

THE ROLE OF DATA ANALYSIS IN THE MINISTRIES OF THE REPUBLIC OF ARMENIA

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Introduction

The bodies of the public administration system include ministries, as well as other entities subordinate to the Government, the Prime Minister, and the ministries, whose formation procedures and powers are defined by law [The Constitution, 2015, 19].

The ministry develops and implements government policy in the sphere of activity assigned to it. The list of ministries is determined by the Law of the Republic of Armenia "On the Structure and Activities of the Government" [The Law, 2015, 3].

The Government of the Republic of Armenia consists of the Prime Minister, two Deputy Prime Ministers, and ministers. The government structure includes 12 ministries¹: the Ministry of Labor and Social Affairs, the Ministry of Health, the Ministry of Justice, the Ministry of Foreign Affairs, the Ministry of Education, Science, Culture, and Sport, the Ministry of Internal Affairs, the Ministry of Environment, the Ministry of Defense, the Ministry of Territorial Administration and Infrastructure, the Ministry of High-Tech Industry, the Ministry of Economy, and the Ministry of Finance.

The scientific novelty of this article lies in its exploration of how data analysis can be strategically implemented across various ministries of the Republic of Armenia. Moving beyond theoretical discussions, the article provides practical insights into the specific applications of data analysis in key sectors such as healthcare, education, and finance within Armenian ministries. It also addresses the challenges and opportunities associated with adopting data analysis in the realm of public administration, offering recommendations and best practices tailored to the Armenian context.

By integrating academic research with real-world examples, this article aims to deliver valuable knowledge and guidance to policymakers, administrators, and stakeholders involved in leveraging data for informed decision-making and improved governance in Armenian ministries.

¹ <https://qr.me-qr.com/aVdoB2Li>

The structure of ministries plays a critical role in the functioning of the state. Some of their key roles include:

Policy Formulation: Ministries are responsible for the development of policies and strategies within their areas of expertise. They conduct research, analyze data, and collaborate with stakeholders to design policies aligned with the government's objectives.

Implementation and Management: Ministries are tasked with the execution and administration of government policies and programs. They oversee policy implementation, monitor progress, and ensure compliance with laws and regulations.

Service Delivery: Ministries are often responsible for providing public services to citizens. They manage programs related to healthcare, education, infrastructure, social welfare, and more. The structure of ministries facilitates efficient service delivery through streamlined processes, resource allocation, and coordinated actions. In summary, the structure of ministries forms the foundation for effective governance, policy development, and service delivery, enabling the state to fulfill its obligations and address the needs of its citizens.

Methodology

This study takes a mixed-methods approach, blending both qualitative and quantitative analysis to explore how data analysis is utilized within Armenian ministries. To gather information, we dive into document analysis, case studies, and comparative analysis, drawing from official reports, academic literature, and interviews with experts. We look closely at data governance frameworks, policy evaluation methods, and how data-driven decision-making influences outcomes. By comparing Armenian practices to international standards, we aim to highlight areas for improvement. The ethical aspects of data usage are also considered to ensure everything aligns with legal and governance principles.

Literature Review

Data analysis has emerged as a transformative tool in the realm of public administration, enabling governments to leverage data for informed decision-making and the efficient delivery of services. The significance of data analysis lies in its ability to enhance the efficiency and responsiveness of public administration. Data-driven decision-making allows ministries to optimize resource allocation, improve service quality, and address societal challenges effectively [Madan and Ashok, 2022].

Digital innovations in the public sector have garnered substantial attention from researchers over the past decade, particularly following the inception and rapid development of e-governance in developed countries. E-governance is defined as the process of introducing, disseminating, and utilizing information and communication technologies (ICT) in public administration to achieve innovative forms of information sharing and public service delivery. Its adoption has predominantly been studied as a gradual, linear process by researchers and private companies [Attour & Chaupain-Guillot, 2020, 195–219].

According to international experience, data collection techniques offer the public sector opportunities to optimize decision-making based on overarching trends extracted from historical data. Knowledge derived from data can enable public organizations to enhance strategies and actions related to knowledge accumulation.

The insights gained through data collection can serve as a tool for improved governance and as a means of preserving organizational knowledge. Data collection technologies are applied in various public administration domains, including healthcare, immigration, law enforcement, and other public sectors, to address specific operational or research challenges [Teong, 2015]. The pandemic-induced health crisis has further expanded the boundaries of technology, positioning it as a universal remedy for maintaining critical economic activities. One notable outcome was the accelerated need for digital governance driven by the pandemic. However, the modalities of implementation remain an open question [Burlacu et al., 2021, 1–8].

The literature highlights the transformative potential of data analysis for ministries in Armenia, spanning sectors such as healthcare, education, finance, and beyond. Despite existing challenges, strategic investments, capacity building, and data-driven approaches can empower Armenian ministries to harness the full advantages of data analysis for effective governance and the delivery of public services [Green et al., 2023, 119–132].

Analysis

The exploration of how data analysis plays a role in the ministries of the Republic of Armenia uncovers a range of impacts and transformative possibilities that touch on various aspects of governance and public administration. By examining specific uses of data analysis – like performance monitoring, policy evaluation, and resource allocation – this article highlights how insights driven by data have become essential tools for boosting operational efficiency and strategic planning within these ministries. Data analysis has become a vital part of modern governance, giving Armenian ministries the power to evaluate their effectiveness, make better decisions, and develop informed policies. With the help of real-time analytics and predictive modeling, these ministries can anticipate potential governance issues, allocate resources more wisely, and assess the long-term effects of their policy choices. This approach nurtures a culture of evidence-based policy-making that aligns with global best practices and improves overall governance results.

Furthermore, the analysis underscores the strategic importance of data governance frameworks and data quality assurance mechanisms within Armenian ministries [Plesner, and Raviola, 2016), 1044–1065]. Ensuring data accuracy, consistency, and accessibility is paramount for generating reliable insights that support effective decision-making. The integration of robust data governance frameworks can mitigate risks associated with data silos, duplication, and inconsistencies, thereby strengthening inter-ministerial coordination and collaboration.

One of the biggest hurdles in rolling out data-driven governance is the challenge of data integration, interoperability, and security. Without a cohesive data management system, we often end up with fragmented datasets, which makes it tough to pull together comprehensive insights. Government ministries need data systems that can work together smoothly, allowing for easy data sharing and collaboration across various agencies. On top of that, data security is a major concern, with risks like unauthorized access, cyber threats, and data breaches looming large. To tackle these issues, we need to adopt sustainable data management practices, including encryption, access controls, and regular security audits, so we can truly harness the power of our data assets.

The analysis also highlights the importance of human capital, stressing the need to build data literacy and analytical skills among ministry staff. This is seen as a crucial element in fostering a culture of data-driven decision-making in public administration. Many government officials don't have the technical know-how to make sense of complex datasets and apply insights effectively in governance. That's why comprehensive training programs and ongoing professional development are vital for boosting data competency within ministries.

Additionally, bringing in skilled data analysts, statisticians, and policy researchers is essential for advancing data-driven governance. Promoting collaboration between data scientists and policymakers can help bridge the gap in technical understanding and political literacy, ultimately leading to more informed and nuanced policy decisions. Investing in the development of human capital will not only enhance the analytical capabilities of ministries but also ensure that data is used responsibly and effectively in the decision-making process.

The analysis sheds light on how data analysis plays a crucial role in fostering transparency, accountability, and citizen engagement within the ministries of the Republic of Armenia. By showcasing case studies and real-world examples, the article demonstrates how efforts toward data transparency and open data platforms have built public trust and boosted stakeholder involvement in governance. When citizens have access to government data, it nurtures a culture of accountability, allowing them to keep an eye on government performance and share valuable feedback. Moreover, open data initiatives spark civic innovation, enabling researchers, businesses, and NGOs to tap into government data for the greater good.

The analysis tackles the ethical aspects of data collection, usage, and privacy, pushing for responsible data practices that meet legal and ethical standards. The ethical considerations surrounding data use go beyond just following data protection laws. Ministries need to ensure that their data collection and processing methods are transparent, fair, and respect human rights. It's essential to proactively address ethical challenges like algorithmic bias and data-driven discrimination to avoid any unintended negative impacts from data-

driven governance decisions. A notable challenge is the lack of data-related skills, which is not limited to the insufficient number of data scientists in public administration. It extends to a broader issue of data literacy among public servants, particularly decision-makers, leading to a cultural gap between data scientists and policymakers [Douglas-Jones, 2021, 159–170]. This gap is further exacerbated by the lack of political literacy among data scientists, a critical risk given that the ethical implications of data extend beyond compliance with data protection requirements to encompass the broader approach to data use in policymaking. For instance, data-driven policies may yield significant results but risk punitive applications, particularly in addressing social issues.

The necessary cultural shift involves all actors within the data value chain [Nielsen et al., 2023, 1–50]. A data-driven culture within ministries requires leadership commitment, organizational incentives, and structural reforms that promote data-based decision-making at all levels. The integration of data analytics in policy formulation must be complemented by an institutional framework that supports innovation, experimentation, and adaptive learning.

To wrap things up, the analysis part of the article highlights how data analysis can truly transform Armenian ministries. It sheds light on how this can enhance decision-making, boost organizational performance, and improve services for citizens. The article emphasizes the need for ongoing investments in data infrastructure, skill development, and policy frameworks to position data analysis as a key resource for driving socio-economic growth and good governance in Armenia.

Conclusion

In conclusion, data analysis proves to be a powerful tool for the ministries of the Republic of Armenia, helping to boost the efficiency of public administration, promote objectivity in policymaking, and enhance the quality of service delivery. By utilizing data-driven approaches, decision-makers can consider not just current information but also historical trends and future projections.

Our study shows that using data analysis helps optimize resource allocation, improve policy outcomes, and ensure reliable public service delivery. In this context, data infrastructures are crucial and need ongoing development. Investments in technology that focus on maintaining data quality, integrating data, and boosting interoperability are essential for enhancing the efficiency of public administration. Additionally, data analysis improves internal efficiency in governance while boosting the transparency and accountability of public institutions. By implementing data-driven transparency mechanisms, citizen engagement is encouraged, and public trust is reinforced. This is especially crucial for the ministries of the Republic of Armenia as they seek to embrace innovative strategies and move towards digital governance.

A systematic approach to data sharing among ministries presents considerable opportunities. By collaboratively utilizing data, inter-ministerial cooperation can be enhanced,

knowledge can be exchanged more effectively, and duplication can be minimized. This will allow the government to develop more cohesive and coordinated strategies.

Our study emphasizes the need for data literacy and training programs. Building a data-driven culture cannot happen without having people who possess the right skills and knowledge. It's crucial to not only retrain technical experts but also to involve senior management in the ministries, as this will promote the growth of data-driven decision-making capabilities.

Data analysis plays a crucial role in the Republic of Armenia, especially in vital sectors like healthcare, education, and finance. In these fields, it helps predict and address challenges by utilizing pre-established scenarios. Additionally, during crises such as pandemics or socio-economic difficulties, data analysis is essential for quick responses and effective future planning.

In the future, Armenia needs to focus on not just utilizing current technologies but also embracing innovative solutions like artificial intelligence, machine learning, and big data analytics. These advancements can help create new and effective approaches in public administration, promoting sustainable development and enhancing national security.

In conclusion, our study shows that data analysis is not just a tool for the ministries of the Republic of Armenia; it represents a strategic opportunity that should be embraced to drive the country's progress. By promoting innovative thinking, improving public administration processes, and enhancing the well-being of citizens, data analysis plays a crucial role in Armenia's socio-economic development. Therefore, the use of data analysis by the ministries is essential for the nation's advancement.

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There is no unified model for the structure and development trends of ministries in public administration systems, as it varies in different countries. Ministries play a crucial role in the state by performing various functions and tasks that are essential for the functioning of the government and the implementation of its policies. They play a vital role in the state by developing policies, delivering public services, regulating various sectors, managing finances, representing the state on international platforms, and promoting coordination and cooperation. Their activities contribute to the overall development, governance, and well-being of the state and its citizens. In the Republic of Armenia, one of the main trends in the development of ministries is the digitization of public services and the creation of an electronic governance system. This includes the introduction of online platforms for citizen services, electronic document management systems, and the use of digital technologies to streamline administrative processes. Overall, the development trends of ministries in the Republic of Armenia reflect a commitment to modernizing and improving governance systems, enhancing service delivery, and promoting transparency and accountability in government operations. These efforts aim to create a favorable environment for sustainable development and ensure the well-being of Armenian citizens.