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Influence of Technology on Public Administration: Opportunities and Challenges

Abdirizak Husein Nour[1*], Ezekiel Ingudia Malenge[1]
[1]Faculty of Humanities and Social Sciences. Red Sea University, Bosaso, Puntland, Somalia.
*Corresponding Author Email: abdirisakhusen2510@gmail.com

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ABSTRACT

This study examines the impact of technology on public administration, emphasising both its transformative opportunities and the challenges it presents. In the context of increasing digitisation, the research explores how innovations such as e-governance, automation, and data-driven decision-making influence efficiency, transparency, and service delivery within government institutions. The purpose of the study is to assess how technological tools contribute to administrative effectiveness and citizen engagement while identifying barriers that hinder their full implementation. A quantitative research design was employed, using an online questionnaire completed by 70 government employees from different departments, supplemented by secondary data from local and international reports, scholarly articles, and official websites on technology and governance. The findings reveal that technology significantly improves service delivery, operational efficiency, and public participation in governance. However, issues such as inadequate digital infrastructure, limited digital literacy among public officials, and cybersecurity risks constrain the effective use of these innovations. The study concludes that to fully harness the benefits of technology in public administration, governments must invest in robust digital infrastructure, provide continuous training for public servants, and implement policies promoting digital literacy and data protection. Addressing these challenges will strengthen institutional performance, enhance citizen trust, and ensure that public administration adapts effectively to the evolving demands of modern governance.

Keywords: Influence, Technology, Opportunities, Challenges, Public administration, Puntland-Somalia

INTRODUCTION

The rapid evolution of information technology highlights the imperative to construct digital government information platforms that will modernize national governance arrangements and make the conduct of governance more efficient. Such platforms are essential mechanisms for improving administrative efficacy, promoting increased transparency, stimulating citizen participation, and supporting data-driven decision-making. By infusing advanced digital technologies into governance arrangements, governments become more responsive to public demands, optimize the allocation of resources, and construct more resilient and accountable institutions (Febriyanti et al., 2023a).

According to Johnston, J. (2015), public administration is defined as the formal structures and systems that public organizations use to serve governments and act in the public interest. The modern public administration model was developed between the mid-1800s and early 1900s. Notable contributions include Max Weber's theory of bureaucracy with its emphasis on hierarchy, formalism, and expert competence; Northcote and Trevelyan's contributions regarding the establishment of a professional British civil service; and Woodrow Wilson's demand in the United States for the separation of policy-making from administration.

People's expectations of the delivery of public administration services in digital form are being radically altered, largely as a result of the success of digital transformation in the private sector and other non-governmental realms. In reaction to these increasingly high expectations, public institutions are adopting radical reconfigurations of their operating models, including new approaches that orient towards enhancing the efficiency, effectiveness, and responsiveness of service delivery. These

modifications are not only to promote greater operational efficiency and cost-effectiveness but also to spur more comprehensive governance objectives like greater system interoperability, greater administrative openness, and higher citizen engagement and satisfaction. The creation of these models is an extension of a broader paradigm shift to people-centred governance, where digital innovation is an indispensable catalyst for the production of public value (Ines Mergel 2019).

Use of information technology has been forecasted to greatly impact the provision of public services, making them effective, efficient, and more accessible to citizens. Government agencies will, through the use of digital technologies and platforms, be able to streamline operations, shorten intervals between the delivery of services, lower operating costs, and increase responsiveness to changing citizens' demands. The change is necessary for increasing public satisfaction, establishing public trust in governmental institutions, and enabling inclusive and sustainable development. (Hafiez Sofyani, 2020).

The uniqueness of this study lies in its empirical examination of how technological innovation interacts with governance processes in developing contexts—an area that has received limited attention in previous research.

However, despite its promise, the use of technology in public administration faces critical challenges, including limited awareness, weak regulatory frameworks, and cybersecurity and privacy concerns. These challenges are especially acute in resource-constrained developing countries, where institutional and infrastructural capacities are limited. This gap underscores the need for empirical studies that assess how technology influences administrative efficiency, transparency, and service delivery, while identifying the main obstacles that impede its adoption. Accordingly, the present study aims to analyse the opportunities that technology offers for improving public administration performance, identify the challenges that constrain its adoption, and propose strategies to enhance its effective utilisation in governance.

This study is guided by the research question: How does technology influence public administration in terms of improving efficiency, transparency, and service delivery, and what challenges hinder its effective implementation?

To address this question, a quantitative research design was employed. Data was collected through an online questionnaire distributed to 70 government employees across various departments, complemented by secondary data from reports, academic articles, and official government sources. This methodological approach provides both empirical and contextual insights into how technology affects public administration performance. The rationale of the study is to examine and quantify the extent to which technological adoption improves efficiency, transparency, and service delivery within public institutions. Understanding this relationship is essential for policymakers and administrators seeking to enhance technology use for better governance outcomes. By identifying measurable patterns, the study contributes to evidence-based decision-making and provides a foundation for developing strategies that enhance public sector performance through digital transformation.

Guided by findings that quantitative methods are effective for systematically measuring attitudes and readiness toward technology adoption (Borissov & Hristozov Yanko, 2024), this study employed a quantitative design to evaluate the readiness of employees within the Puntland government administration to adopt technology in their professional duties. The sample comprised 70 public-sector employees across five ministries. Data were collected via an electronic questionnaire (Google Forms) consisting of seven structured questions with four response options, complemented by demographic items (sex, educational background, and work experience). Using a Likert scale, readiness levels were mapped into four categories—Poor, Satisfactory, Good, and Very Good—enabling a systematic assessment of technological readiness and acceptance (Borissov & Hristozov Yanko, 2024).

The questionnaire items assessed: (1) awareness of and beliefs about the benefits of technology for administrative work; (2) adequacy of digital infrastructure (software/hardware and connectivity); (3) employees' adaptability to using technology; (4) sufficiency of funding for digitization and staff training to use modern software tools; (5) the need for special regulations to ensure ethics, data privacy, and security; (6) three priority areas for technology use—data management and reporting, transparency and accountability, resource allocation and planning, public service delivery, human resource management, risk management, automation of routine tasks, decision support and work process optimization, and public relations and outreach; and (7) three principal risks of technology use—data privacy and security, job displacement due to automation, dependence on technology, ethical concerns and bias, lack of digital

literacy, and implementation and maintenance costs.

Literature Review

According to Junaidi (2023), Public administration is a discipline and profession that deals with the administration, organisation, implementation, and coordination of government initiatives, programs, and policies. It involves planning, execution, and oversight of public policies and actions trying to meet society's needs and serve the public interest. Public administration is tasked with the provision of essential public services, whereas platform government aims to improve the efficiency of these services by leveraging increased efficiency, efficacy, security, and accountability (Xu & Tang, 2020). Platform government employs digital platforms and emerging technologies to optimise governmental processes, minimise bureaucratic lag, and promote civic participation. Platform government also improves transparency, supports data-driven decision-making, and facilitates collaboration between the public and private sectors, ultimately optimising service responsiveness to citizens' needs and accessibility.

The evolution of public administration has progressed from classical, rule-bound bureaucratic forms to more flexible, collaborative, and networked governance models. This is motivated by the increasing complexity of public policy issues and increasing demands for efficiency, transparency, and active citizen engagement. At the heart of this transformation is the incorporation of digital technologies, such as e-governance, big data, and artificial intelligence, which have improved decision-making, the delivery of services, and interaction among different stakeholders. As a result, the modern model of governance prioritises responsiveness, inclusiveness, and sustainability, thereby rendering public administration a dynamic and future-oriented discipline capable of tackling the complexity of present-day society. (Sanyasorn Swasthaisong, 2025).

According to Radin 2020), public administration is the management, oversight, and enforcement of governmental policies, rules, and directives. Public administration entails planning, organising, and coordinating public programs to facilitate efficient governance. Public administration is also central in the provision of services, ensuring public order, and enhancing transparency and accountability in governmental operations.

(Criado, J. I., Sandoval-Almazán, R., & Gil-Garcia, J. R., 2024). Argued that during the last few years, AI technologies have been increasingly adopted and implemented at a fast pace by public administrations all over the world. The increasing awareness of the opportunities for AI improvement of the performance of public services provision, the efficiency of administrative operations, and decision-making would seem to be the origin of this trend. Application domains of AI technologies are manifold: predictive analytics to optimise resource allocation, chatbots for improving interactions with citizens, and machine learning algorithms to detect fraud or ensure public health.

The integration of electronic services has given a new twist to the efficacy of public administration and democratized service access. As Sydorenko (2021) describes the impact of electronic services on citizens, it is considered to indicate a sea change in the perspective of public administration to democratizing service access, increasing transparency, and ensuring greater citizen participation in government decision-making processes. In addition to the ease of administration, the innovations have managed to glue the relationship between citizens and institutions.

Public administration operates in an external environment that shifts constantly, shaped by endless policy reforms, socio-economic developments, and the rhythms of elections. Such an environment is complex and uncertain, emphasising public value deliberations and stakeholder interactions. To face these challenges, public managers conceptualise and operationalise appropriate internal knowledge frameworks. These frameworks not only facilitate the balancing of competing demands but also drive innovation, encourage organisational flexibility, and counter resistance to change, ensuring that governance remains responsive and impactful (Ashok, Al Dhaheri, Madan, & Dzandu, 2021).

Efficiency and quality in public service delivery depend on whether local authorities adapt their administrative structures and processes to fast changes in conditions and the ever-increasing demands of citizens. Successive crises such as the global financial crisis, austerity measures, and the refugee crisis continuously affect local governments in Europe, these situations drive technological innovation and good delivery of public services. Besides, digital technologies have equipped local authorities with the development of more accessible and efficient online portals for the provision of services, automation of

routines, and making more data-informed decisions.

For instance, e-governance tools helped provide distance-based access to services to the citizens, while AI and data analytics helped smooth operations and predict community needs. At the same time, technological changes have cushioned the impact of crises (S. Kuhlmann & M Heuberger, 2023).

E-Government is increasingly used to ensure transparency in administrative systems and to connect communities through digital interaction (Androniceanu, 2021). It supports public administration by carrying out procedures, reducing red tape, and promoting accountability. Digital platforms allow for citizen participation, real-time feedback, and a feeling of trust in the government. Integrated services facilitate interdepartmental collaboration that results in efficient and citizen-centred solutions.

According to (Mærøe, Norta, Tsap, & Pappel, 2020), since the rise of the Internet in the 1990s, many governments have had strategies for transforming traditional public administrations into modern, cost-effective digital services. It has also been about how public services can be accessed more easily, sped up, and at lower operational costs while improving the standards of services to the citizens. Adopting e-portals, digital identity systems, and complete workflow automation have enabled governments to offer faster, more convenient services. Moreover, all this brings greater transparency, accountability, and increased participatory rights of the citizens, a far cry from the concept of public administration.

Governments worldwide are increasingly using digital technologies and data to change their core functions, structures, operations, processes, activities, and ways of interaction with stakeholders, citizens, businesses, other government bodies, and civil society (Miriam, 2019).

The innovative and disruptive potential for AI in the public sector are threefold: (1) streamlining operational efficiency across the bureaucracy, (2) making important decisions better across public administrations, and (3) bringing citizens closer to government, especially by enhancing citizen-focused services and more participation on the part of citizens in public sector activities (Samoili et al., 2020).

According to Damar (2024), Public administration provides an instrumental foundation necessary to develop plans to improve human conditions in this better future.

However, this use of developments in technology enhances management resources, further supports decision-making, and delivers increased service levels that may be beneficial to public recipients to address emergent challenges better Public service delivery, therefore, is defined as the managed process of dispensing core government services to all citizens through the organization, workforce, and socio-political influence (Osborne et al., 2021).

Compared to the private sector, the use of AI by the public sector has been more gradual over recent decades. Many factors contribute to this slowness, amongst them the operational difficulty inherent in the public sector and slower decision-making, not forgetting ethical and legal considerations. Most public organisations are either budget-constrained or have limited technological infrastructure, or have to face greater scrutiny; therefore, it's hard for them to move quickly.

In addition, public sector agencies usually aim for stability and public trust, which makes the pace of adoption of innovative technologies like AI even slower (Kevin C. Desouza, 2020).

The evolution of digital technologies such as artificial intelligence (AI), big data analytics, and blockchain is transforming government operations in an essential manner through increased efficiency, transparency, and citizen engagement (Yigitcanlar, T., Desouza, K. C., Butler, L., & Roozkhosh, F., 2020). This transformation is also linked with the evolution of smart cities that integrate technology, civic engagement, and policy initiatives to enhance urban governance and public service delivery. By utilising these technologies, governments can optimise the use of resources, make better decisions, and create more sustainable and resilient cities that address evolving populations' needs.

RESULT AND DISCUSSION

Result

Table 1. Sex of the Respondents

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Male	45	64.3	64.3	64.3
	Female	25	35.7	35.7	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author compilation 2025

The above (Table 1) indicates a higher proportion of male respondents, with 64.3% identifying as male, compared to 35.7% identifying as female. This suggests a gender disparity in the sample, with men representing nearly two-thirds of the respondents. The distribution reflects a skew toward male participation in the survey, which may be indicative of the demographic composition of the organisation, in which the respondents were drawn. However, the presence of female respondents still constitutes a notable portion, allowing for a diverse range of perspectives to be represented.

Table 2. Educational Background of the Respondents

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Diploma	10	14.3	14.3	14.3
	Degree	23	32.9	32.9	47.1
	Masters	22	31.4	31.4	78.6
	PhD	4	5.7	5.7	84.3
	Others	11	15.7	15.7	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author compilation 2025

The above (Table 2) shows a diverse educational background among the respondents. The largest group, 32.9%, holds a degree, followed closely by 31.4% with a master's degree. A smaller group, 14.3%, has a diploma, and 5.7% have a PhD. Additionally, 15.7% listed "other" as their educational qualification, which likely encompasses a variety of certifications or non-traditional education paths. This distribution indicates that the respondents represent a broad spectrum of education levels, from diploma holders to those with advanced degrees, reflecting a range of expertise and perspectives in the survey sample.

Table 3. Work Experience of the Respondents

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	13	18.6	18.6	18.6
	1 year – 2 years	14	20.0	20.0	38.6
	2 years – 4 years	23	32.9	32.9	71.4
	Above 4 years	20	28.6	28.6	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author compilation 2025

The above (Table 3) outlines the work experience of the respondents, with the majority having a moderate level of experience. A significant section, 32.9%, has between 2 and 4 years of experience, followed by 28.6% with more than 4 years of experience. Those with 1 to 2 years of experience make up 20%, while 18.6% have less than 1 year of experience. This distribution suggests a well-rounded group, with a mix of early-career professionals and those with more established backgrounds, likely providing a diverse range of perspectives.

Table 4. Are you aware of the use of technology, and do you believe it could benefit your administration's work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Yes, absolutely! Technology, including computers, AI and automation, can significantly enhance administrative efficiency by streamlining processes, improving communication, and reducing manual workload.	45	64.3	64.3	64.3
	B. Yes. Technology is beneficial in many areas, such as data management and decision-making, but challenges like training, cybersecurity, and costs must be considered.	17	24.3	24.3	88.6
	C. Not really. Traditional administrative methods have worked well so far, and while technology is useful, I don't see an urgent need for significant changes.	6	8.6	8.6	97.1
	D. No, I don't think so. Implementing new technology could create more complications, such as technical issues, costs, and adaptation challenges, making it less beneficial than expected.	2	2.9	2.9	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author Compilation 2025

The above (Table 4) presents survey responses regarding the use of technology in administration. The majority, 64.3%, firmly believe that technology, including AI and automation, can significantly improve administrative efficiency by streamlining processes and reducing manual workloads.

A smaller group, 24.3%, acknowledges technology's potential benefits, particularly in areas like data management and decision-making, though they emphasise the need to consider challenges like training and cybersecurity.

Only 8.6% feel that traditional administrative methods are sufficient, showing little urgency for technological change, while 2.9% are outright opposed, citing potential complications such as costs and technical issues. Overall, the data suggests a strong inclination towards embracing technology, with some caution regarding its implementation and the challenges it may bring.

Table 5. Is your administration equipped with the necessary digital infrastructure to incorporate technology in your administration?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Yes, fully equipped. Our administration has the necessary digital infrastructure, including software, hardware, and internet connectivity, to integrate technology effectively.	5	7.1	7.1	7.1
	B. Yes, but with some limitations. In our work, we use computers and peripheral devices necessary for employees' tasks, but external access is limited. This restricts the full integration of digital solutions.	35	50.0	50.0	57.1
	C. Not really. We lack essential digital tools and infrastructure, making it difficult to incorporate technology effectively.	14	20.0	20.0	77.1
	D. No, not at all. Our administration does not have the necessary digital infrastructure, and significant investments would be required to implement technology.	16	22.9	22.9	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author Compilation 2025

The above (Table 5) reveals that most respondents believe their administration lacks adequate digital infrastructure to incorporate technology. While 7.1% feel their administration is fully equipped with all the necessary tools, the majority, 50%, report having only some limitations, with basic equipment like computers and peripheral devices in place, but limited external access, hindering full digital integration. Additionally, 20% acknowledge a significant lack of essential digital tools, while 22.9% state

their administration is entirely unprepared, needing considerable investment to implement technology. These responses suggest that many administrations are struggling to meet the digital infrastructure demands for effective technology integration.

Table 6. Do you believe the employees in your administration would adapt well to using technology?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Yes! Our employees are skilled and open to learning new technologies, making adaptation easy and efficient.	11	15.7	15.7	15.7
	B. Yes, but some training is needed. While most employees are comfortable with technology, some may require training to use new tools effectively.	19	27.1	27.1	42.9
	C. Not really. Many employees are unfamiliar with advanced digital tools, and adaptation would require significant effort and training.	22	31.4	31.4	74.3
	D. No, I don't think so. Most employees rely on traditional methods, and transitioning to technology would be challenging without major changes in mindset and skills.	18	25.7	25.7	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author compilation 2025

Table 6 shows that opinions on employees' ability to adapt to technology vary widely within the administration. While 15.7% believe that employees would easily adapt due to their skills and openness to learning, a larger section (27.1%) acknowledges that training would be necessary to ensure the effective use of new tools. However, 31.4% of respondents suggest that many employees are not familiar with advanced digital tools, indicating that significant effort and training would be required for successful adaptation. Additionally, 25.7% believe that most employees rely heavily on traditional methods, making the transition to technology a difficult challenge without significant shifts in mindset and skill development. Overall, the data highlights a mix of optimism and concern regarding the readiness of employees to embrace technological change.

Table 7. Does your administration allocate sufficient funds for digitisation and staff training to effectively use modern software tools?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Our administration allocates adequate funds for both digitisation and staff training, ensuring the effective use of modern software tools.	3	4.3	4.3	4.3
	B. We allocate funds for digitisation and training, but there are budget constraints that limit the scope and frequency of training programs.	12	17.1	17.1	21.4
	C. Some funds are allocated for digitisation and staff training, but they are insufficient to cover all the necessary tools and training needs.	32	45.7	45.7	67.1
	D. Our administration does not allocate sufficient funds for digitisation or staff training, making it hard to implement and use modern software tools effectively.	23	32.9	32.9	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author compilation 2025

The above (Table 7) indicates that most administrations do not allocate sufficient funds for digitisation and staff training to effectively implement modern software tools. Only 4.3% of respondents believe that their administration provides adequate funding for both areas. A section, 17.1%, acknowledges that while funds are allocated for digitisation and training, budget constraints limit the scope and frequency of training programs. However, 45.7% report that some funds are set aside, but they fall short of covering all the necessary tools and training requirements. Furthermore, 32.9% state that their administration does not allocate enough funds for either digitisation or training, which significantly hinders the effective use of modern software tools. Overall, these findings highlight the financial challenges many administrations face when attempting to support digital transformation and employee development.

Table 8. Do you think special regulations are needed for the use of technology in public sector organisations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Special regulations are essential to ensure ethical use, data privacy, and security when adopting technology in public sector organisations.	20	28.6	28.6	28.6
	B. Some regulations are necessary, especially around data protection and transparency, but the extent may vary based on the technology used.	15	21.4	21.4	50.0
	C. Not really. Existing laws and policies can be adapted to cover technology usage, so there is no immediate need for special regulations.	17	24.3	24.3	74.3
	D. No, I don't think so. Technology can be integrated into public sector organisations without the need for separate regulations, as long as general governance frameworks are followed.	18	25.7	25.7	100.0
	Total	**70**	**100.0**	**100.0**	

Source: Author Compilation 2025

Table 8 reveals a range of opinions on whether special regulations are needed for the use of technology in public sector organisations. A key section, 28.6%, believes that special regulations are essential to ensure ethical use, data privacy, and security when adopting new technologies. Meanwhile, 21.4% argue that some regulations, particularly related to data protection and transparency, are necessary, though the extent of these regulations should depend on the specific technology.

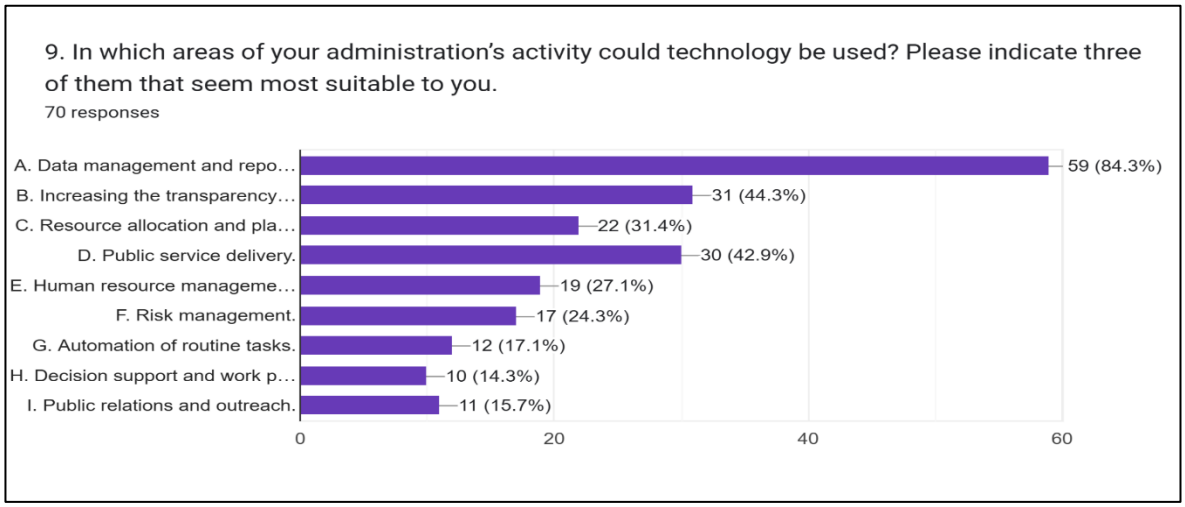

Chart 1. Top Areas for Technological Improvement

Source: Author compilation 2025

On the other hand, 24.3% think existing laws and policies can be adapted to cover technology usage, suggesting no immediate need for new regulations. Lastly, 25.7% believe technology can be integrated into public organisations without special regulations, as long as general governance frameworks are in place. This data highlights a balance between caution and confidence in adapting existing frameworks to the growing technological landscape in public sector organisations.

The above (chart 1) indicates that data management and reporting is the most popular area for technological improvement, with 59 responses (84.3%), indicating a strong need for proper data management.

Increasing transparency (31 responses, 44.3%) and public service delivery (30 responses, 42.9%) came next, indicating the importance of technology in improving openness and efficiency of services. Resource allocation and planning (22 responses, 31.4%) was another important area selected for optimisation.

Conversely, human resource management (27.1%) and risk management (24.3%) received moderate attention. Less prominent areas were automation of routine tasks (17.1%), decision support and work processes (14.3%), and public relations and outreach (15.7%), reflecting a lesser felt need for technological innovation in these sectors.

Overall, the findings indicate that the administration must prioritise digital transformation efforts in data management, transparency, and public service delivery to make it more effective and efficient.

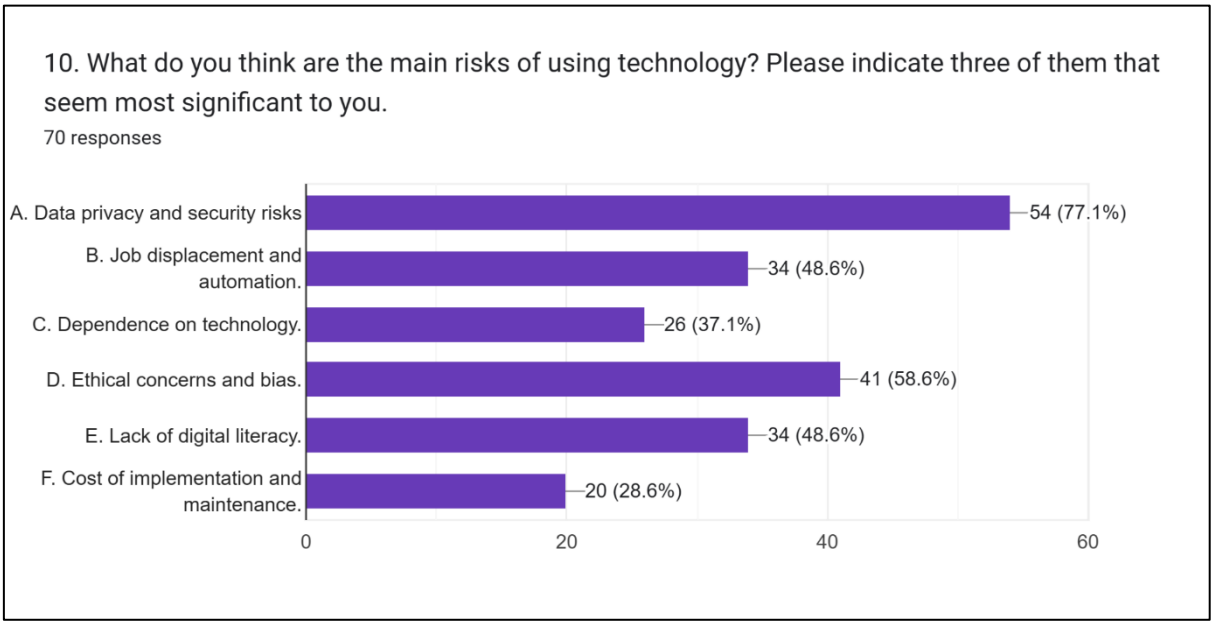

Chart 2. Perceived Risks of Technology Use

Source: Author compilation 2025

The above (Bar chart 2) reveals that data privacy and security risks were the most applicable risks of technology usage, with 54 references (77.1%), since there was a shared concern for protecting sensitive information.

Ethical concerns and bias followed, where 41 respondents (58.6%) were concerned about unfair or biased decision-making in electronic systems. Job displacement caused by automation and lack of digital literacy was chosen by 34 (48.6%), reflecting problems of workforce disruption and the ability to adapt to change. Over-reliance on technology 26, 37.1%) was also cited as a problem, reflecting vulnerability to over-reliance on digital technology.

The cost of implementation and maintenance was the least picked risk, with 20 (28.6%) responses, indicating that cost factors, although present, were not as significant compared to other factors. Overall, the findings are that privacy, ethics, and employee concerns should have been top among the considerations for technology adoption.

DISCUSSION

Adoption of Technology in Public Administration

Recent surveys indicate a growing interest in adopting digital technologies in public administration, driven by their potential to enhance decision-making, efficiency, and transparency. Expanding government online platforms is expected to facilitate intelligent decision-support systems and promote data-driven decision-making (Febriyanti et al., 2023b). The integration of frontier technologies—such as Artificial Intelligence (AI), Big Data analytics, and cloud computing—has been shown to streamline policy formulation and optimise resource allocation.

This aligns with Technological Determinism Theory (Smith & Marx, 1994), which postulates that technological advancement drives social and organisational change. Public institutions are increasingly shaped by digital transformation trends that influence administrative practices, governance models, and service delivery mechanisms.

Infrastructure Limitations and Implementation Challenges

Despite the enthusiasm for technology adoption, many administrations report inadequate digital infrastructure. Respondents note that poor connectivity, outdated hardware, and insufficient software licenses hinder full-scale digital integration. (Kimani, 2017), who reported that Kenyan county governments face infrastructural deficits, limited staff training, and low management commitment to technology integration, observed similar challenges.

Resource-Based View (RBV) provides a theoretical lens for understanding this issue (Barney, 1991). According to RBV, organisational success depends on the availability and effective use of critical resources—such as ICT infrastructure and skilled personnel. Inadequate resources limit administrative capacity to exploit technological opportunities effectively.

Moreover, decentralisation efforts, as seen in Ghana, have promoted local infrastructure development and improved governance outcomes, though persistent structural challenges remain (Yao, 2024). This reflects the Institutional Theory perspective, emphasising that organisational structures and practices are influenced by institutional limitations and socio-political contexts.

Employee Readiness and Organisational Culture

The findings reveal mixed insights about employee readiness to adopt digital tools. While some administrations express optimism, others remain doubtful about staff adaptability. Successful digital transformation (DT) centres on employee willingness, leadership commitment, and continuous capacity building (Bader K. AlNuaimi, 2022).

According to Lewin's Change Management Model (Lewin, 2013), transformation requires unfreezing existing attitudes, implementing change, and refreezing new behaviours. Regular training, open communication, and leadership support help employees adapt to technological shifts. (Neeley and Leonardi 2022) Emphasise cultivating a culture of engagement through feedback and digital literacy programs to ensure smooth transitions and sustained innovation.

Financial Constraints and Sustainable Funding

Another key barrier to effective digital integration is financial constraints. Many public institutions lack sufficient funds for ICT investments and staff training. Budget constraints often lead to outdated systems, service disruptions, and reduced efficiency. Sustainable financing models are crucial for long-term digital success (Gabriel Inakefe Inakefe, 2024).

This challenge can be understood through Public Value Theory (Moore, 2013), which opines that public managers must allocate resources efficiently to create social value. Without consistent financial investment, digital transformation efforts cannot produce sustainable administrative improvements.

Regulatory Frameworks, Accountability, and Transparency

The study reveals differing opinions on whether specific regulatory frameworks are needed to guide technology use in public organisations. (Levy, 2021) highlights that while administrative regulations ensure transparency and accountability, procurement processes often remain opaque, leading to inefficiency and reduced public trust.

Regulatory Technology (RegTech)—which applies AI, blockchain, and data analytics—can enhance compliance, accuracy, and real-time monitoring (Laura Grassi, 2022). RegTech aligns with New Public Management (NPM) theory, which advocates for efficiency, transparency, and innovation in public sector management. Strengthening regulatory systems through technology thus enhances accountability and reduces corruption risks.

Data Management, Automation, and Service Delivery

Digital transformation in data management can significantly improve transparency, performance monitoring, and service delivery. Automation reduces reliance on manual processes, while analytics enhance decision-making and resource allocation (Sitti Hairani Idrus, 2024).

This reflects the Sociotechnical Systems Theory (Trist & Emery, 1951), which emphasises the interdependence between technology and human factors in organisational design. Integrating both aspects promotes effective, adaptive, and high-performing public institutions.

Privacy, Ethics, and Cybersecurity Concerns

Despite the advantages of technology use, privacy and data protection remain critical concerns. The findings reveal apprehension about data misuse, ethical risks, and employee fears regarding surveillance or manipulation. (Quach, 2022) underscores that while digital innovation can enhance economic value, it must be managed responsibly to safeguard personal information and maintain public trust.

The Technology Acceptance Model (TAM) (Davis, 1989) suggests that perceived usefulness and trust influence technology adoption. Without adequate safeguards, employees and citizens may resist technological initiatives, thereby undermining digital transformation efforts.

CONCLUSION

The study reveals that the incorporation of technology in public administration significantly enhances efficiency, transparency, and accessibility in government operations, thus directly addressing the research question on how digital transformation influences administrative performance. Findings reveal that technologies such as Artificial Intelligence (AI), blockchain, cloud computing, and big data analytics have improved service delivery, decision-making, and citizen engagement by automating repetitive tasks, reducing costs, and nurturing evidence-based policies.

Through platforms like e-citizen systems, governments have simplified service access, encouraged inclusivity, and increased public participation in governance. These results collectively illustrate that technological advancement is a powerful driver of administrative modernisation and improved governance outcomes.

Still, the study also identifies challenges that limit these benefits, including digital inequality, inadequate infrastructure, cybersecurity threats, and the risk of overreliance on automation. These findings suggest that while technology answers the demand for more efficient and transparent governance, it concurrently exposes gaps in access, capacity, and regulation that must be addressed to achieve equitable transformation. Future research should explore frameworks for inclusive digital governance and strategies to bridge the technological divide, whereas policymakers should prioritise sustainable ICT investment, digital literacy programs, and data protection laws to ensure technology assists all citizens fairly.

RECOMMENDATIONS

1. Puntland must invest in digital infrastructure and establish viable ICT financing models to enhance public service delivery. Expanding internet coverage, updating outdated systems, and introducing cloud-based systems will increase administrative efficiency. Budgetary allocations based on strategic priorities and public-private partnerships can ensure long-term financial sustainability.
2. Developing digital competency through frequent training sessions is required for effective use of technology. Capacity-building programs should encompass AI, big data, and cybersecurity. Strong leadership support should be extended to build an innovative and agile culture. A skilled workforce will ensure smooth digital transformation and enhance the quality of

services.

3. Strengthening regulatory frameworks and cybersecurity is crucial in promoting responsible use of technology. Puntland should adopt clear policies regarding AI ethics, data privacy, and cybersecurity. Regulatory Technology (RegTech) can improve governance compliance, transparency, and accountability, mitigating corruption risks and increasing trust among citizens.
4. Finally, data-driven decision-making and additional e-government services will improve governance. Big data analytics and smart decision-support systems can optimise the way resources are allocated and simplify administrative processes. Digital platforms must be scaled up to allow citizens to engage more, ensure transparency, and improve service delivery

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BIBLIOGRAPHY

AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research, 145*, 636–648. https://doi.org/10.1016/j.jbusres.2022.03.038

Androniceanu, A. (2021). Transparency in public administration is a challenge for good democratic governance. *Revista Administratie si Management Public (RAMP), 36*, 149–164. https://www.ceeol.com/search/article-detail?id=964121

Ashok, M., Al Badi Al Dhaheri, M. S. M., Madan, R., & Dzandu, M. D. (2021). How to counter organisational inertia to enable knowledge management practices adoption in public sector organisations. *Journal of Knowledge Management, 25*(9), 2245–2273. https://doi.org/10.1108/JKM-09-2020-0700

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Borissov, B., & Hristozov, Y. (2024). Potential for using artificial intelligence in public administration. *Innovative and Economic Research Journal, 12*, 409–423. https://doi.org/10.2478/eoik-2024-0034

Criado, J. I., Sandoval-Almazán, R., & Gil-Garcia, J. R. (2024). Artificial intelligence and public administration: Understanding actors, governance, and policy from micro, meso, and macro perspectives. *Public Policy and Administration.* https://doi.org/10.1177/09520767241272921

Damar, M., Özen, A., Çakmak, Ü. E., Özoğuz, E., & Erenay, F. S. (2024). Super AI, generative AI, narrow AI and chatbots: An assessment of artificial intelligence technologies for the public sector and public administration. *Journal of AI, 8*(1), 83–106. https://doi.org/10.61969/jai.1512906

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Desouza, K. C., Dawson, G. S., & Chenok, D. (2020). Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector. *Business Horizons, 63*(2), 205–213. https://doi.org/10.1016/j.bushor.2019.11.004

Febriyanti, D., Widianingsih, I., Sumaryana, A., & Buchari, R. A. (2023). Information communication technology (ICT) on Palembang city government, Indonesia: Performance measurement for great digital governance. *Cogent Social Sciences, 9*(2), 2269710. https://doi.org/10.1080/23311886.2023.2269710

Grassi, L., & Lanfranchi, D. (2022). RegTech in public and private sectors: The nexus between data, technology and regulation. *Journal of Industrial and Business Economics, 49*(3), 441–479. https://doi.org/10.1007/s40812-022-00226-0

Inakefe, G. I., Bassey, V. U., & Amadi, J. O. (2024). Evaluation of the policy and institutional implications of digital tools in e-governance reforms implementation for service delivery in Cross River State Civil Service, Nigeria. *SAGE Open, 14*(4), 21582440241297047. https://doi.org/10.1177/21582440241297047

Johnston, J. (2015). Public administration: Organisational aspects. In the *Encyclopedia of Public Administration and Public Policy*. https://doi.org/10.1016/B978-0-08-097086-8.73057-1

Junaidi, A., Sabtohadi, J., Wibowo, A. M., Wibowo, S. S., Asgar, A., Pramono, E. P., & Yenti, E. (2024). The role of public administration and social media educational socialisation in influencing public satisfaction on population services: The mediating role of population literacy awareness. *International Journal of Data & Network Science, 8*(1). http://dx.doi.org/10.5267/j.ijdns.2023.9.019

Kimani, J. G. (2017). Challenges facing the integration and use of ICT in the management of county governments in Kenya. *Journal of Information and Technology, 1*(1), 1–11. https://www.stratfordjournals.com/journals/index.php/Journal-of-Information-and-Techn/article/view/5

Kuhlmann, S., & Heuberger, M. (2023). Digital transformation going local: Implementation, impacts and constraints from a German perspective. *Public Money & Management, 43*(2), 147–155. https://doi.org/10.1080/09540962.2021.1939584

Levy, K., Chasalow, K. E., & Riley, S. (2021). Algorithms and decision-making in the public sector. *Annual Review of Law and Social Science, 17*(1), 309–334. https://doi.org/10.1146/annurev-lawsocsci-041221-023808

Lewin, K. (2013). *Field theory in social science: Selected theoretical papers* (reprint edition). Isha Books. https://openlibrary.org/books/OL9488829M/Field_theory_in_social_science

Moore, M. H. (2013). *Creating public value: Strategic management in government.* Harvard University Press. https://www.hup.harvard.edu/books/9780674175587

Mærøe, A. R., Norta, A., Tsap, V., & Pappel, I. (2020). ncreasing citizen participation in e-participatory budgeting processes. *Journal of Information Technology & Politics*, 25. https://doi.org/10.1080/19331681.2020.1821421

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly, 36*(4), 101385. https://doi.org/10.1016/j.giq.2019.06.002

Miriam, L. (2019). Digital Government: Managing Public Sector Reform in the Digital Era. London: Taylor & Francis. https://doi.org/10.4324/9781315622408

Neeley, T., & Leonardi, P. (2022). Developing a digital mindset. *Harvard Business Review, 100*(5–6), 50–55. https://hbr.org/2022/05/developing-a-digital-mindset

Osborne, S. P., Nasi, G., & Powell, M. (2021). Beyond co-production: Value creation and public services. *Public Administration, 99*(4), 641–657. https://doi.org/10.1111/padm.12718

Quach, S., Thaichon, P., Martin, K. D., Weaven, S., & Palmatier, R. W. (2022). Digital technologies: Tensions in privacy and data. *Journal of the Academy of Marketing Science, 50*(6), 1299–1323. https://doi.org/10.1007/s11747-022-00845-y

Radin, B. A. (2020). What have we learned in the fields of public policy and public administration that might be relevant to the coronavirus pandemic? *The American Review of Public Administration, 50*(6–7), 743–745. https://doi.org/10.1177/0275074020942426

Samoili, S., Lopez, C., Gomez, G. E., De Prato, G., Martinez-Plumed, F., & Delipetrev, B. (2020). AI Watch: Defining artificial intelligence. European Commission. https://publications.jrc.ec.europa.eu/repository/handle/JRC118163

Sitti Hairani Idrus, Sumartono, E., Wartono, W., Suharto, S., & Syahriar, I. (2024). Harnessing digital transformation for improved public service delivery: Lessons from global administrative practices. *Journal of Social Science, 13*. https://ejournal.mellbaou.com/index.php/join/article/view/27

Smith, M. R., & Marx, L. (Eds.). (1994). *Does technology drive history? The dilemma of technological determinism.* MIT Press. https://mitpress.mit.edu/9780262193474/does-technology-drive-history/

Sofyani, H., Riyadh, H. A., & Fahlevi, H. (2020). Improving service quality, accountability and transparency of local government: The intervening role of information technology governance. *Cogent Business & Management, 7*(1), 1735690. https://doi.org/10.1080/23311975.2020.1735690

Swasthaisong, S., Klawklong, T., Toochaleesrithin, S., Thirawan, R., & Multha, A. (2025). Transforming the public sector for a just and sustainable society and future trends. *Journal of Public and Private Issues, 2*(1), 1–15. https://so17.tci-thaijo.org/index.php/jppi/article/view/773

Sydorenko, N. (2021). Digitalisation: Electronic administrative services. *Journal of Public Administration, Psychology, Law, 4*, 11–15. https://doi.org/10.51547/ppp.dp.ua/2021.4.2

Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of the longwall method of coal-getting. *Human Relations, 4*(1), 3–38. https://doi.org/10.1177/001872675100400101

Xu, C. K., & Tang, T. (2020). Closing the gap or widening the divide: The impacts of technology-enabled coproduction on equity in public service delivery. *Public Administration Review, 80*(6), 962–975. https://doi.org/10.1111/puar.13222

Yao, Y. (2024). Digital government information platform construction: Technology, challenges and prospects. *International Journal of Social Sciences and Public Administration, 2*(3), 48–56. https://doi.org/10.62051/ijsspa.v2n3.06

Yigitcanlar, T., Desouza, K. C., Butler, L., & Roozkhosh, F. (2020). Contributions and risks of artificial intelligence (AI) in building smarter cities: Insights from a systematic review of the literature. *Energies, 13*(6), 1473. https://doi.org/10.3390/en13061473