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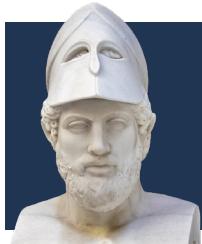
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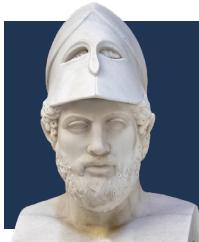
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Public management of digital transformation in communities: Integration of artificial intelligence into local development strategies

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Abstract. The research relevance of digital transformation of local self-government using technologies, in particular artificial intelligence, is determined by the need to improve the efficiency of management processes and services for citizens in many countries around the world. The study aimed to analyse the implementation of digital solutions in local community management, in particular the use of artificial intelligence to optimise administrative and social processes. The study used a multi-method qualitative approach, including case studies and a literature review. The results of the study demonstrated that the integration of technology into local government can significantly improve the efficiency and transparency of public services, facilitating access through online platforms and mobile applications. By analysing technical, social and institutional barriers, key obstacles to the implementation of e-government services were identified, especially among vulnerable population groups. The results of the study showed that insufficient digital literacy, accessibility issues and fragmented governance structures remain critical obstacles to achieving full digital inclusion. At the same time, broad citizen engagement and effective data management, particularly in the context of artificial intelligence-based predictive models, have significant potential for shaping sustainable "digital" communities. An analysis

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of the experiences of Singapore, Mexico and other countries that actively use digital innovations confirmed that the use of big data and artificial intelligence in public administration improves resource management, helps reduce corruption and increases citizen participation in decision-making processes. One of the relevant aspects identified was digital inclusion and the need to reduce the digital divide to ensure equal access to e-government for all social groups. The practical value of the study is determined by proposals for adapting innovative technologies to improve management processes and increase the efficiency of local administrations based on real-life cases

Keywords: local self-government; digital inclusion; e-governance; data management; administrative services

■ Introduction

Digital transformation in the context of globalisation is central in the development of public administration, which is reflected in the changing approaches of local authorities to interacting with citizens and modernising their activities through digitalisation. The introduction of modern digital technologies, in particular artificial intelligence (AI), significantly improves the efficiency of management processes, ensuring more transparent and accessible public services. For Ukraine, as for other countries, this process is a substantial area of development, as many local authorities still use outdated systems that require modernisation. The Ministry of Digital Transformation of Ukraine (2023) has initiated the creation of a Community Digital Transformation Index, which can be used for the assessment of the level of digital services and infrastructure at the local level, as well as the identification of priority areas for the further development of digital services. At the same time, given the regional characteristics and the duration of digitalisation processes at the local level, in-depth research is needed into digital transformation processes in Ukrainian communities and their integration with the use of AI to achieve sustainable development.

The process of digital transformation in local communities, which involves the integration of new digital technologies, has a significant impact on social projects and management processes. A. Marmulyak *et al.* (2024) studied the impact of digital technologies on social projects, prioritising the improvement of management processes and ensuring transparency. The study emphasised that digital tools contribute to more effective citizen engagement in social initiatives, which can optimise the use of resources. However, it also requires the adaptation of organisational structures to new digital realities and increased digital literacy among local authorities. In turn, N. Piskokha (2021) emphasised the need to create digital communities that will improve interaction between local authorities and citizens. The study highlighted the significance of the modernisation of management processes through digital services, platforms, and e-government tools to ensure the accessibility and transparency of administrative services. At the same time, the article also highlights the difficulties communities face during digital transformation, in particular the insufficient organisational capacity of local authorities and the need to bridge the digital divide between different regions.

A substantial aspect is the role of artificial intelligence in digital transformation, which can improve the efficiency of local government. I. Bakhov *et al.* (2025) demonstrated

that the use of AI can significantly improve the efficiency of management processes in communities, particularly in areas such as data analysis, forecasting, process automation, and improving communication between authorities and citizens. At the same time, the transformation must consider local characteristics, needs and cultural differences, which are substantial factors for the successful implementation of AI in management practices. Furthermore, according to S.A.A. Bokhari *et al.* (2025), the integration of AI into digital governance processes contributes to increased efficiency through citizen trust and active participation. Empirical research conducted by the authors based on surveys demonstrated that trust is a substantial mediator between technological changes and citizens' perception of digital services as effective and legitimate. The study emphasised the socio-behavioural aspects of digital transformations, emphasising that the success of e-governance depends not only on technology. G.H. Djatmiko *et al.* (2025) noted that, despite progress in digitalisation, low digital literacy, lack of internet access, and other socio-economic factors can lead to unequal access to services. To improve the situation, researchers have proposed a range of policy and technical solutions, such as digital literacy programmes and the integration of AI and cloud solutions to ensure equal access to digital services.

A substantial study in the field of e-government was conducted by T. Yigitcanlar *et al.* (2024). The authors analysed 50 years of digital technology implementation in local government, including the use of AI. They found that in the 21st century, AI has become a substantial element of digital transformations in local governments, particularly in the areas of planning, security, and energy. However, the study also noted that ethical issues, particularly data privacy, and the role of the public in these processes, remain underestimated.

The digital transformation of local communities, which includes the integration of artificial intelligence into local development strategies, has significant potential to increase the efficiency and transparency of governance, as well as improve interaction between authorities and citizens. However, this process is accompanied by several challenges, particularly in terms of organisational readiness, digital literacy and inclusiveness. It is therefore necessary to study the impact of AI on digital local development strategies, which will not only modernise management processes but also promote sustainable community development. Therefore, the study aimed to analyse current trends in the

implementation of digital technologies, particularly AI, at the local level and their potential for the development of sustainable and inclusive communities in Ukraine.

Materials and Methods

A multi-method qualitative approach was used to study the digital transformation of local government, which provided a deep and comprehensive overview of issues related to the integration of digital solutions into public administration. This methodology was chosen to determine contextual factors, social and cultural aspects, and user experiences in different communities, where quantitative methods might not reflect all the realities of digital transformation, particularly in low-income and remote regions.

One of the main methods used in this study is the thematic research method proposed by J.W. Creswell & C.N. Poth (2016). This approach provided an in-depth examination of the issue of integrating digital solutions into management processes and e-government services, as it focuses on user experience. Thematic studies identified key barriers to accessing digital services, issues of digital literacy, and problems of trust in new technologies.

In addition, a literature review method based on conceptual mapping (de Ries *et al.*, 2022) was used for the theoretical framework. This method identified key concepts and theoretical approaches to digital transformation, GovTech, and their impact on local self-government, which became the basis for analysing the effectiveness of digital initiatives. This method organised scientific approaches to the topic, highlighting the correlation between different aspects of digital technologies and how they're used in local government.

The main sources for this study were peer-reviewed scientific publications, reports, and official documents in the field of digital governance, including materials from international organisations such as the Organisation for Economic Co-operation and Development (OECD) alongside the Development Bank of Latin America (CAF)

(OECD/CAF, 2023), Connect Europe (Wood & Sherrington, 2025), as well as data from studies and projects implemented in Latin America and Southeast Asia. Academic articles, monographs, and scientific studies describing the stages of digital transformation in different countries, particularly regarding the implementation of AI in management processes, were also used. The sources selected for analysis were selected through the scientometric databases Scopus, MDPI, Springer and ResearchGate, as well as using the Google search engine.

The emphasis on Latin America and Southeast Asia was determined by several factors. These regions are actively implementing digital technologies in community management, which facilitates the assessment of their impact on socio-economic development. As these countries face similar challenges in accessing modern digital technologies, their experience in digital transformation is valuable for the further development and adaptation of such initiatives at the global level.

Results and Discussion

Conceptual vision of the digital transformation of local self-government

The digital transformation of community management is a necessary step in modernising local self-government, aimed at improving the efficiency, transparency and accessibility of public services. It involves the integration of the latest information technologies, which ensure a transition from traditional manual processes to more efficient, data-driven management models. It also includes strengthening citizen engagement in decision-making and ensuring digital inclusion, providing access to modern services. However, digital transformation also requires the development of reliable infrastructure and the implementation of innovative solutions, such as process automation, big data and analytics for resource management. The key characteristics, objectives and benefits of digital transformation in community management are summarised in Table 1.

Table 1. Key features and benefits of digital transformation in community management

Key aspects
Service modernisation: process automation, online permits, document management, and AI chatbots for instant support
Citizen engagement: introduction of interactive websites, online town halls and platforms for idea crowdsourcing and feedback
Data-driven decision-making: use of big data, analytics and data governance to inform policy and resource allocation
Digital inclusion: ensuring access to digital services and participation for all residents, including marginalised groups
Infrastructure and security: creation of a reliable digital infrastructure and ensuring cybersecurity for secure data processing
Aims and benefits
Efficiency and transparency: simplification of bureaucratic tasks and an increase in openness
Improved service delivery: access to public services anytime, anywhere through mobile-first approaches
Expanded participation: creating new models for involving citizens in decision-making
Sustainable development: alignment with global sustainable development goals by promoting equitable access and efficient use of resources
Governance structures: establishment of clear policies, standards and decision-making processes (Digital Development)

Source: compiled by the authors based on A. Marmulyak *et al.* (2024), I. Bakhov *et al.* (2025), Y. Zhang & Y. Li (2025)

This implies transformation of traditional local government into a smart, adaptive system that uses technology to meet the evolving needs of citizens and build sustainable, inclusive communities. When done right, digital

transformation at the local government level can create many opportunities. It is an opportunity for stakeholders, government officials and the local community to collaborate and identify ways to transform the services they use every day.

Global practice shows that digital transformation at the local government level can include automation of manual processes; configuration of online permits; ensuring document management; holding online meetings in the city council; providing interactive content on the website; introducing CRM for stakeholders to improve coordination; crowdsourcing ideas and feedback on local projects and issues; creating programmes that ensure digital inclusion for

all residents; setting up AI-based chatbots to help answer frequently asked questions; providing a mobile experience and applications for access anywhere, anytime (Yigitcanlar et al., 2024). For local authorities, meeting the needs of voters is the main driver of digital transformation. However, this is rarely the only catalyst. Voters or local communities expect their local government to deliver on the implications listed in Table 2.

Table 2. Implications of digital transformation that local communities expect from their local authorities

Expected critical elements
Efficient platforms: efficient and functional platforms that make it easy to perform relevant tasks such as filling out forms, making appointments, and searching for government-related information
Security: a secure environment and confidence that any data transmitted or collected is protected
Ease of access: performing tasks related to local self-government at a convenient time and using a convenient device
Greater value: digital technologies that lead to cost savings, which in turn lead to budget reallocation
Greater resilience: bigger steps towards sustainable development and better environmental consideration with data collection and analysis technologies
Expectations regarding the workforce for digital local self-government
Efficient operation: optimised workflows that maximise functionality and efficiency, providing additional time for staff to prioritise high-value tasks
Regulatory compliance: platforms that comply with national data security regulations
Analytics: access to data, analytics, and local information needed for decision-making
Access: remote access to ensure continued operations even outside government offices and eliminate reliance on paper forms or outdated systems

Source: compiled by the authors based on O. Lyulyov et al. (2020), I. Smyrnova et al. (2021), J. Liebowitz (2023)

Digital transformation involves modernising administrative and social processes through the integration of digital technologies, which greatly contributes to the development of technologically prepared communities. However, in order to achieve success in this area, it is necessary to avoid excluding those for whom the transition to digital technologies may be difficult and unclear. The challenge is to achieve an optimal balance that covers the needs of all population groups without creating new forms of social inequality.

Digital inclusion and challenges in ensuring equal access to e-services

Despite the significant potential of advanced technologies to create new digital services, such as e-government or digital health, not all countries and communities have equal access to these opportunities. The problem of the digital divide occurs in the lack of equal conditions for access to technology, particularly in regions where infrastructure is not sufficiently developed. For example, although mobile broadband coverage reaches 96% of the population in South-East Asia, 39% of people still lack access to mobile Internet services. This phenomenon, known as the “usage gap” in technology, is a major challenge for the global mobile ecosystem, as evidenced by studies by C.K. Sanders & E. Scanlon (2021), J. Lay & K. Fietz (2023) and P. de Pablos et al. (2025).

Ukraine also faces the problem of unequal access to digital technologies. According to S. Kemp (2025), 82.4% of Ukrainians (over 31.5 million people) use the internet, but this means that almost 17.6% of the population (approximately 6.7 million people) still do not have access

to the network. The situation is complicated by regional differences: access to high-speed internet is significantly better in cities than in rural areas, where coverage, connection quality and infrastructure remain weak. Although 94.1% of mobile connections in Ukraine provide broadband access (3G/4G/5G), weak infrastructure in some regions and limited digital literacy hinder the full use of digital services. Such inequalities limit citizens' ability to use online services, participate in e-government, or receive digital services on equal terms, underscoring the need to bridge the digital divide as one of the key tasks of digital transformation in Ukraine.

The digital divide is also a substantial issue for other regions, particularly in Europe. Although internet access in the EU is widespread, inequality in access to high-speed networks and digital technologies remains noticeable, particularly between urban and rural areas. For example, as shown by a study by R. Wood & S. Sherrington (2025), even though gigabit internet coverage in Europe is 82.5% of the population, more than 45 million people still do not have access to this technology. In addition, 5G networks are only available to 40% of the population, further exacerbating digital inequality, particularly for those living in less economically developed regions. These figures indicate that even in economically developed countries, the digital divide remains one of the main problems limiting citizens' access to modern services and technologies that should be available to all.

Digital inclusion is a key element of sustainable e-governance, as it ensures equal access to digital public services for all citizens, regardless of their socio-economic situation or place of residence. At the same time, limited

digital literacy, uneven development of digital infrastructure and institutional barriers significantly complicate the implementation of digital services, especially for marginalised and vulnerable groups of the population. G.H. Djatmiko *et al.* (2025) emphasised that public-private partnerships, digital literacy programmes, and the introduction of innovative technologies such as artificial intelligence, blockchain, and cloud computing, which can improve the accessibility, security, and quality of digital services, are substantial for overcoming these obstacles. The researchers also noted the significance of integrating digital inclusion policies with the UN Sustainable Development Goals, particularly in the areas of education, infrastructure, reducing inequality, and strengthening institutions, which enhances the long-term impact of digital governance. These findings point to the need for a comprehensive and multilateral approach with long-term investments in accessibility, cybersecurity and user trust, as well as the promise of applying mixed methodologies and comparative studies in different socio-economic contexts to further improve digital inclusion strategies.

The introduction of chatbots based on artificial intelligence, blockchain to ensure transaction security, and mobile applications for the provision of public services contributes to improving accessibility for citizens, especially in urbanised and semi-urbanised regions. However, the effectiveness of e-government largely depends on the level of digital literacy and user acceptance of these technologies, which varies across demographic and socio-economic groups. Many studies confirm that digital skills directly influence the willingness to use e-services, as low digital literacy significantly limits trust in government platforms and reduces citizens' willingness to use online services. Improvement of digital skills, in turn, is associated with greater participation in the digital life of society. Research by T. Lee *et al.* (2020) confirmed that digital skills directly influence the willingness to use e-services. In addition, socio-economic factors such as income level, place of residence (urban or rural), language barriers and age have a significant impact on the accessibility to e-services. For example, low-income households, rural residents and people who do not speak the official language are significantly less likely to use digital public services (Singh & Chobotaru, 2022). These factors highlight the need for comprehensive measures to reduce the digital divide and ensure equal access to online services for all social groups.

Low levels of digital literacy significantly limit trust in government platforms and reduce citizens' willingness to use online services. On the other hand, improved digital skills are associated with greater participation in the digital life of society. Socio-economic factors such as income level, education and place of residence have a significant impact on citizens' ability to interact with digital government platforms. In addition, infrastructure problems, fragmented policy frameworks and insufficient institutional support continue to hamper efforts to ensure equal access to digital governance (Morte-Nadal & Esteban-Navarro, 2022).

Furthermore, infrastructure problems, fragmented policy frameworks and insufficient institutional support continue to hamper efforts to ensure equal access to digital governance (Tremblay-Cantin *et al.*, 2023).

Addressing digital inequality in access to e-government services requires a comprehensive approach that includes technological solutions as well as political, educational and organisational interventions. This issue is complex and involves not only infrastructure limitations, but also socio-economic, educational and cultural barriers. To effectively address these challenges, targeted policy interventions and close cooperation between the public and private sectors are needed. A substantial component is the development of flexible strategies tailored to the needs of marginalised and vulnerable communities, which will reduce barriers to access. Governments should prioritise digital equality by focusing their policies on the user, improving accessibility features and implementing proactive engagement strategies that ensure inclusivity and real benefits from e-government for all citizens.

Therefore, the transition from centralised models to more localised approaches better meet the needs of citizens. Digital governance, using modern technologies, can significantly improve access to public services, reduce corruption and increase transparency. However, to achieve sustainability and ensure equal access, it is necessary to overcome barriers, particularly in the areas of digital literacy and cybersecurity, and to promote the development of inclusive digital infrastructure. Partnerships between government agencies, the private sector and civil society organisations are substantial in this process, ensuring the effective implementation of innovations and support for digital initiatives. For successful digital transformation at the local level, it is necessary to incorporate the experience of other countries and implement long-term strategies focused on sustainable development and ensuring access to services for all segments of the population.

Implications of digital transformation for decentralisation

Scholars and policymakers have noted that centralised governance is not the optimal path to development. The hierarchical and bureaucratic nature of centralised governance has failed in developing countries. The shift from a centralised to a localised approach to governance was intended to bring governance processes closer to communities for several reasons. First, local communities should strive to create autonomous institutions at the local level, which ensures active participation in decision-making and facilitates the resolution of local issues through partnerships (Jöansson & Bexell, 2021). Second, a reduction in the role of the state attracts new investment to small and medium-sized enterprises and fosters innovation that contributes to sustainable development. Thirdly, service delivery at the local level is more efficient as local authorities are more aware of citizens' needs and can prioritise spending to improve service delivery. Localising development creates resilient

communities that can learn from experiences through continuous feedback, which is particularly relevant in service delivery (Suranto *et al.*, 2025). Crisis management is a prime example of how local authorities gain experience from previous crises in the region or community, enabling them to respond more effectively to new challenges (Foschi *et al.*, 2025). Therefore, effective public management of digital transformation at the local community level is one of the key principles of progress in governance.

Digital governance provides more efficient mechanisms for delivering public services, improves interaction with business and industry, and empowers citizens through access to information and optimised community management. It helps reduce corruption, increase transparency and convenience, grow revenues and cut costs. S. ElMassah & M. Mahieldin (2020) noted that digital transformation supports the achievement of the Sustainable Development Goals (SDGs) by transforming collected information into actionable data for monitoring progress and improving policies. This creates new opportunities for implementing the SDGs with lower transaction costs. Digital transformation also supports local authorities' efforts to build sustainable communities through inclusive data collection, emphasising the five key dimensions of SDG 16: efficiency, inclusiveness, openness, reliability and accountability. The use of best practices in digital transformation provides local authorities with guidelines for adapting sustainable development strategies at the local level.

Cooperation between government agencies, private enterprises, and civil society organisations is essential for building a stable and inclusive digital infrastructure. O. Mordvinov *et al.* (2021) and A. Žuvela *et al.* (2023) have highlighted that multilateral partnerships significantly improve the accessibility, affordability and overall coverage of digital services, enabling a wide range of user needs to be met. By leveraging the resources, experience, and technological capabilities of the private sector, governments can develop more ambitious and effective e-government strategies, facilitating access to digital services for broader segments of the population. One notable example of such partnerships is Google's expanded Public Sector Partnership Programme, which aims to support digital transformation in the public sector, including governments, educational institutions and non-governmental organisations. The programme provides partners with resources, tools, and training to implement innovative solutions such as artificial intelligence, data analytics, and security, including through new discount models, certification, and joint marketing. This initiative is designed to accelerate digital transformation by enabling partners to develop their practices and adapt Google's cutting-edge technologies to the real needs of government agencies, thereby contributing to the creation of effective and sustainable solutions for the public sector (Bertram, 2024).

Another relevant initiative is Microsoft's Artificial Intelligence for Accessibility programme, which promotes collaboration with government agencies to develop

inclusive technologies for people with disabilities. This programme aims to overcome accessibility barriers by integrating artificial intelligence to improve digital tools, such as speech-to-text software, real-time captioning, and adaptive interfaces for people with visual or motor impairments. In their study of this programme, P. Radanliev *et al.* (2023) emphasised that even in the most advanced digital environments, such as the Metaverse, people with physical limitations are often excluded from using technology due to a lack of standards and regulations and insufficient attention to their specific needs. At the same time, developing solutions to ensure access to e-government services for people with disabilities can significantly improve user engagement among marginalised groups.

Stable and sustained investment in digital inclusion programmes is necessary for achieving sustainability in digital governance. Although many governments prioritise the development of physical infrastructure for digital technologies, often insufficient attention is paid to initiatives aimed at improving digital literacy, ensuring cybersecurity, compliance with legal norms and ensuring accessibility, which ultimately only provokes the preservation of digital inequality, as noted by M.G. Kibria & P. Hong (2024). Short-term funding and fragmented implementation of digital strategies, particularly in countries with economic problems, can create obstacles to successful digital transformation, which is also true for Ukraine. Therefore, analysis of best practices of other countries is critical for the improvement of government practices. To overcome these challenges, policymakers should develop strategies focused on sustainable development that include:

- sustained funding for digital literacy programmes, particularly for rural areas and low-income groups, through public-private partnerships and multi-year budget allocations;
- implementation of measures to improve access to digital technologies for the most vulnerable social groups. In particular, these could include Internet subsidies, tax breaks for inexpensive devices, and zero tariffs for basic e-government services;
- ensuring robust cybersecurity and personal data protection, which will help build trust in digital government platforms;
- establishment of independent supervisory bodies to monitor compliance with citizens' digital rights to ensure confidentiality and prevent misuse of personal data.

A substantial component of success is a sustainable development strategy that includes not only the development of physical infrastructure, but also support for digital literacy programmes, cybersecurity, and compliance with legal norms. Such initiatives, as exemplified by various countries, can help adapt innovative technologies to achieve the Sustainable Development Goals, creating opportunities for scaling digital solutions at the local level. In this context, it is necessary to study the role of artificial intelligence in e-government, in particular its impact on improving management processes and services, emphasising examples of effective use of AI in local government.

Artificial intelligence as a tool for transforming urban management

By adopting a holistic approach that emphasises sustainable development, governments can ensure equal access to digital technologies while strengthening the long-term sustainability and adaptability of e-government systems. Artificial intelligence can significantly influence the development of sustainable digital transformation at the local community level. According to Z. Lin *et al.* (2025), greater diversity in the data used in AI is associated with improved economic performance, reduced financial inequality, and expanded access to education and healthcare. Initiatives aimed at collecting data with the participation of communities significantly improve the quality and representativeness of this data, which in turn increases the accuracy and fairness of AI models. In addition, the application of ethical principles in AI governance helps to strengthen public trust, improve the perception of technologies as fair, and promote the active involvement of stakeholders. J. Liebowitz (2023) identified key aspects of digital transformation in local government where the application of AI-based solutions can be particularly effective:

1. Digital infrastructure. This includes servers, cloud platforms, network equipment and communication tools. It can be used by local authorities to manage electronic data and provide services online and create opportunities for scaling and expanding digital services as needed.

2. Online services for citizens. These are convenient web platforms and mobile applications for citizens to interact with local authorities. Examples of such services include online applications for permits, tax payment systems, and requests for information. Ensuring that such services have a simple and intuitive interface increases citizen participation, reduces waiting times, and improves user satisfaction.

3. Data management systems. These are databases, analytical platforms and data warehouses that help process large amounts of data. These systems collect, store, analyse and share information. Well-configured data management makes it easier for local authorities to make informed decisions in real time and ensures transparency by giving citizens access to relevant data.

4. Cybersecurity measures. This is a set of technologies and protocols for protecting citizens' data from cyber threats. It includes firewalls, encryption, attack detection systems, and regular security checks. Reliable protection of personal data will help strengthen citizens' trust in electronic services.

5. Platforms for public engagement. These tools are designed to inform and support communication between local authorities and citizens. They also help gather feedback and encourage public participation in decision-making processes. Established dialogue increases transparency and trust between authorities and the public, which in turn contributes to more effective governance.

6. Process automation tools. These optimise workflows, hence employees can prioritise more pressing tasks. This reduces the probability of human error, which increases

the reliability of results and speeds up responses to citizens' requests, leading to improved service efficiency and customer satisfaction.

7. Performance indicators. These help local authorities evaluate the results of their services and programmes. Analysis of key performance indicators (KPIs) can identify problem areas and ensure that resources are allocated effectively to meet community needs. These indicators also increase transparency and accountability, demonstrating the government's activities and improving public trust.

8. Change management strategies. These help overcome the difficulties associated with the introduction of new technologies and processes. Through training and support, government employees can improve mastery of digital tools and promote the development of an innovative culture. Such strategies ensure effective communication and interaction between all participants in the change process.

Interagency coordination mechanisms that facilitate the creation and maintenance of a common agenda are necessary for the development of more rational processes in public policy. As noted in a joint report by the Organisation for Economic Co-operation and Development and the Development Bank of Latin America (OECD/CAF, 2023) dedicated to digital governance in Latin America and the Caribbean, effective management of digital transformation requires a robust coordination framework at different levels of government that can align strategies, policies and actions between central and subnational authorities, as well as between agencies dealing with technology, data and service delivery. Many countries in the region have established coordination bodies and mechanisms that bring together key stakeholders to align digital governance policies, but only a few have the power to make decisions and ensure coordination between different agencies and levels of government.

AI technologies are central to implementing such policies. They form the basis for control panels in smart cities, where relevant life support data is accumulated to optimise city management and improve the quality of life for citizens. For example, the Command, Control, Communications and Computers (C4) Centre in Bogota is an integrated platform for monitoring, analysing and coordinating operational data used for security management, emergency response and overall management of city functions. It combines video cameras, an emergency call system and other sensors into a single digital system that collects and analyses information about events occurring in the city in real time and coordinates the actions of law enforcement and emergency response services. The centre also serves as a "think tank" for planning and implementing urban security and infrastructure management strategies, promoting data-driven decision-making and improving the quality of life for Bogota's residents (Fierro, 2024).

Notably, in Latin America and the Caribbean, artificial intelligence is used as an effective tool for solving various problems at the community level, particularly in the areas of combating corruption, managing natural disasters, and

social integration. For example, AI is used to detect corruption schemes through the analysis of government transactions, as well as to improve emergency response through predictive models that can forecast extreme weather events and optimise resource allocation for rapid and effective assistance (Plaw *et al.*, 2020).

AI also has significant potential in achieving the Sustainable Development Goals, particularly in the context of implementing modern GovTech strategies in local communities. As noted in a study by E. Zapata *et al.* (2022), AI, in collaboration with innovative start-ups, can significantly improve natural resource management, optimise transport systems to reduce carbon emissions, and promote innovative approaches to waste management. GovTech solutions have a proven impact on SDGs related to the provision of public services, in particular through the creation of new data and improved analytics that support monitoring and policy-making.

Artificial intelligence is a substantial tool that is being actively implemented in digital governance to optimise decision-making processes and improve the efficiency of public service delivery. In particular, in the context of digital transformation, AI helps automate routine administrative tasks, provides predictive systems for emergency management, and improves interaction with citizens through personalised services. S.A.A. Bokhari *et al.* (2025) have shown that AI can significantly improve management efficiency by helping governments make informed decisions based on big data and analytics. However, the implementation of AI also requires considerable attention to ethical aspects, in particular trust on the part of citizens, which is a substantial mediator between technological change and the actual results of digital transformation. Additionally, AI is substantial in ensuring the inclusiveness of digital services, as analytics can be used to ensure equal access to public services, even for marginalised groups. At the same time, to successfully implement AI in government systems, it is necessary to ensure transparency and stakeholder inclusion, which will maximise the potential of this technological tool in the digital transformation process.

AI also has significant potential in the development of proactive public policy, particularly at the local government level. Such policies prioritise the anticipation and resolution of future issues before they reach critical levels, enabling local governments to be more proactive rather than merely reactive. Using real-time and historical data, AI can help local authorities predict new trends, challenges, and potential threats at the community level and develop appropriate strategies to prevent them.

One of the main areas of application for AI at the local level is forecasting and preventing crises that could affect the community, such as natural disasters, epidemics or social conflicts. Thanks to AI technologies, local authorities can predict these events based on the analysis of data, such as climate or medical data, and take preventive measures long before these problems become critical for the community. Resource optimisation is another relevant area where

AI can help at the local level. Forecasting demand for local services, such as medical, educational or social services, improves efficiency of allocation of limited resources, preventing shortages at key moments and ensuring timely access to services for all community members. This facilitates efficient budget planning, cost reduction and overall service improvement for local governments.

AI also helps improve public services at the local level by using data to identify underserved or under-resourced areas. Local authorities can obtain relevant information for making decisions on investments in new services, which promotes equal access to services for all segments of the population. For example, data analysis can identify where the greatest need for medical services arises or where there is a shortage of educational resources to respond to these needs in a timely manner. The implementation of AI in the context of proactive policy at the local level creates new opportunities for proactive management, where local authorities not only respond to problems but are also able to anticipate and prevent them, creating a more adaptive and resilient management system for the community.

Examples of successful cases of AI application in e-government

The successful implementation of digital governance using artificial intelligence demonstrates how technological innovations can not only automate administrative processes but also transform the way citizens and the state interact, increasing the efficiency, transparency and quality of public services. Governments have started to implement proactive AI-based digital solutions in different countries around the world to address a wide range of socio-economic issues, from security and health care to city management and crisis prediction. This section presents a range of successful cases illustrating real-life practices of AI application in e-government, their impact on the development of local self-government, and the results achieved, which can serve as a benchmark for other administrative systems in the process of digital transformation.

Singapore has become a leader in applying innovative technologies to improve the public sector, using design thinking as its primary strategy for transforming public services. One of the most successful examples is the Moments of Life initiative, which was developed by the government technology agency GovTech in 2017 (Ganesan *et al.*, 2019). The programme aims to consolidate services provided by various government agencies into a single platform focused on the needs of citizens. The first phase of this initiative prioritises support of young parents. To this end, a mobile application was created that can be used by citizens to register the birth of their children, access medical records, navigate healthcare and childcare options, and apply for a child bonus programme aimed at reducing the financial costs of parenthood.

A key element of the programme's success was the establishment of interdepartmental cooperation within the government. The "whole-of-government" approach

involves close interaction between different government agencies to ensure the coherence of policies, processes and operations necessary for project implementation. This has not only reduced service fragmentation but also created a platform that is convenient for citizens and meets their real needs. According to V. Ganesan *et al.* (2019), the programme has become popular among citizens: since its launch in 2018, the app has been downloaded more than 32,000 times, and in subsequent versions, the GovTech team plans to expand services to cover other relevant stages of life, including ageing and care for the elderly.

In addition, Singapore is actively improving inclusivity for persons with disabilities. A 2016 survey of persons with disabilities revealed that most of them do not feel socially included. In response to these issues, the National Council of Social Service (NCSS) in Singapore, together with the DesignSingapore Council, created a team to study the problems and find solutions. They used an immersive ethnographic research method to further determine the daily lives of people with disabilities and identify their needs. The data collected led to the creation of several new initiatives, such as the “Joy Box”, which are personalised packages for people with disabilities that learning and discovery of new aspects of life, and the “Social Combinator”, an acceleration programme for developing business ideas and involving people with disabilities in economic life. These programmes have been adapted by local organisations to the needs of different social groups, including children with special needs.

Artificial intelligence is also actively used in Singapore to address biodiversity issues. AI algorithms process huge amounts of data on species distribution and movement in the natural environment. This makes it possible to create priority strategies for protecting and restoring ecosystems, predict invasive species, and actively respond to changes in nature. Thus, Singapore is a notable example of how digital technologies and AI can not only improve the quality of public services, but also promote inclusiveness, community development and environmental protection.

Despite the urgent need for governments to digitise their processes, many face challenges due to limited human resources and technical expertise. This has created significant demand for innovative technological solutions to stimulate innovation in the local public sector. Mexico’s experience is interesting in this regard. It is worth noting that the digital divide in Mexico and Latin America remains significant, and none of these countries are among the world’s leading indices of digitisation and public innovation (OECD/CAF, 2023). This gap represents a missed opportunity for progress, hindering economic growth and social development in the region. Open source technologies and innovative solutions, such as Visor Urbano in Mexico, offer affordable and adaptable tools to meet the unique needs and challenges of each city (GovStack, 2022). By providing scalable solutions, these technologies provide the basis for more inclusive and effective governance, ensuring positive change in communities across the region.

At the local level, there are several challenges, including inadequate infrastructure and technological resources, regions with limited access to high-quality internet, and the lack of a favourable regulatory framework to encourage the adoption of technology in public institutions. In addition, there is a shortage of digital skills and competencies needed to fully leverage the benefits of technology. To overcome this problem, innovations such as Visor Urbano are based on the ethos of “sharing for improvement”. In this context, open innovation (strategies for increasing efficiency, using technology, and enabling organisations to gather a multitude of ideas from different sources to solve a specific problem) and free and open-source technologies (publicly available software that can be viewed, modified, adopted, and distributed by anyone under certain licensing conditions) become relevant. Since many governments lack the financial or technical resources to develop independent technologies, open innovation and open source solutions are central in promoting progress and overcoming barriers to technological advancement.

In Mexico, Visor Urbano is notable as a digital platform that promotes transparent and efficient land management. This free software helps local authorities digitise urban development processes, such as business and construction licences, while promoting digital integration among officials and citizens. Developed in Guadalajara in 2016, it helps local authorities digitise urban development processes, including business and construction licensing. Supported by Bloomberg Philanthropies, the platform has expanded to other cities and has had significant positive results. In Guadalajara, it has caused a 74% reduction in bribes thanks to online forms that have reduced interactions between the government and citizens by 84%. In Tototlán, municipal revenues have increased by 320%. In Cocula, the platform made it possible to digitise all business licences and create a new tool for building permits. In Gómez Farías, reducing the time to obtain business licences from 15 days to less than one day made it possible to issue 1,700 licences. Cabo Corrientes united municipal departments in a digital format, reducing time and costs for residents. Visor Urbano has significantly improved municipal management in more than 50 cities in Mexico and has the potential for further expansion (Plaw *et al.*, 2022).

Successful examples of digital platform implementation demonstrate the importance of adapting technologies to the specific needs of each city and community, rather than simply introducing new solutions for the sake of novelty. This underscores the need for a strategic approach to digitalisation that considers local contexts and needs. The key lessons learned from these successful implementations can be summarised as follows:

- The driving force for technology implementation must extend the scope of novelty. It should encompass the adaptation of digitisation processes to the unique context of each city, addressing the concerns of residents and improving

their quality of life, which ensures a more personalised and effective approach to technology implementation.

■ Any process of technological development or implementation must be accompanied by a comprehensive digital integration strategy. This ensures the development of digital skills not only among civil servants but also among a wider range of citizens, thereby promoting inclusiveness and the involvement of all stakeholders.

■ When developing or replicating such software, user-centred principles must remain at the forefront. Furthermore, once implemented, it is necessary to encourage feedback, testing and continuous iteration so that the technology is constantly improving and meeting user needs.

■ Replication of successful practices is a substantial priority. Carefully measuring and evaluating the impact of these solutions provides evidence and supports more cities along their path to becoming smarter and more innovative, thereby enhancing the effectiveness of the solutions implemented.

■ Improving cities through technology requires collective efforts not only from governments, but also from the entire community, including business, academia, civil society and other ecosystem organisations. This collaborative, multi-sectoral approach ensures that diverse voices are included and prevents exclusion from design and decision-making processes, contributing to greater effectiveness and sustainability of change.

■ The key to transforming a city with technology is often an individual or a specialised group that strives to catalyse significant change and implement innovative solutions. Cultivating these internal leaders is a substantial factor for the successful implementation of technological initiatives, ensuring the sustainability and adaptability of digital transformations.

However, for the successful implementation of digital technologies in local government, it is necessary to ensure a harmonious balance between political and bureaucratic processes and the needs of society. By moving from e-government to digital government, local authorities are changing not only their management methods but also their methods of interaction with citizens. This process has been made possible by the active use of information and communication technologies (ICT) and concepts such as open data, open government and digital platforms for citizens. The use of open data, which is available to both citizens and businesses, ensures not only transparency but also public involvement in governance processes. At the same time, digital governance is not limited to improving administrative efficiency using the latest technologies, but emphasises the active participation of citizens in data-driven decision-making and forecasting the future needs of communities. This not only ensures a rapid response to citizens' requests but also ensures a high level of public satisfaction at all stages of interaction with government agencies. As a result, digital governance contributes to the creation of more efficient, transparent and inclusive management systems that meet the needs of modern society.

Conclusions

The study analysed the conceptual aspects of digital transformation of local self-government and the impact of new technologies on community management, as well as their application to ensure access to public services. The main characteristics of digital transformation, such as process automation, big data utilisation, digital inclusion, and AI application, were examined. As a result, the study determined that the digital transformation of local government contributes to the improvement of the efficiency of service delivery, reduction of corruption, and transparency and ease of access to public services for citizens. The introduction of the latest technologies ensures the automation of many routine administrative tasks, such as processing applications for permits, filing taxes, and interacting with local authorities. This reduces the burden on government agencies, facilitating more relevant tasks and improving the quality of service to citizens.

In addition, the introduction of digital platforms ensures active citizen participation in governance processes, as citizens can provide feedback through interactive websites and online platforms for crowdsourcing ideas, which improves the quality of decisions and increases trust in public authorities. A substantial aspect is digital inclusion, which guarantees access to services for all residents, including marginalised groups, thereby promoting greater social equality. However, there are several challenges to the successful digital transformation of local government, such as limited access to digital technologies in certain regions, insufficient digital literacy among citizens, and cybersecurity issues. To overcome these challenges, targeted measures must be implemented, including investing in infrastructure development, providing training for all segments of the population, and ensuring reliable data protection.

Promising areas for further research include studying the role of artificial intelligence in improving management processes, as well as its potential for solving problems such as crisis prediction, resource optimisation, and improving environmental management at the local level. It is also necessary to explore ethical issues in the context of AI applications in local government how to ensure transparency in decision-making and guaranteed fairness for all social groups. These areas of research will help develop strategies and tools for more effective and inclusive local government, contributing to sustainable development and improving the quality of life for citizens.

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Анотація. Актуальність теми цифрової трансформації місцевого самоврядування з використанням технологій, зокрема штучного інтелекту, зростає у зв'язку з необхідністю покращення ефективності управлінських процесів та послуг для громадян у багатьох країнах світу. Метою роботи був аналіз впровадження цифрових рішень в управління місцевими громадами, зокрема застосування штучного інтелекту для оптимізації адміністративних та соціальних процесів. У дослідженні використовувались методи багатометодного якісного підходу, включаючи тематичні дослідження та огляд літератури. Результати дослідження показали, що інтеграція технологій у місцеве управління дозволяє значно підвищити ефективність та прозорість публічних послуг, полегшуючи доступ громадян до них через онлайн-платформи та мобільні додатки. Шляхом аналізу технічних, соціальних та інституційних бар'єрів, було виділено ключові перешкоди на шляху впровадження послуг електронного урядування, особливо серед вразливих груп населення. Результати дослідження засвідчили, що недостатня цифрова грамотність, проблеми доступності та фрагментовані структури управління залишаються критичними перешкодами для досягнення повної цифрової інклюзії. Водночас, широка залученість громадян та ефективне управління даними, зокрема в рамках прогнозних моделей на основі штучного інтелекту, мають значний потенціал у формуванні стійких «цифрових» громад. Аналіз досвіду Сінгапуру, Мексики та інших країн, що активно застосовують цифрові інновації, підтверджив, що використання великих даних та штучного інтелекту у сфері публічного управління покращує управління ресурсами, сприяє зменшенню корупції та підвищує участь громадян у процесах прийняття рішень. Одним із важливих аспектів було визначено цифрову інклюзію та необхідність зменшення цифрового розриву, щоб забезпечити рівний доступ до е-урядування для всіх соціальних груп. Практична цінність роботи полягає у пропозиціях щодо адаптації інноваційних технологій для покращення управлінських процесів та підвищення ефективності місцевих адміністрацій на основі реальних кейсів

Ключові слова: місцеве самоврядування; цифрова інклюзія; електронне врядування; управління даними; адміністративні послуги

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