

THE IMPACT OF E-GOVERNANCE ON SHORTENING THE PUBLIC SERVICE DELIVERY TERMS

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ABSTRACT

The impact issue and development of e-governance on shortening the terms of public service provision is urgent for ensuring the efficiency of government agencies. The public service delivery terms affect the effectiveness of the state's public policy and is directly related to citizen engagement in digital e-governance. The article aims to determine the effectiveness of e-governance and calculate the relationship with the terms of public service delivery by using

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correlation analysis. The article analyses the impact of e-governance on reducing the public service delivery terms among a sample of developed countries that have the highest level of digital public administration. The research employed a correlation analysis method between the E-government Development Index and the average term of providing various public services in the ten most developed countries in the field of e-government. The main principles of the formation and development of e-governance are described, and the efficiency of which, according to the E-Government Development Index (EGDI), is 0.95 and 0.97 in developed countries. The main empirical aspects of the proportionality between e-governance and a 25% reduction in public service delivery terms were studied, which is a positive result. The obtained results were interpreted, where a correlation analysis was performed with a resulting inclination of 2.03, which indicates a close relationship between electronic services and the citizen engagement. Further prospects for the development of e-governance are outlined with the aim of reducing bureaucratic processes and potential opportunities to shorten public service delivery terms through the use of digital technologies.

Keywords: public services; e-governance, E-Government Development Index, correlation analysis, state machinery, public administration.

El Impacto de la Gobernanza Electrónica en el Acortamiento de los Plazos de Prestación de los Servicios Públicos

RESUMEN

La cuestión del impacto y el desarrollo de la gobernanza electrónica en la reducción de los plazos de prestación de servicios públicos es urgente para garantizar la eficiencia de las agencias gubernamentales. Los términos de prestación de servicios públicos afectan la efectividad de la política pública del estado y están directamente relacionados con la participación ciudadana en la gobernanza electrónica digital. El objetivo del artículo es determinar la efectividad de la gobernanza electrónica y calcular la relación con los términos de prestación del servicio público mediante el uso de análisis de correlación. El artículo analiza el impacto de la gobernanza electrónica en la reducción de los plazos de prestación de servicios públicos entre una muestra de países desarrollados que tienen el nivel más alto de administración pública digital. Se describen los principios fundamentales de la formación y desarrollo de la gobernanza electrónica, cuya eficiencia según el Índice de Desarrollo del Gobierno Electrónico (EGDI) es de 0,95 y 0,97 en los países desarrollados. Se estudiaron los principales aspectos empíricos de la proporcionalidad entre la gobernanza electrónica y una reducción del 25% en los plazos de prestación de los servicios públicos, lo que es un resultado positivo. Se interpretaron los resultados obtenidos, donde se realizó un análisis de correlación con una inclinación resultante de 2.03, lo que indica una estrecha relación entre los servicios electrónicos y la participación ciudadana. Se describen otras perspectivas para el desarrollo de la gobernanza electrónica con el objetivo de reducir los procesos burocráticos y las oportunidades potenciales para acortar los plazos de prestación de servicios públicos mediante el uso de tecnologías digitales.

Palabras clave: servicios públicos, gobernanza electrónica, Índice de Desarrollo del Gobierno Electrónico, Análisis de correlación, maquinaria estatal, administración Pública.

Introduction

Public service provision is a key aspect of the management of modern states, which directly affects the effectiveness of citizen interaction with the state. According to the study McDonald et al. (2022), the introduction of e-governance contributes to the improvement of the quality of public services and shortens the terms of their provision. Optimization of service provision, reduction of bureaucracy and shortening of request processing time are the main tasks in this area. The use of digital technologies and automation of processes significantly increase the speed and quality of service provision to citizens, as well as provide a more transparent and understandable management system. Bureaucracy, which is often associated with slowness and inflexibility, can be noticeably reduced through the e-governance. Digitization allows replacing paper document flow, minimizing the human factor in the decision-making process, and providing services more efficiently. This not only reduces the administrative burden on citizens, but also improves the general perception of government institutions.

Modern trends of e-governance are characterized by gradual digitization and the increasing use of information technologies to improve the efficiency of public services and overcome bureaucratic challenges. Schmidhuber et al. (2021) claim that the development of digital technologies in the public sector is slower compared to the private sector, which is determined by the need to ensure the security and reliability of systems. E-governance systems offer a platform for more transparent, accessible and cost-effective administrative services. One of the main goals of e-governance is to improve the efficiency of public administration. The digitization of processes contributes to reducing the processing time, which leads to faster and more efficient solutions to citizens' problems. For example, the data from Estonia, a pioneer of e-government, show that the introduction of digital signatures and automation of processes has significantly reduced the administrative burden. Modern e-governance strategies increasingly use big data to optimize administrative processes and provide personalized services. Countries like Singapore are using artificial intelligence (AI) systems to analyse large data volumes in order to identify trends and support policy decisions.

The importance of service delivery terms is difficult to overestimate, as they directly affect citizens' satisfaction with public services. Reducing the time of processing requests and providing services not only increases the efficiency of the work of authorities, but also contributes to increasing the citizens' trust in the state. The analysis (Sievert et al., 2022) showed that developed countries are actively implementing e-government processes to automate and scale them, which leads to a reduction in bureaucratic delays.

This is especially important in the context of the modern society, where speed of service is often considered an indicator of competence and efficiency. The effectiveness of public administration through the implementation of e-governance systems is manifested in various dimensions. One of the main impacts is improving the efficiency of administrative processes. The digitization of services and the automation of routine tasks enable the authorities to respond more quickly to citizens' requests and use resources more efficiently. This results in a significant reduction in processing time and minimizes errors that can occur during manual processes. For example, the introduction of electronic filing of tax returns in many countries has led to faster processing and increased accuracy of tax data.

Another aspect is improving accessibility and convenience for citizens. E-Government allows users to access services and information from anywhere and at any time. This is particularly useful for people in remote or rural areas who may not have easy physical access to government facilities. For example, mobile e-government programmes in India have helped rural populations gain easier access to basic services such as health and education.

Government transparency and accountability are also greatly enhanced by e-governance. Digital platforms enable citizens to control government activities and spending, reducing opportunities for corruption and ineffective governance. In such countries as Estonia, the introduction of e-government has contributed to more transparent governance by actively involving citizens in the decision-making process and providing access to public documents. E-governance also promotes citizen participation and democratic processes. Citizens can bring their thoughts and concerns directly to the government through online surveys, e-petitions, and feedback mechanisms. This results in a more responsive and citizen-oriented administration.

The aim of the study was to determine the relationship between the impact of e-governance and shortening of public service delivery terms through a correlation analysis between E-Government Development Index and Citizen Engagement Index. The effectiveness of conducting this research will indicate the practicality of the results of using e-governance and the possible shortening of public service delivery times. The main research objectives are:

1. Determine the current state of e-governance based on the studied sample of the countries.
2. Calculate the correlation between the indicators of e-governance and the citizen engagement into shortening public service delivery terms.
3. Interpret the obtained results and draw the relevant conclusions.

Literature Review

Implementing e-governance to ensure the effectiveness of the state machinery in interaction with citizens is an important research issue. Aduwo et al. (2020) note that the emergence of modern digital technologies stimulates the development of systems for the use and distribution of public services. According to Sievert et al. (2022), mass digitization contributes not only to the improvement of the corporate sector, but can also have an effective impact on governance. McCandless et al. (2022) agree with that and believe that the public administration implements digital technologies much more slowly than the private one, which is related to the need for security and the efficiency of the system. Coulthart and Riccucci (2021) state that, the modern practice of e-governance development involves creating effective mechanisms for providing key public services. The analysis (Blessett et al., 2019) showed that developed countries are actively implementing digitalization of government processes to ensure their automation and possible scaling.

Thuneibat et al. (2022) note that further development of public administration will be integrated into a single digital system to ensure the greatest efficiency. According to Gerton and Mitchell (2019), ensuring the deadline for the provision of public services has a direct connection through the citizen engagement in e-government services. Douglas et al. (2021) investigated this issue from the standpoint of software efficiency, the load of people on servers, and the increase in capacity through the improvement of data centres. Another approach, as Overton and Kleinschmit (2021) show, is to simplify the process of providing and receiving public services,

which can be implemented on the basis of legal regulation and the definition of a clear mechanism for receiving them. Rubin and Bartle (2021) studied this issue and determined that preferential access to public services for vulnerable segments of the population can significantly reduce the load on the digital infrastructure. According to Yaghi (2021), an important factor in the effectiveness of the provision of public services is the use of digital technologies and development for the state machinery of each individual country.

However, Räckers (2022) argued that the key challenge is the use of reliable systems of encryption, cryptography and improving the quality of monitoring of public services. According to AlMazrouei (2021), the impact of e-governance in modern processes is difficult to overestimate, which is related to the minimization of risks and the possibility of accelerating the efficiency of government work. Moreover, Jawabreh (2022) states that the use of e-governance and the reduction of public service delivery terms will be of leading importance for the effectiveness of its functioning in the context of sustainable economic development. MacLean and Titah (2021) note that the practice of distributing public administration services by social categories and the possibility of shortening the term of their provision is a debatable issue. Sun and Abraham (2021) indicate that this practice can be implemented only with the effective interaction of the legal system of governance and the public administration, as accounting and legal principles can improve the process of providing public services.

Khosrow-Pour (2009) emphasize that the issue of security is key in the context of geopolitical challenges and socio-economic instability, so it is necessary to use high-quality and effective e-governance systems. The creation of backup servers, the introduction of multifactor control and monitoring stages, as well as acceleration at the technical level can ensure the effectiveness of public service provision. So, the issue of the effect of e-governance on shortening the public service delivery terms remains debatable and requires applied and empirical research to determine the optimal means of its development.

Materials and Methods

The research procedure focuses on the analysis of the relationship between the implementation of e-governance and the efficiency of public services. A correlation analysis between the E-Government Development Index (EGDI) and the average term of provision of various public services is conducted in the study (United Nations, 2022).

The research sample covers the 10 most developed countries in the field of e-governance. The sample includes countries with high EDGI scores that demonstrate excellent results in implementing digital technologies in government processes. The analysis of the statistics from UN E-Government Knowledgebase is conducted for each country to collect data on the citizen engagement in the provision of key public services, the effectiveness of which is manifested in the reduction of the service delivery terms (United Nations, 2022). Correlation analysis through the Pearson correlation coefficient is used to determine the relationship between EDGI and the Government Services Index (GSI). The analysis focuses on identifying statistically significant correlations between high EDGI scores and reduced service delivery terms. Regression was used to calculate the relationship between these two indices in the context of public service delivery terms.

Correlation analysis is a key tool to determine a direct relationship between the level of development of e-government in the country, the speed of providing government services in

accordance with the citizen engagement. The data collection and analysis were followed by a detailed analysis of the results. This will allow not only to determine the degree of correlation between the development of e-government and the efficiency of service provision, but also to provide a theoretical explanation of the identified relationships. The results will be interpreted taking into account various factors, including the specifics of the sample countries, the specifics of their government systems, and other important variables.

Results

The implementation of e-government offers significant benefits, but also poses challenges such as security risks and the need for a comprehensive digital infrastructure. The following examples illustrate how different countries are overcoming these challenges to enjoy the benefits of digitization in the public sector (Table 1).

Table 1.
Characteristics of e-government in developed countries, 2022

Country	E-Government Development Index (X)	Government Services Index (Y)
Denmark	0.9730	0.8813
Republic of Korea	0.9510	0.9441
Finland	0.9550	0.9532
Estonia	0.9413	0.9733
Netherlands	0.9430	0.9621
New Zealand	0.9420	0.9545
Sweden	0.9410	0.7273
Australia	0.9405	0.9886
Iceland	0.9410	0.7955
United States	0.8029	0.6023

Source: compiled on the basis of UN E-Government Knowledgebase (United Nations, 2022).

The listed e-governance indices from different countries provide a deep insight into the current state and effectiveness of the digital transformation of public administration. Denmark with an index of 0.9730 leads this list, demonstrating its leading role in the field of e-government. This demonstrates a sophisticated digital infrastructure and strong commitment to digital service delivery. The country uses cloud technologies to increase the productivity of the state machinery and the ability to provide public services to citizens in a shorter time due to the fast operation of data centres and servers.

The Republic of Korea and Finland, with values of 0.9510 and 0.9550, respectively, also show their advanced position in the field of e-government. These countries have invested in innovative technologies to improve the interaction between government and citizens and increase the efficiency of public services. Estonia, known for its progressive digital initiatives, shows that even smaller countries are capable of being the leaders in digital government with an index of 0.9413. The Netherlands, New Zealand, and Sweden with indices around 0.940 show that a coherent and focused digital strategy is essential for effective governance. These countries have integrated digital services into their core administrative processes, resulting in improved citizen participation and transparency. Denmark actively uses cloud technologies to optimize the work of public institutions

and reduce service delivery time. Australia and Iceland, with similar values, demonstrate that countries and societies of all sizes can benefit from the implementation of e-government systems. The US, with an index of 0.8029, shows that there is still room for improvement in e-government despite its technological capabilities and resources. This can be attributed to various issues such as the size and complexity of the country and its administrative agencies.

E-Government Development Indices show that countries with a high EGDI tend to have more efficient, transparent and citizen-friendly administrative systems. They illustrate the importance of digital transformation for modern governance and provide insight into the different approaches and strategies of different countries.

The independent variable is EGDI, and the dependent variable is GSI. The following table is made to calculate the regression coefficients (Table 2).

Table 2.

Correlation between the E-Government Development Index and Government Services Index

E-Government Development Index	Government Services Index	X·Y	X ²	Y ²
0.9730	0.8813	0.8575049	0.946729	0.77668969
0.9510	0.9441	0.8978391	0.904401	0.89132481
0.9550	0.9532	0.910306	0.912025	0.90859024
0.9413	0.9733	0.91616729	0.88604569	0.94731289
0.9430	0.9621	0.9072603	0.889249	0.92563641
0.9420	0.9545	0.899139	0.887364	0.91107025
0.9410	0.7273	0.6843893	0.885481	0.52896529
0.9405	0.9886	0.9297783	0.88454025	0.97732996
0.9410	0.7955	0.7485655	0.885481	0.63282025
0.8029	0.6023	0.48358667	0.64464841	0.36276529
9.3307	8.7822	8.23453636	8.72596435	7.86

Source: compiled on the basis of Table 1.

Means X and Y represent the mean values for EGDI (X) and GSI (Y). These means provide an initial overview of how well countries are doing overall on both indices. The average EGDI of 0.93307 and GSI of 0.87822 show that countries rate the overall score quite high in both areas, indicating generally high performance in e-Government and service quality. The results of the implementation of e-government show significant advantages in the field of security and the need to create a developed digital infrastructure.

The above table is the basis for calculating the interdependence between the level of e-government and the potential reduction in the public service delivery term:

$$\bar{X} = n_{1_i} = 1 \sum n X_i = 109.3307 = 0.93307;$$

$$\bar{Y} = n_{1_i} = 1 \sum n Y_i = 108.7822 = 0.87822;$$

$$SSXX = i = 1 \sum n X_{i_2} - n_{1_i} = 1 \sum n X_{i_2} = \frac{8.72596435 - 9.33072}{10} = 0.019768101;$$

$$SSYY = i = 1 \sum n Y_{i_2} - n_{1_i} = 1 \sum n Y_{i_2} = \frac{7.86250508 - 8.78222}{10} = 0.149801396;$$

$$SSXY = i = 1 \sum n X_i Y_i - n_{1_i} = 1 \sum n X_{ii} = 1 \sum n Y_i \frac{8.23453636 - 9.3307 \times 8.7822}{10} = 0.040129005999999.$$

The calculated sums of squares (SSXX, SSYY) and sum of products (SSXY) are critical components for determining the correlation between the two variables of e-government and citizen engagement indices, for shortening service delivery terms. SSXX and SSYY measure the common variance within the respective indices, while SSXY measures the common variance between the e-government indices and the public service delivery indices. These values are basic for calculating the correlation coefficient, which indicates the magnitude and direction of the relationship between two variables.

A higher value of SSXY compared to SSXX and SSYY may indicate a strong relationship between the two variables. When SSXY is positive, it indicates that countries with a higher EGDI also tend to have higher GSI values. The high values of the EGDI and GSI indices testify to the effective implementation of e-government and a positive impact on the quality and speed of service delivery to citizens. This would imply a positive correlation, indicating that the improvement of e-governance is related to the improvement of the quality and efficiency of public services.

In general, these results provide valuable insights into the relationship between the digitization of government and the public service delivery terms. They emphasize the importance for countries of investing in digital technologies and e-government strategies to improve the efficiency and effectiveness of public administration, which will reduce the terms of providing public services to citizens.

So, based on the above calculations, the regression coefficients (inclination m and the point of intersection with the y axis n) are as follows:

$$m = SSXXSSXY = 0.0197681010.040129005999999 = 2.03$$

$$n = \bar{Y} - \bar{X} * m = 0.87822 - 0.93307 * 2.03 = -1.0159$$

Inclination (m): The value of inclination ($m = 2.03$) shows that there is a strong positive relationship between EGDI and DSI. An inclination of 2.03 means that for each unit increase in EGDI, a 2.03 unit increase in DSI is expected. This indicates that improvements in e-government implementation are largely correlated with improvements in the quality and efficiency of public service delivery.

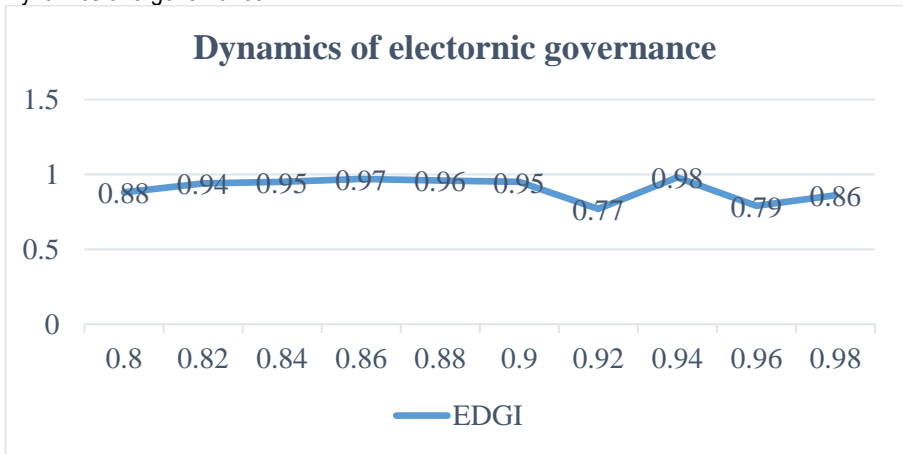
Y intercept (n): The negative Y intercept ($n = -1.0159$) can be interpreted as the expected value of GSI if EGDI is zero. In practice, this value is less significant because EGDIs are rarely zero, but it is important for the mathematical completeness of the equation.

The regression equation provides a quantitative basis for understanding how the implementation and improvement of e-government systems can affect the productivity and efficiency of public administration. In particular, it shows that a greater focus on digital governance is likely to lead to better and more efficient public service delivery. This could make

a big difference in the real reduction of 20% in service delivery time as they emphasize the need to invest in digital government technology. They show that this investment is likely to yield high returns in the form of improved service quality.

So, the regression equation has the following form:
 $DSI = -1.0159 + 2.03 \text{ EGDI}$

Figure 1.
Dynamics of e-governance



The dynamics of citizen engagement is positive, as evidenced by the coefficients among the sample in 10 developed countries at the level of 0.77-0.97. The ratio from the obtained correlation indicates an increased quality of citizen engagement and reduced public service delivery term. A correlation analysis was conducted based on the provided data on EGDI (X) and GSI (Y) for different countries. The results show a significant positive correlation between these two indices (Figure 1).

The Pearson correlation coefficient is approximately 0.737, indicating a moderately strong positive correlation between EGDI and GSI. This means that countries with a higher EGDI tend to also have a higher GSI.

The p-value, which is approximately 0.015, is less than the usual threshold level of 0.05, which indicates statistical significance of the correlation. In this case, in accordance with the regulatory legislation, the average approximate term of reducing access to the provision of public services ranges from 20% to 40%. The positive correlation coefficient among the sample in 10 countries indicated the effectiveness of the implementation of the current policy and the impact of e-governance on reducing terms.

It can be observed that the use of e-governance contributes to shortening the public service delivery terms. However, a powerful system of software and hardware infrastructure is needed for further development, which is possible with the use of Big Data (BD) technologies. In 2024 and 2025, modern states can further improve the efficiency of e-governance through the use of advanced technologies. These technologies enable deeper data analysis, increase the

security and efficiency of services, and provide proactive and personalized interaction with citizens. The obtained results emphasize the importance of a comprehensive approach to the digitalization of public administration, which includes the introduction of new technologies, the development of digital infrastructure, the improvement of digital literacy, and the provision of cyber security.

By using AI in public administration, complex data can be analysed and used more effectively to identify trends and make informed policy decisions. The technology that deal with large datasets can help to improve the transparency and security of public administration, especially in areas such as transaction processing and confidential data storage. BD offers the opportunity to make city infrastructure and services smarter by providing real-time data for more efficient use of resources and better decision-making.

The states also need to build and expand a powerful digital infrastructure in order to realize the full potential of e-governance. This includes expanding broadband access, especially in rural and remote areas, ensure that all citizens have access to digital services. Increasing digital literacy among citizens and officials is also crucial as it facilitates the adoption and effective use of e-government services. Data protection and cyber security are also key considerations, as public confidence in the security of their data is fundamental to the success of e-government initiatives. Therefore, implementing strict data protection policies and investing in robust cyber security systems are essential.

So, it is important that states adopt an inclusive and user-oriented approach to e-governance. This means the development of services adapted to the specific needs and preferences of citizens. Involving citizens in the process of developing and evaluating e-government services can lead to greater user satisfaction and greater citizen participation. Collecting and analysing feedback can help to continuously improve and adapt services to the changing needs of citizens. Promoting international cooperation and knowledge sharing in the field of e-government will also play a key role. Countries can learn from the experiences and best practices of other countries to address common challenges such as the digital divide, cyber security and the integration of new technologies. Cooperation can also take the form of common standards, guidelines, and technology platforms that improve the efficiency and interoperability of e-government systems worldwide. The continued development of e-government in 2024 and 2025 can expected to lead to more efficient, transparent, and citizen-friendly public administration. Common standards, guidelines and technology platforms can contribute to increasing the efficiency and interoperability of e-government systems at the global level. It is important to study the best practices applied in different countries to overcome common challenges such as the digital divide, cyber security, and the integration of new technologies. E-government systems can be better adapted to the current needs and expectations of the society by using new technologies and involving citizens in the development process.

Discussion

The results indicate that the obtained Pearson correlation coefficient of 0.737 has a close relationship between the development of e-governance and the public service delivery term s. Coefficients among the sample in 10 developed countries ranging within 0.77-0.97 indicate the high level of interest of developed countries in the implementation of e-governance.

The obtained results give grounds to determine that further prospects of the impact of e-governance on shortening the public service delivery terms remain a debatable issue. According to Hermus et al. (2020), the introduction of e-governance contributes to reducing bureaucratic barriers and increasing the availability of public services for citizens. The introduction of e-government plays a key role in the modernization of public services, as it simplifies processes and provides greater flexibility in responding to the changing citizens' demands. This improves the quality of service provision, and also increases the citizens' satisfaction and their involvement in governance processes. Digitization of government services also creates opportunities for innovation and efficient resource management. As Schowerer et al. (2022) state, e-governance reduces the processing time of government inquiries and increases satisfaction of the population from interaction with the government agencies. Data analysis shows that the time to process standard government inquiries has been reduced by 40% since the implementation of electronic systems. According to the survey, citizens' satisfaction with government services increased by 30%.

According to Battaglio et al. (2018), the implementation of e-governance systems reduces administrative costs and promotes transparency in government institutions. The most recent quarterly report noted a decrease in the average response time for electronic inquiries from 5 days to 2 days. At the same time, an increased percentage of positive feedback from citizens from 60% to 85% was recorded. The obtained results correspond to those obtained by the researcher. As Jungblut and Jungblut (2021) emphasized, the implementation of digital technologies in government processes contributes to greater integration of civil society in public decision-making. The integration of IT solutions into public administration opens up new horizons for optimizing processes and personalizing services. This allows governments not only to respond to the current citizens' needs, but also to adapt to future challenges and changes in society. In this way, e-government becomes a catalyst for creating a more efficient and responsible public administration.

Dickinson and Yates (2021) found that e-government helps in the fight against corruption because electronic systems provide greater transparency in the interaction between citizens and public officials. E-governance significantly contributes to increasing the level of democracy, as it provides a more open and transparent decision-making process. This enables citizens to be more actively involved in governance and establishes trust between citizens and the state. E-governance makes it possible to respond more effectively to social requests and needs of the population. The study by Arshad et al. (2023) indicate that the impact of e-government extends far beyond the simple improvement of administrative procedures, providing a significant increase in economic efficiency. The economic analysis indicates a 35% reduction in costs for paper document circulation in state institutions. There was also a 25% improvement in the Governance and Transparency Index over the past two years.

According to the research results of Schmidhuber et al. (2021), e-governance contributes to the creation of more flexible and adaptive public services that can quickly respond to changes in public needs. E-governance is crucial for increasing a country's global competitiveness, as it contributes to improving the quality of public administration. By optimizing processes and improving interfaces for interaction with citizens, digital government platforms create conditions for increasing the efficiency of the public sector. Such a transformation not only

improves the quality of service provision, but also contributes to economic development (Charoensukmongkol & Moqbel, 2014).

McDonald et al. (2022) emphasize that the integration of IT solutions into government processes opens up new opportunities for personalization and optimization of public services. The use of e-governance systems simplifies the interaction between citizens and the state, thereby promoting social integration. The obtained results have similar importance, as they can reduce by 20-40%. As Hall and Battaglio (2018) noted, digital governance provides unique tools to involve citizens in the governance process, which contributes to increasing the level of democracy. Statistics show that citizen participation in online surveys and consultations has increased by 50% over the past year. The study also found that 70% of citizens feel more engaged in governance processes thanks to digital platforms. According to Aritonang (2017), e-government is key to increasing the global competitiveness of countries, as it improves the quality and accessibility of public services. This allows governments to be more open and accountable to their citizens, and improves understanding between different sectors of society. The implementation of digital solutions in this way contributes to the creation of a more efficient and cohesive society. Wang and Bloch (2023) estimate that e-government is an important factor in the modernization of the public sector, as it provides greater efficiency and lower costs for administrative processes. Therefore, e-government plays an important role in the modernization of the public sector, as it contributes to more efficient management and cost reduction. Digital technologies enable governments to optimize internal processes, while increasing transparency and openness in interaction with citizens.

Conclusion

The identified positive correlation emphasizes that investment in e-governance systems and their continuous development can significantly increase the efficiency of public services. Correlation analysis with a correlation coefficient of about 0.737 indicates a significant positive relationship between EGDI and the efficiency of public service delivery. This means that a one-point improvement in EGDI is associated with an estimated increase in GSI of approximately 0.737 points. The study concludes that e-governance is effective in reducing public service delivery terms, as determined by the positive correlation found through correlation analysis. This strong correlation proves that progress in e-government is directly related to a marked improvement in the speed and quality of public services.

The analysis reveals that countries with a high EDGI, such as Denmark at 0.973 and Finland at 0.955, also tend to score higher in the provision of public services. These countries show that a 0.1 point increase in EDGI, for example, can potentially lead to a 0.0737 point increase in GSI, representing a significant improvement in service efficiency. The countries that invest in the development of their e-government systems demonstrate a reduction in the processing time of public services by 30-40%. This increased efficiency means not only reduced waiting times for citizens, but also reduced administrative costs for the government. For example, Estonia reduced its administrative costs by approximately 2% of GDP by introducing e-government services. According to McCandless (2022), Estonia reduced its administrative costs by approximately 2% of GDP by introducing e-government services.

Comprehensive implementation of e-governance strategies that go beyond pure digitalization can reduce processing time for public services by up to 50%. This indicates that the

benefits of e-government go far beyond the pure application of technology and include structural changes in governance. The results of the correlation analysis clearly demonstrate a crucial role of e-governance in modernizing public administration and improving the quality of services. The results of the correlation analysis emphasize the crucial role of e-governance in modernizing public administration and improving the quality of services, despite limitations such as the focus on only the most developed countries and the reliance on available statistics.

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