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## **Use of Data Journalism in PR Strategies of Central Administration Bodies of Azerbaijan: a Research Based on Content Analysis**

**Vafa Isgandarova\***

**Abstract.** This study examines how government agencies in Azerbaijan are developing their public relations strategies through data journalism. The study analyzed the social media activities of 27 central agencies in 2024. The results showed that some agencies were active in data sharing, but lagged behind in building relationships and communicating more transparently with the public. The study revealed that government agencies have significant potential in public relations by adopting more interactive and strategic approaches.

**Keywords:** Data journalism, central government agencies, social media, PR, public relations

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## **Использование Журналистики Данных в PR-Стратегиях Центральных Органов Власти Азербайджана: Исследование на Основе Контент-Анализа**

**Вафа Искендерова\***

**Абстракт.** В этом исследовании рассматривается, как государственные учреждения в Азербайджане разрабатывают свои стратегии связей с общественностью посредством журналистики данных. В исследовании анализировалась деятельность 27 центральных учреждений в социальных сетях в 2024 году. Результаты показали, что некоторые учреждения были активны в обмене данными, но отставали в построении отношений и более прозрачном общении с общественностью. Исследование показало, что государственные учреждения имеют значительный потенциал в связях с общественностью, принимая более интерактивные и стратегические подходы.

**Ключевые слова:** журналистика данных, центральные государственные учреждения, социальные сети, PR, связи с общественностью

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## **Azərbaycanın Mərkəzi İdarəetmə Orqanlarının PR Strategiyalarında Data Jurnalistikadan İstifadə: Məzmun Təhlilinə Əsaslanan Tədqiqat**

**Vəfa İsgəndərova\***

**Abstrakt.** Bu araşdırma Azərbaycanda dövlət qurumlarının data jurnalistikası vasitəsilə ictimaiyyətlə əlaqələr strategiyalarını necə inkişaf etdirdiklərini araşdırır. Tədqiqatda 27 mərkəzi agentliyin 2024-cü ildə sosial media fəaliyyəti təhlil edilib. Nəticələr bəzi agentliklərin məlumat mübadiləsində fəal olduğunu, lakin əlaqələr qurmaqda və ictimaiyyətlə daha şəffaf ünsiyyət qurmaqda geridə qaldığını göstərib. Araşdırma zamanı məlum olub ki, dövlət qurumları daha interaktiv və strateji yanaşmalar tətbiq etməklə ictimaiyyətlə əlaqələr sahəsində əhəmiyyətli potensiala malikdir.

**Açar sözlər:** Data jurnalistikası, mərkəzi dövlət qurumları, sosial media, PR, ictimaiyyətlə əlaqələr

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## **1.Introduction**

In today's world, the rapid advancement of digital technologies has increased the importance of values such as transparency, accountability, and participation in the field of public relations (PR), paving the way for new approaches in institutional communication with the public. Particularly, government institutions are striving to adapt to this evolving environment by leveraging the power of digital platforms and the opportunities offered by data journalism in their communication with citizens.

Data journalism facilitates the collection, analysis, and visualization of complex and large-scale data, ensuring that information is presented in a simple, understandable, and clear manner. This approach enables government institutions to support their projects, services, and policies with digital data, contributing to the development of more reliable and transparent communication models. As a result, the use of digital data is not only limited to information dissemination but also strengthens fundamental principles such as participation and accountability in public relations.

The primary objective and problem area of this research is to examine which public relations strategies central government institutions in Azerbaijan implement through data-driven social media posts and to what extent these strategies are effective in public relations. Within the scope of this study, the extent to which government institutions successfully implement transparency and accountability principles on social media and how they communicate with the public using data journalism tools have been systematically analyzed.

## **2.The Theoretical Framework of Public Relations and Its Role in Public Administration**

Throughout history, public relations have been a crucial tool in regulating the relationships between rulers and the governed. Since ancient times, those in power have utilized various propaganda activities to maintain their influence and legitimacy. For instance, Alexander the Great's practice of wearing local attire to establish stronger connections with the local population can be considered an early example of public relations practices. The development of public relations was significantly influenced by the invention of the printing press by Gutenberg in the 1440s. With the widespread use of the printing press, messages could reach larger audiences, transforming public relations from a one-sided propaganda tool into an increasingly "society-oriented" communication model [Bıçakçı: 2014, 122].

The formation of the modern theoretical and practical framework of public relations dates back to the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. During this period, the rapid expansion of capitalist economies and the increasing prevalence of mass communication media laid the foundation for the professionalization of

public relations. Experts such as Ivy Lee and Edward Bernays provided theoretical explanations of the fundamental principles and mechanisms of public relations, establishing its professional practices [Sabunçuoğlu: 2008, 73]. The technological advancements of the late 20<sup>th</sup> century, particularly the emergence of digital platforms, accelerated the evolution of public relations and transformed it into a key component of strategic management.

Today, public relations extend beyond merely promoting institutions; they also involve engaging in mutual interaction with society, analyzing the needs and expectations of stakeholders, and making informed decisions accordingly [Mert: 2016, 137]. The integration of public feedback into organizational decision-making processes enhances the effectiveness of communication channels and contributes to the long-term maintenance of trust and reputation [Okay: 2001, 220; Wells: 1999, 108]. This approach highlights the "communication management" and "relationship-building" functions of public relations [Cooley: 1999, 41], establishing the strategic foundation necessary for sustainable and trustworthy relationships.

The significance of public relations is not limited to the private sector; it also plays a critical role in public administration. The development of democratic principles and the promotion of transparent governance require government institutions to establish open and two-way communication with citizens. In this context, public relations serve as a mechanism not only for facilitating the exchange of information between the state and citizens but also for encouraging public participation in decision-making processes.

As the Turkish researcher Mert points out, government institutions have two fundamental functions in public relations: "recognition" and "promotion." In the recognition process, administrative bodies learn about the needs, demands, and expectations of society and shape their policies accordingly [Boztepe: 2014, 29]. In the promotion phase, the public is provided with transparent and timely information about decisions, plans, and implementations. These activities play a crucial role both in securing public support for government policies and in the implementation of transparency and accountability mechanisms [Karaca: 2022, 137].

Moreover, public relations not only enhance the reputation and public perception of government institutions but also provide essential feedback to improve service quality and strengthen the effectiveness of administrative decisions. In democratic societies, state-citizen relations should not be limited to electoral processes; public opinion must be considered at every stage of governance. This approach establishes the foundation for a multifaceted and participatory governance model that reinforces institutional legitimacy.

The regular dissemination of information regarding government activities is a critical factor in building and maintaining public trust [Eken: 1994, 53]. The role of public relations in creating such an environment facilitates mutual understanding between administrators and citizens while also strengthening oversight mechanisms to ensure the fair distribution of resources [Ünal: 2010, 62]. A lack of emphasis on public relations can lead to negative consequences such as a lack of transparency and public dissatisfaction. In this regard, PR activities serve as essential tools that enhance the legitimacy of governance while securing public support [Kazancı: 1982, 8-9].

In conclusion, public relations emerge as a strategically significant, two-way, and continuous communication process in both the private sector and public administration. The historical evolution of PR, from propaganda and message transmission to a strategic management function, demonstrates its crucial role in shaping institution-society relations. In modern societies, where democratic values and social justice are prioritized, public relations are not merely a tool for disseminating information but also a mechanism that fosters trust, promotes participatory governance, and integrates society into decision-making processes. Therefore, conducting PR activities correctly and professionally, both in public administration and the private sector, contributes significantly to the implementation of effective governance models and the establishment of sustainable, socially responsible relationships.

### **3.The Impact of Digitalization on Public Relations in Public Administration**

The rapid development of information and communication technologies (ICT) has profoundly transformed both governance processes and societal dynamics in public administration. This transformation has reinforced the significance of democratic values such as transparency, accountability, and participation, turning the relationship between government institutions and citizens into a multi-dimensional interaction model [11]. Moreover, the integration of internet-based digital platforms into public administration has paved the way for innovative approaches in public relations.

Digital public relations, leveraging the interactive nature of the internet, has not only facilitated the transmission of information but also enabled citizens to actively participate in decision-making processes. In this context, online platforms provided by government institutions have allowed citizens to directly communicate their demands and suggestions to relevant authorities, thereby strengthening the legitimacy of public administration. The use of digital technologies in governance has also expanded accountability mechanisms, making decision-making processes more transparent and easier to monitor [Dilaveroğlu: 2020, 49]. Citizens' ability to quickly access public

information through online platforms has enhanced transparency in the use of state resources and reinforced internal audit processes [Maria, Rizzo: 2005, 87]. Consequently, public administration has evolved towards greater openness and responsibility.

Furthermore, digitalization has eliminated spatial and time constraints, increasing the speed of feedback and mutual interaction. This has enabled government institutions to improve service quality more efficiently, enhance citizen satisfaction, and strengthen the effectiveness of public services. As a result, digital platforms have made state-citizen relations more dynamic, contributing to the establishment of long-term trust and sustainable dialogue.

The growing need for faster and more direct communication between public administration and citizens has further increased the significance of social media. Platforms such as Facebook, X (formerly Twitter), and Instagram play key roles in public relations by facilitating information sharing, collecting feedback, and expanding collaboration among different stakeholders. These functions enable government institutions to perform their "recognition" and "promotion" roles more efficiently and effectively [Safko: 2010, 4]. As a result, citizen participation in governance processes has increased, while government institutions have enhanced their transparency and accessibility. The two-way communication structure of social media allows policymakers and citizens to quickly exchange views, accelerating the innovation and improvement of policies [12]. This interactive approach is directly linked to the unique characteristics of social media, which combine interpersonal and mass communication elements. Consequently, the rapid exchange of information within the framework of citizens' rights and demands has contributed to strengthening democracy and participatory values.

As social media has become a strategic tool for public relations professionals, institutions can now closely monitor public opinion and proactively shape their communication strategies [Zerfass, Moreno, Tench, Vercic, Verhoven: 2009, 60]. In this context, government institutions have improved citizen satisfaction through targeted communication efforts, fostering a more genuine connection with society. Additionally, the interactive nature of social media has enabled the analysis of large volumes of frequently updated data, allowing for a real-time assessment of public opinion. This not only helps mitigate potential risks but also enhances transparency in public relations processes.

In modern public administration, data journalism has become an increasingly essential tool for strengthening public relations. With the advancement of digital technologies and the launch of open data platforms by government institutions, the collection, analysis, and visualization of data have made it possible to present complex issues to the public in a clear and comprehensible

manner. These activities reinforce transparency and accountability principles, ensuring that citizens are more closely involved in government decision-making processes.

In modern public administration, data journalism is becoming increasingly important for strengthening public relations. The development of digital technologies and the launch of open data platforms by government institutions enable the collection, analysis, and visualization of information, presenting complex issues to society in a clear and comprehensible manner. This process not only supports transparency and accountability principles but also encourages citizens to participate more actively in government decision-making processes.

Reports and infographics produced within the scope of data journalism provide citizens with accurate and clear information regarding the use of public resources, the efficiency of public services, and the outcomes of various policies. As a result, media organizations' role in shaping public opinion is strengthened, while the legitimacy of public administration is expanded. Consequently, citizens gain a more objective perspective on government policies and activities, fostering a greater sense of trust in state-society relations.

#### **4. Research Methodology**

The methodology of this study is based on a content analysis approach, combining quantitative and qualitative methods to systematically examine the data journalism-related posts shared by 27 central government institutions in Azerbaijan on Facebook, Instagram, and X (formerly Twitter) between January 1, 2024, and December 31, 2024.

During the data collection process, different types of content shared on each institution's social media accounts were categorized. These categories included statistics, graphs, infographics, and interactive materials as examples of data journalism, as well as posts containing only links or text-free content. Additionally, comments on posts, the level of responses given to these comments, and the institutions' reactions to user interactions (such as filtering or deleting comments) were analyzed.

From a quantitative perspective, the collected data were characterized based on the total number of posts, topic distribution, and content formats. From a qualitative perspective, the study assessed how data journalism elements were presented, the visual quality of statistics and graphics, and the extent to which interactive content enhanced audience engagement.

For the visualization of research findings, relevant tables and graphs were utilized. At this stage, differences among social media platforms, the effectiveness of data-driven approaches for each institution, and the level of



public engagement (measured through comments and responses) were presented in a comparative manner.

## 5. Research Findings

### Analysis of Facebook Posts by Central Government Agencies in Azerbaijan in the Context of Data Journalism

Table 1. Data Obtained on Facebook Posts by Government Institutions

	<b>Names of Institutions</b>	<b>NDJ<sup>1</sup></b>	<b>NPE<sup>2</sup></b>	<b>NPIE<sup>3</sup></b>	<b>NPL<sup>4</sup></b>	<b>NC<sup>5</sup></b>	<b>NFC<sup>6</sup></b>	<b>NRC<sup>7</sup></b>	<b>NUC<sup>8</sup></b>
1	State Migration Service of the RA	11	0	11	0	0	0	0	0
2	State Statistical Committee of the RA	63	40	23	0	0	0	0	0
3	Ministry of Finance of the RA	90	64	9	17	3	0	1	0
4	Ministry of Youth and Sports of the RA	2	0	2	0	7	0	0	0
5	Ministry of Agriculture of the RA	53	0	53	0	29	19	1	0
6	Ministry of Defense of the RA	1	0	1	0	2	0	0	0
7	Ministry of Science and Education of the RA	10	0	10	0	43	0	27	0
8	State Committee for Urban Planning and	1	0	1	0	0	0	0	0

1 NDJ – Number of examples related to data journalism

2 NPE – Number of posts shared without explanations

3 NPIE – Number of posts shared with explanations

4 NPL – Number of posts shared only by including a link

5 NC – Number of comments

6 NFC – Number of filtered comments

7 NRC – Number of responded comments

8 NUC – Number of unanswered comments

	Architecture of the RA								
9	State Customs Committee of the RA	7	0	7	0	2	0	0	0
10	Ministry of Ecology and Natural Resources of the RA	16	7	9	0	1	0	0	0
11	Ministry of Labor and Social Protection of the RA	41	0	41	0	11	9	0	0
12	Ministry of Economy of the RA	10	0	10	0	3	1	1	0
13	Food Safety Agency of the RA	25	0	25	0	1	0	0	0
14	Ministry of Digital Development and Transport of the RA	22	0	22	0	20	11	0	0
15	Ministry of Internal Affairs of the RA	1	0	1	0	12	0	0	0
16	Ministry of Energy of the RA	44	17	27	0	4	0	0	0
17	Ministry of Emergency Situations of the RA	33	0	33	0	9	0	0	0
18	Ministry of Health of the RA	0	0	0	0	0	0	0	0

Based on the data presented in Table 1, the Facebook-based data journalism activities and the level of audience engagement by government institutions of the Republic of Azerbaijan can be summarized as follows:

### **6.Information Sharing and Formats:**

The Ministry of Finance of the Republic of Azerbaijan led with 90 data journalism posts, followed by the State Statistical Committee [63], the

Ministry of Agriculture [53], and the Ministry of Energy [44]. In contrast, some institutions, such as the Ministry of Health, did not share any data-related content, indicating a lack of engagement in social media activities.

Regarding content format, the Ministry of Agriculture and the Ministry of Labor and Social Protection provided explanatory (interpretative text) posts, adding more context to the presented data. The Ministry of Ecology employed both explanatory and non-explanatory formats simultaneously, while the Ministry of Finance stood out with 17 link-based posts.

### **7. Comments and Engagement:**

The Ministry of Science and Education (43 comments) and the Ministry of Internal Affairs (12 comments) recorded the highest number of user comments. However, none of these comments received a response, highlighting a critical issue. Overall, the practice of responding to comments was found to be very low. Only the Ministry of Finance responded to a single comment.

The Ministry of Agriculture [19], the Ministry of Digital Development and Transport [11], and the Ministry of Labor and Social Protection [9] had the highest number of filtered (deleted or hidden) comments. This suggests that these institutions adopted a stricter approach to social media moderation.

### **8. Comparison of Passivity and Activity:**

Some institutions, such as the State Migration Service, the Ministry of Defense, and the State Committee for Urban Planning and Architecture, were found to be highly inactive, with only one or two posts. In contrast, institutions like the Ministry of Finance demonstrated high activity levels, both in terms of posting frequency and diversity of data presentation formats.

### **9. General Assessment:**

Overall, varying levels of activity were observed in data journalism posts on the Facebook accounts of government institutions. The Statistical Committee, Ministry of Finance, and Ministry of Agriculture exhibited more consistent and diverse approaches to data presentation. However, most institutions displayed weak audience engagement. The lack of responses to comments, the application of content filtering, and restrictions on public discussions indicate shortcomings in establishing genuine and transparent communication with citizens.

## **10. Analysis of Instagram Posts by Central Government Agencies in Azerbaijan in the Context of Data Journalism**

Table 2. Data Obtained on Instagram Posts by Government Institutions

	<b>Names of Institutions</b>	<b>NDJ</b>	<b>NPE</b>	<b>NPIE</b>	<b>NPL</b>	<b>NC</b>	<b>NFC</b>	<b>NRC</b>	<b>NUC</b>
1	State Migration Service of the RA	10	0	10	0	2	0	1	0
2	State Statistical Committee of the RA	57	47	10	0	1	0	1	0

3	Ministry of Finance of the RA	4	2	2	0	0	0	0	0
4	Ministry of Youth and Sports of the RA	2	0	2	0	5	0	0	0
5	Ministry of Agriculture of the RA	72	0	72	0	2	0	1	0
6	Ministry of Defense of the RA	1	1	0	0	0	0	0	0
7	Ministry of Science and Education of the RA	20	0	20	0	364	0	38	0
8	State Committee for Urban Planning and Architecture of the RA	0	0	0	0	0	0	0	0
9	State Customs Committee of the RA	10	0	10	0	41	0	7	0
10	Ministry of Ecology and Natural Resources of the RA	16	0	16	0	0	0	0	0
11	Ministry of Labor and Social Protection of the RA	45	0	45	0	82	13	0	2
12	Ministry of Economy of the RA	8	0	8	0	6	0	0	0
13	Food Safety Agency of the RA	18	0	18	0	0	0	0	0
14	Ministry of Digital Development and Transport of the RA	9	0	9	0	3	0	0	0
15	Ministry of Internal Affairs of the RA	2	0	2	0	108	0	0	1
16	Ministry of Energy of the RA	49	0	49	0	0	0	0	0
17	Ministry of Emergency Situations of the RA	33	0	33	0	9	0	0	0
18	Ministry of Health of the RA	0	0	0	0	0	0	0	0

Based on the data presented in Table 2, the data journalism activities and audience engagement levels of government institutions of the Republic of Azerbaijan on Instagram can be summarized as follows:

### **11.Information Sharing and Formats:**

The Ministry of Agriculture of the Republic of Azerbaijan led Instagram-based data journalism activities with 72 posts. The ministry presented all its data in an explanatory format, providing followers with detailed and comprehensive information. The Ministry of Energy (49 posts) and the Ministry of Labor and Social Protection (45 posts) also stood out for their active engagement.

On the other hand, the Ministry of Health did not share any data, making it the least active institution in social media engagement. An analysis of post formats revealed that most institutions used explanatory formats, with very few non-explanatory posts, and none of the institutions shared link-only posts (NPL=0).

## 12. Comments and Engagement:

The Ministry of Science and Education received the highest audience engagement, with 364 comments, demonstrating a significant level of public interest in its posts. However, none of these comments received a response (NRC=0), indicating a lack of effective communication with the audience.

The Ministry of Internal Affairs, despite making only two posts, received 108 comments, responding to just one comment (NRC=1). This suggests that

	Names of Institutions	NDJ	NPE	NPIE	NPL	NC	NFC	NRC	NUC
1	State Migration Service of the RA	0	0	0	0	0	0	0	0
2	State Statistical Committee of the RA	46	35	11	0	0	0	0	0
3	Ministry of Finance of the RA	87	34	8	45	0	0	0	0
4	Ministry of Youth and Sports of the RA	0	0	0	0	0	0	0	0
5	Ministry of Agriculture of the RA	59	0	59	0	0	0	0	0
6	Ministry of Defense of the RA	0	0	0	0	0	0	0	0
7	Ministry of Science and Education of the RA	7	0	7	0	0	0	0	0
8	State Committee for Urban Planning and Architecture of the RA	1	0	1	0	0	0	0	0
9	State Customs Committee of the RA	11	0	11	0	0	0	0	0
10	Ministry of Ecology and Natural Resources of the RA	0	0	0	0	0	0	0	0
11	Ministry of Labor and Social Protection of the RA	67	0	67	0	0	0	0	0
12	Ministry of Economy of the RA	5	0	5	0	0	0	0	0
13	Food Safety Agency of the RA	19	0	19	0	0	0	0	0
14	Ministry of Digital Development and Transport of the RA	11	0	11	0	0	0	0	0
15	Ministry of Internal Affairs of the RA	2	0	2	0	0	0	0	0
16	Ministry of Energy of the RA	56	0	56	0	0	0	0	0
17	Ministry of Emergency Situations of the RA	33	33	0	0	0	0	0	0
18	Ministry of Health of the RA	1	0	1	0	0	0	0	0

the institution made some effort to engage in dialogue with its audience.

The Ministry of Labor and Social Protection also ranked among the more active institutions, receiving 82 comments, of which two were responded to, while 13 comments were filtered (NFC=13). This indicates that while the ministry emphasized social media moderation, there were shortcomings in audience engagement.

Overall, most institutions showed very low engagement levels in responding to comments, with response rates often recorded as zero (NRC=0). This highlights the need for more effective management of public relations through social media.

### **13.Filtering and Activity:**

The Ministry of Labor and Social Protection (13 filtered comments) and the State Customs Committee (7 unanswered comments) placed greater emphasis on social media moderation. Institutions that did not apply content filtering were typically those that received fewer or no comments, suggesting that they either attracted less public interest or did not encourage audience interaction.

### **14.General Assessment:**

Regarding data-driven content sharing on Instagram, the Ministry of Agriculture, the Ministry of Energy, and the Ministry of Science and Education emerged as the most active institutions. However, significant weaknesses were observed in responding to comments and engaging with the audience.

The fact that most institutions failed to respond to comments (NRC=0) or provided only minimal engagement suggests that greater efforts are needed to improve public relations. The Ministry of Health, having shared no data-related content, demonstrated passivity in social media activities. When compared to other institutions' activities, this lack of engagement stands out as a notable inconsistency.

### **15.Analysis of X (Twitter) Posts by Central Government Agencies in Azerbaijan in the Context of Data Journalism**

Table 3. Data Obtained on X (Twitter) Posts by Government Institutions

Based on the data presented in Table 3, the data journalism activities and audience engagement levels of government institutions of the Republic of Azerbaijan on the X platform can be summarized as follows:

### **16.Information Sharing and Formats:**

The Ministry of Finance of the Republic of Azerbaijan was the most active institution on X, with 87 data-related posts. Among these, 45 posts consisted solely of links, indicating that the ministry prioritized directing followers to its official website or other sources for information dissemination. Other highly active institutions included the Ministry of Agriculture (59 posts), the Ministry of Labor and Social Protection (67 posts), and the Ministry of Energy (56 posts).

Regarding content formats, most institutions presented their data in an explanatory manner. However, a notable exception was the Ministry of Emergency Situations which shared all 33 of its posts without any explanatory text, distinguishing it from other institutions.

The Ministry of Finance was the only institution to share link-only posts, while in all other institutions, this indicator remained at zero. Meanwhile, some institutions, such as the Ministry of Defense and the Ministry of Youth and Sports, did not share any data-related content at all. Similarly, the Ministry of Health posted only one data-related post, showing very limited activity.

**17. Comments and Engagement:**

Across all institutions, the number of comments, filtered comments, and response rates were recorded as zero. This indicates that X was primarily used as a one-way information dissemination tool rather than an interactive platform for citizen engagement.

For example, the Ministry of Agriculture (59 posts), the Ministry of Labor and Social Protection (67 posts), and the Ministry of Energy (56 posts) were among the most active institutions in terms of posting frequency. However, this activity was not accompanied by any public discussions or interactions.

**18. General Assessment:**

On X, the data journalism activities of government institutions focused more on information sharing rather than audience engagement. Although most institutions presented their data in an explanatory format, no evidence of public interaction or responses to citizen feedback was observed. This suggests that the platform was used primarily as an information-sharing channel rather than a two-way communication tool.

The Ministry of Finance, Ministry of Labor and Social Protection, Ministry of Agriculture, and Ministry of Energy led in terms of post frequency. However, the lack of any data-related posts from institutions such as the Ministry of Defense and the Ministry of Youth and Sports, as well as the limited activity of the Ministry of Health, was particularly noteworthy.

Analyzing content formats, it was found that explanatory posts were the most common, with non-explanatory posts appearing only in the case of the Ministry of Emergency Situations. Link-only posts were primarily used by the Ministry of Finance.

Additionally, the research found that nine government institutions, including the State Service for Mobilization and Conscription, the State Security Service, the State Committee for Work with Religious Organizations, the Ministry of Foreign Affairs, the State Border Service, the State Committee for Work with the Diaspora, the Ministry of Justice, the Ministry of Defense Industry, and the Ministry of Culture, did not share any data journalism-related content on their social media accounts (Facebook, Instagram, or X).

Furthermore, these institutions also recorded zero engagement in terms of comments, filtering, and responses, confirming that they did not utilize social media for data journalism activities and displayed extremely low levels of citizen interaction.

**19. Analysis of Data Journalism Examples Shared on Social Media Platforms (Facebook, Instagram, X) by Central Government Institutions Operating in Azerbaijan***Topics of the Posts*

### **State Migration Service of the Republic of Azerbaijan**

- Temporary and permanent residence permits: The SMS has provided statistical data on application processes, innovations, and procedures related to temporary and permanent residence permits.
- Work permits and labor migration: Statistical data on foreign citizens' work activities in Azerbaijan have been shared, along with information on the issuance processes of work permits and updates in this area.
- Citizenship procedures: Categorized statistics on citizenship applications have been shared, and innovations related to these processes have been announced to the public.
- Administrative violations and justifications: Statistical data on administrative violations have been provided, along with an explanation of the measures taken to address these issues.
- Language diversity and service quality: Statistics on inquiries made to the call center by language (Azerbaijani, Russian, and English) have been shared, showcasing multilingual service capacity.

### *State Statistical Committee of the Republic of Azerbaijan*

- Demographic indicators: Data on the population size and age groups have been shared, illustrating the total population and different age categories. Birth and death rates have been provided comparatively, detailing the natural growth rate of the population. Migration and urbanization trends have been analyzed, emphasizing internal and external migration movements and changes in urban and rural populations.
- Economic indicators: GDP and sectoral distributions have been shared, showing the distribution of production, industry, services, and agriculture over the years. Income levels and spending trends have been published, reflecting social welfare indicators. Foreign trade data have been explained, highlighting the export-import balance and key trade partners.
- Social and cultural indicators: Education statistics have been shared, including student numbers, graduate statistics, and data on different education levels. Information on cultural institutions has been provided, highlighting statistics on museums, theaters, and cultural centers. Data on healthcare services have been published, showing hospital bed capacity and the number of patients per doctor.
- Agriculture and natural resources: Agricultural production and productivity indicators have been shared, emphasizing the production volume of key agricultural products. Information on water resources and irrigation systems has been provided, presenting key sustainability indicators. Environmental protection data have been shared, highlighting efforts to conserve natural resources and afforestation levels.



- **Transportation and communication:** Transportation indicators have been shared, detailing road, air, and rail passenger transportation data. Digital infrastructure statistics have been presented, showcasing the number of internet and mobile subscribers, as well as the prevalence of e-government applications.

#### *Ministry of Finance of the Republic of Azerbaijan*

- **State budget and expenditures:** Data have been provided on revenues generated from taxes, customs, and the oil and gas sectors, as well as on current expenditures, investment expenditures, and debt payments. The share of functional expenditure categories such as education, healthcare, and defense in the overall budget has been shared, including percentage ratios and changes over time.
- **Public debt:** Indicators such as the currencies in which domestic and foreign debts are issued, repayment periods, and annual interest rates have been presented. The ratio of public debt to Gross Domestic Product (GDP) and the sustainability of public finance have been reflected.
- **Government bonds and auction processes:** Information has been shared on types of bonds (coupon and discount), nominal values, issuance volumes, coupon rates, and payment dates. Government bond auctions held on different dates have also been presented.
- **Economic performance and forecasts:** Data on economic growth indicators, inflation, revenues from oil and non-oil sectors, and employment rates have been provided. Comparative presentations of future forecasts and actual performance indicators have been shared.

#### *Ministry of Youth and Sports of the Republic of Azerbaijan*

- **Youth policy and participation:** Information has been shared about various camps, international events, and projects.
- **Sports achievements and events:** Data have been provided on major competitions and tournaments. Achievements in Olympic, non-Olympic, and Paralympic sports have been highlighted.
- **Environmental awareness initiatives:** Information has been shared about awareness events organized on environmental issues.

#### *Ministry of Agriculture of the Republic of Azerbaijan*

- **Agricultural subsidies and state support:** Detailed information has been provided on per-hectare subsidies for various crops (hazelnuts, pomegranates, apples, tea, etc.), the implementation of modern irrigation systems, and the coverage of costs for planting materials. Support mechanisms tailored to different economic regions have been highlighted.
- **Export achievements:** Detailed export indicators for tobacco, cotton, tomatoes, persimmons, and other products have been presented. Increases

in product volumes and revenue values have been supported by statistical data. Successes in export markets have been explained with specific growth indicators for different product categories.

- General production indicators: The total volume of agricultural production has been presented in terms of plant and livestock production categories. Progress in plant and livestock production has been shared with percentage indicators.
- Geographical focus and regional support: Special incentive programs implemented in Karabakh, Lankaran-Astara, Shirvan-Salyan, and other economic regions have been introduced. Support measures adapted to the climate and soil characteristics of different regions have been emphasized.
- Insurance and risk management: Information has been provided on insurance mechanisms implemented for the agricultural sector and the payments made. The role of insurance programs in minimizing risks for producers has been explained.
- Overall agricultural performance: The economic significance of total agricultural production and its contribution to national income have been assessed. The share of plant and livestock production sectors has been comparatively presented.

*Ministry of Defense of the Republic of Azerbaijan*

- Military preparedness and security strategies: Information has been provided on the construction of military bases and the deployment of artillery units in various economic regions.
- Mine deployment and defensive barriers: The process of landmine deployment for security purposes has been explained in detail.
- Surveillance and monitoring systems: Information has been shared about monitoring systems placed along the contact line.
- Justification of operations: Security threats and intelligence information proving the necessity of military operations have been provided. It has been emphasized that operations are conducted in accordance with international legal principles and the national interests of the country.

*Ministry of Science and Education of the Republic of Azerbaijan*

- Education and development programs: Information has been shared on participation in educational programs, the number of textbooks, improvements in curricula, and the strengthening of technical education infrastructure. Efforts in the education sector aimed at increasing participation and enhancing quality have been explained in detail.
- Scientific achievements and statistical analyses: Data have been provided on trends in academic publications by Azerbaijani scientists, citation indicators, and article statistics. Azerbaijan's position in international

scientific rankings and the progress achieved in the field of science have been reflected.

- Citizen applications and education requests: Applications related to education and other relevant topics submitted by citizens have been analyzed by type and number. Information has been shared on the evaluation and resolution processes of applications received through communication channels.

*State Committee for Urban Planning and Architecture of the Republic of Azerbaijan*

- Urban planning and infrastructure development: Projections for the city of Kalbajar in 2040 have been shared, including indicators for population, green spaces, education, healthcare, and cultural infrastructure. Data have been provided on the calculation of green space per capita (in square meters). Detailed information has been presented on the lengths of roads and bicycle lanes, designed in accordance with rapid transportation and eco-friendly urban planning strategies.

*State Customs Committee of the Republic of Azerbaijan*

- Call center performance: Data have been shared on the number of individuals who contacted the call center within a specific period, the total volume of inquiries, and the duration of consultations. Applications have been categorized based on individual goods transportation, the use of the "Smart Customs" application, and the declaration of mobile devices.
- Satisfaction analysis: The satisfaction levels of individuals and legal entities regarding services have been presented separately. The role of customer feedback in shaping service policies has been emphasized.

*Ministry of Ecology and Natural Resources of the Republic of Azerbaijan*

- Environmental protection and waste management: The quantities of plastic, glass, and batteries collected as part of recycling campaigns have been shared (measured in liters and units). Information has been provided on the disposal and recycling of electronic waste, emphasizing the impact of awareness campaigns on public consciousness.
- Clean-up and conservation of natural areas: Data have been shared on the length of cleaned areas (measured in meters) and the amount of waste collected. Information has also been provided on afforestation efforts and the implementation of modern irrigation systems in regions such as Zangilan, Jabrayil, and Aghdam.
- Biodiversity and fauna: Information has been shared on the physical characteristics, habitats, and ecological significance of local animal and insect species such as Köpger and July needleman. Conservation efforts for

Bezoar goats, gazelles, leopards, and other rare species have been highlighted.

- Social awareness campaigns: Information has been provided on ecological awareness events organized for children and adults. The number of regions where campaigns were conducted and statistics on participant numbers have been shared. The impact of awareness-raising activities on public perception has been explained in detail.

Ministry of Labor and Social Protection of the Republic of Azerbaijan

- Social reforms and policies: Data have been shared on increases in minimum wages and pensions, emphasizing their positive impact on social welfare. The expansion of social assistance programs and an increase in the allocated budget for these initiatives have been highlighted.
- Economic support and social welfare: Information has been provided on post-war rehabilitation services, modern prosthetic support, and housing assistance programs. It has been emphasized that the number of beneficiaries of social aid programs has increased, making these services more widely accessible.
- Labor market and employment: Changes in employment policies and the creation of new job opportunities have been outlined.
- Rehabilitation and specialized services: Data have been shared on the provision of rehabilitation tools for individuals with disabilities and the availability of specialized social services.
- Child protection and reintegration: Statistical data have been provided on the expansion of adoption programs and efforts to reunite children with their families.
- Social transparency and citizen applications: Information has been shared on the management of citizen applications and the proactive delivery of social services.

Ministry of Economy of the Republic of Azerbaijan

- Economic performance and investments: Economic indicators such as credit distribution and production growth in various regions have been defined. Information has been provided on investment projects carried out by companies and their revenue structures.
- Economic development and industry: Growth indicators in sectors such as construction, transportation, and information technology have been emphasized. Data have been shared on increasing production capacity in industrial zones and expanding export potential. Support measures implemented to facilitate economic recovery have been explained in detail.
- International trade and exports: The expansion of domestically produced goods into international markets and the implementation of new export

strategies have been highlighted. The relationship between import and export indicators and overall economic development has been emphasized.

- Development of small and medium-sized enterprises (SMEs): Tax incentives and financial support provided for SMEs have been detailed. Opportunities for young entrepreneurs and investments in technology-based startups have been explained.

#### Food Safety Agency of the Republic of Azerbaijan

- Food safety and public health: Statistics on inspections conducted in restaurants, cafés, and other food establishments have been shared. Information has been provided on violations and deficiencies identified during inspections. Hygiene regulations and safety measures aimed at protecting public health have been emphasized.
- Obesity and healthy nutrition: Trends in obesity rates over time and the importance of healthy eating have been explained. The negative effects of unhealthy diets on obesity and other diseases have been emphasized.
- Diabetes and sugar consumption: Trends in the spread of diabetes and its impact on public health have been shared. Detailed explanations have been provided on per capita sugar consumption in Azerbaijan and its role in cardiovascular diseases and diabetes.
- Ecological sustainability and food safety: The use of biodegradable materials and environmentally friendly packaging methods has been emphasized. Methods for combating pests such as the brown marmorated stink bug have been explained.

#### Ministry of Digital Development and Transport of the Republic of Azerbaijan

- Economic sector performance: Data on revenue growth in the transportation sector over different periods have been shared, highlighting comparisons between periods. Revenue increases in the information and communication sector have also been noted.
- Digitalization and infrastructure development: Information has been provided on the expansion of fixed and mobile broadband internet services, the number of subscribers, and service quality. The "Online Azerbaijan" project has been emphasized, focusing on extending broadband coverage and improving access to high-speed internet services. Development of electronic services and digital transformation initiatives have also been highlighted.
- Transit and logistics: Data on the annual volume of transit freight transportation and its growth have been shared. Projects aimed at strengthening international transportation connections have been emphasized.

- Ecological sustainability: The reduction of carbon emissions through the modernization of radio broadcasting platforms has been highlighted. The transition to FM and DAB+ broadcasting technologies and its goal of reducing environmental impact have been discussed. Measures aimed at significantly reducing carbon emissions by 2030 have been outlined.

Ministry of Internal Affairs of the Republic of Azerbaijan

- Firearm surrender and public safety: Results of the campaign encouraging the voluntary surrender of illegally possessed firearms have been shared.
- Proactive security policies: Preventive measures implemented by the state to enhance disarmament and public safety have been emphasized. The effects and outcomes of these policies applied within a specific period (01.01.2024 - 01.07.2024) have been evaluated.

Ministry of Energy of the Republic of Azerbaijan

- Electricity production and consumption: Annual production volumes of power plants such as "Shimal-1," "Sugovushan-1," "Sugovushan-2," and "Takhtakorpu" have been presented. Comparative analysis of power plant production capacities over different periods has been conducted. The share and contribution of hydroelectric and thermal energy sources have been highlighted.
- Natural gas production and exports: Detailed data have been provided on natural gas production at the "Shah Deniz," "ACG," and "Absheron" fields. Information has been shared on natural gas exports to Europe, Turkey, and Georgia. Overall production and export figures have been visually presented.
- Oil production and exports: Production data from SOCAR and other consortiums have been shared. The changes in oil production over the years and the sources of exported products have been indicated. Technological and infrastructure developments in the oil sector have been emphasized.
- Technological and infrastructure developments: The implementation of infrastructure projects aimed at increasing energy efficiency has been highlighted. Modernization efforts in the energy sector and measures taken to reduce environmental impacts have been shared.

Ministry of Emergency Situations of the Republic of Azerbaijan

- Emergency response operations: The number of fires that occurred during a specific period and the measures taken to combat them have been detailed. Data on individuals requesting assistance and emergency situations have been shared. The number of people rescued during emergencies, with a particular emphasis on child rescues, has been highlighted. Statistics on individuals who lost their lives due to accidents have been provided.

- Special incidents and accidents: Recorded cases of explosions and the preventive measures taken have been explained. Response processes to traffic accidents and the related efforts carried out have been outlined.
- Evacuation and affected individuals: The number of evacuees and their conditions have been described. Data on individuals injured in emergency situations have been shared.

#### *Ministry of Health of the Republic of Azerbaijan*

- Blood supply: The number of blood donors in Baku and various regions has been presented. The total volume of blood collected has been specified.

### **20. General Characteristics of the Visual Presentation of Data Journalism Examples Shared on Social Media Platforms (Facebook, Instagram, X) by Central Government Institutions in Azerbaijan**

Government institutions have utilized various visualization techniques to enhance data comprehension. These techniques not only increase user engagement but also simplify and categorize the data for better understanding.

- Color Coding: Distinctive color schemes have been used to visually organize and categorize data.

#### ➤ *Practical Examples:*

- Ecological data is represented in green, while economic indicators are shown in blue.
- In financial reports, revenues are highlighted in green, whereas expenditures are marked in red.
- Contrasting colors are used in categorized pie charts.
- Symbols and Iconography: Complex and difficult-to-understand data have been simplified through visual symbols.

#### ➤ *Practical Examples:*

- Education-related content includes book icons, while medical icons are used for healthcare topics.
- Agricultural data is illustrated with crop icons (e.g., pomegranates or animal figures).
- Minimalist Design: Reducing visual complexity ensures a stronger focus on key data points.

#### ➤ *Practical Examples:*

- Simple backgrounds, large fonts, and prominent headings effectively convey information.

Visual formats used for categorizing data and tracking changes over time

#### • **Types of Graphs:**

- Bar Charts: Used for time-series data and comparisons.

- Example: Annual changes in the state budget are displayed through bar charts.
  - Pie Charts: Preferred for visualizing category proportions.
    - Example: Financial distributions across various sectors are represented using pie charts.
  - Line Charts: Applied to illustrate long-term trends.
    - Example: The population growth rate is demonstrated through a time-series line chart.
  - **Tables and Text Presentations**
  - Tables are utilized for the systematic presentation of data.
    - Example: Financial support details for state programs are displayed in table format.
  - **Time Series**
  - Data from different periods is displayed along a timeline.
    - This approach helps illustrate development trends more clearly.
- Various design tools and optimization methods used for the effectiveness of visual materials in digital platforms
- **Professional Design Tools**
    - Visual materials have been created using tools such as Adobe Illustrator, Canva, and Tableau.
    - This approach ensures the delivery of both simple and professional designs.
  - **Social Media Optimization**
    - Visuals have been optimized to generate higher engagement on social media.
    - Mobile-friendly formats, fast loading times, and concise descriptions have been considered.
  - **Interactive Visualization**
    - To attract social media users, animated visuals, GIFs, and video infographics have been utilized.
- Various elements used to enhance the effectiveness of visual materials
- **Credibility and Sources**
    - Data sources have been clearly stated within the visuals.
    - For example, logos of official institutions such as the "State Statistical Committee" have been included.
  - **Emphasis on Key Information**
    - Critical information has been highlighted using large fonts and distinct colors.
    - This method ensures that important details are quickly noticed by users.



- **Accessibility and User Experience**

- Visuals have been designed to be understandable for users of all educational levels.
- The complexity of statistics has been reduced, with priority given to general information.

## **21. Conclusion**

Throughout 2024, the quantitative and qualitative analysis of data journalism examples shared on social media platforms (Facebook, Instagram, X) by 27 central government institutions operating in Azerbaijan has revealed several key findings. The results can be summarized as follows:

### **21.1. Diversity in Data Journalism Posts**

The scope and frequency of data journalism-based content varied significantly across institutions. Ministries such as the Ministry of Finance, State Statistical Committee, Ministry of Agriculture, and Ministry of Labor and Social Protection regularly shared data-driven posts, presenting annotated texts, graphs, infographics, statistical indicators, and other formats with rich information. In contrast, institutions like the Ministry of Health, Ministry of Youth and Sports, and Ministry of Defense had either very limited or no data-focused posts. This indicates that data-driven communication strategies with citizens are not yet uniformly applied across all government institutions.

### **21.2. Transparency and Public Information Levels**

Active data sharing has increased transparency in areas such as the use of state resources, demographic indicators, social policies, and infrastructure projects, empowering public participation in decision-making processes. However, the lack of data-sharing or minimal engagement by certain institutions suggests that public information and accountability approaches are not systematically developed across all sectors.

### **21.3. Weak Engagement in Social Media Interactions**

On Facebook and Instagram, some government institutions' posts received significant user comments, but the response rate from the institutions remained low. For example, the Ministry of Science and Education and the Ministry of Internal Affairs' Instagram accounts showed such trends. While some institutions, such as the Ministry of Finance and the Ministry of Labor and Social Protection, attempted to respond to comments, overall, government institutions demonstrated limited capacity for two-way, dialogue-based communication on social media.

### **21.4. Comment Filtering and Moderation Issues**

Some institutions, particularly the Ministry of Agriculture and the Ministry of Labor and Social Protection, adopted practices of hiding or deleting comments on their social media accounts.

Such practices may result in suppressing critical opinions from public view, contradicting the principles of transparent communication.

### **21.5.Platform-Specific Differences**

While data journalism-based posts were more commonly observed on Facebook and Instagram, the X (Twitter) platform primarily served as a one-way information dissemination tool.

On X, there was limited engagement or dialogue-oriented communication from government institutions.

### **21.6.Visual Presentation and Design Approaches**

The use of graphs, tables, line charts, and infographics in data journalism posts helped make information more accessible and understandable. However, the limited use of interactive visuals (GIFs, video infographics) resulted in a lack of deeper engagement with the target audience.

### **21.7.Institutional Benefits of Data Journalism and Future Perspectives**

Systematic and integrated data-sharing efforts have strengthened transparency and public accountability mechanisms by informing citizens about state policies and services. Nevertheless, data-driven approaches in many government institutions have remained project-based rather than being implemented as part of a strategic communication framework.

Overall, this study demonstrates that data journalism has the potential to play a significant role in the public relations (PR) strategies of central government institutions in Azerbaijan, yet there is a strong need for substantial improvements in its implementation. Systematically developing data-driven communication strategies, strengthening dialogue with the public, and ensuring broader citizen participation in governance processes require important steps to be taken. This approach can empower data journalism not only as an information dissemination tool but also as a strategic mechanism that fosters democratic participation.

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