

E-Office Software to Promote Paperless Working Environment

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Abstract

This paper emphasizes digital transformation and a paperless Punjab Assembly in today's modern era. It highlights e-parliaments in light of the Digital Maturity Index of IPU. The focus is on how we can control environmental pollution and how a paperless assembly can help reduce paper wastage, thereby contributing to a cleaner and greener environment. It also discusses how this initiative can support the Government of Punjab and the CPA in achieving the SDG goals, enhance the performance of the Secretariat, and assist members in the legislative process. Realizing Pakistan's status of being one of the top 10 countries vulnerable to climate change, the new Article 9A has been inserted in the Constitution of the Islamic Republic of Pakistan 1973 through 26th Amendment: "9A. Clear and Healthy Environment - Everyone has the right to a clean, healthy and sustainable environment."

Keywords: E-Office Software, Paperless Working, Technology in Work.

Introduction

Digital Transformation is the application of digital technologies to create new or improved processes, products, or services (US legal website, 2025). Digitization or Digitalization often used interchangeably with Digital Transformation (although differ in their meanings) is a process of adaption towards paper-free office working with the help of devising Standard Operating Office Procedures through customized software-modules run on computers via internet. In present days, organizations related to all sectors are embracing and expanding their digital transformation to stay competitive across the globe.

Ecological Hazards Caused by Paper Pollution

Paper pollution is defined as environmental pollution produced by the manufacturing, usage, and recycling of paper. Paper pollution degrades the quality of air, water, and land. Many dump sites contain large amounts of discarded paper. Paper recycling causes pollution because of the sludge produced during deinking (Sustainability, 2023). The rejected paper generated throughout the production process accounts for up to 25% of the total paper produced. Paper manufacturing byproducts, such as waste water released from pulp/paper mills, contain particles and dissolved organic materials, which damage aquatic bodies. Pulp and paper is the third greatest industrial polluter in the US, emitting more than 100 million kg of harmful pollution annually. Organic stuff dissolved in fresh water alters ecological properties and may cause the death of various living creatures.

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Digital Transformation of Government and Public Sector

Digital Transformation in Government and Public Sector refers to the process of using technology and digital solutions to enhance the delivery of public services, streamline internal operations, and improve overall governance (Sustainability, 2025). Digital transformation in the public sector is critical because it may significantly increase the efficiency, openness, and accessibility of government services while also allowing the government to make data-driven decisions. Governments may employ digital technologies to optimize operations, decrease expenses, and provide residents with a better user experience (WAVETEC, 2023).

Digital Transformation in Parliaments Globally

Some parliaments in the world have built upon existing infrastructure while some have accelerated the digital transformation activities that were already in progress. As a response to COVID-19, some Parliaments established entirely virtual platforms to continue their work (INCAE, 2023). Digital transformation is the use of new digital tools and technologies to parliamentary processes and culture (The Asia Foundation, 2025).

The day-to-day functioning of Parliaments across the world involves heavy use of papers e.g., from order of the day, draft bills, booklets of Questions to be asked on the floor and Proceedings/Hansards are all printed leading to use of papers in hundreds. The expenditure of legislatures on procurement of papers amount to millions of rupees. There are many redundant uses of paper in the legislatures that can be avoided by gradual shift to digitalization. For instance, dispatch of intimation/official letters through posts (often received late or at wrong address) results in heaps of papers going waste. Accordingly, the given research aims to identify the underlying issues of paper-pollution to see what innovative steps can help digitalize parliaments.

Need of Digital Transformation in Parliaments of Pakistan

Pakistan needs to follow the global trends in several domains. The parliaments in Pakistan are National Assembly and Senate of Pakistan and Provincial Assemblies: Punjab, Sindh, Baluchistan, Khyber Pakhtunkhwa, Gilgit-Baltistan, Azad Jammu and Kashmir (Green Climate Fund, 2025). Their digitization situation will be discussed in the next parts. Our country is a signatory of numerous international environmental agreements, that need to be transformed into actual implementation by compliance to the treaties. One of such cases is the dire need for legislatures in Pakistan to come at par with digitally transformed parliaments of USA, Commonwealth Parliamentary Association (CPA Asia & South-East Asia Region), and the least developed countries of Africa. The manual methods of work involving paper should be digitized to minimize paper-waste, mitigate the relevant environmental impact, and utilize the resources of Assemblies more effectively and efficiently.

Realizing Pakistan's status of being one of the top 10 countries vulnerable to climate change (Inter-Parliamentary Union, 2025) the new Article 9A has been inserted in the Constitution of the Islamic Republic of Pakistan 1973 through 26th Amendment: "9A. Clean and Healthy Environment - Everyone has the right to a clean, healthy, and sustainable environment" (Green Climate Fund, 2024).

Pakistan has signed several international treaties (*1) and is receiving numerous funds (*2) to deal with the climate change issue. The subject in the present discussion is the Parliaments of Pakistan, especially Provincial Assembly of Punjab. However, all of the public sector departments in Pakistan should move for a 'Environmental Conservation' approach in the light of the given agreements. Although paper formats have significance of their own, they have several relevant

problems. To produce 1 ton of paper, 17 trees and 30,000 liters of water are needed (Govt. of Pakistan, 2025).

The relevant issue is that Parliaments have to innovate as for some provincial assemblies in Pakistan, the budget documents that comprise of hundreds of printed pages, the same is provided in a flash drive handed over to MPs who can open them on their computers for a thorough study of economy and budget numbers. Similarly, in National Parliament i.e., National Assembly and Senate of Pakistan, the notice of Assembly and committee meetings are in the shape of the soft copies of these documents, dispatched by the Secretariats, and received well in time by the respective Members of Parliament through SMS messages on mobile phones or by applications such as WhatsApp. The digitization of National Assembly of Pakistan was started in 2022 (Govt. of Pakistan, 2025). Some digitization proposals have been put forward in 2024 (President.gov.pk.2025). In Pakistan, at provincial level, the Paperless Governance Project already implemented in the province of Khyber Pakhtunkhwa (KP) can serve as a model to accomplish these tasks. According to a verbal source, the KP Assembly was digitized in 2015-2016 due to huge costs of paper incurred by the organization.

Comparison of Pakistan with e-Parliaments Globally

Digital Maturity Index is a measure of the readiness of an organization to take on digital transformation (ipu.org, 2024). The National Assembly of Pakistan has a low value of 4 on Digital Maturity Index and provincial legislatures are not even present in the list (KPITB Website, 2025). Examples of some CPA parliaments with digitization done up to a low level have been mentioned in Tables 2, 3, 4. The Provincial Assembly of Punjab stands in this list of Parliaments that have a well-functioning website with uploaded summary of proceedings, questions, resolutions, bills, and notifications etc. online (matics.com, 2025). In addition, the Assembly has made access of the facility to broadcast the live Assembly sessions. However, efforts need to be taken to move to a paperless work environment.

Table 1: Digital Maturity Index of e-Parliaments Globally

	e-Parliament	Digital Maturity Index
1.	Brazil – Chamber of Deputies	10
2.	Brazil – Senate	10
3.	Canada – House of Commons	10
4.	Chile – Chamber of Deputies	10
5.	European Parliament	10
6.	Finland	10
7.	Ireland	10
8.	Israel	10
9.	Paraguay – Chamber of Deputies	10
10.	Slovakia	10
11.	Austria	9
12.	Bahrain – Shura Council	9
13.	France – Senate	9
14.	Italy – Senate	9
15.	Latvia	9
16.	Paraguay – Senate	9
17.	Slovenia – National Assembly	9
18.	United Kingdom	9

19.	Australia	8
20.	Chile – Senate	8
21.	Estonia	8
22.	Poland – Sejm	8
23.	Republic of Korea	8
24.	South Africa	8
25.	Spain – Congress of Deputies	8
26.	Switzerland	8
27.	Ukraine	8
28.	Zimbabwe	8
29.	Burundi – Senate	7
30.	Canada – Senate	7
31.	Fiji	7
32.	Germany – Bundestag	7
33.	Hungary	7
34.	Italy – Chamber of Deputies	7
35.	Mauritius	7
36.	Montenegro	7
37.	Morocco – House of Representatives	7
38.	Norway	7
39.	Thailand – Senate	7
40.	Bahrain – Council of Representatives	6
41.	Kazakhstan – Mazhilis	6
42.	Luxembourg	6
43.	Netherlands – House of Representatives	6
44.	Portugal	6
45.	Romania – Senate	6
46.	Spain – Senate	6
47.	Suriname	6
48.	Thailand – House of Representatives	6
49.	Trinidad and Tobago	6
50.	Tunisia – Assembly of People's Representatives	6
51.	Armenia	5
52.	Burundi – National Assembly	5
53.	Cambodia – Senate	5
54.	Denmark	5
55.	Greece	5
56.	Guyana	5
57.	Iceland	5
58.	Malawi	5
59.	New Zealand	5
60.	North Macedonia	5
61.	Sri Lanka	5
62.	Algeria – National People's Assembly	4
63.	Cyprus	4
64.	Kenya	4
65.	Malaysia	4
66.	Namibia	4
67.	Pakistan – National Assembly	4

68.	Zambia	4
69.	Andorra	3
70.	Angola	3
71.	Botswana	3
72.	China	3
73.	Germany – Federal Council	3
74.	Ghana	3
75.	Japan – House of Representatives	3
76.	Kazakhstan – Senate	3
77.	Kuwait	3
78.	Monaco	3
79.	Romania – Chamber of Deputies	3
80.	Seychelles	3
81.	Azerbaijan	2
82.	Bhutan – National Assembly	2
83.	Eswatini	2
84.	Ethiopia – House of People’s Representatives	2
85.	Lesotho	2
86.	Mozambique	2
87.	Pan – African Parliament	2
88.	Republic of Moldova	2
89.	Tanzania	2
90.	Vanuatu	2
91.	Central African Republic	1
92.	Djibouti	1
93.	Kiribati	1
94.	Lebanon	1
95.	Lesotho	1
96.	Madagascar	1
97.	Mexico – Senate	1
98.	Palau	1
99.	Tonga	1

Table 2: Selected examples of CPA Canada Branches

Sr. No.	CPA Canada Branches
1.	Alberta
2.	British Columbia
3.	Manitoba
4.	New Brunswick
5.	Newfoundland & Labrador
6.	North-West Territories
7.	Nova Scotia
8.	Nunavut
9.	Ontario
10.	Prince Edward
11.	Quebec
12.	Saskatchewan
13.	Yukon

Table 3: Selected examples of CPA Asia Branches

Sr. No.	CPA Asia Branches
1.	Baluchistan
2.	Punjab
3.	Sindh
4.	KPK
5.	Bangladesh
6.	Maldives
7.	Sri Lanka
8.	Malta
9.	Northern Ireland

Table 4: Selected examples from CPA Caribbean, American, Atlantic Branches

Sr. No.	CPA Caribbean, American, Atlantic Branches
	Anguilla
	Guyana
	Jamaica

Some of the worldwide initiatives with regards to Digital Maturity Index are shared below that help any legislature in knowing different options which may be strategize to move towards a paperless working of the Legislatures:

1. In 2016, The COVID-19 pandemic was a catalyst for IT modernization in various legislative assemblies across the world, including the Senate of Cambodia and the National Assembly of Madagascar.
2. ICT governance Councils/Groups have been established in Assemblies of Malawi, Mozambique, and Chad (17 Provincial Assembly of the Punjab Website, 2025) (All of above have been cited from 13)
3. India started a project called National E-vidhan or NeVa to make the two houses of Parliament and state legislature completely paperless in 2018 (Inter-Parliamentary Union, 2025). The digitization process of Indonesian Parliament was initiated in 2015 (Tripathi, 2018).
4. Sri Lankan Parliament moved towards digitalization due to resource limitations (Pekommas, 2024).
5. People's Majlis of Maldives has implemented a digital transition agenda including speech-to-text transformation and incorporation of sign language interpretation in their live broadcast (Tech, 2023).
6. In collaboration with WFD, entitled as 'M-Open Project in Myanmar' digital tools have been applied for upskilling of parliamentarians and citizen engagement (WFD, 2025).

International Environmental Agreements Signed by Pakistan

MEAs facilitate global efforts to address environmental issues and are complimentary to national and regional agreements. United Nations Environment Program (UNEP) and other UN agencies strengthen implementation of MEAs through sub-programs such as UNFCCC. A division within UNEP namely 'Division of Environmental Law and Convention (DELIC)', has classified MEAs under three broad themes: Biodiversity (endangered/migratory species conservation) and Land (sea, wetlands, combating desertification), Climate and Atmosphere (ozone layer), Chemicals and

Waste (pesticides, mercury, organic pollutants, and other hazardous wastes) related domains (EPA, 2022).

As mentioned earlier, Pakistan is a signatory of several Multilateral Environmental Agreements (MEAs). Based on the 18th Amendment (2010) in the Constitution, 'Environmental pollution and ecology was delved to the provinces making it the legislative domain of the Provincial Assemblies under section 26 (Brief on Environment Policy and Legal Framework, 2025). The implementation of MEAs is the responsibility of provincial EPA. Moreover, domestic regulations entitled Pakistan Environmental Protection Act (PEPA) should be implemented.

Results

The given plan is in-line with the 'National e-Parliament System' program (NITB, 2022). Presently, compliance to digitization regulations is at a small-scale in Punjab Assembly. E-Office is an application to help the Government departments to go paperless through electronic administration (MoITT, Gov. of Pakistan, 2025). The E-Office App/Software has been suggested because it can:

- i. Make data more accessible and resolve the problems of missing files/record wastage.
- ii. Protect critical and sensitive information of the organization.
- iii. Save time, budget, and other resources such as saving storage, printing, operational, and data recovery costs etc.
- iv. Automate certain tasks (MoITT, Gov. of Pakistan, 2025) save space, and enhance the productivity of the organization.
- v. Simplify interdepartmental communication and improve decision-making.
- vi. Help control the issues of paperwaste and environmental pollution.
- vii. Solve 'Un-addressed Questions' issue of members of assembly bringing equality in the House.
- viii. Fulfill requirements of the present-day making Punjab Assembly part of Global Village.
- ix. Be an ecofriendly solution to the environmental problems.

Recommendations

To control the environmental disruption and resource wastage concerns, the digital transformation of Punjab Assembly using E-office application/software has been recommended. The sustainability and progressiveness of the system should be found beforehand (by calculating if the time/resources spent on the digitization efforts will be covered by the future use of the given digitized systems) along with ensuring data/cybersecurity. Digitized systems should be implemented at selected parts of the Punjab Assembly, initially as a pilot/testing phase such as file movement relevant to Administration, Legislation, Research and Publications, and Security wings etc. Obviously, the various forms of paperless solutions include Pdfs, E-forms, Database, Emails, and Instant Messaging etc. Provision of hardcopies upon request to the people/members comfortable with hard forms should be accomplished. Relevant computer/IT trainings should be given to the staff/members of Assembly to avoid any problems during the use of digital systems. All the parliaments of Pakistan should make arrangements to include their names in the IPU e-Parliament list and strive to achieve high Digital Maturity Index values.

Conclusion and Way Forward

In a nutshell, digitization of Provincial Assembly of the Punjab has been recommended as a solution to resolve paper-wastage issue that in turn is a cause of a multitude of problems such as

environmental pollution, resource wastage, deviation from international accords etc. Examples at both international and local levels have been presented. Particularly, the last three examples have been stated to practically apply the notions of mutual learning, innovative legislation, and collaborative governance towards a sustainable future i.e., the foundations of the Lahore Charter passed in Commonwealth Parliamentary Association (CPA) Regional Conference held at Punjab Assembly in the year 2025.

***1. Environmental Conservation Treaties Signed by Pakistan**

1. Convention on Biological Diversity
2. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
3. Convention on Wetlands of International Importance Especially as Waterflow Habitat (Ramsar Convention)
4. Convention on the Conservation of Migratory Species
5. United Nations Convention to Combat Desertification (UNCCD)
6. United Nations Framework Convention on Climate Change (UNFCCC)
7. Kyoto Protocol to UNFCCC
8. Paris Agreement
9. Rotterdam Convention on prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade
10. Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal
11. Stockholm Convention on Persistent Organic pollutants (POPs)
12. Vienna Convention for the Protection of the Ozone Layer
13. 1987 Montreal Protocol on Substances that deplete the Ozone Layer
14. Minamata Convention on Mercury
15. United Nations Convention on the Law of the Sea (UNCLOS)
16. Nagoya Protocol under CBD

***2. Funds received by Pakistan to deal with Climate-related Risks**

Table 5: Funds received by Pakistan to deal with Climate Change

Fund	Amount (USD)
Acumen Climate Action Pakistan (ACAP)	80M
Technical Assistance Envelop	10M (Ministry of Climate Change & Environmental Coordination, 2025).
Green Climate Fund	9.8M (Green Climate Fund, 2024).
Sustainable Actions for Ecosystems Restoration in Pakistan (SAFER)	10M (World Food Program Website, 2024).
ADB: Climate and Disaster Resilience Enhancement Program (CDREP) (Loan)	500M (Relief Web, 2024).
Recharge Pakistan Project	77.8M (ADB Website, 2024).

As stated earlier, Punjab Assembly is included in the list of parliaments that have made their websites and online libraries/catalogues and upload their summary of proceedings, questions, resolutions, bills, and notifications etc. on these online platforms. Some of these have given the facility of broadcasting the live Assembly sessions.

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