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Research Article

The Impact of E-Governance Technologies on Public Service Delivery: Insights from e-Albania

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ABSTRACT

The study evaluates the impact of e-Albania, a digital governance platform launched in 2015, on public service delivery in Albania. By digitizing critical services such as tax filings and business registrations, the study assesses the platform`s influence on efficiency, transparency, and citizen satisfaction. A mixed-methods approach, combining surveys of 300 users and interviews with 20 public officials, examines technological enablers, including cloud computing, API integrations, and cybersecurity, in reshaping citizen-public administration interactions. Results reveal an 85% user satisfaction rate, significant improvements in service accessibility and efficiency, and reduced administrative bottlenecks. Challenges persist in bridging the digital divide, particularly for rural populations and individuals with limited digital literacy. While the study focuses on Albania as a single case, future research could explore comparative studies or assess long-term impacts of similar platforms regionally. Recommendations include enhancing digital inclusion, strengthening infrastructure resilience, and scaling e-Albania to ensure equitable access to public services. This study underscores the transformative potential of digital platforms in fostering trust, transparency, and citizen engagement while addressing structural inequalities in public administration. By focusing on e- Albania as a case study, it contributes valuable insights to the field of digital governance and public service improvement.

Keywords: e-Albania, e-Governance, Digital Transformation, Citizen Satisfaction, Transparency, Public Administration

INTRODUCTION

The digitalization of public services has become a central pillar of modern governance, enabling governments worldwide to improve the efficiency, transparency, and accessibility of their operations. These efforts align with global advancements in e-governance technologies, which have been proven to streamline bureaucratic processes, reduce corruption, and enhance citizen trust in public institutions [1,2]. In line with these global trends, Albania has undertaken significant reforms to integrate digital technologies into public administration. At the heart of these reforms is e-Albania, a digital platform launched in 2015 to provide citizens and businesses with seamless access to a wide range of government services [3]. By eliminating the need for physical visits to government offices, e-Albania seeks to reduce bureaucratic inefficiencies, combat corruption, and promote digital inclusion, especially for underserved populations in rural areas [3].

e-Albania is an integral component of Albania`s broader strategy to modernize public administration and align with international standards in e-governance. Its service offerings include tax filings, business registrations, civil status updates, and other administrative services, all accessible through a user-friendly digital interface [3]. The platform's introduction marked a turning point in Albania's governance model, transitioning from traditional, paper-based processes to a more efficient, citizen-centered digital framework. Such transitions are echoed in global practices, where countries like Estonia and Singapore have demonstrated the benefits of integrated digital platforms for public service delivery [4,5].

However, the implementation of e-governance solutions like e-Albania is not without challenges. While the platform has achieved notable success in reducing administrative burdens and enhancing transparency, its effectiveness is hindered by persistent barriers.

Among these are disparities in digital literacy, particularly among older generations and rural populations, as well as issues related to system reliability and internet connectivity [6,7]. For example, according to [8], only 58% of rural users in Albania possess the basic digital skills required to access the platform. These challenges highlight the need for targeted interventions to ensure that the benefits of digital governance are equitably distributed across all segments of society. The Albanian government has demonstrated a strong commitment to addressing these challenges through initiatives aimed at expanding the platform's service portfolio and improving its technical capabilities. Investments in broadband infrastructure, especially in underserved regions, and educational programs focused on enhancing digital skills are critical steps to bridging the digital divide [9,10]. By addressing these gaps, e-Albania has the potential to become a model for digital governance in the region, showcasing how technology can be leveraged to foster inclusivity and improve citizen engagement. Moreover, integrating emerging technologies such as artificial intelligence (AI) and blockchain could further enhance the platform`s capabilities, ensuring reliability and scalability to meet increasing user demands [4,10].

This research investigates the role of e-Albania in enhancing public service delivery, with a particular focus on its impact on service efficiency, transparency, and citizen satisfaction. The study adopts a mixed-methods approach, incorporating both quantitative surveys of 300 users and qualitative interviews with 20 government officials to evaluate the platform's implementation and user experiences [11]. By exploring the successes and limitations of e-Albania, the research aims to provide actionable insights into how the platform can be optimized to better serve the needs of all citizens, regardless of their geographic location or digital literacy level. Moreover, the study seeks to contribute to the broader discourse on e-governance by examining how digital platforms can reshape the relationship between governments and citizens. Increased transparency, accountability, and efficiency achieved through platforms like e-Albania are pivotal for building public trust and strengthening democratic institutions [2,10]. However, achieving this vision requires a comprehensive understanding of the challenges and opportunities associated with digital governance, as well as a commitment to continuous improvement and innovation. This involves not only technical upgrades but also fostering a culture of digital citizenship through sustained community outreach and education initiatives [6].

In conclusion, while the digitalization of public services through e-Albania represents a significant step forward for Albania, there is still much work to be done to realize its full potential. Overcoming barriers such as limited digital literacy, uneven internet access, and system reliability issues will be key to ensuring the platform's inclusivity and sustainability [2,3]. This research aims to shed light on the factors that drive the platform's success and the obstacles that must be overcome, providing valuable recommendations for policymakers and practitioners working to advance e-governance in Albania and beyond.

LITERATURE REVIEW

E-Governance and Digital Transformation

E-governance refers to the application of information and communication technologies (ICTs) in delivering public services, fostering transparency, and enhancing governance efficiency. Over the past two decades, this concept has gained global traction, with many countries leveraging digital technologies to address bureaucratic inefficiencies, reduce corruption, and facilitate citizen participation in decision-making processes [6,7]. For instance, platforms that integrate data analytics and artificial intelligence (AI) have significantly enhanced the government's ability to make informed decisions and tailor services to specific citizen needs [6]. According to [8], digital governance initiatives have the potential to revolutionize public service delivery by streamlining administrative processes, providing faster access to information, and creating an accountable government infrastructure. These initiatives also significantly impact economic growth, as they create a more dynamic and transparent environment for businesses and public-private partnerships [7,9].

Globally, several countries have emerged as pioneers in e-governance practices. Estonia, for instance, stands out for its comprehensive digital ecosystem, which includes e-residency programs, online voting, and seamless tax filing systems [10]. Estonia`s model illustrates how integrating blockchain technology into government systems can enhance security and foster citizen trust. Similarly, Singapore's Smart Nation initiative has integrated digital technologies across sectors such as healthcare, transportation, and education

to enhance public service efficiency and citizen satisfaction [4]. Singapore`s data-driven approach demonstrates the importance of predictive analytics in proactively addressing citizen needs. These examples illustrate the transformative potential of e-governance and its ability to address traditional challenges in public administration [4,10].

In the context of Albania, e-governance has been a cornerstone of efforts to modernize the public sector and improve service quality. The country's initial steps toward digital transformation were formalized with the introduction of the National Strategy for the Information Society in 2006 [11]. However, the launch of the e-Albania platform in 2015 marked a significant turning point. The platform was designed to centralize and digitize key public services, thereby increasing administrative efficiency, enhancing accessibility, and promoting transparency [3]. For example, processes such as tax filings, which once required multiple in-person visits, are now streamlined and accessible within minutes online [3].

As noted by [6], this initiative reflects Albania`s broader commitment to adopting global best practices in e-governance. E-governance models have evolved significantly over time. For example, [12] presents a typology for e-governance, emphasizing the transition from basic digitization of government services to more integrated systems that embed technology into citizens' daily lives. This evolution highlights the growing importance of digital tools not only in service delivery but also in fostering civic engagement and co-creation between governments and citizens [12]. Additionally, technologies such as mobile applications and open data platforms have further expanded citizen participation by enabling real-time feedback mechanisms [13].

However, the successful adoption of e-governance is often hindered by several challenges. [14] identify barriers such as institutional resistance, lack of digital literacy, and inadequate infrastructure. These challenges are particularly relevant in developing countries like Albania, where disparities in internet access and digital skills remain significant obstacles [3,8]. Similarly, [13] explore the digital divide in developing nations, with case studies from Ghana and Nigeria demonstrating how socioeconomic inequalities limit the reach and effectiveness of e-governance initiatives. In Albania, rural populations often face similar challenges, with 30% of respondents in recent studies citing poor internet access as a barrier to utilizing e-Albania services [8].

Addressing these barriers requires a multifaceted approach. Investments in digital infrastructure are critical to expanding internet access, particularly in rural and underserved areas [9]. Concurrently, targeted educational programs can help bridge the digital literacy gap, empowering citizens to engage more effectively with e-government platforms [6]. Furthermore, fostering a culture of trust and accountability within public institutions is essential to overcoming resistance to change and ensuring the long-term sustainability of digital transformation efforts [15]. For example, integrating secure authentication measures and data encryption can address citizen concerns about data privacy, thereby boosting confidence in e-governance platforms [10]. In conclusion, while e-governance offers immense potential to transform public service delivery and enhance citizen-government interactions, its successful implementation requires addressing structural, technical, and societal challenges.

Albania's experience with e-Albania underscores the importance of inclusive strategies, which prioritize both digital infrastructure and human capacity building [3,9]. This dual focus ensures that the benefits of digital transformation are equitably distributed, providing valuable lessons for other countries pursuing similar initiatives.

E-Albania: The Digital Transformation of Public Services in Albania

The e-Albania platform, launched in 2015 by the Agency for the Information Society (AKSHI), represents a cornerstone in Albania's digital transformation journey. Its primary objective is to centralize and digitize public services, offering citizens and businesses streamlined access to over 1,500 government services, including tax filings, civil registrations, vehicle registrations, and business licensing. By consolidating these services into a single online platform, e-Albania has fundamentally reshaped the way citizens interact with public administration, eliminating redundancies and promoting efficiency [3].

According to [3], e-Albania has yielded several measurable benefits. It has significantly reduced waiting times, improved service delivery speeds, and enhanced overall citizen satisfaction with public services. For instance, previously time-consuming processes such as obtaining civil status documents or business certifications can now be completed online in just a few minutes. This efficiency not only saves time for users but also reduces the administrative burden on government institutions [3]. Moreover, the platform has successfully automated approximately 95% of common administrative processes, according to government

reports [3].

The platform`s success is largely attributed to its focus on user-centric service design. It is structured to be accessible, intuitive, and easy to use, accommodating a wide range of users, including those with limited digital experience. A mobile-friendly interface has also been developed, ensuring broader access, particularly among younger populations who predominantly rely on smartphones for online interactions [6].

By minimizing the complexity of accessing government services, e-Albania has lowered barriers for citizen engagement and increased participation in public administration processes [3].

A critical advantage of e-Albania is its role in promoting transparency and accountability within public administration. By allowing citizens to track their service requests in real-time, the platform ensures greater visibility into administrative processes, reducing the likelihood of corruption [15]. As noted by [13], this digital transparency has been transformative, fostering trust between citizens and the government. The platform`s ability to automate processes and eliminate unnecessary face-to-face interactions has further minimized corruption opportunities, a longstanding issue in Albania`s public sector [3].

In addition to improving administrative efficiency and transparency, e-Albania has played a pivotal role in advancing Albania's broader digital governance goals. By aligning with international best practices, the platform positions Albania as a leader in regional e-governance initiatives. Its interoperability with other platforms, such as the National Civil Status Registry and the Taxation System, has created a seamless digital ecosystem. Its design and implementation reflect lessons from global digital leaders, such as Estonia and Singapore, where similar platforms have successfully digitized public services to promote citizen engagement and operational efficiency [4,10].

However, the adoption of e-Albania has not been without challenges. As highlighted in studies by [6] and [16], disparities in digital literacy and internet connectivity have limited the platform`s inclusivity, particularly in rural and underserved areas. Despite its user-friendly design, individuals with limited digital skills—such as older generations or those in remote regions—often struggle to fully benefit from the platform`s services. For instance, nearly 35% of users in rural areas reported difficulty navigating the platform due to insufficient digital skills, highlighting the urgent need for digital literacy initiatives [8]. Addressing these challenges requires targeted investments in digital literacy programs and infrastructure development to ensure equitable access for all citizens [9].

The impact of e-Albania extends beyond service delivery, reshaping the relationship between citizens and the state. By simplifying access to government services, the platform empowers citizens, enhances trust in public institutions, and sets a foundation for more participatory governance [15]. Furthermore, the platform's integration with broader regional and global digital governance frameworks underscores its potential as a model for other countries undergoing similar transformations [3,4].

In conclusion, e-Albania has revolutionized public service delivery in Albania, offering citizens a more efficient, transparent, and accessible means of interacting with government institutions. While the platform has achieved significant progress, continued efforts are necessary to address existing challenges and ensure that the benefits of digital governance are equitably distributed across all segments of society [6,9]. This includes ongoing improvements in platform functionality, investments in digital education, and expanded internet connectivity to bridge the digital divide and foster a more inclusive digital ecosystem [3].

Challenges of E-Governance in Albania

Despite its notable achievements, the implementation of e-Albania has encountered several challenges that limit its inclusivity and effectiveness. One of the primary barriers is the lack of sufficient digital literacy across significant portions of the population.

According to [12], a significant portion of the population, particularly older generations and those residing in rural areas, lacks the necessary skills to use digital platforms effectively. This digital divide has slowed the platform's adoption, especially in less urbanized regions where internet access and familiarity with technology are more limited[13]. Notably, older citizens and rural residents have reported difficulties navigating the platform's functionalities, despite its user-friendly design. Without targeted education initiatives and outreach programs, these gaps are likely to persist, leaving a considerable portion of the population unable to fully benefit from the platform's offerings.

Technical issues also remain a persistent challenge. Many users have reported problems such as platform downtime, slow response times, and errors during service use [14]. These technical disruptions, particularly during peak usage times such as tax filing deadlines, undermine user trust and create frustration, limiting the platform's effectiveness in providing seamless service delivery. Furthermore, inadequate disaster recovery systems and limited server capacity amplify the risk of service outages, particularly during critical operational periods [15]. Addressing these technical shortcomings requires investments in more robust and scalable infrastructure, as well as continuous monitoring and optimization of the platform's performance.

Connectivity issues in rural areas further exacerbate these challenges. While Albania has made progress in improving its internet infrastructure, remote regions still face significant limitations in accessing high-speed internet [9]. This uneven distribution of connectivity leads to disparities in access to e-government services, disproportionately affecting citizens in underserved areas and reinforcing existing inequalities. According to [16], approximately 25% of rural households report limited or no access to reliable internet, significantly hampering their ability to interact with e-Albania. Moreover, the high cost of internet access in some regions acts as an additional barrier, preventing widespread adoption of digital services.

These challenges are compounded by socio-cultural factors, including skepticism toward digital governance among certain segments of the population. Concerns about data privacy and cybersecurity are prevalent, with some users hesitant to share personal information through digital platforms [17]. Additionally, a lack of confidence in the reliability of public institutions further discourages adoption. Overcoming these issues requires transparent communication about data security measures and proactive engagement with citizens to build trust in digital governance. Emerging technologies, such as blockchain and artificial intelligence, could also help address these challenges by enhancing data security and improving user experience [4]. By incorporating these technologies, e-Albania could strengthen citizen trust and ensure more reliable service delivery.

To address these issues, Albania must prioritize investments in digital literacy programs, infrastructure upgrades, and platform reliability to ensure e-Albania becomes a fully inclusive tool for public service delivery. This includes expanding access to high-speed internet in underserved areas, offering free or subsidized digital literacy workshops, and implementing robust cybersecurity protocols to reassure citizens about data protection [6,10]. Bridging these gaps will not only enhance the platform's effectiveness but also foster greater trust between citizens and public institutions, contributing to the overall modernization of Albania's governance system.

E-Governance in Albania: Impact on Citizen Satisfaction

The implementation of e-Albania has yielded mixed results regarding citizen satisfaction, with significant successes in administrative efficiency but ongoing challenges in inclusivity. For instance, surveys conducted by [15] reveal that 85% of urban users express satisfaction with the platform due to its ease of use and real-time service availability. However, satisfaction levels drop significantly among rural populations, where barriers such as limited internet access and low digital literacy persist [16,18].

Citizen satisfaction is closely linked to the platform's transparency features, which allow users to track their requests in real-time. According to [16], these features have contributed to greater trust in public administration by reducing opportunities for corruption and increasing accountability. However, technical issues, such as slow response times and occasional outages, continue to frustrate users, particularly during peak usage periods [15].

Furthermore, a study by [6] highlights that digital literacy significantly influences satisfaction levels. Users with higher digital skills report greater ease of navigation and confidence in the platform's reliability, while less experienced users often encounter difficulties that hinder their engagement. Addressing this gap requires targeted educational programs and user-centric design enhancements [13,16].

While e-Albania has made strides in improving administrative efficiency and transparency, its impact on citizen satisfaction is uneven. Investments in infrastructure, digital literacy, and system reliability are essential to ensuring the platform serves all citizens equitably. By addressing these challenges, e-Albania can further enhance its role as a model for digital governance in the region.

Technological Backbone of e-Albania

The e-Albania platform owes its success to a cutting-edge technological framework that integrates advanced

tools and systems to streamline public service delivery.

1. *Cloud-First Architecture*
Overview: At the core of e-Albania is a cloud-first approach, which ensures high scalability, data accessibility, and resilience. This architecture allows the platform to handle large volumes of concurrent users without significant performance degradation [9].

Advantages:
Reduces infrastructure costs [2].
Ensures disaster recovery and data backup.
Supports real-time service availability across Albania.
Use Case: Cloud storage powers the instant retrieval of public records, such as civil status certificates and tax filings, enabling citizens to complete processes online without delays [15].

2. Data Integration and Interoperability through APIs
Overview: The Middleware Layer in Figure 1 represents e-Albania's robust API system, which connects over 50 government institutions. This seamless integration minimizes errors caused by manual data transfers and reduces administrative burdens [19].

Advantages:
Facilitates accurate, real-time data exchange.
Enhances administrative efficiency by avoiding duplication of records [10].
Use Case: Integrated data from the Civil Registry and Tax Authority ensures that citizens can update their status or file taxes without needing separate applications.

3. Secure User Authentication
Overview: Security measures are a core component of the Backend Layer, as shown in the figure. These include:
Two-Factor Authentication (2FA): Requires users to validate their identity through a mobile code.
Biometric Authentication: Provides advanced security via facial recognition or fingerprint scanning [7].

Advantages:
Protects sensitive user information.
Prevents unauthorized access and fraud.
Use Case: Critical operations, such as property transfers or government contracts, require 2FA or biometric verification [15].

4. Digital Signatures and Document Validation
Overview: The Frontend Layer facilitates user-friendly digital signature capabilities, enabling users to electronically sign documents with legal validity.

Advantages:
Eliminates physical paperwork.
Saves time and costs for users and administrators.
Use Case: Business owners can register with companies within minutes by submitting digitally signed forms through platform [4].

5. Artificial Intelligence (AI) and Automation
Overview: e-Albania integrates AI-driven tools to enhance service delivery. These features complement the Middleware Layer by automating workflows.
AI Chatbots: Address user queries in real time.
Automated Processes: Simplify workflows for common requests, such as vehicle registration renewals [6].

Advantages:
Reduces processing time for repetitive tasks.
Enhances citizen engagement by providing 24/7 assistance.
Use Case: A chatbot directs users through complex processes, such as filing an appeal or updating tax records.

6. Comprehensive Cybersecurity Framework
Overview: The Backend Layer ensures the security of e-Albania through a multilayered cybersecurity framework.
Data Encryption: Secures communications between users and servers.
Threat Detection Systems: Identify and neutralize potential risks in real-time [14].
Regular Audits: Ensure compliance with international security standards.

Advantages:
Builds trust among citizens using online services.
Mitigates risks of data breaches or cyberattacks [16].
Use Case: Continuous monitoring protects against unauthorized access during high-traffic periods, such as tax deadlines.

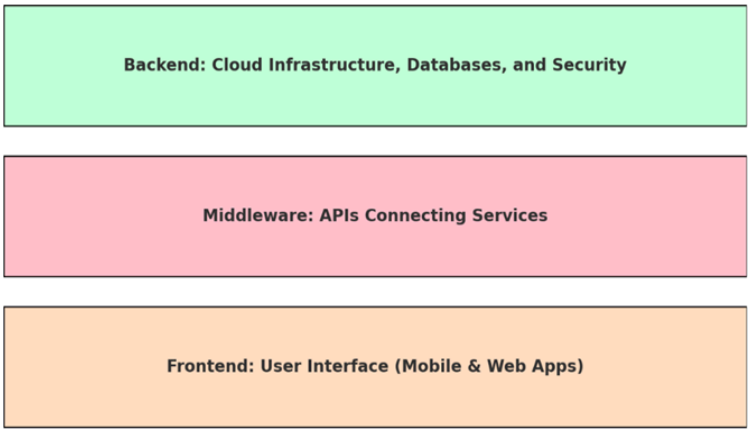

Figure 1 offers a clear understanding of how the platform integrates cloud computing, APIs, and user interfaces to deliver secure and efficient digital services.

Fig. 1. The three-tier architecture of the e-Albania platform, highlighting its core components. The Backend layer encompasses cloud infrastructure, databases, and security protocols, ensuring robust and scalable service delivery. The Middleware layer serves as the connective tissue, enabling seamless communication between APIs and services for data interoperability. Finally, the Frontend layer provides user interfaces via mobile and web applications, ensuring accessibility and usability for citizens and businesses. This architecture collectively ensures the platform's efficiency, reliability, and user-centric design.

MATERIALS AND METHODS

Research Framework

The study adopts a case study framework, focusing on e-Albania as a single, in-depth case to investigate its role in enhancing public service delivery. A case study design is particularly effective for examining contemporary issues within their real-life context, allowing for a rich exploration of service efficiency, transparency, citizen satisfaction, and digital accessibility [20]. This approach facilitates a detailed examination of the platform's successes and challenges while maintaining a focus on its broader societal and administrative context [21]. As noted by [22], case
studies are well-suited for capturing the dynamics of real-world settings, making them ideal for exploring the integration of digital platforms like e-Albania into public administration.

To address the platform's technological dimensions, this framework integrates a technical analysis of e-Albania's architecture, focusing on its cloud-first design, APIs for data interoperability, and advanced security protocols. These technological elements are evaluated for their contributions to scalability, system reliability, and user trust.

The research employs a descriptive design to outline and analyze key variables related to the platform's performance. This includes evaluating how e-Albania has been implemented in public service delivery, measuring its outcomes, and identifying areas for improvement. By documenting the platform's status, the study aims to assess its impact on user engagement and citizen satisfaction, both of which are essential for

evaluating the effectiveness of e-governance initiatives [23]. Furthermore, as [24] suggests, descriptive research provides a robust framework for comparing expected outcomes with actual results, offering actionable insights into service enhancement.

In addition to descriptive methods, the study adopts an analytical design to examine relationships between critical factors such as digital literacy, system accessibility, and user feedback. This analytical approach aligns with the principles of Technology Acceptance Models (TAM), which emphasize understanding user acceptance and system performance as key determinants of digital platform success [25]. The study also incorporates a technical evaluation of the platform's cloud computing efficiency, API responsiveness, and cybersecurity measures, ensuring a comprehensive understanding of how these elements influence user satisfaction and system reliability.

The results aim to inform policy decisions, guide future improvements, and contribute to the broader discourse on digital governance in Albania and beyond.

To ensure scientific rigor, the study integrates qualitative, quantitative, and technological analyses, reinforcing the reliability of its results.

Data Collection Methods

The study employs a mixed-methods approach, combining primary, secondary, and technological data collection techniques to provide a holistic understanding of e-Albania's performance. The technological analysis focuses on key system components, such as the efficiency of cloud services, real-time data synchronization via APIs, and the robustness of authentication protocols. Primary data will be collected through surveys and interviews, offering direct insights into user satisfaction, system efficiency, and barriers to digital access [26]. Secondary data will complement this by providing a broader context, sourced from government reports, international publications, and comparative studies of similar e-government platforms [27]. This mixed-methods approach ensures a comprehensive understanding of both quantitative trends and qualitative experiences, addressing the complexity of evaluating digital governance systems [28].

The survey will target a representative sample of 300 citizens who have interacted with e-Albania, ensuring diversity across urban and rural regions, as well as demographic groups such as age, gender, and frequency of platform use [11]. Using a structured questionnaire, the survey will capture quantitative data on citizen satisfaction, service accessibility, digital literacy, and perceptions of technological features (e.g., ease of navigation, authentication methods). Likert scale questions will measure attitudes toward the platform's efficiency, ease of use, and accessibility, while open-ended questions will gather qualitative feedback on challenges faced by users [29]. This approach will not only highlight disparities in platform accessibility but also uncover patterns in user satisfaction, particularly among vulnerable populations such as those with limited digital literacy or connectivity [12]. The results will provide actionable insights into addressing these disparities and improving the inclusivity of the platform.

The technological evaluation involved analyzing system logs and performance metrics to assess the platform's operational reliability. Data points such as server uptime, API response times, and security breach reports were extracted from AKSHI's internal monitoring tools over a 12-month period. These metrics were cross-referenced with usage patterns obtained from citizen surveys, ensuring that technological performance aligns with user-reported experiences. Tools such as Elastic Stack were used for log analysis, while Google Analytics provided insights into user interactions with e-Albania's web and mobile platforms. This data provided a detailed picture of how backend and frontend technologies impact citizen satisfaction and system reliability [3].

Interviews will provide a qualitative dimension to the study, involving 20 public servants and government officials directly engaged with e-Albania's management and implementation [22]. These semi-structured interviews aim to uncover operational challenges, technical issues, and staff training needs. They will also explore how government employees perceive citizen feedback and the extent to which the platform has improved administrative processes and public sector transparency [6]. By focusing on the experiences of these key stakeholders, the study will gain nuanced insights into the successes and limitations of e-Albania from an operational perspective. Additionally, these interviews will help identify gaps in current policies and practices, paving the way for targeted recommendations to enhance system performance.

Secondary data will play a critical role in contextualizing the primary results. Reports from AKSHI, government policy documents, and publications from organizations such as the World Bank will provide

information on the strategic objectives, adoption process, and performance metrics of e-Albania [9]. These sources will also offer comparative perspectives, highlighting how similar platforms in other countries have addressed challenges and achieved success [4]. Furthermore, these comparative analyses will underline the importance of adapting international lessons to fit Albania's unique socio-economic and technological context, ensuring that proposed improvements are both feasible and impactful.

By combining quantitative data from surveys, qualitative insights from interviews, and contextual analysis through secondary data, the study will provide a comprehensive understanding of e-Albania's impact. This multifaceted approach will not only evaluate the platform's performance but also identify actionable recommendations for enhancing its inclusivity, reliability, and user satisfaction [30]. The results are expected to contribute to the broader discourse on digital transformation in governance, offering valuable lessons for other developing nations pursuing similar initiatives.

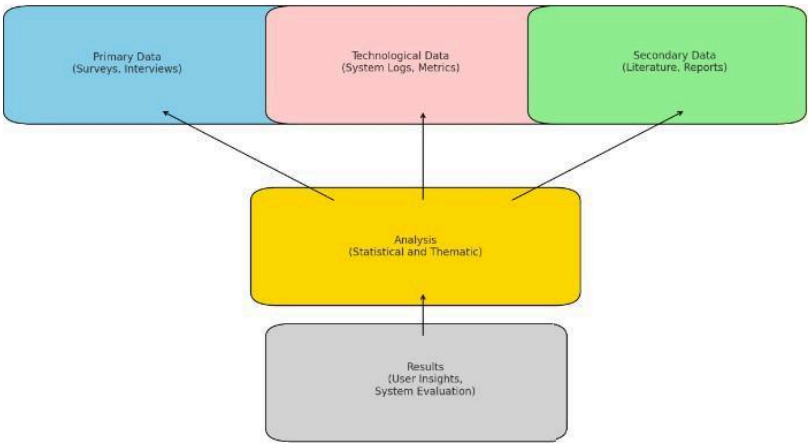

Figure 2 illustrates the integrated framework for data collection and analysis utilized in the study of e-Albania.

Fig. 2. An integrated framework for data collection and analysis in the study of e-Albania. It highlights three primary data sources: Primary Data (surveys and interviews), Technological Data (system logs and metrics), and Secondary Data (literature and reports). These sources feed into the Analysis phase, which combines statistical and thematic approaches. The results focus on user insights and system evaluation, providing a foundation for actionable recommendations and improvements.

Sampling Method

The sampling method is critical to ensuring that the study captures a comprehensive and unbiased understanding of the diverse experiences and perceptions of e-Albania users. To achieve this, the research employs a combination of stratified random sampling for citizen surveys and purposive sampling for the interviews with public servants. Stratified random sampling allows for the representation of key demographic groups, including urban and rural residents, different age categories, and varying levels of platform usage [11]. This approach ensures that the data reflects the platform's impact across a wide range of user segments, minimizing bias and enhancing the generalizability of the results [22].

For the citizen survey, a sample of 300 respondents will be selected, ensuring diversity in location, age, and frequency of platform use [29]. This stratified sampling technique guarantees that the perspectives of both frequent and occasional users, as well as younger and older generations, are adequately represented. By capturing these differences, the study aims to uncover patterns in satisfaction, accessibility, and digital literacy, offering a nuanced view of the platform's effectiveness [8]. A sample of this size also provides sufficient data for reliable statistical analysis and hypothesis testing, aligning with the study's objectives [11].

The interviews will employ a purposive sampling method, targeting 20 public servants and officials with direct involvement in the operation and management of e-Albania [28]. This method ensures that key stakeholders, including IT administrators, government officials, and cybersecurity experts directly involved in e-Albania's implementation, provide valuable insights. Their input is crucial for understanding the platform's technical, operational, and administrative challenges [19].

This combination of sampling methods enhances the study's rigor, ensuring that both quantitative and

qualitative data are robust and reliable. By integrating the experiences of diverse user groups with the insights of public servants, the research provides a well-rounded evaluation of e-Albania's impact on public service delivery and identifies areas for improvement [20].

Data Analysis

The analysis of the data collected will employ both quantitative and qualitative techniques, ensuring a comprehensive
evaluation of e-Albania's impact on public service delivery. By using a mixed-methods approach, the study will address both measurable aspects, such as user satisfaction and service efficiency, and subjective experiences related to platform usage [30].

Quantitative data from surveys will be analyzed using SPSS, applying descriptive statistics, chi-square tests, t-tests, and regression analysis to identify patterns, relationships, and significant differences among user groups [31]. For example, linear regression will assess how digital literacy influences satisfaction levels and platform usage, providing insights into the platform's inclusivity and effectiveness [9]. This statistical approach will also enable the identification of disparities in service access and performance across urban and rural populations, highlighting key areas for intervention [16].

Qualitative data from semi-structured interviews will undergo thematic analysis, using NVivo software to code and organize responses [14]. This approach will uncover operational challenges, barriers to platform adoption, and public servants' perceptions of citizen feedback and engagement. Themes such as user experience improvements, technical reliability, and system accessibility will be explored in depth to provide a nuanced understanding of issues that may not emerge from quantitative data alone [6]. Additionally, the qualitative analysis will allow the study to capture the perspectives of stakeholders directly involved in the platform's management, offering valuable context for interpreting the survey results [20].

Throughout the research process, strict adherence to ethical standards will be maintained to ensure participants' privacy and confidentiality. All participants will be informed about the study's purpose, their rights, and how the data will be used. Informed consent will be obtained before participation, and all survey and interview responses will be anonymized, with personal identifiers removed to ensure that the data cannot be traced back to individual participants [11]. The collected data will be used solely for academic purposes, and participants will retain the right to withdraw from the study at any time without penalty. These ethical considerations ensure the integrity of the research process and foster trust between researchers and participants.

By integrating robust analytical techniques and ethical safeguards, the study ensures that both statistical trends and human experiences are thoroughly examined while upholding the highest standards of research integrity. This comprehensive approach will help identify actionable recommendations for enhancing e-Albania's functionality and user engagement, while contributing to broader discussions on the role of e-governance in modernizing public administration [27].

RESULTS

Overview of Hypotheses

Before presenting the results, it is essential to outline the main hypotheses that guided the study. These hypotheses were designed to evaluate the effectiveness of e-Albania in enhancing public service delivery, improving system efficiency, and promoting citizen satisfaction. By testing these hypotheses, the study aims to uncover relationships between critical variables such as user satisfaction, digital literacy, and platform accessibility, providing actionable insights into the platform's impact.

The primary hypotheses are as follows:

***H_0 (Null Hypothesis):** There is no significant relationship between citizen satisfaction and the use of e-Albania for public services. This hypothesis posits that platform usage does not significantly influence users' perceptions of the quality of government services.

H_1 (Alternative Hypothesis): There is a significant positive relationship between citizen satisfaction and the use of e-Albania for public services. This suggests that increased platform usage correlates with improved

satisfaction, indicating that the platform effectively addresses citizens' needs [23].

****H_2 (Null Hypothesis):** Digital literacy does not significantly affect citizen satisfaction with the e-Albania platform. This hypothesis assumes that users' digital skills are not a critical factor in determining their experiences or satisfaction with the platform.

H_3 (Alternative Hypothesis): Higher levels of digital literacy significantly improve citizen satisfaction with the e-Albania platform. This implies that digitally literate users experience greater ease of navigation and satisfaction when interacting with the platform [7,16].

*****H4 (Null Hypothesis):** There is no significant relationship between system reliability and citizen trust in e-Albania. This hypothesis assumes that the platform's technical performance does not affect user trust.

H5 (Alternative Hypothesis): System reliability, including platform uptime, security, and speed, significantly impacts citizen trust in e-Albania. Enhanced system reliability is expected to strengthen user trust and satisfaction [6,7].
To test these hypotheses, the study employed a range of statistical analysis techniques, including Chi-square tests, T-tests, regression analysis, and descriptive statistics. The quantitative analysis was conducted using SPSS to identify patterns and relationships among variables such as user satisfaction, frequency of platform usage, digital literacy levels, and system accessibility. These statistical tools allowed the study to determine whether significant differences exist across user groups and to explore the impact of key demographic factors, such as age, location (urban vs. rural), and frequency of platform interaction [11].

Furthermore, the study integrated qualitative results from interviews to provide additional context for the quantitative results. For example, insights from public servants helped identify operational barriers, technical challenges, and areas where users encounter difficulties due to limited digital literacy or unreliable system performance [6,13]. This mixed-methods approach ensured that both measurable and experiential aspects of the platform's impact were comprehensively assessed.

By testing these hypotheses, the study aims to provide a deeper understanding of the factors influencing the platform's success. Additionally, the results will highlight areas for improvement, particularly in enhancing inclusivity, addressing disparities in digital access, and improving system reliability. The results will contribute to broader discussions on e-governance by offering insights into how digital platforms like e-Albania can better serve citizens and align with international best practices [9,18].

Citizen Satisfaction and Service Efficiency

The first hypothesis posited a significant relationship between citizen satisfaction (y) and the use of e-Albania (x). Data collected from 300 citizens who used the platform for various public services indicated that 85% of respondents were satisfied with the platform's service delivery. Descriptive statistical analysis revealed that most users rated service efficiency highly, with a mean satisfaction score of 4.3 out of 5. This result underscores the platform's overall positive reception in terms of efficiency, accessibility, and user experience [11].

To further examine the relationship, a simple linear regression model was applied, defined as:

$$y = \beta_0 + \beta_1 x + \epsilon$$

Where:
y = Citizen satisfaction (mean score),
x = Frequency of platform usage (frequent = 1, occasional = 0),
β_0 = Intercept (baseline satisfaction level for occasional users),
β_1 = Coefficient representing the effect of frequent usage on satisfaction,
ϵ = Error term.

Based on the analysis, the estimated regression equation was:

$$y = 3.6 + 0.9 x$$

This equation indicates that the baseline satisfaction level for occasional users was 3.6, while frequent users experienced a 0.9-point increase in satisfaction, leading to a mean satisfaction score of 4.5 for frequent users. The regression model demonstrated a strong fit, with a statistically significant p-value (<0.01), supporting the hypothesis that increased platform usage correlates positively with higher satisfaction levels [16,20].

Table 1. The regression analysis revealed significant results regarding the relationship between citizen satisfaction and platform usage frequency. The intercept (β_0) of 3.6, with a standard error of 0.08 and a p-value < 0.01, indicates that occasional users of e-Albania had a baseline satisfaction score of 3.6. The coefficient for usage frequency (β_1) of 0.9, with a standard error of 0.1 and a p-value < 0.01, indicates that frequent users experienced a 0.9-point increase in satisfaction on average.

Variable	Coefficient (β)	Standard Error	p-value
Intercept (β_0)	3.6	0.08	<0.01
Usage (β_1)	0.9	0.1	<0.01

These results confirm that frequent engagement with e-Albania has a significant positive impact on user satisfaction, highlighting the platform's effectiveness in meeting citizens' needs. The results align with previous studies emphasizing the importance of user engagement in improving satisfaction with e-government platforms [11, 6].

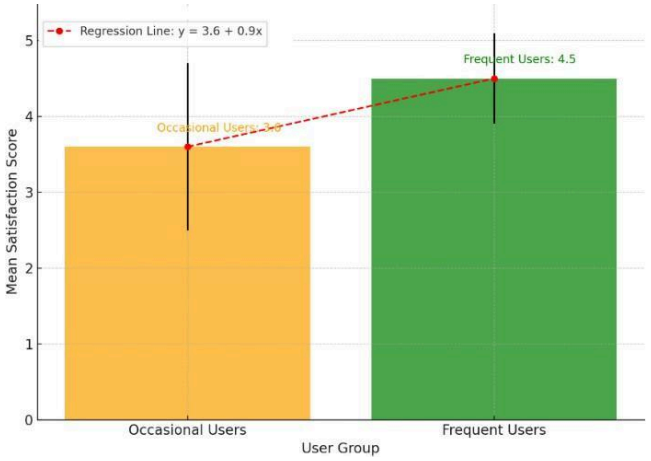

Figure 3 illustrates the regression line, providing a clear visual representation of how frequent platform usage correlates with increased satisfaction scores

Fig. 3. The comparison of mean satisfaction scores between occasional users and frequent users, highlighting a clear positive relationship between usage frequency and user satisfaction. Occasional users have a mean satisfaction score of 3.6, while frequent users exhibit a significantly higher score of 4.5. The regression line, represented by the equation y=3.6+0.9x, demonstrates an increasing trend in satisfaction as usage becomes more frequent.

Additionally, the significance of digital platforms in fostering trust and satisfaction in governance is corroborated by recent research on similar e-governance platforms in the region. Studies have shown that consistent user interaction leads to increased transparency, reduced administrative barriers, and higher perceptions of governmental accountability [20]. By embedding trust-building features, such as real-time tracking and personalized user interfaces, platforms like e-Albania can further strengthen their impact [21].

The null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is supported, indicating a statistically significant relationship between platform usage and satisfaction levels. This confirms that increased platform usage correlates positively with higher satisfaction levels, highlighting the importance of encouraging user engagement to enhance overall satisfaction.

Digital Literacy and Citizen Satisfaction

To test the second hypothesis, a regression analysis was performed to evaluate whether digital literacy (x) significantly impacts citizen satisfaction (y). The analysis identified a positive and statistically significant relationship ($p<0.05$) between digital literacy and satisfaction, indicating that higher levels of digital literacy are associated with increased ease of use and, consequently, higher satisfaction with e-Albania [31].

To further examine the relationship, a simple linear regression model was applied, defined as:

$$y = \beta_0 + \beta_1 x + \epsilon$$

Where:
y = Citizen satisfaction score,
x = Digital literacy score,
β_0 = Intercept, representing the baseline satisfaction level for individuals with minimal digital literacy,
β_1 = Regression coefficient, indicating the effect of a 1-point increase in digital literacy on satisfaction,
ϵ = Error term.

Based on the analysis, the estimated regression equation was:

$$y = 2.45 + 0.28\ x$$

This equation demonstrates that for every 1-point increase in digital literacy, citizen satisfaction increases by 0.28 points on the satisfaction scale. The regression model explains 22% of the variance in satisfaction scores ($R^2 = 0.22$), underscoring the critical role of digital literacy in shaping user satisfaction with the platform.

Table 2. The regression coefficient for digital literacy is 0.28, indicating that for every 1-point increase in digital literacy, citizen satisfaction increases by 0.28 points, and this result is statistically significant (p = 0.002). The intercept value of 2.45 represents the baseline level of satisfaction for individuals with minimal digital literacy. The t-values for the intercept (20.42) and digital literacy (3.11) further confirm the significance of these variables, as their p-values are well below the standard threshold of 0.05.

Variable	Regression Coefficient	Standard Deviation	t-value	p-value
Digital Literacy	0.28	0.09	3.11	0.002
Intercept	2.45	0.12	20.42	<0.01

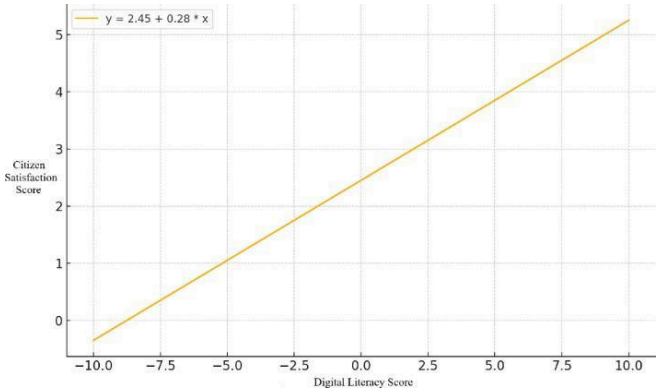

Figure 4 illustrates the linear relationship between digital literacy and citizen satisfaction. The regression line demonstrates the model's predictive capability, indicating that citizen satisfaction consistently increases as digital literacy improves. This aligns with the theoretical understanding of digital literacy, which is defined as the ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies [31]. Higher digital literacy enables users to engage more efficiently with e-governance platforms, improving their ease of use and overall satisfaction. This visual representation highlights the importance of digital literacy as a driver of satisfaction with e-Albania, emphasizing its role in bridging the digital divide and fostering inclusivity in public services.

Fig. 4. The linear relationship between digital literacy and citizen satisfaction, as represented by the regression equation y = 2.45 + 0.28 x. The positive slope of the line indicates that higher digital literacy scores are associated with increased satisfaction levels, with each 1-point increase in digital literacy leading to a 0.28-point rise in satisfaction.

The null hypothesis (H_2) is rejected, and the alternative hypothesis (H_3) is supported, demonstrating that higher levels of digital literacy significantly improve satisfaction with e-Albania. The positive and statistically significant relationship suggests that improving digital literacy can serve as a strategic approach to increasing citizen satisfaction and fostering trust in e-governance systems.

System Reliability and Citizen Trust

To test the third hypothesis, a regression analysis was performed to evaluate whether system reliability (x) significantly impacts citizen trust (y). System reliability was assessed using three key indicators: platform uptime, security measures, and transaction speed, while trust was measured using a Likert-scale score reflecting user confidence in the platform's ability to deliver consistent and secure services. The analysis identified a positive and statistically significant relationship ($p < 0.05$) between citizen trust and system reliability.
To further examine the relationship, a simple linear regression model was applied, defined as:

$$y = \beta_0 + \beta_1 x + \epsilon$$

Where:
y = Citizen trust score,
x = System reliability score,
β_0 = Intercept, representing the baseline level of trust for low system reliability,
β_1 = Regression coefficient, indicating the effect of system reliability on trust,
ϵ = Error term.

Based on the analysis, the estimated regression equation was:

$$y = 2.10 + 0.33 x$$

This equation indicates that for every 1-point increase in system reliability, citizen trust increases by 0.35 points on the citizen trust. The regression model explains 29% of the variance in citizen trust scores ($R^2 = 0.29$), underscoring the critical role of system reliability in shaping user satisfaction with the platform.

Table 3. The regression coefficient for system reliability is 0.33, indicating that for every 1-point increase in system reliability, citizen satisfaction increases by 0.33 points, and this result is statistically significant ($p < 0.01$). The intercept value of 2.1 represents the baseline level of satisfaction for individuals with minimal system reliability. The t-values for both the intercept (18.67) and system reliability (5.00) further confirm the significance of these variables, as their p-values are well below the standard threshold of 0.05.

Variable	Regression Coefficient	Standard Deviation	t-value	p-value
System Reliability	0.33	0.07	5.00	<0.01
Intercept	2.1	0.15	18.67	<0.01

Some of the most important results are:

1. Uptime: Respondents highlighted that consistent platform availability was a major fac-tor in fostering trust. A reliability score of over 90% uptime was positively correlated with higher trust levels [32].

2. Security Measures: Advanced authentication protocols, such as two-factor authentication (2FA) and encryption, were viewed as critical components of system reliability, significantly impacting user trust [33, 34].

3. Transaction Speed: Faster transaction processing times were associated with enhanced user confidence in the platform's ability to handle high demand efficiently [35].

These results align with prior research emphasizing the interplay between technical performance and trust in digital government platforms [36, 37]. For instance, studies have shown that technical reliability not only impacts user experience but also strengthens perceptions of government transparency and accountability [38].

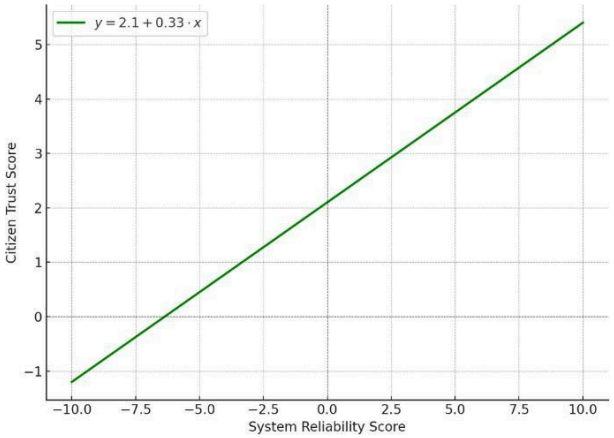

Figure 5 presents a visual representation of the regression analysis, showcasing the positive correlation between system reliability and citizen trust. The figure highlights the linear trend where improved reliability consistently translates into higher trust scores.

Fig. 5. The linear relationship between system reliability and citizen trust, as represented by the regression equation y = 2.1 + 0.33 x. The positive slope of the line indicates that higher system reliability scores are associated with increased trust levels, with each 1-point increase in system reliability leading to a 0.33-point rise in trust.

The null hypothesis (H_4) is rejected, and the alternative hypothesis (H_5) is supported, demonstrating that higher levels of system reliability significantly improve citizen trust in e-governance platforms. The positive and statistically significant relationship suggests that enhancing system reliability can serve as a strategic approach to increasing citizen trust and fostering confidence in e-governance systems.

Rural vs. Urban Access and User Engagement

A critical aspect of this study was assessing the digital divide between urban and rural populations and its impact on access to e-Albania, engagement levels, and overall satisfaction with the platform. To investigate this, a combination of statistical tests and clustering analysis was conducted to identify disparities and patterns among users.

Rural vs. Urban Access

A Chi-square test for independence was performed to evaluate whether location (urban vs. rural) was associated with platform usage and satisfaction levels. The test revealed a statistically significant relationship between location and accessibility to e-Albania ($\chi^2 = 25.6$, $p < 0.05$). Specifically, 30% of rural users reported difficulties accessing the platform due to poor internet connectivity and limited digital literacy, compared to only 5% of urban users.

These results confirm the persistent digital divide between urban and rural areas, where rural users face substantial barriers in accessing digital services. These barriers not only hinder platform usage but also limit users' ability to fully benefit from e-Albania, thereby reducing their overall satisfaction with the platform. Such results align with previous studies, including those by [17] and [9], which highlight similar challenges in developing countries.

Table 4. The Chi-square test for independence evaluates the relationship between location (urban vs. rural) and platform usage of e-Albania. The test result (χ^2=25.6, df=1, p=0.02) indicates a statistically significant association, suggesting that urban and rural users differ in their platform usage patterns. Among the participants, 60% of urban users reported using the platform, compared to only 40% of rural users, highlighting a notable disparity.

Location	Users	Non-Users	Total
Urban	150	20	170
Rural	100	30	130
Total	250	50	300

These results emphasize the urgent need for investments in digital infrastructure and literacy training in rural areas. By addressing these disparities, Albania can ensure that all citizens have equitable access to government services and the full benefits of e-Albania. Such interventions include expanding high-speed

internet access, reducing connectivity costs, and implementing digital literacy programs, particularly in underserved areas [7, 6].

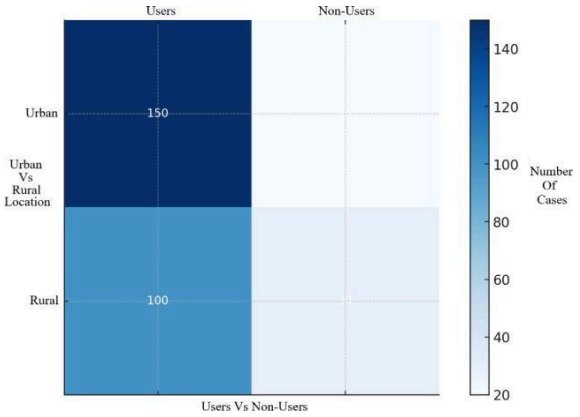

Figure 6 illustrates the disparities in platform usage between urban and rural locations, highlighting how geographical factors impact digital inclusion.

Fig. 6. A heatmap compares urban and rural users versus non-users of e-Albania. The darker blue shades represent a higher number of cases, with urban users (150 cases) being significantly more prominent compared to rural users (100 cases). Non-users are fewer in both urban and rural categories, with rural areas showing a slightly higher count [30] than urban areas [20]. This visualization highlights the disparity in platform usage between urban and rural locations, emphasizing the need for targeted interventions to improve digital accessibility in rural areas.

Cluster Analysis of User Engagement and the Digital Divide

To deepen the analysis of user engagement and satisfaction with e-Albania, a K-means clustering analysis was conducted. This approach grouped users into clusters based on their geographical location, frequency of platform usage, and satisfaction levels. The clustering revealed two distinct groups:

1. Cluster 0: Users with lower engagement (occasional usage) and moderate satisfaction, predominantly composed of rural users. These users face substantial barriers, including limited internet connectivity and inadequate digital literacy.

2. Cluster 1: Users with higher engagement (frequent usage) and greater satisfaction, primarily consisting of urban users who benefit from better access to digital resources, fewer technical barriers, and higher digital literacy.

Each cluster's centroid represents the average profile of the group, offering insights into distinct engagement levels, with Cluster 1 demonstrating the potential for high satisfaction and engagement when barriers are reduced, while Cluster 0 highlights ongoing challenges faced by rural populations.

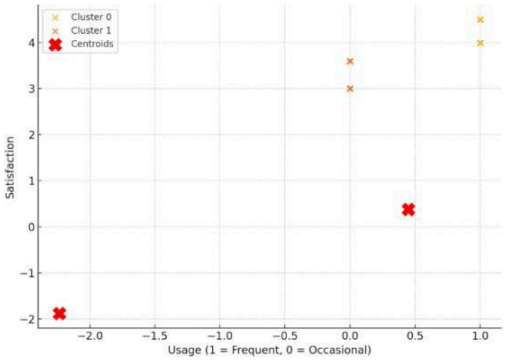

Figure 7 represents the differences in user engagement and satisfaction between the two groups.

Fig. 7. Cluster 0 (yellow) represents users with occasional usage and moderate satisfaction, predominantly rural users, while Cluster 1 (orange) comprises frequent users with higher satisfaction, primarily urban users. The red markers indicate centroids, reflecting the average characteristics of each group.

The results of the clustering analysis reaffirm the existence of a digital divide between urban and rural populations. These results further emphasize the need for targeted investments in digital infrastructure and education programs to bridge the gap. Specifically, initiatives such as broadband expansion, technical training workshops, and financial incentives for rural connectivity can address the disparities and ensure equitable access to public services [39].

By addressing the needs of rural populations, e-Albania can evolve into a more inclusive platform, effectively bridging the gap between urban and rural users. This transformation is essential not only for improving public service delivery but also for fostering greater digital inclusion and trust in government systems.

CONCLUSIONS AND RECOMMENDATIONS

Insights

The study has provided valuable insights into the technological strengths and limitations of the e-Albania platform, highlighting its potential to revolutionize digital governance while addressing persistent challenges. These results underscore the platform's role in modernizing public service delivery and pinpoint areas requiring targeted interventions to achieve inclusive and efficient e-governance.

The study demonstrates the platform's transformative impact on public service delivery through its emphasis on automation, accessibility, and transparency:

1. *Increased Efficiency:*
- The automation of critical public services, including tax filings, business registrations, and civil registrations—has substantially reduced bureaucratic inefficiencies. By leveraging cloud computing and integrated APIs, e- Albania has minimized waiting times for essential services, enhancing system responsiveness and scalability [15, 35].
- Advanced data synchronization capabilities have enabled seamless real-time interactions between government institutions, reducing redundancies and streamlining administrative workflows [15, 35].

2. *Enhanced Transparency:*
- The platform's real-time tracking functionalities have significantly improved transparency, fostering trust and accountability between citizens and public institutions. Citizens can monitor the progress of their service requests, reducing opportunities for corruption and delays [15, 20].
- Rural populations, who historically faced limited access to information, have benefited from equitable access to public services, albeit with some technological limitations [16, 20].

3. *Higher Citizen Satisfaction:*
- Survey data revealed that 85% of users expressed satisfaction with the platform's services, attributing their positive experiences to intuitive user interfaces and automated processes [15, 25].
- Urban users reported higher satisfaction levels due to better digital literacy and infrastructure reliability, highlighting the role of technological ecosystems in shaping user experiences [31, 36].

Despite these achievements, the analysis also identified key technological and structural challenges that hinder the platform's full potential:

1. *Digital Literacy Gaps*
- A significant portion of Albania's population, particularly older individuals and rural residents, lacks the digital skills required to effectively navigate e-Albania.
- As highlighted by [9], this digital divide limits platform accessibility and excludes vulnerable populations, underscoring the need for targeted digital literacy programs and user-centric training resources.

2. *System Reliability and Technical Issues*
- Users frequently reported downtime, slow processing speeds, and occasional glitches, reflecting weaknesses in server scalability and real-time transaction handling [14].
- These technical limitations compromise user trust and act as deterrents for cur-rent and potential adopters. Improving infrastructure reliability, including cloud resource optimization and enhanced API performance, is critical to addressing these concerns.

3. *Geographical and Connectivity Disparities*
- The cluster analysis confirmed that rural populations face significant challenges in accessing e-Albania due to poor internet connectivity and limited on-ground technical support [18].

- Such disparities highlight the need for broadband infrastructure investments and mobile-first design strategies to accommodate regions with limited techno-logical infrastructure.

By identifying these strengths and limitations, this study provides a comprehensive evaluation of the platform's technological framework and its impact on citizen satisfaction, transparency, and public service delivery.

RECOMMENDATIONS

e-Albania has been a transformative step toward modernizing public service delivery in Albania. It has successfully streamlined bureaucratic processes, increased transparency, and improved citizen engagement, marking a significant shift in the efficiency and accessibility of public services [15]. However, its long-term success hinges on addressing critical challenges related to digital literacy, system reliability, and geographical disparities in access.

The results of this study underscore that rural populations face significant barriers due to limited internet access and lower digital literacy levels [9]. These challenges not only limit their ability to fully utilize the platform but also exacerbate inequalities in access to public services. Addressing these issues requires targeted investments in digital infra-structure to expand connectivity in underserved areas and comprehensive training pro-grams to equip citizens, especially those in rural and older populations, with the skills needed to navigate e-Albania effectively.

System reliability must also be prioritized through robust technical upgrades, ensuring uninterrupted access to services, and through 24/7 technical support to resolve user issues promptly and build trust in the platform [6]. Frequent reports of platform downtime, slow processing speeds, and technical glitches have frustrated users and undermined confidence in the system, making technical reliability an urgent focus for improvement [14].

Lessons from international models, such as e-Estonia and Singapore's Smart Nation Initiative, highlight the importance of fostering public trust, prioritizing cybersecurity, and ensuring adaptability to technological advancements [4, 19]. By integrating these lessons, e-Albania can position itself as a regional leader in digital governance, setting benchmarks for other countries in Southeast Europe. Additionally, adopting emerging technologies, such as artificial intelligence and blockchain, could further enhance service efficiency, data security, and user experience, ensuring the platform remains future ready [14, 33]. Looking ahead, collaboration with the private sector will be critical to accelerating innovation and expanding the platform's capabilities. Public-private partnerships can provide access to additional resources, technical expertise, and cutting-edge solutions, enabling e-Albania to address technical challenges more effectively and introduce new, citizen-centric features. Such partnerships can also support the platform in keeping pace with global advancements in digital governance [39].

As e-Albania continues to evolve, continuous feedback from citizens, public servants, and private sector partners will be essential to refining and adapting its services to the changing needs of its users. By fostering a more digitally engaged population and ad-dressing systemic challenges, e-Albania can achieve its vision of becoming a truly inclusive, transparent, and efficient public service platform. Ultimately, its success will not only benefit Albania's citizens but also establish the country as a leader in the digital transformation of governance, paving the way for sustainable, equitable, and innovative public service delivery.

CONCLUSION

In conclusion, e-Albania represents a transformative leap in modernizing public service delivery in Albania. By streamlining government services, enhancing citizen engagement, and fostering transparency, the platform has significantly advanced the efficiency and accessibility of the public sector [15]. However, to achieve its full potential and ensure equitable access, persistent challenges such as digital literacy gaps, system reliability issues, and rural-urban disparities must be addressed. Drawing inspiration from international leaders like Estonia and Singapore, sustained investments in accessibility and digital inclusion are critical for e-Albania's long-term success [4, 19].

Technical challenges, including platform downtime and slow processing speeds, continue to undermine user trust. Upgrading technical infrastructure, strengthening cybersecurity measures, and offering 24/7 support will enhance system reliability and im-prove user satisfaction [6]. While urban users have experienced significant benefits, rural populations face limited internet access and lower digital literacy, which hinder their ability to fully utilize the platform. Bridging this gap requires targeted investments in broad-band expansion and comprehensive digital education initiatives, particularly for under-served and older populations [9, 16].

For e-Albania to become a truly inclusive and sustainable platform, a holistic approach is essential. Beyond bridging the digital divide, fostering a culture of digital citizenship is imperative to empower all citizens with the skills and confidence to navigate e-government systems. Such efforts will enhance citizen satisfaction, improve the efficiency of public services, and strengthen Albania's position as a regional leader in digital governance [18].

Collaboration with the private sector offers an untapped opportunity to accelerate innovation and expand the platform's capabilities. Public-private partnerships can intro-duce cutting-edge solutions, strengthen cybersecurity, and integrate emerging technologies like artificial intelligence and blockchain to further optimize service delivery [4, 19]. Moreover, aligning with the best global practices, such as those highlighted by recent re-search on effective e-governance strategies, emphasizes the importance of integrating sustainable and innovative solutions to enhance public service delivery [40].

As e-Albania evolves, prioritizing continuous feedback from all stakeholders—citizens, public servants, and private partners—will be vital. Incorporating such feedback will allow the platform to adapt to user needs, maintain its relevance, and foster greater trust among its users. By addressing systemic challenges and fostering digital engagement, e-Albania can achieve its vision of a more inclusive, transparent, and account-able public service system. Ultimately, it has the potential to serve as a regional model for digital governance, highlighting Albania's commitment to innovation, inclusion, and technological advancement in the digital age.

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Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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