Journal of Science Research International (JSRI)
ISSN: 2456-6365 (Online)

OPEN ACCESS

DATA-DRIVEN E-GOVERNANCE FOR SMART PUBLIC ADMINISTRATION

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Received: 25 December 2025	Revised: 19 January 2026	Accepted: 21 February 2026	Published: 28 February 2026

DOI: **https://doi.org/10.5281/zenodo.19047038**

Abstract:

The rapid advancement of digital technologies has transformed the way governments deliver services to citizens. E-governance plays an important role in improving transparency, efficiency, and accountability in public administration. In recent years, data-driven approaches have become essential for enabling smart governance by using large volumes of administrative and public data to support decision-making processes. This research paper explores the role of data-driven e-governance in improving the efficiency of public administration. The study examines how data analytics, digital platforms, and information systems can enhance government services and policy implementation. By analyzing existing e-governance frameworks and technological tools, the research highlights the benefits of using data-driven systems for public service delivery. The findings suggest that the integration of data analytics and digital governance platforms can significantly improve decision-making, reduce administrative delays, and enhance citizen engagement in governance processes.

Keywords: *E-Governance, Data Analytics, Smart Governance, Public Administration, Digital Government.*

1. Introduction

In the digital age, governments across the world are adopting technological solutions to improve public administration and service delivery. E-governance refers to the use of information and communication technologies (ICT) to provide government services, exchange information, and enhance the interaction between government institutions and citizens.

Traditional administrative systems often face challenges such as bureaucratic delays, lack of transparency, and inefficient resource management. The introduction of data-driven technologies has opened new opportunities for governments to make informed decisions and deliver services more efficiently. Data-driven e-governance focuses on collecting, analyzing, and utilizing large volumes of data to support administrative decision-making and policy formulation.

With the growth of digital platforms, governments can now gather real-time information from multiple sources such as public databases, online platforms, and citizen feedback systems. This information enables policymakers to identify problems quickly and implement effective solutions. Therefore, integrating data analytics with e-governance systems has become a key component of smart public administration.

2. Literature review

Several studies have explored the role of information technology in modern governance systems. Scholars have emphasized that digital governance can significantly improve transparency and accountability in public institutions.

Heeks (1) explained that e-governance initiatives help governments reduce administrative inefficiencies and improve public service delivery through digital systems. Similarly, Dawes (2) highlighted that data- driven decision-making enables governments to develop more effective policies by analyzing large datasets related to social and economic conditions.

Another study by Janssen and Kuk (3) discussed the importance of open data in government operations. The authors suggested that publicly accessible datasets promote transparency and encourage citizen participation in governance processes. Furthermore, Kassen (4) noted that the integration of big data technologies in government institutions allows administrators to identify trends, predict policy outcomes, and improve public service management.

These studies demonstrate that data-driven governance has the potential to transform traditional public administration systems into more responsive and efficient digital governance models.

3. Methodology

This research adopts a qualitative and analytical approach to examine the role of data-driven e-governance in public administration. The methodology focuses on analyzing existing frameworks, technologies, and case studies related to digital governance systems.

3.1 Data collection

Data for this research is collected from academic journals, government reports, and digital governance studies. These sources provide valuable insights into the implementation of e-governance initiatives and the role of data analytics in public administration.

3.2 Data analysis

The collected information is analyzed to understand how data-driven technologies contribute to decision- making processes within government institutions. The analysis focuses on identifying key components of data-driven governance systems such as digital platforms, open data policies, and analytics tools.

3.3 Framework development

Based on the analysis, a conceptual framework is proposed to explain how data analytics and information systems can support smart governance and improve administrative efficiency.

4. Results and Discussion

The findings of this research indicate that data-driven e-governance systems offer several advantages for modern public administration. One of the major benefits is improved decision-making through the use of real-time data analytics. Government agencies can analyze public data to identify patterns and trends that help in designing effective policies.

Another important advantage is increased transparency in administrative processes. Digital governance platforms allow citizens to access government information, monitor policy implementation, and provide feedback on public services. This transparency helps build trust between citizens and government institutions.

Data-driven systems also improve the efficiency of public service delivery by reducing manual administrative tasks and automating many government processes. For example, digital portals for tax filing, license applications, and welfare schemes simplify procedures and reduce processing time.

However, the implementation of data-driven governance also presents certain challenges such as data privacy concerns, cybersecurity risks, and the need for technical infrastructure. Governments must address these challenges by developing strong data protection policies and investing in digital infrastructure.

Figure 1: Demographics: The respondents are from various age groups.

The survey collected responses from 71 participants belonging to different age groups and genders. The results show that the majority of respondents (66.2%) are in the 18–25 age group, indicating that young individuals form the largest portion of the sample. The 26–35 age group represents 19.7%, while smaller percentages belong to older age groups. In terms of gender, 62% of respondents are male and 38% are female, showing participation from both genders.

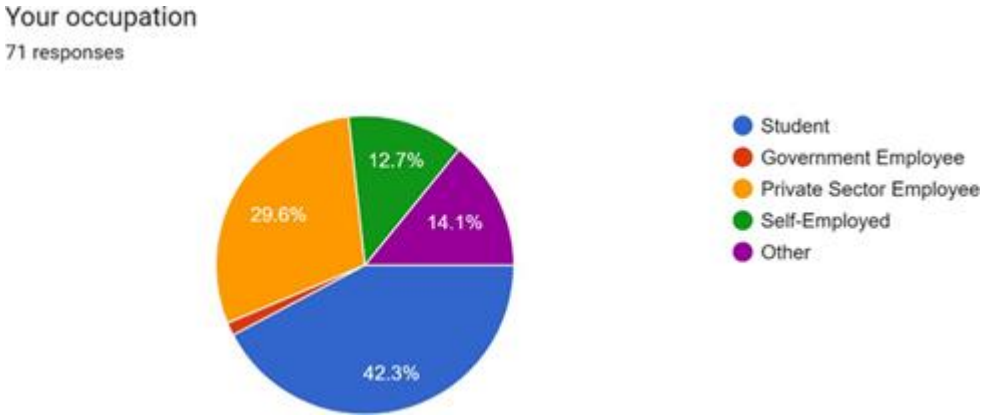

Figure 2: Work Status: The sample includes a mix of working professionals and a student

The occupation data shows a diverse group of participants. Students make up the largest group (42.3%), followed by private sector employees (29.6%). Additionally, 12.7% are self-employed, while 14.1% belong to other occupations, with only a small percentage working in government jobs. This mix provides insights from both students and working professionals.

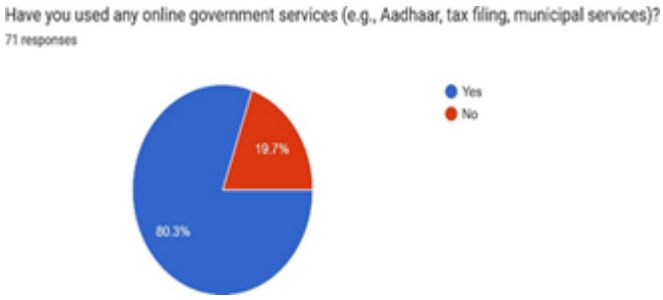

Figure 3: Use of E-Governance: A yes/no question to determine whether the respondent has used e-governance services

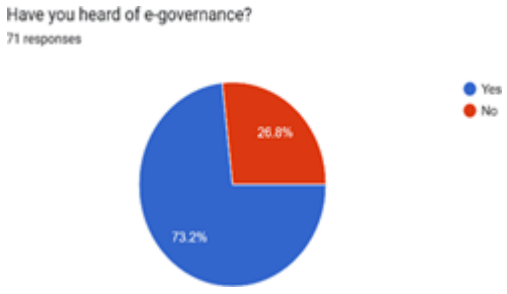

Figure 4: Satisfaction: A qualitative raw response field to capture what the respondent liked in their experience

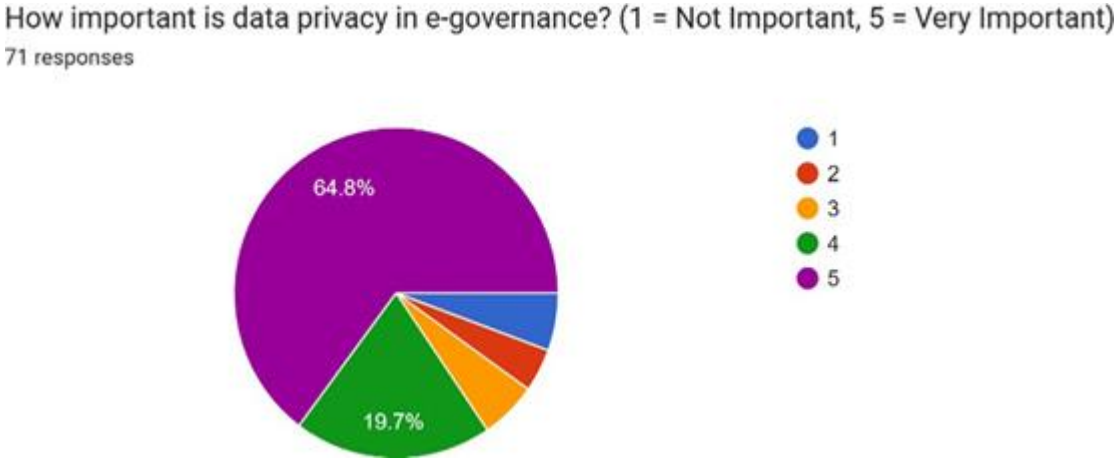

Figure 5: E-Payments Usage: A Likert scale question ranging from 1 to 5, to measure how often they use e-payments

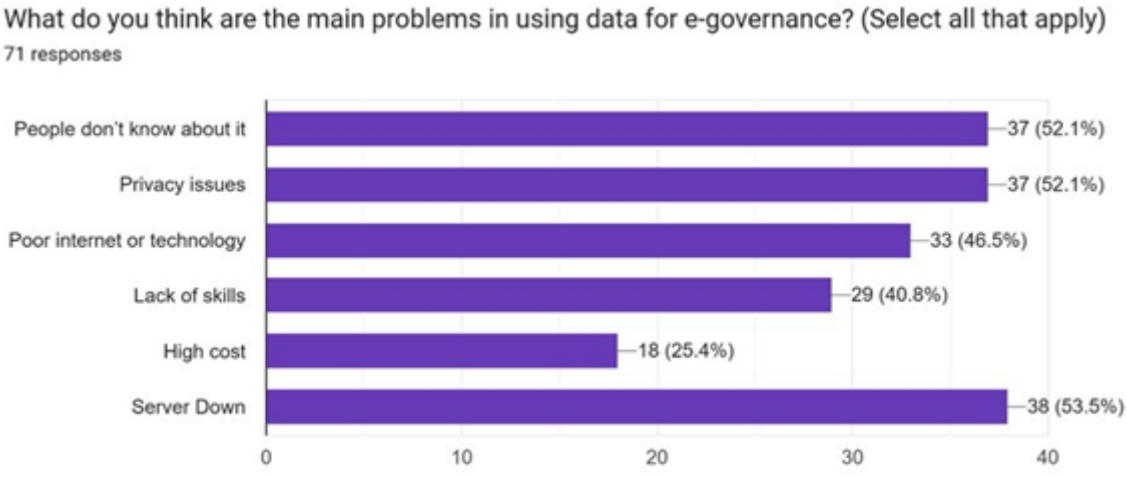

Figure 6: Problems in using data for e-governance

The diagram shows responses from 71 participants about the main problems in using data for e- governance. The most common issue is server downtime, reported by 53.5% of respondents, indicating that system reliability is a major challenge. Lack of awareness and privacy concerns were also significant problems, each selected by 52.1%

of respondents. Additionally, 46.5% reported poor internet or technology infrastructure, while 40.8% identified lack of digital skills as a barrier. High cost was the least reported issue, selected by 25.4% of participants.

Overall, the results suggest that technical infrastructure, digital literacy, and data security concerns are key challenges that need to be addressed for effective data-driven e-governance and smart public administration.

Conclusion

Data-driven e-governance represents a significant step toward achieving smart public administration. By integrating data analytics, digital platforms, and information systems, governments can improve the efficiency and transparency of administrative processes.

This research highlights that data-driven governance systems enable policymakers to make informed decisions based on real-time information and analytical insights. The adoption of digital governance frameworks can significantly enhance public service delivery, citizen engagement, and administrative accountability.

Future research may focus on developing advanced data analytics models and exploring the role of artificial intelligence in enhancing e-governance systems. With continuous technological advancements, data-driven governance will play a crucial role in building smarter and more responsive public administration systems.

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