, the ECP believed that the EVM tested by the government does not provide evidence in case of election-related disputes<sup>290</sup>.

## Past, Present and Future of EVM in Pakistan

This study has tried to capture diverse views on electronic voting from various stakeholders in Pakistan, mainly focusing on the prospects and challenges of electronic voting machines (EVMs). It has also tried to identify the underlying themes and reasons that triggered a highly politicised debate on EVMs between 2019 to 2022. Electronic voting became increasingly politicised when the PTI government amended the election bill in 2021 to allow electronic voting in the next general election. The magnitude and scale of Pakistan's electoral exercise distinguish it from many other countries. Elections are held on the same day for the national and provincial assemblies, and results are

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286. Shah, "37 Reservations Issued by ECP on EVMs." see sections ii and iii in Appendix A

287. Ibid. see section xii in Appendix A

288. Ibid. see section x in Appendix A

289. Ibid. see section xxvi in Appendix A

290. Ibid. see section xx in Appendix A

announced within a few hours of the election. The use of electronic voting machines offers the possibility of increasing transparency in the electoral process and preventing widespread electoral fraud and manipulation. The systemic overview of technologies in this study indicates that electoral technologies represent a diverse range of digitalisation approaches that assist the Election Management Bodies (EMBs) in administering elections. These electoral technologies comprise various information systems, modern hardware and software techniques. These include biometric identification machines, computerisation of electoral rolls, internet voting, electronic vote counting machines (EVCs), electronic voting machines (EVMs) and other extended technological services that may assist in the election process, such as SMS or the GPS.

Based on the scale, magnitude, and legal and technological mandate, different countries employ various electoral technologies for their elections. Some countries use internet voting, though, except Estonia, nationwide use of iVoting is extremely rare in other countries. Some countries, such as Mongolia, extensively rely on EVCs for electronic vote counting, whereas a host of countries, such as the United States, India and Brazil, are using EVMs. Election technologies are context-dependent, and they cannot be applied to all countries in the same way. Some countries have adopted electronic voting machines, some have partially adopted them, some have completely abandoned them after trials, and some are in the process of testing them. Individual experiences vary widely between countries due to a variety of factors. Several countries have implemented EVMs for convenience and financial reasons, while others have done so to facilitate greater fairness and transparency.

Nevertheless, many countries opt for technology-aided processes such as digital electoral rolls, electronic counting of votes or GPS tracking for election equipment monitoring and voter guidance but not completely technology-based processes like electronic voting machines. A digital electoral roll can be extremely useful in managing and identifying erroneous entries in a voter list. Transmission of election results via ICTs facilitates a faster production of election results. In particular, mobile technologies have the potential to significantly enhance the electoral process for the disenfranchised and vulnerable groups such as women, the elderly, or individuals with reduced mobility. Nevertheless, there are challenges and fears associated with the digitalisation of

the electoral process. There are concerns that the technologies are not always foolproof, and that the vulnerabilities in hardware and software code may result in the manipulation of election results, thus affecting the election's outcome. Countries opting out of EVMs also cite other concerns besides cybersecurity, including increased costs, a lack of transparency and reliability, operational capabilities, and cultural barriers such as literacy and accessibility. These factors served as the basis for conducting semi-structured interviews with key stakeholders in Pakistan for this study.

eGovernment applications and the digitalisation of public administration are transforming the way people interact with their governments. The disruptive nature of technologies and their use in governance is establishing a new digital social contract between the state and citizens. It ensures the perpetuation of democratic values by fostering economic and social transformations and tries to lessen structural inequalities and social disparities. Similarly, the new configurations of state power rooted in data-based governance require fresh perspectives on data justice. Trust in government and state sovereignty will be the first causalities if the security of the digital apparatus of the state is manoeuvred or compromised altogether. Trust in democracy and its institutions will further deteriorate if technology-based electoral processes fail to win the public's confidence. There are concerns that the technological prowess of modern computing may open the door to new forms of digital electoral fraud. Therefore, digital sovereignty and cybersecurity of elections remain central to any debate on electronic voting, particularly in the context of Pakistan.

There has been a growing use of information and communication technology (ICT) in administering Pakistan's general elections since 2008. ICTs are incorporated in the mandate and approach of the Election Commission of Pakistan and have become an integral part of its five-year strategic plans. The term "electoral technologies" has been formally introduced in the ECP's third strategic plan (2019-2023). The ECP has made gradual progress in integrating ICTs into the electoral process in Pakistan. NADRA, on the other hand, has emerged as a leading public-sector institution in the eGovernment debate, and its citizen database is constantly facilitating innovation in the electronic delivery of public services. Teledensity and mobile subscription rates have significantly influenced the choice of medium for electronic service delivery. The preconditions of pursuing electoral

technologies in Pakistan have placed ECP in a unique position to initiate a variety of electoral technologies.

Since 2008, ECP has partnered with NADRA to computerise electoral rolls as its first significant electoral technology project. NADRA and the ECP regularly collaborate to produce a fresh electronic voter list a year before each election. An additional electoral technology launched by the ECP is the 8300 SMS App, which enables citizens to verify their entry on the voter list and confirm their exact constituency via mobile phone. The ECP has also received assistance from the UN since 2014 in developing a results management system (RMS). Furthermore, in 2018, the ECP experimented with a Result Transmission System (RTS) to assist election staff in electronically transmitting election results. Nevertheless, the RMS and RTS have not been entirely successful in comparison to digitalising the electoral rolls and the 8300 SMS App, as this study has already pointed out.

The ECP has deliberated about electronic voting since 2010 as part of its first strategic plan (2010-2014). However, during the PTI government, EVMs became a venue for political contestation between the PTI and opposition parties. A perception analysis of the interviewees of this study indicates a severe lack of clarity regarding electronic voting machines. Despite media-led debates and political promises, the feasibility of EVMs in Pakistan does not appear to be adequately addressed. It seemed that the Election Commission was not on board when the PTI government passed the bill for amendment in election law in 2021 to allow the use of EVMs in the next general election. The ECP issued 37 observations about the EVM that had been tested during the PTI government. The media projected these observations as objections, but according to the ECP, most of these observations served as a prerequisite for implementing EVMs in Pakistan. A critical observation made by the ECP about the EVM tested in 2021 was that it did not ensure ballot secrecy, and the identity of the voters could be compromised. The way opposition parties rejected the election amendment bill made it clear that the amendment enabling the use of EVMs might be withdrawn if the opposition were to gain power. After the PDM alliance comprising PPP, PML-N, and other parties came to power in 2022, the parliament overturned the use of electronic voting machines for the next election.

The lack of clarity on EVM may be attributed to the lack of political dialogue. The absence of political dialogue emerged as the most dominant theme in the interviews with the respondents. The most common recommendation made by respondents to this study was that Pakistan needs a detailed dialogue on EVMs, involving all stakeholders, including government, political parties, the Pakistan Election Commission, civil society, digital rights organisations, the media, and the general public. Such a dialogue can address various aspects of EVMs, such as technology, ballot secrecy, cyber security, cost, capacity, and cultural nuances. Similarly, the deliberations about EVMs should be conducted at different levels: first, among and within political parties; second, at the level of civil society; and third, at the level of the media.

The study demonstrates that Pakistan is currently going through a massive digitalisation phase. There are information technology boards and local eGovernment initiatives at the provincial level. Nonetheless, a realistic assessment of electoral technologies in Pakistan suggests many challenges. There is a lack of essential infrastructure for the nationwide digitalisation of the election process. The digital divide, particularly the gender digital divide, still prevails in the country. In several rural areas, there is either limited or no digital connectivity. Operational capacity is another challenge, as most of the population is digitally illiterate, and even the workforce lacks the necessary skills to adopt such electoral technologies. Every year Pakistan's foreign debt causes severe strain on its already budget-strapped economy; thus, affording a technology such as EVMs, which have not been widely tested in pilot studies, makes it unviable. The preference for manual to digital services is still dominant in the culture. These challenges make the feasibility of EVMs stands on fragile grounds, and as one respondent in this study put it, EVMs seems to be an unnecessary obsession.

## Appendix A

### 37 observations about EVM submitted by the ECP in 2021

Part -1<sup>291</sup>

#### **CHALLENGES OF EVM**

- i) Lack of time for large scale implementation for EVMs in upcoming general election
- ii) Lack of ballot secrecy
- iii) Lack of voters' anonymity
- iv) Lack of transparency (black box)
- v) Lack of capacity of all levels
- vi) Lack of massive pilot testings
- vii) Lack of ensuring security and chain of custody during machine at rest and transportation
- viii) Financially not viable
- ix) EVM cannot prevent rigging like booth capturing
- x) Legal amendments are essentials
- xi) Lack of independence of EMB
- xii) Machine is hackable and tamper prone which can cause Calculations errors
- xiii) Software can easily altered (source code)
- xiv) It is nearly impossible ensure that every machine is honest
- xv) Poll in one-day using machines in nearly impossible
- xvi) Lack of voter education, public awareness and literacy rate
- xvii) There is no consensus amongst the stakeholders
- xviii) All processes are outsourced to the international or national firms (privatizations)
- xix) (Reusability) of technology / technology obsoletes more frequently
- xx) Lack of evidence in case of elections disputes
- xxi) Absence of dust-free humid free and controlled temperature Environment warehouse
- xxii) Lack of trained staff

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291. Ibid.

## Reservations submitted by the ECP to the Senate Standing Committee on Parliamentary Affairs about the EVMs in 2021

### Part -2<sup>292</sup>

- xxiii) Huge learning curve is required for technical operators
- xxiv) Logistics and transportation issues
- xxv) scalability / magnitude issues demographically and geographically
- xxvi) Data integration and configuration issues due to 11th hour Court orders regarding Change in ballot paper
- xxvii) Lack of public trust and confidence in case of we introduce in a one go (nationwide)
- xxviii) Result delayed
- xxix) Lack of trust by the stakeholders, civil society organizations (CSOs), NGOs, media etc.
- xxx) All action being taking in haste by not following the due process which is the negations of all international standards
- xxxi) EVM cannot prevent local voter's turnout low women voter's turnout misuse of state authorities, election fraud, electronic ballot stuffing, vote buying, law & orders situation, dishonest polling staff, wide spread political and electoral violence, abuse of state resources by incumbent parties
- xxxii) Dependency on machine vendors as the vendors provide support for maintenance, updates, configuration and reconfiguration in the period between elections, which creates the possibility of fraud
- xxxiii) These machines are not of-the-shelf product; therefore, it requires frequent technical challenges at the demand of the stakeholders
- xxxiv) Not following the standards of the global Eco system for introduction of new technology at mass level
- xxxv) Due to above-mentioned challenges and implementing new technologies nationwide in haste. The conduct of free, fair, credible and transparent elections as per constitution are not possible. Public trust and confidence will remain shaky
- xxxvi) Germany, Holland abandoned due to lack of transparency
- xxxvii) Ireland, Italy and Finland abandoned due to lack of security

\* \* \* \*

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292. Ibid.



## Appendix B

## Form 15: Request to add name in the electoral roll

**الیکشن کمیشن آف پاکستان**  
**فارم 15**  
**[انڈیکس فائدہ 31]**  
**نام شامل کرنے کے لئے دعویٰ**

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**حصہ اول**

۱۔ انتخابی علاقہ کا نام ..... ۲۔ قومی شناختی کارڈ نمبر ..... ۳۔ قومی شناختی کارڈ نمبر ..... ۴۔ قومی شناختی کارڈ نمبر .....

۵۔ جنس مرد ☐ عورت ☐ خواجہ سرا مرد ☐ خواجہ سرا عورت ☐ خلیفہ مشکل ☐ ۶۔ والد / شوهر کا نام ..... ۷۔ متعلقہ شخصیت ☐ مسلمان ☐ ہندو ☐ سکھ ☐ بدھ مت ☐ پارسی ☐ قادیانی / احمدی ☐ دیگر غیر مسلم ..... ۸۔ سکونت کے کوآف جس کے حوالے سے انتخابی فہرست میں اندراج کا دعویٰ کیا گیا ہے: (الف) ووٹ کا اندراج کیا جائے: شناختی کارڈ کے مطابق مستقل پتہ پر ☐ شناختی کارڈ کے مطابق ماضی پتہ پر ☐ دیگر پتہ پر (سرکاری ملازمت کی صورت میں) ☐ مکان نمبر ..... محلہ ..... خیر / قصبہ / دیہہ ..... پتہ اور سرکل / پتہ دار سرکل ..... تحصیل / تعلقہ ..... ضلع ..... (ب) ایسے اشخاص کے لئے جو پاکستان کی سرکاری ملازمت میں ہیں۔ عہدہ ..... محلہ ..... (ملازمت کا سرٹیفکیٹ منسلک کریں) مقام تعیناتی ..... درخواست دہندہ کا ایسے شخص سے تعلق جو سرکاری ملازم ہو۔ ..... (جی) آغا اور سرکاری ملازم کے پاس کی سرحد میں ۱۵ کپ پی، درجہ اولیہ اور قادیانی کا پتہ منسلک کریں) ۹۔ میں بذریعہ ذیل اقرار کرتا / کرتی ہوں۔ اول۔ میں پاکستان کا / کی شہری ہوں۔ دوم۔ میری عمر 18 سال سے کم نہیں ہے۔ سوم۔ میں قومی شناختی کارڈ کا / کی حامل ہوں۔ چہارم۔ مجھے کسی عدالت مجاز سے قیام حاصل قرار نہیں دیا۔ پنجم۔ زیر دفعہ 27 الیکشن ایکٹ 2017 اس انتخابی علاقہ کا / کی رہائش پزیر ہوں۔ ششم۔ میرا نام کسی اور انتخابی علاقہ کی انتخابی فہرست میں درج نہیں ہے اور اگر میرا نام بطور دوسری اور انتخابی فہرست میں درج ہو تو اس کو حذف کر دیا جائے۔

**ملاحظہ (صرف مسلمان کے لئے)**

میں علیحدہ اقرار کرتا / کرتی ہوں کہ میں خاتم النبیین حضرت محمد صلی اللہ علیہ وسلم کی ختم نبوت پر مکمل اور غیر مشروط طور پر ایمان رکھتا / رکھتی ہوں اور یہ کہ میں کسی ایسے شخص کا / کی بیوی یا شریک ہوں جو حضرت محمد صلی اللہ علیہ وسلم کے بعد اس نقطہ کے کسی بھی مذہب یا کسی بھی تشریح کے لحاظ سے پیغمبر ہونے کا دعویٰ دار ہو اور نہ ہی میں ایسے دعوے دار کو پیغمبر یا نبی مصلحتاً / کاتبی ہوں نہ ہی میں قادیانی گروپ یا لاہوری گروپ سے تعلق رکھتا / رکھتی ہوں یا خود کو احمدی کہتا / کہتی ہوں۔

درخواست دہندہ کے دستخط	درخواست دہندہ کا نشان / انگوٹھا	تاریخ						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">سال</td> <td style="width: 33%;">مہینہ</td> <td style="width: 33%;">دن</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> </tr> </table>	سال	مہینہ	دن			
سال	مہینہ	دن						

نوٹ: اگر مجھے کوئی نشان / انگوٹھا ہے۔

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**اقرارنامہ**

میں بذریعہ ذیل اقرار کرتا / کرتی ہوں کہ مذکورہ بالا کوآف میرے علم و یقین کی حد تک درست ہیں۔

درخواست دہندہ کے دستخط	درخواست دہندہ کا نشان / انگوٹھا	تاریخ						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">سال</td> <td style="width: 33%;">مہینہ</td> <td style="width: 33%;">دن</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> </tr> </table>	سال	مہینہ	دن			
سال	مہینہ	دن						

نوٹ: اگر مجھے کوئی نشان / انگوٹھا ہے۔

ڈاک کا پتہ .....  
.....

---

**\*اختیار نامہ**

میں بذریعہ ذیل اس / اسکا ..... دلہ / دلہ / ازواج ..... کو اپنی طرف سے دعویٰ بذرائع کرنے کا اقرار کرتا / کرتی ہوں۔  
.....  
نوٹ: اختیار نامہ صرف والد، والدہ، نواسہ / نواسہ، بیوی یا شوہر کا درخواست کر سکتا ہے۔

## Appendix C

## Form 16: Objection on the name entered in the electoral roll

## الیکشن کمیشن آف پاکستان

فارم 16

[دیجیٹل قاعدہ 31]

نام شامل کرنے پر اعتراض

حصہ اول

۱۔ انتخابی علاقہ کا نام.....

۲۔ شہریاتی پاک کوڈ.....

۳۔ اس اعتراض کے کوآف جس پر اعتراض ہو:

(اول) اس شخص کا نام جس پر اعتراض ہو.....

(دوم) والد / شوہر کا نام.....

(سوم) انتخابی فہرست کا حصہ: مرد.....

(چہارم) انتخابی فہرست میں سلسلہ نمبر.....

(پنجم) قومی شناختی کارڈ نمبر.....

(ششم) شہر / قصبہ / دیہہ.....

(ختم) ضلع.....

۴۔ اعتراض کنندہ کے کوآف

(اول) نام.....

(سوم) قومی شناختی کارڈ نمبر.....

(چہارم) انتخابی فہرست میں سلسلہ نمبر.....

(پنجم) شہریاتی پاک کوڈ.....

(ششم) شہر / قصبہ / دیہہ.....

(ختم) ضلع.....

۵۔ میں صدر رجسٹرڈ ذیلی عدالت کی بنیاد پر اس اعتراض پر جس کے کوآف ایچ کے ایچ نمبر میں مذکور ہیں اعتراض کرتا کرتی ہوں۔

(الف).....

(ب).....

(ج).....

## اقرار نامہ

میں بذریعہ بذاتِ اقرار کرتی ہوں کہ مذکور بالا کوآف میرے علم و یقین کی حد تک درست ہیں۔

تاریخ			اعتراض کنندہ کے دستخط	اعتراض کنندہ کا نشان (انگوٹھا)
سال	مہینہ	دن		
رابطہ نمبر				

نوٹ: انگوٹھے کا نشان لگانا لازمی ہے۔

ڈاک کا پتہ.....

نوٹ: کوئی شخص جو جعلی اقرار نامہ یا کسی اطلاع دے جسے وہ جانتا ہو یا پھر اگر جان کر کہ کوئی ایسی بات لکھ رہا ہے جس کے درست ہونے کا وہ یقین نہ ہو تو وہ مجبوراً عدالت پاکستان (ایکٹ XLV-1860) کی دفعات 182 اور 199 کے تحت موجب مزاحمت ہوگا۔

(مسبذیلی عدالت کی خانہ بھری نام نظر چلی کے دفتر میں کی جائے گی)

اعتراض نمبر..... داخل کرنے کی تاریخ..... تاریخ سماعت.....

تاریخ سماعت کا نوٹس وصول کیا۔

تاریخ			اعتراض کنندہ کے دستخط	اعتراض کنندہ کا نشان (انگوٹھا)
سال	مہینہ	دن		

نوٹ: انگوٹھے کا نشان لگانا لازمی ہے۔



Appendix E

Form 28: List of polling stations for a particular constituency

ELECTION COMMISSION OF PAKISTAN

FORM-28

[see rule 50]

LIST OF POLLING STATIONS FOR A CONSTITUENCY OF

Election to the National Assembly of the NA-123-Lahore-I

S.No.	No. and Name of Polling Station	In case of rural area		In case of urban area		S.No. of voters on the electoral roll in case electoral area is bifurcated	Male Voters	Female Voters	Total Voters	Male Booths	Female Booths	Total Booths	Type
		Name of Electoral Area	Block Code	Name of Electoral Area	Block Code								
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Star College, Main G.T. Road, Kot Shahab Din, Shadira Lahore I			Khadam Colony	185030602		1666		1666	2	0	2	Male
1 Total													
2	Oldage Employees benefit main G.T. Road, kot Shahab Din Shandara Lahore I			Kamboh Gali No.2.3 kot Shahab Din	185030605		1666	0	1666	2	0	2	Male
2 Total							876		876	2	0	2	Male
3	Oldage Employees benefit main G.T. Road, kot Shahab Din Shandara Lahore I			Khadam Colony	185030602		876	0	876	2	0	2	Female
3 Total				Kamboh Gali No.2.3 kot Shahab Din	185030605		1415	717	2132	0	4	4	Female
4	Directorate of Social Security 65 G.T. Road Shandara Lahore I			Jinnah Park Kot Shahab Din	185030603		0	2132	2132	0	4	4	Female
4				G.T. Road Kot Shahab Din	185030604			356	356				Female
4				Gali No.5 Kot Shahab Din	185030601			735	735				Female
4 Total							0	1143	1143	0	4	4	Male
5	Star College, Main G.T. Road, Kot Shahab Din, Shadira Lahore I			Jinnah Park Kot Shahab Din	185030603		309		309	3	0	3	Male
5				Gali No.5 Kot Shahab Din	185030601		869		869				Male
5 Total							1178	0	1178	3	0	3	
6	Directorate of Social Security 65 G.T. Road Shandara Lahore I			G.T. Road Kot Shahab Din	185030604		393		393	2	0	2	Male
6 Total							393	0	393	2	0	2	Male
7	Kinnal Jinnah School, Sadar Street, Main Bazar Kot Shahab Din I			Masjid Khail / Bera Chowdhary Wazir Chatha	185030605		794		794	2	0	2	Male
7 Total							794	0	794	2	0	2	
8	Directorate of Social Security 65 G.T. Road Shandara Lahore I			Jinnah Park	185030606		607		607	3	0	3	Male
8				Gali No.7/9 Lajpat Nagar	185030603		553		553				Male
8 Total							1160	0	1160	3	0	3	

## Appendix F

## Form 45: Result of vote count in a particular constituency

**Appendix F:**  
**Form 45: Result of vote count in a particular constituency**

**FORM-45**  
[see rule 81(1)]

**RESULT OF THE COUNT**

Election to the \*National Assembly 52 Islamabad-1  
Provincial Assembly of the Punjab  
Sindh  
Khyber Pakhtunkhwa  
Balochistan

Page No. 01

No. and name of constituency = CHATTA BAKHTAWAR Part-I  
No. and name of polling station No. = 01 SNSMSB (I-VIII) Chattha Bakhtawar  
No. of votes assigned to the polling station =

Sr. No.	Names of the Contesting Candidates	Number of valid votes polled in favour of each contesting candidate	Number of valid Tendered votes polled in favour of each contesting candidate	Number of valid Challenged votes polled in favour of each contesting candidate	Total valid votes polled in favour of each contesting candidate [Cols (3)+(4)+(5)]
1	7 سید بی بی	NIL	NIL	NIL	00
2	اسرار احمد عباس	NIL	NIL	NIL	00
3	بلاک فیصل اکبر	04	X	X	04
4	حافظ محمد اسلم	03	X	X	03
5	راجہ خرم سہیل دلوڑ	297	X	X	297
6	رفیقات احمد	43	X	X	43
7	سید اسماعیل شاہ	NIL	X	X	00
8	سید حسن ظفر	01	X	X	01
Total					

(i) Total valid votes (column 6)

(ii) Number of votes excluded from the count in accordance with section 90 (4)(c) of the Elections Act 2017:

Votes taken out from the ballot boxes which have been excluded from the count:	
Tendered votes which have been excluded from the count:	
Challenged votes which have been excluded from the count:	
Total	


(iii) Grand total [sum of (i) and (ii)]

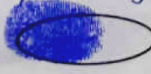
(iv) Number of votes polled

Male	Female	Total
	NIL	

Signature of Senior-most Assistant Presiding Officer Muhammad Asif Javed  
Name Muhammad Asif Javed  
Designation V. Principal / Sr. A.P.O

Signature of the Presiding Officer Ghulam Yasin Awan  
Name Ghulam Yasin Awan  
Designation Principal / Presiding officer

Thumb impression 

Thumb impression 

NIC No. 3450122266251 NIC No. 61110118186759

Place Abd Date 25-07-2018

\*Strike off the words not applicable.

PCPPL-378/PEC-2018 (21,89,000 Forms)

Appendix G

Form 46: Ballot paper count for a particular constituency

FORM-46  
[see rule 83 (1)]

BALLOT PAPER ACCOUNT

Election to the ~~National Assembly~~ NA 52 Islamabad-1  
Provincial Assembly of ~~the Punjab~~ Sindh  
~~Khyber Pakhtunkhwa~~  
~~Balochistan~~

No. and name of constituency CHATTA BAKHTAWAR 5 Male  
No. and name of polling station 601 S.A.S.M.S (I-VIII) Chatta Bakhtawar 180

1. Ballot papers received for use at the polling station:

Quantity of ballot papers	No. of books	Sr.No. of books		Sr. No. of ballot papers	
		From	To	From	To
900	09	00000001	00000009	00000001	00000900

2. Total number of ballot papers taken out from the ballot box or boxes 585

3. Total number of Tendered Ballot Papers NIL

4. Total number of Challenged Ballot Papers NIL

5. Total number of stray, spoilt and cancelled ballot papers 11

6. Total number of ballot papers under Item Nos. (2), (3), (4), and (5) 585

7. Number of unissued ballot papers:

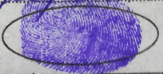
Serial number		Total
From	To	
0000801	0000900	100
0000701	0000800	100
0000605	0000700	96
0000585	0000600	16
0000398	0000400	03
Total		315

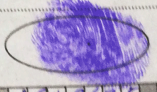
8. Total number of ballot papers under Item Nos. (6) and (7) 900

Note: Total of Item No. (8) should be equal to the total of Item No. (1).

Signature of Senior-most Assistant Presiding Officer Muhammad Asif Javed  
Name Muhammad Asif Javed  
Designation V. Returning Officer S.A.P.O.

Signature of the Presiding Officer Ghulam Yasin Khan  
Name Ghulam Yasin Khan  
Designation

Thumb impression 

Thumb impression 

NIC No. 34501-2226625-1

NIC No. 61101-1818675-2

Place Chatta Bakhtawar Sbd

Date 25-7-2018

\*Strike off the words not applicable.

PCPPL-169/PEC-2018 (1,094,500 Nos.)

## Appendix H

## Form 47: Non-consolidated election result in a particular constituency

**فارم-47**  
دیکھئے قاعدہ 84(1)

**غیر حتمی نتائج کا مجموعی گوشوارہ**

قومی اسمبلی ☒ صوبائی اسمبلی ☐ پنجاب ☐ سندھ ☐ خیبر پختونخواہ ☐ بلوچستان ☐

NA-1 Chitral

۱۔ انتخابی حلقے کا نمبر اور نام

۲۔ پولنگ اسٹیشن کی کل تعداد 294

۳۔ انتخابی حلقے میں ووٹوں کی کل تعداد

۴۔ ڈالے گئے ووٹوں کی تعداد

۵۔ ڈالے گئے درست ووٹوں کی تعداد

۶۔ گنتی سے خارج ووٹوں کی تعداد

۷۔ ڈالے گئے ووٹوں کی شرح فیصد 60.97 %

سلسلہ نمبر	امیدوار کا نام	جماعتی وابستگی	حاصل کردہ ووٹ
1	افتخار الدین	پاکستان مسلم لیگ ن	21,016
2	تقدیرہ اجمل	ازاد	681
3	سعید الرحمن	پاکستان راہ حق پارٹی	3,223
4	سلیم خان	پاکستان پیپلز پارٹی پارلیمنٹیرینز	32,635
5	شہزادہ محمد تیمور خسرو	ازاد	2,414
6	عبد الطیف	پاکستان تحریک انصاف	38,481
7	عبد الحسین	عوامی نیشنل پارٹی	3,613
8	محمد امجد	آل پاکستان مسلم لیگ	6,755
9	محمد بچی	ازاد	698
10	مولانا عبدالاکبر چترالی	متحدہ مجلس عمل پاکستان	48,616
11	نثار دستگیر	ازاد	793

Appendix H: Form 47: Non-consolidated election result in a particular constituency

مقام  
26/07/2018 تاریخ

Returning Officer  
NA-1 Chitral

محمد امجد



Appendix I

Form 48: Consolidated results of the count furnished by the presiding officer

FORM - 48  
[See rule 85(1)]  
CONSOLIDATED STATEMENT OF THE RESULTS OF THE COUNT FURNISHED BY THE PRESIDING OFFICERS  
Election to the National Assembly of the NA-55 ATTOCK-I

No. and name of the Constituency: NA-55 ATTOCK-I  
No. of registered voters: Male 303770 Female 268034 Total 571804  
Total number of polling stations: Male 180 Female 167 Combined 346 Total 493

Sr. No.	Polling Station	Number of valid votes (including Tenders & Challenged votes) cast in favour of										Total votes per polling station		
		ASIF IQBAL (Chair)	TANMOOR ASLAM (Batsman)	ZULFIQAR HAYAT KHAN (Arrow)	SAEED AHMED (Bock)	SHEIKH AHMED (Tiger)	TAHIR SADIQ (Bat)	MUHAMMAD HARIZ ULJAH JAN (Crane)	MALIK MIR AFZAL (Umbrella)	Valid	Invalid	Total		
1	2	3	4	5	6	7	8	9	10	11	12	13		
1	1 AGRICULTURAL OFFICE ATTOCK (MALE) (P)	2	5	11	7	199	523	47	0	794	10	804		
2	2 GOVT. GIRLS HIGH SCHOOL PEOPLES COLONY ATTOCK (FEMALE) II (P)	2	1	14	4	195	391	39	2	648	29	677		
3	3 AGRICULTURAL OFFICE ATTOCK OFFICE OF RESEARCH OFFICER (MALE II) (P)	1	1	5	16	159	376	21	0	579	5	584		
4	4 AGRICULTURAL OFFICE ATTOCK OFFICE OF RESEARCH OFFICER (FEMALE II) (P)	0	1	11	23	133	265	14	0	447	12	459		
5	5 AGRICULTURAL OFFICE ATTOCK (MALE) (P)	7	0	3	56	191	353	18	0	628	6	634		
6	6 GOVT. BOYS HIGHER SECONDARY SCHOOL ATTOCK (FEMALE) (P)	1	0	6	40	125	270	6	0	448	6	454		
7	7 M.C. BOYS PRIMARY SCHOOL NO-6 BEHAR COLONY ATTOCK (MALE) (P)	1	1	6	15	142	429	32	0	626	9	635		
8	8 M.C. GIRLS ELEMENTARY SCHOOL MEHR PURA (WEST) ATTOCK (FEMALE) (P)	0	0	14	28	157	299	13	0	511	14	525		
9	9 GOVT. GIRLS HIGH SCHOOL PEOPLES COLONY ATTOCK (MALE) (P)	3	2	14	36	191	424	29	1	700	11	711		
10	10 GOVT. GIRLS HIGH SCHOOL PEOPLES COLONY ATTOCK (FEMALE) (P)	3	0	8	17	155	284	14	0	481	12	493		
11	11 DEAF & DEFECTIVE HEARING SCHOOL PEOPLE COLONY ATTOCK (MALE) (P)	1	2	10	21	166	402	32	0	634	3	637		
12	12 DEAF & DEFECTIVE HEARING SCHOOL PEOPLE COLONY ATTOCK (FEMALE) (P)	1	1	8	23	118	293	28	1	473	6	479		
13	13 DEAF & DEFECTIVE HEARING SCHOOL PEOPLE COLONY ATTOCK (MALE) (P)	0	1	1	20	74	184	8	0	288	3	291		
14	14 DEAF & DEFECTIVE HEARING SCHOOL PEOPLE COLONY ATTOCK (FEMALE) (P)	0	0	0	11	53	137	8	0	209	6	215		
15	15 OFFICE OF THE DEPUTY DISTRICT OFFICER, AGRICULTURE (Extension)	2	2	6	12	175	305	13	0	515	3	518		
16	16 SOIL CONSERVATION OFFICE ATTOCK (MALE) (P)	2	0	3	12	131	239	8	0	395	8	403		
17	17 SOIL CONSERVATION OFFICE ATTOCK (FEMALE) (P)	1	2	4	13	101	215	3	0	338	5	343		
18	18 GOVT. BOYS HIGHER SECONDARY SCHOOL (HALI) (MALE) (P)	1	4	2	7	146	449	33	0	642	8	650		
19	19 NURSING TRAINING CENTER, ATTOCK (FEMALE) (P)	0	1	8	12	109	314	15	0	459	14	473		

Signature of Presiding Officer  
Asif Iqbal  
Returning Officer  
NA-55 Attock-I



## Appendix J

## Form 49: Final consolidated result

**FORM 49**  
[See rule 88(1)]

**FINAL CONSOLIDATED RESULT**

Election to the : ☒ National Assembly

☐ Provincial Assembly:

☐ Punjab ☐ Sindh ☐ Khyber Pakhtunkhwa ☐ Balochistan

No. and name of the constituency: NA-52 Islamabad-I

No. of registered voters: Male-----125183 Female-----109325 Total-----234508

Sr. No.	Name of Contesting Candidate(s)	Party Affiliation, if any	Number of valid votes polled
1	2	3	4
1	Asia Bibi	Independent	127
2	Asrar Ahmad Abbasi	Independent	186
3	Bilal Faisal Amin	Muttahida Majlis-e-Amal Pakistan	2496
4	Hafiz Muhammad Aslam	Tehreek-e-Labbaik Islam	548
5	Raja Khurram Shehzad Nawaz	Pakistan Tehreek-e-Insaf	64881
6	Rizwan Ahmad	Tehreek-e-Labbaik Pakistan	11996
7	Syed Amjad Ali Shah	Independent	541
8	Tariq Fazal Chaudhry	Pakistan Muslim League (N)	33564
9	Muhammad Afzal Khokhar	Pakistan Peoples Party Parliamentarians	34087

Total number of valid votes polled:-----148426

Total number of invalid votes:-----2568

Date: 27-07-2018

Place: Islamabad

Signature of Returning Officer  
(SAYED FAIZAN HAIDER)  
Addl. District & Sessions Judge  
West, Islamabad  
Returning Officer - NA-52

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Interview with Amjad Qammar (Bytes For All). In-person, November 2, 2022.

Interview with Farhatullah Babar (Secretary General: PPPP). In-person, November 11, 2022.

Interview with Haroon Baloch (Bytes For All). In-person, November 2, 2022.

Interview with Majid Siddique Nizami (Senior Journalist). In-person, November 4, 2022.

Interview with Mudassir Rizvi (FAFEN). In-person, November 3, 2022.

Interview with Muhammad Khizer Aziz (Director General: Information Technology; ECP). In-person, November 11, 2022.

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