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Artificial intelligence and social media as new arenas of political competition: challenges for democracy

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This study examined how users' perceptions of algorithmic influence and AI manipulation are associated with key democratic indicators, including trust in political information, perceived political autonomy, and the quality of online deliberation. The study is based on a mixed research design. The quantitative part included a survey of 1,795 active social media users in the Republic of Kazakhstan. The analysis used correlation analysis, multivariate OLS regression with interaction effects, and sample weighting. The computational component included principal component analysis (PCA) to validate the indices of perception of algorithmic influence and AI manipulation (explained variance: 52 and 58%, respectively). The qualitative part was based on interviews analyzed based on thematic analysis. The results indicated that the perception of algorithmic personalization has an ambivalent democratic effect: it is moderately negatively associated with trust in political information and the quality of online discussions ($\beta \approx -0.10 \dots -0.15$), but under certain conditions is associated with a higher sense of control over information choices. In contrast, the index of perception of AI manipulation had a strong and stable negative relationship with all democratic indicators ($\beta \approx -0.30 \dots -0.45$). Heterogeneity of effects was revealed: the most pronounced negative consequences were recorded among Telegram and YouTube users, as well as among younger respondents (18–29 years old). Thus, the study indicated that the democratic challenges associated with AI and social media are technological and socio-interpretive in nature. The vital factor in democratic erosion is not the fact of algorithmic mediation itself, but the perception of opacity, control, and manipulability of AI. The findings contribute to the interdisciplinary debate on democracy in the digital age and identify the need for policy and regulatory responses to the challenges of AI.

KEYWORDS

artificial intelligence, democratic resilience, digital democracy, political communication, political competition, public opinion, social media

1 Introduction

Over the past decades, digital technologies have influenced the transformation of the environment of political interaction. Modern intelligence (AI) systems and social media have become relevant for the transformation of the arena of political competition. At the initial stages of the introduction of digital platforms, they were considered primarily as platforms for expanding civic participation, transparency and access to socially important information. Today, their role is increasingly associated with new forms of political influence, information manipulation, asymmetric actions of the government, etc. (Calice et al., 2021). AI systems, platform-based recommendation algorithms, and automated accounts represent distinct but interacting components of digital political communication. This has had its impact on the processes of voter mobilization and the formation of directions of public discourse. Social networks have gradually ceased to be neutral channels for communications. Today, they are assessed as complex socio-technical systems within which political actors fought for the attention, trust and loyalty of audiences. Algorithmic content definition, work with personalized information feeds and automated targeting of political messages have created fundamentally new conditions for conducting political debates (Calice et al., 2021). In them, those subjects who primarily had reliable access to technological resources gained an advantage. This situation could shift the balance between traditional democratic institutions and digital platforms, which increasingly often had the functions of informal “intermediaries” of the political process (Jungherr et al., 2026). Contemporary political communication is shaped by several distinct components: platform algorithms, AI-generated content, and automated communication practices.

At the same time, the spread of AI tools in social media was accompanied by an increase in risks for democracies. First, researchers have identified algorithmic distortion of public discourse, the rapid spread of disinformation, deepfakes, the transfer of political debates to the digital environment and a corresponding decrease in their quality, fragmentation of public opinion, and a decrease in the influence of traditional representative institutions (Christodoulou and Iordanou, 2021). Such processes have become especially acute during political polarization or crises of legitimacy, when digital technologies have been used for aggressive competition and systemic influence on democratic procedures. Recent European developments illustrate the political relevance of these processes. For example, in 2024 the Constitutional Court of Romania annulled presidential election results following allegations of digital interference (Jungherr et al., 2026), while the European Commission initiated an investigation into TikTok under the Digital Services Act regarding potential manipulation of electoral processes.

Platform algorithms, AI-generated content, and automated communication practices jointly shape the conditions of political communication. Much less attention has been paid to conceptualizing the understanding of social media and AI as new arenas for political competition, which simultaneously combine elements of democratic expansion with overt threats to democratic governance. This has created a significant gap in research between empirical observations and theoretical understanding of the transformations in modern democratic processes in the digital age. The purpose of this study is to analyze how users perceive algorithmic influence and AI-mediated political communication, and how these perceptions are associated with key democratic outcomes—trust in political information, sense

of political autonomy, and quality of online deliberation. Therefore, the tasks are as follows: (1) To examine how users perceive algorithmic influence and AI manipulation in social media. (2) To analyze how these perceptions are associated with democratic indicators. (3) To explore interpretative interpretations through which users make sense of AI-mediated communication.

2 Literature review

2.1 Social media algorithms and political communication

AI has now become one of the important factors in the transformation of political processes in democratic and hybrid regimes. Scientific research has indicated that AI is a technical tool and a structural element of modern politics, which has influenced the change in the ways of decision-making, political competition, and interaction between government and citizens.

One vital conceptual framework is Jungherr's (2023) approach, which suggests that AI should be understood in a political sense as an infrastructural mediator of democracy. In this logical plane, AI can affect the entire ecosystem of the democratic process. This applies to the processes of political information formation, public participation and electoral behavior. In addition, other authors have determined that the democratic consequences of AI depend on the ways of institutionalization, algorithmic design and political control (Aulia Rahman et al., 2022). A similar, but more politically oriented, position was expressed by König and Wenzelburger (2020), who indicated that AI plays the role of an important ambivalent factor in democratic politics. These authors also indicated that AI could increase the effectiveness of political governance and influence evidence-based policymaking. However, they also noted that there are significant risks of concentration of power, reduced transparency and increased technocratic tendencies. However, such conceptual tendencies are incompatible with the fundamental idea of democratic self-government. At the same time, Schippers (2020) pointed out a change that is characteristic of democratic politics within the framework of algorithmic governance. The author pointed out that within the framework of democratic tendencies, major political decisions may be partially made or adjusted by automated systems (Ashirbekova et al., 2025; Kukeyeva et al., 2024; Zadayev, 2024). Such decisions may have the effect of weakening the role of public debate and political accountability. At the same time, a significant part of the scientific literature is devoted to the regulatory and legal consequences of the use of artificial intelligence in the political sphere. Nemitz (2018) was one of the first to formulate important theses that indicated the existence of a conflict between algorithmic governance and constitutional democracy. This author acknowledged that opaque algorithmic systems could have an impact on the emergence of undermining principles of accountability and the rule of law. At the same time, developing this position, Hong (2022) analyzed various risks of AI for democracy. This author focused on the analysis of constitutional law and indicated that automated decision-making systems have created a noticeable asymmetry of information and power between state institutions and citizens. In the same vein, Hakan Kan (2024) and Battista and Uva (2025) focused on the relationship between AI, democracy and human rights. The author pointed out that without a clear ethical and legal framework, artificial

intelligence can lead to systemic violations of freedom of expression, the right to privacy and political participation. For this reason, AI is described as a factor that can transform democracy and undermine its normative foundations.

A separate area of research concerns the description of social networks, which constitute a new arena of political competition. In this system, AI algorithms play a vital role in the formation of political information. [Castelló et al. \(2025\)](#) pointed out that social media now pose a systemic threat to democracy, as their algorithmic logic contributes to polarization of emotional content. At the same time, studies by other authors have indicated that social platforms are quasi-political actors that, through algorithmic modeling of attention, participate in the political process ([Longo, 2022](#); [Wong, 2025](#)). The authors have emphasized that the lack of effective regulation allows platforms to shape political agendas without democratic accountability. Separately, [Christodoulou and Iordanou \(2021\)](#) have indicated that the combination of AI and Big Data is now important for the digital media environment. The authors also highlighted the ethical risks of manipulation, microtargeting and the devaluation of citizens' autonomy. In such a system, democracy is gradually transformed from a process of public discussion to an algorithmically controlled space of influence.

2.2 Artificial intelligence in political communication

A particularly dangerous aspect is the problem of disinformation. For example, [Wong \(2025\)](#) acknowledged that AI significantly increases the efficiency of production and dissemination of political disinformation. In particular, the author proved that this occurs based on the use of deep-fake technology and automated information campaigns. This affects the formation of asymmetry between political actors and voters. Besides, [Brown \(2024\)](#) indicated that AI and social networks are now important resources of geopolitical rivalry. The author acknowledged that states are actively using these technologies to develop political influence. At the same time, [Roumate \(2024\)](#) pointed out that AI is a significant factor in the formation of a new world order, in which technological superiority becomes the basis of political and informational dominance. For this reason, democracy has become vulnerable to external and internal informational influences. In turn, [Steff and Abbasi \(2020\)](#) pointed out that the militarization of artificial intelligence technologies contributes to the centralization of decisions and the reduction of democratic control. This, in turn, has indirect consequences for civil politics in the digital space.

Platform algorithms and AI-generated content are distinct but interacting phenomena. Algorithms determine the visibility of content, while AI technologies are involved in generating or automating it. Their interaction creates complex conditions for political communication, especially when algorithmic systems amplify AI-generated or coordinated content.

2.3 Interaction between algorithms and AI-driven content

This section focuses on how platform algorithms interact with AI-generated content and automated political communication practices. Despite critical assessments of the impact of artificial intelligence on democratic processes, a separate line of research has emerged in contemporary literature, which has indicated that AI is an important potential tool for renewing democratic participation and political communication.

Some authors have pointed out the importance of the concept of digital democracy in the era of artificial intelligence, according to which algorithmic systems play a constructive role in supporting democratic processes ([Novelli and Sandri, 2024](#)). The authors recognized that artificial intelligence has the potential to promote inclusivity and participation based on the involvement of automated analysis of public positions. At the same time, scientific literature indicates that the democratic potential of AI is quite conditional and directly depends on the institutional space of its involvement ([Bonon, 2025](#); [Novelli and Sandri, 2024](#)). Recent authors have pointed to the possibilities of using artificial intelligence to support and implement deliberative processes in the digital environment ([Östling et al., 2025](#)). These authors also recognized AI as an important tool for moderating online discussions, structuring arguments, and reducing the phenomenon of information asymmetry between citizens.

At the same time, the authors warned that the introduction of AI into deliberative practices may be associated with the risk of a technocratic shift. Such a situation would question the autonomy of participants and could lead to a hidden normalization of certain positions. Therefore, deliberate democracy in the context of AI will require clear interpretations of democratic control.

An additional dimension to this issue has been determined by modern interdisciplinary research, which highlights various issues of the human dimension in the field of political interaction and broader algorithmization. [Stukes et al. \(2025\)](#) raised the issue of the displacement of human empathy by automated systems. In a political sense, this meant the risk of reducing civic participation to formalized, algorithmically processed signals. [Tilt \(2023\)](#) pointed out the importance of introducing different regulatory frameworks through the prism of patent law. At the same time, [Nemitz \(2018\)](#) recognized that democratic regulation cannot be limited to technical standards or corporate self-regulation it must include the political responsibility of platforms. Thus, optimistic approaches to the use of AI in democracy have recognized its potential to expand participation. However, scholars have also emphasized the structural risks of algorithmic governance. Therefore, this nature of AI makes the issues of regulation and institutional design central to further research.

2.4 The Kazakh context

In the context of Kazakhstan, technological infrastructure, the level of institutional trust, the type of political regime, and the specifics of the media ecology became particularly important, which could modify the perception of algorithmic activity. Despite the authors' notable interest in the issues of artificial intelligence, digital transformation and social media in Central Asia, the Kazakh context remains under-integrated in theoretical discussions on AI and democracy. Existing research focuses on individual aspects of digitalization—governance, law, security or cultural transformations. However, they are not combined in a holistic analysis of political competition in the algorithmically mediated public space of Kazakhstan. Existing research on digital transformation in Kazakhstan has identified a hybrid nature of modernization, combining elements of innovative public administration and post-Soviet administrative heritage. [Knox and Orazgaliyev \(2025\)](#) have pointed to the public administration of Kazakhstan as a system that simultaneously demonstrates a desire for modernization and retains authoritarian practices of control and centralization of decisions. In such a space, digital technologies played the role of instruments for the development of institutional logic of governance.

Azimzhanov and Myssayeva (2025) emphasized that the digital transformation of media and communication technologies in Kazakhstan is accompanied by asymmetric development. On the one hand, the growth of digital infrastructure and platforms has become noticeable. However, there is also limited space for autonomous political communication in this country. At the same time, some studies have indicated that modern social networks in Kazakhstan play a significant role in the process of shaping political communication. However, their influence is not always noticeable in the space of formal political participation. Ibrayeva et al. (2025) determined that social networks in Kazakhstan play the role of an important catalyst for legal change, through the emotional interaction of citizens with public court broadcasts. Therefore, the potential for digital deliberation is noticeable.

At the same time, the question of emotional mobilization is also related to the study of the protest potential of youth. Khamzina et al. (2025) pointed out the existence of a paradox of “silent numbers,” in which high levels of social tension and digital activity do not necessarily convert into sustained political mobilization. For this reason, the current algorithmic and institutional limitations of social media have played a role in depoliticization.

Kazakh research has also pointed to the impact of artificial intelligence on governance and decision-making processes. Beimisheva et al. (2025) investigated the interaction of AI and human agency in cultural transformations of governance.

A significant element of the Kazakh scientific space is the topic of using AI in the field of security. Feldstein (2019) described AI as a tool of digital repression. Besides, he pointed out that they are particularly relevant for semi-authoritarian regimes. Gritsenko et al. (2025) indicated that even in the presence of citizen skepticism, algorithmic systems are perceived as legitimate. This in turn indicates the normalization of digital control. Khalilova and Ellerby (2025) indicated that Central Asian states, including Kazakhstan, are actively learning from each other in the field of AI strategies. SUCH thoughts reinforce regional models of digital governance with limited democratic accountability. At the same time, current legal studies of digital transformation in Kazakhstan have indicated a gradual update of the legal framework in the field of open data and digital governance (Kassen, 2017; Verbovaya et al., 2024). However, the problem is that these works have not described in detail the issues of political competition, algorithmic content moderation and the impact of AI on democratic processes.

This study fundamentally distinguished several interrelated but conceptually distinct phenomena:

- (1) Algorithms of social media platforms that determined the ranking and visibility of content.
- (2) Algorithmic personalization as a perception for individualizing the information flow.
- (3) Content generated by artificial intelligence.
- (4) Automated activities (bots, coordinated campaigns).

Although these processes could interact within the digital environment, they had different natures, action, and potential democratic consequences. In the framework of this study, they are considered as analytically distinct dimensions, which made it possible to avoid conceptual confusion.

Thus, despite the existence of solid theoretical models of the interaction of AI, social media, and democracy, these approaches

have hardly been applied to the analysis of Central Asia in general and Kazakhstan in particular. There is a lack of systematic research that would analyze the algorithmic formation of political content in social media in Kazakhstan; assess the impact of AI on political competition and mobilization. Despite the significant amount of research on the impact of artificial intelligence and social media on democratic processes, most of it has focused on analyzing algorithmic effects, institutional changes, or case studies of political campaigns. At the same time, much less attention has been paid to how users perceive algorithmic activities and how these interpretations affect the democratic experience. In such circumstances, the proposed study shifted the analytical focus from studying the objective characteristics of algorithmic systems to analyzing their perceptions by users. The article examined the algorithmic influence and manipulation of AI as technological phenomena, and as interpreted social processes.

3 Methods

3.1 Research design

The study is based on a mixed research design. This article combines quantitative, computational, and qualitative methods to analyze social media and artificial intelligence as new arenas of political competition. Besides, the methodological logic of the study was sequential explanatory. At the first stage, quantitative and computational methods were used to identify patterns of political visibility, automation, and competition in social media. At the second stage, these results were processed using qualitative methods.

The study was explanatory and analytical in nature and was not limited to the description of technological innovations. It aims to explore how participants interpret AI-mediated political communication and to understand perceived processes underlying observed relationships.

Within the framework of the research design, social media is considered as algorithmically structured political spaces in which the rules of visibility, engagement and interaction are determined by a combination of technological solutions and political strategies. Artificial intelligence in this space is interpreted as an infrastructural intermediary that mediates the interaction between political actors, platforms and citizens.

3.2 Analytical framework

The analytical framework of the study is based on an interdisciplinary combination of approaches from political science, digital media studies and critical studies of artificial intelligence. Within this framework, social media is defined as algorithmically structured political arenas, while artificial intelligence is defined as an infrastructural mechanism.

In contrast to approaches that have identified AI as a mere auxiliary tool of political communication, this study defines it as an active factor that mediates the interaction between political actors, platforms, and citizens. Within the analytical framework, three interrelated dimensions are distinguished through which the impact of AI and social media on political competition and democracy is analyzed.

3.2.1 Algorithmic visibility and political competition

The first dimension focused on algorithmic visibility. The analytical framework assumes that AI algorithms shape visibility asymmetries between political actors and determine the positions of those who are better adapted to the logic of platforms (frequency, emotionality, format), while at the same time limiting access to the audience of alternative or less resourceful participants in the political process.

3.2.2 Automation, manipulation and strategic interaction

The second dimension identified automated and AI-mediated practices of political communication, including the use of bots, generative content, microtargeting and automated moderation. Within this dimension, artificial intelligence is defined as a tool of strategic interaction that can be used to enhance political influence.

3.2.3 Democratic consequences and civic experience

The third dimension focuses on the democratic consequences of AI-mediated political competition that manifest themselves at the level of civic experience. In this sense, aspects such as trust in political information, perception of manipulation, willingness to participate and quality of public deliberation are identified and analyzed.

The analytical framework assumes that democratic consequences cannot be reduced to institutional changes or formal indicators of participation. Instead, they manifest themselves based on citizens' subjective perception of algorithmic influence and sense of political autonomy.

The analytical framework of the study therefore combines the structural level (algorithms and platforms), the strategic level (political actors and their practices) and the civic level (perception and participation). Within the analytical framework, artificial intelligence is not viewed as a homogeneous phenomenon. Instead, different forms of algorithmic activity are distinguished: content ranking (platform algorithms), personalization, content generation, and automated political communication practices.

The proposed framework, which included structural, strategic, and civic levels, was based on a combination of approaches to the analysis of digital political communication that distinguish between: (1) technological conditions (platform algorithms), (2) actors and practices (AI, bots, microtargeting), and (3) user perceptions and responses. This division made it possible to integrate different dimensions of digital communication into a single analytical framework.

3.3 Participants

Data were collected in the Republic of Kazakhstan during March 2025–November 2025. The study covered 1795 participants aged 18 and over who were active users of social media and regularly encountered political or socio-political content in the digital environment. The choice of such a target group is due to the research goal of the article—the analysis of artificial intelligence and social media as arenas of political competition, in which citizens' participation is realized as speed through the consumption and interpretation of political content.

The number of respondents made it possible to ensure high statistical power (power) of the analysis even for multivariate models and to test interactions between key variables. With standard parameters ($\alpha = 0.05$, average effect $f^2 = 0.05$ – 0.10), such a sample exceeded the minimum required values for regression and latent models. Therefore, this reduced the risk of type II errors and increased the reliability of the conclusions in general.

The study included respondents who met clearly defined inclusion criteria regarding the relevance of empirical data to the research questions. All participants must be 18 years of age or older; use at least one social platform (Facebook, Instagram, Telegram, YouTube, or X/Twitter) at least several times a week; understand what AI is, use AI or chatbots in their activities. Participants also had to self-report regular contact with political or socio-political content (news, statements by politicians, political discussions, comments, analytical materials).

Recruitment was carried out through an online survey, which was distributed through targeted placement of links in social networks, thematic online communities, regional groups, as well as through partner educational and public platforms. This approach corresponded to the nature of the phenomenon under study, as it made it possible to directly involve those participants who function in the digital public space. To reduce selection bias and excessive concentration of certain user groups, stratified recruitment was used, which provided for targeted recruitment of respondents from different age, educational and territorial categories. Several key socio-demographic parameters quota-based online sampling: age (18–29; 30–44; 45–59; 60+); gender; level of education; type of settlement (city, village, rural area); main platform for consuming political content (Telegram, Facebook/Instagram, YouTube, X/Twitter). The sample size was determined considering the requirements for statistical power for regression analysis (power analysis), focusing on the average effect size and the number of predictors in the model.

This approach enabled the consideration of the digital and social heterogeneity of Kazakhstani society, specifically differences between urban and rural regions, generations, and media consumption models. Although the sample does not claim to be fully nationally representative in a demographic sense, it is analytically representative of the target group—active social media users who form the core of modern digital political communication. Therefore, the sample size ($N = 1795$) is methodologically sufficient and justified for research on political communication in the digital environment (see Table 1). Besides, Table 2 shows a comparison of the sample structure of the study with the structure of the general population by two key variables—age and type of settlement—as well as the corresponding weighting factors applied to correct for possible sampling bias. Thus, the younger age groups (18–44 years) are slightly overrepresented in the sample, while the older group (60+) is underrepresented, which is typical for online surveys. Accordingly, an increasing factor (1.33) is applied to the 60+ group, while decreasing factors (<1) are applied to the younger groups. A similar logic is applied to the type of settlement: residents of large cities are slightly overrepresented, while the rural population is underrepresented.

All participants were informed about the scientific nature of the study and provided informed consent to participate. The survey was conducted anonymously; no personally identifiable data was collected or stored. The study was conducted in accordance with basic ethical standards of social sciences, in particular the principles of voluntariness of participation, risk minimization, and protection of respondent confidentiality.

TABLE 1 Socio-demographic characteristics of participants (*N* = 1795).

Characteristics	Category	<i>n</i>	%
Sex	Men	862	48.0
	Women	933	52.0
Age	18–29 years	493	27.5
	30–44 years	574	32.0
	45–59 years	511	28.5
	60 years and older	217	12.0
Education	Secondary	318	17.7
	Secondary specialized/ vocational	487	27.1
	Higher	748	41.7
	Postgraduate	242	13.5
Type of settlement	Big city (million+)	561	31.3
	City (up to 1 million)	604	33.7
	Village	311	17.3
	Rural area	319	17.7
Main social platform*	Telegram	672	37.5
	Facebook/Instagram	521	29.0
	YouTube	396	22.1
	X (Twitter)	206	11.4
Frequency of exposure to political content	Daily	618	34.4
	Several times a week	742	41.3
	Less than once a week	435	24.3

*The main platform was defined as the one on which the respondent most often consumes political or socio-political content.

3.4 Instruments and procedure

It is important to note that all key variables in this study are based on respondents' subjective perceptions rather than direct measures of algorithmic processes. Accordingly, the analysis focuses on perceived algorithmic influence and perceived AI manipulation as socially constructed interpretations of digital political environments. The quantitative component of the study involved identifying important aspects in the sphere of individual perception of the role of artificial intelligence and social networks in political competition. For this purpose, a structured online questionnaire was created, which included standardized scales and author's indicators.

3.4.1 Structure of the quantitative toolkit

The questionnaire consisted of five thematic blocks, each of which corresponded to a separate element of the analytical framework. The first block consisted of socio-demographic variables. It included questions about age, gender, level of education, type of settlement, and the main platform for consuming political content. These variables were used as controls in statistical models and for stratification of the sample. The second block consisted of patterns of political content consumption.

The frequency of contact with political content on social media, types of content (news, statements by politicians, analytical materials,

TABLE 2 Example items used for index construction.

Index	Example items (Likert scale, 1–5)
Algorithmic influence	"My news feed is largely shaped by algorithms rather than my own choices" "Social media platforms prioritize certain political topics automatically"
Algorithmic personalization	"I mostly see political content that matches my interests" "Platforms adapt political information based on my previous behavior"
AI manipulation	"Bots or automated accounts influence political discussions online" "Some political messages I see are generated by AI"
Trust in political information	"I trust political information shared on social media"
Political autonomy	"I feel free to form my own political opinions online"
Deliberative quality	"Online political discussions are balanced and constructive"

comments) and forms of interaction (viewing, liking, commenting, sharing) were assessed. The answers were recorded on ordinal frequency scales. The third block consisted of the perception of algorithmic and AI influence.

This block was aimed at measuring the respondents' awareness of the role of recommendation algorithms, personalization of the news feed and automation of content. It included several statements that were rated on a five-point scale (1—"completely disagree," 5—"completely agree"). Based on these statements, an index of perception of algorithmic influence was formed.

The fourth block involved determining the perception of AI manipulation. It was aimed at measuring the subjective assessment of the manipulative potential of AI in political communication. The statements concerned the presence of bots, automated accounts, AI-generated messages and microtargeting practices. The responses were used to form an index of perception of AI manipulations.

The fifth block consisted of democratic consequences. Indicators of trust in political information in social media, the feeling of political autonomy and the assessment of the quality of online discussions (deliberative quality) were measured. All variables were operationalized as the average values of multi-point scales.

Quantitative data collection was implemented in an online format among social media users in Kazakhstan. The survey was distributed through social networks, regional online communities and partner platforms, which allowed respondents from different social and territorial groups. To ensure the quality and reliability of the data, the following procedural steps were used: (1) preliminary piloting of the questionnaire to check the clarity of the wording; (2) use of filtering questions to meet the inclusion criteria; (3) control of the time of filling out the questionnaire to identify inattentive answers. The qualitative component was based on an expert sample (journalists, digital policy specialists, civil society representatives) and reflected expert interpretations rather than the direct experience of ordinary users.

3.4.2 Computational indices and construction procedure

The computational component of the study used a set of composite indices that were designed to provide a generalized measure of perceptions of algorithmic and AI influence. These indices were not arbitrary but were based on existing theoretical approaches. However, they were adapted and operationalized for the empirical context of the study.

Besides, the indices were based on developments in three areas: (1) Algorithmic visibility and personalization (research on recommendation systems, algorithmic ranking, and filter bubbles); (2) Artificial intelligence and manipulative practices in political communication (bots, automated content, microtargeting); (3) Digital democracy and the quality of debate (trust, civic autonomy, the quality of online discussions). None of the indices were mechanically copied from previous studies. Instead, they were purely authorial composite indicators that were compiled based on the adaptation of conceptual variables.

3.4.2.1 Index of perception of algorithmic influence

This index was formed to determine the degree of awareness of respondents about the role of algorithms in the formation of political content in social networks. The index items included statements about: (1) the influence of recommendation algorithms on the news feed; (2) personalization of political content; (3) prioritization of certain topics or actors; (4) automatic promotion of popular content. Respondents assessed the level of agreement with each statement on a five-point scale. The calculation procedure consisted of checking the internal consistency of the items (Cronbach's $\alpha > 0.75$); standardizing the responses (z -scores); calculating the average value of the standardized items and normalizing the index to a scale from 1 to 5 for ease of interpretation.

3.4.2.2 AI manipulation perception index

This index was aimed at determining the subjective assessment of the manipulative potential of AI in political communication. The index items covered: (1) perception of the presence of bots and automated accounts; (2) suspicion of AI-generated political messages; (3) perception of targeted political microtargeting; (4) doubts about the authenticity of online discussions. The calculation was carried out similarly: α check (0.78–0.84); standardization; aggregation into a composite indicator.

3.4.2.3 Index of democratic quality of digital interaction

It was formed with the aim of a generalized measurement of the democratic consequences of algorithmically mediated political communication. It combined three subdimensions: (1) trust in political information; (2) perception of political autonomy; (3) assessment of the deliberate quality of online discussions.

Each sub-dimension was measured with a separate multi-item scale; after that, the sub-dimension values were standardized; correlation consistency was checked; a general index was formed as the average of the three components. Principal component analysis (PCA) was used to assess construct validity. All indices demonstrated a clear factor structure, in which the first component explained more than

50% of the variance of the corresponding items. This indicated the conceptual integrity of the constructed indicators (see Table 2).

The indicators used were partially adapted from previous research in the field of algorithmic influence and digital democracy but were largely developed by the authors considering the specifics of the studied context. The formulation of the items was based on a generalization of existing theoretical approaches. However, it was also modified to reflect the empirical features of political communication in social networks in Kazakhstan.

3.4.3 Conceptual clarification of key constructs

Within the framework of the proposed study, it is important to clearly separate the key concepts used in the analysis of algorithmically mediated political communication. Algorithmic personalization refers to the process of individualizing the user's information flow based on his behavioral data, interests, and previous interactions with content. In this case, algorithms performed the function of optimizing the relevance of information.

Algorithmic influence is defined more broadly as the general effect of algorithmic systems on the formation of the visibility of political content, the structure of the information environment, and the prioritization of certain topics. AI manipulation is interpreted as the purposeful use of algorithms and artificial intelligence technologies to influence users' political attitudes through automated, opaque, or strategically designed practices (e.g., botnets, microtargeting, generative content). Therefore, the above concepts have become analytically linked. However, they should not be perceived as synonyms: personalization and influence reflected the functional characteristics of algorithmic systems, while manipulation described their normatively problematic, strategic dimension.

3.4.4 Qualitative tools and procedure

The qualitative component of the study aimed to identify the perceptions within which artificial intelligence and social media function as new arenas of political competition. Within the qualitative part, two complementary tools were used: semi-structured expert interviews, qualitative analysis of political content in social media.

Semi-structured interviews were chosen as the main tool to identify interpretations, practical experiences and normative assessments of AI-mediated political communication. This format made it possible to determine the comparability of responses in covering complex and sensitive topics.

Interviews were conducted with respondents who have direct experience of working or interacting with political content in the digital environment, including journalists and editors of online media; specialists in political communication and digital campaigns, representatives of civil society; experts in digital policy and regulation.

Participants were selected using purposive sampling, considering relevant professional experience and involvement in digital political communication processes. A total of 20 people were involved. Interviews were conducted remotely using secure communication platforms. Before each interview, participants were informed about the purpose of the study and provided informed consent to participate and record the conversation. Interviews lasted an average of 45–60 min and were then transcribed for further analysis.

The Democratic Outcome Index combined three conceptually distinct dimensions—trust, political autonomy, and quality of

deliberation. This combination was of a somewhat analytical nature and was used to summarize the overall perception of democratic quality, but each of the sub-dimensions was also analyzed separately.

3.5 Data analysis

The data analysis was carried out according to a mixed research design. The quantitative data analysis was carried out in several stages. At the first stage, descriptive statistics were used to characterize the sample and the main variables (mean values, standard deviations, minimum and maximum values). As a result, this made it possible to assess the distributions of the indices, levels of trust, perception of AI and general patterns of consumption of political content. Next, a correlation analysis was carried out to identify the relationships between key variables, in particular between: perception of algorithmic influence; perception of AI manipulation; indicators of trust, political autonomy and deliberative quality.

For the main analytical test of the research assumptions, multivariate regression models were used, in which democratic indicators acted as dependent variables, and indices of perception of AI and characteristics of social media use—independent. Sociodemographic characteristics (age, education, type of settlement, platform) were included as control variables.

Interaction effects analysis was used to assess more complex relationships, in particular between AI perceptions and platform type or age groups.

Computational analysis involved testing the structure and validity of the constructed indices. Principal component analysis (PCA) was used to reduce the dimensionality of the data and identify latent dimensions underlying perceptions of algorithmic and AI influence. The PCA results were used to determine and verify whether the indicators formed consistent components and to identify dominant factors. At the same time, the main computational indices were integrated into regression models together with the primary variables. Qualitative data from semi-structured interviews and social media content analysis were analyzed based on the inclusion of thematic analysis. The analysis was conducted iteratively and included several stages: initial coding of texts and formation of generalized thematic categories. Attention was paid to defining interpretive frameworks through which participants made sense of algorithmic influence.

Principal component analysis (PCA) was chosen instead of confirmatory factor analysis (CFA) because the study was partly exploring in nature. In addition, the indices used were adapted and developed by the authors for a specific empirical context. PCA made it possible to identify the latent structure of the variables without a pre-specified

model, which became appropriate at the stage of initial operationalization of the concepts. The use of CFA could be a promising direction for further research to confirm the stability of the factor structure. Principal component analysis (PCA) was used to identify the empirical structure of the variables. However, it was not used to confirm the theoretical validity of the constructions. The theoretical consistency of the indices was justified based on previous research and the conceptual framework.

4 Results

4.1 Quantitative links between perceptions of AI and democratic outcomes

According to the analytical framework of the study, democratic outcomes are operationalized through three interrelated but conceptually distinct dimensions: trust in political information, sense of political autonomy, and assessment of the deliberate quality of online discussions. Besides, the main independent variables are the algorithmic influence perception index and the AI manipulation perception index, while socio-demographic characteristics and platform type are included as control variables. A correlation analysis was conducted to preliminarily assess the directions and strengths of the relationships between key variables (Table 3). Thus, significant associations were obtained between the perception of AI and democratic indicators. The algorithmic influence perception index had a moderate negative relationship with trust in political information and the deliberate quality of discussions. However, this index correlated positively with the sense of control over one's own information choices among more digitally competent respondents. In contrast, the AI manipulation perception index had a stable negative relationship with all democratic indicators. This indicated a negative association with trust and an increase in political skepticism. To determine the stability of the identified dependencies, a series of multivariate OLS regressions were estimated, in which democratic indicators acted as dependent variables. All models included standard control variables (age, education, type of settlement, platform) and were also tested on weighted and unweighted data. To determine the impact of the constructed indices on the latent dimensions underlying the perception of political communication based on artificial intelligence, a principal component analysis (PCA) was conducted. The analysis was conducted separately for each block of indicators using standardized variables. However, before conducting PCA, the adequacy of the data for factor analysis was checked. The

TABLE 3 Sample-population comparison and weights after stratification.

Variable	Category	Sample share (%)	Population share (%)	Weight
Age	18–29	27.5	25	0.91
	30–44	32	30	0.94
	45–59	28.5	29	1.02
	60+	12	16	1.33
Settlement type	Large city	31.3	28	0.89
	City	33.7	35	1.04
	Township	17.3	18	1.04
	Rural area	17.7	19	1.07

Kaiser-Meyer-Olkin (KMO) values exceeded the recommended threshold ($KMO > 0.70$). In addition, the Bartlett test of sphericity was statistically significant ($p < 0.001$). Therefore, the data were suitable for identifying latent structures. For indicators measuring the perception of algorithmic personalization and content ranking, PCA revealed one dominant latent component, which explained more than 52% of the total variance. All indicators had high factor loadings (>0.60). The authors of the article defined the resulting component as a generalized indicator of algorithmic visibility and personalization, in which users' subjective perception of the fact that their political news feed is formed algorithmically is noticeable. A similar procedure was applied to indicators reflecting the perception of the manipulative potential of AI. PCA also identified one principal component, which explained 58% of the variance in the corresponding variables. The factor loadings were consistently high. This indicated the presence of a clear latent dimension. The authors of the article defined this component as important for the perception of automated manipulative practices, which combined the perception of bots, content generated by AI into a single cognitive system. Although the first component explained a significant portion of the variance, the data indicated the usefulness of distinguishing between distinct democratic dimensions. This supported the analytical decision to treat trust, autonomy, and quality of deliberation as related but conceptually distinct measures. To test the robustness of the latent structures, PCA was conducted separately for the main subgroups of respondents (by age and platform). The overall structure of the components remained stable, and variations in factor loadings did not change the interpretation of the latent dimensions. This indicated the comparability of the indices across groups, which is a necessary condition for further analysis of the heterogeneity of effects. Therefore, these data indicated that they confirm that the indices used had a clear latent structure, internal consistency, and construct validity. Additionally, the stability of the factor structure in subsamples was tested. The results indicated the invariance of the principal components, which confirmed the reliability and generalizability of the constructed indices.

Model 1 (Table 4) showed that increased perceptions of algorithmic influence were significantly associated with decreased trust in political information on social media ($\beta < 0$, $p < 0.01$). However, this effect was moderate in magnitude. These results indicate that algorithmic personalization is ambivalent: it is associated with increased perceived relevance of content while being negatively associated with trust in its neutrality.

Model 2 showed that the index of perceptions of AI manipulation had a stronger and more stable negative effect on all three democratic indicators, on the assessment of the deliberate quality of online discussions ($\beta < 0$, $p < 0.001$). These findings indicate that the perception of the manipulative nature of AI is strongly associated with lower levels of democratic indicators.

Model 3 focuses on the sense of political autonomy. The results indicate that respondents with a high level of digital competence demonstrate a less negative reaction to algorithmic influence, but even in this group, the perception of AI manipulation is associated with a decrease in autonomy.

Besides, to identify differential effects, models with interactions between AI indices and platform type, as well as age groups, were estimated (Table 5). The data indicated that the negative impact of the perception of AI manipulation is most pronounced among Telegram and YouTube users, where algorithmic content distribution is combined with high political polarization. Age analysis showed that younger respondents (18–29 years old) had a higher tolerance for algorithmic personalization, but at the same time were more sensitive to suspicions of automated manipulation. This indicated a complex combination of digital adaptability and democratic vulnerability. Thus, these data indicated that AI and social media shape specific conditions of democratic interaction. Algorithmic personalization had an ambivalent effect. Moreover, the perception of AI as a tool of manipulation systematically undermined trust, autonomy, and the deliberate quality of political communication. Moreover, as shown in Figure 1, the negative relationship between perceived AI manipulation and discussion quality is not the same across platforms. In particular, the marginal effects plot shows that this relationship is particularly pronounced among Telegram and YouTube users, where an increase in the perception of AI-driven manipulation is associated with a sharper decrease in perceived discussion quality. In contrast, the slope of this relationship is less steep for Facebook/Instagram and X. This therefore indicated a more moderate moderating role of platform-specific algorithmic architecture. To contextualize platform-specific effects, Figure 2 presents the distribution of the main platforms for political content consumption by age groups. The figure highlighted generational differences. It is noticeable that younger respondents disproportionately rely on Telegram and YouTube. However, older participants were more focused on Facebook/Instagram. In this context, the indices reflected perceptions of different aspects of algorithmic activity, rather than a single technological phenomenon.

To determine the heterogeneity of the impact of AI-mediated political communication, an additional analysis was conducted, which involved assessing platform and group differences in the relationships between the perception of AI and democratic outcomes. To determine platform differences, regression models with interaction terms between AI indices and platform type were used (Table 6). Accordingly, it was found that the negative impact of the perception of AI manipulation on democratic indicators is significantly heterogeneous depending on the platform. The most pronounced negative effects were observed among Telegram and YouTube users. On these platforms, the perception of AI as a tool of manipulation is associated with significantly lower assessments of the deliberate quality of political discussions and

TABLE 4 Correlation matrix of AI perception indices and democratic outcomes.

Variable	1	2	3	4	5
1. Algorithmic influence perception index	1.00				
2. AI manipulation perception index	0.48***	1.00			
3. Trust in political information	−0.26***	−0.41***	1.00		
4. Political autonomy	−0.18***	−0.33***	0.44***	1.00	
5. Deliberative quality	−0.22***	−0.39***	0.51***	0.46***	1.00

$N = 1795$; Pearson correlations; *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

TABLE 5 Multivariate regression models predicting democratic outcomes.

Independent variables	Trust	Political autonomy	Deliberative quality
Algorithmic influence index	−0.17***	−0.12**	−0.15***
AI manipulation index	−0.31***	−0.27***	−0.34***
Age	0.06*	−0.04	0.03
Higher education	0.09**	0.11**	0.08*
Urban (vs. rural)	0.07*	0.05	0.06*
Telegram (ref. Facebook/Instagram)	−0.08*	−0.06	−0.12**
YouTube	−0.05	−0.07*	−0.09*
X/Twitter	−0.04	−0.02	−0.05
Constant	Yes	Yes	Yes
Adjusted R ²	0.28	0.24	0.32

N = 1795; Weighted models; Robust standard errors; ****p* < 0.001; ***p* < 0.01; **p* < 0.05.

trust in information. This is consistent with the features of algorithmic content distribution on these platforms. They combine a high speed of information circulation, emotional polarization, and limited transparency of algorithmic mechanisms. In contrast, for Facebook/Instagram and X, the negative effect of perception of AI manipulation is more moderate. This indicated the moderating role of platform architecture. The marginal effects visualized in Figure 1 clearly indicated these differences. In particular, the increase in perception of AI manipulation is accompanied by a much sharper decrease in the quality of discussions among Telegram and YouTube users. However, for Facebook/Instagram and X, the corresponding slope of the curve is less steep.

Special attention was paid to the generational heterogeneity of the effects. Models with interactions between AI indices and age groups (Table 7) indicated that younger respondents (18–29 years old) had a higher tolerance for algorithmic personalization. This is reflected in the weaker negative relationship between the algorithmic influence index and democratic indicators. At the same time, this same group appears to be sensitive to the perception of AI manipulation. Even with a high level of digital adaptability, suspicions of automated manipulative practices are associated with a decrease in trust, autonomy, and deliberative quality. Older age groups, on the contrary, had a lower tolerance for algorithmic personalization in general, but less severe reactions to AI manipulation. Therefore, to better understand the differences identified, cross-sections of “age × platform” were analyzed (Table 8). The data showed a clear segmentation of audiences: younger respondents are much more likely to use Telegram and YouTube as their main sources of political content, while older age groups are focused mainly on Facebook/Instagram. Thus, AI and social media have shaped the conditions for democratic interaction, depending on the platform architecture and socio-demographic characteristics of users.

4.2 Qualitative results: perceptions of AI, platforms and democratic experiences

The semi-structured interview data allowed us to identify interpretive frameworks within which participants make sense of algorithmic influence, AI manipulation and their impact on democratic interaction. In particular, algorithmic personalization as an ambivalent experience was an important focus.

Most respondents clearly distinguished between algorithmic personalization of content and manipulative use of AI. Besides,

recommendation algorithms are often described as important tools that are aimed at the convenience of information consumption and the relevance of the content presented. Such opinions were noticeable among young people and users with a high level of digital competence. However, in contrast to algorithmic personalization, the perception of AI, which can have a manipulative effect, was much more critical. Respondents associated AI manipulation with botnets, automated political targeting, artificially generated content and hidden influence campaigns. Opacity was a key theme in the responses. Participants emphasized that trust is undermined by the lack of clarity about who is using them and for what purpose. This led to an increase in the phenomenon of political skepticism.

The next theme that the authors of the article highlighted was the experience of political communication. Qualitative data revealed differences in the perception of AI depending on the platform. Telegram and YouTube respondents described them as important platforms with high speed of information circulation and low visibility of algorithmic mechanisms. Instead, Facebook/Instagram content and a simple information search interface (a common feed of current news by algorithms). Such responses softened negative assessments of the impact of AI. These observations explained the quantitatively recorded heterogeneity of effects across platforms.

Generational differences in attitudes toward AI also became noticeable. Younger participants had higher adaptability to algorithmic personalization and a better understanding of the principles of the platform. However, it was this group that was sensitive to suspicions of automated manipulation, perceiving them as a threat to the authenticity of political communication (see Table 9). Older respondents, on the contrary, were generally more critical of algorithmic mechanisms as such, but less likely to interpret them in terms of targeted political manipulation. This also confirmed the quantitative findings regarding the combination of digital adaptability and democratic vulnerability among younger users (see Table 10).

Besides, the qualitative data of the study are presented in the form of a structured coding framework, which also reflects the dominant interpretive patterns revealed in the semi-structured interviews. This coding framework represents the empirical organization of meanings through which respondents have made sense of artificial intelligence and social media as new arenas of political competition. It summarizes recurring themes, their internal differentiation and the mechanisms of influence of AI-mediated communication on the democratic

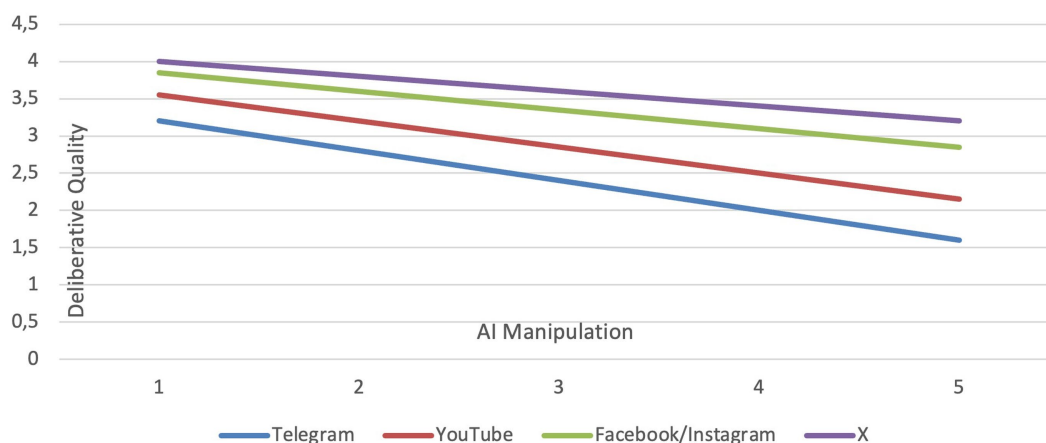


FIGURE 1
Marginal effects: AI manipulation x platform.

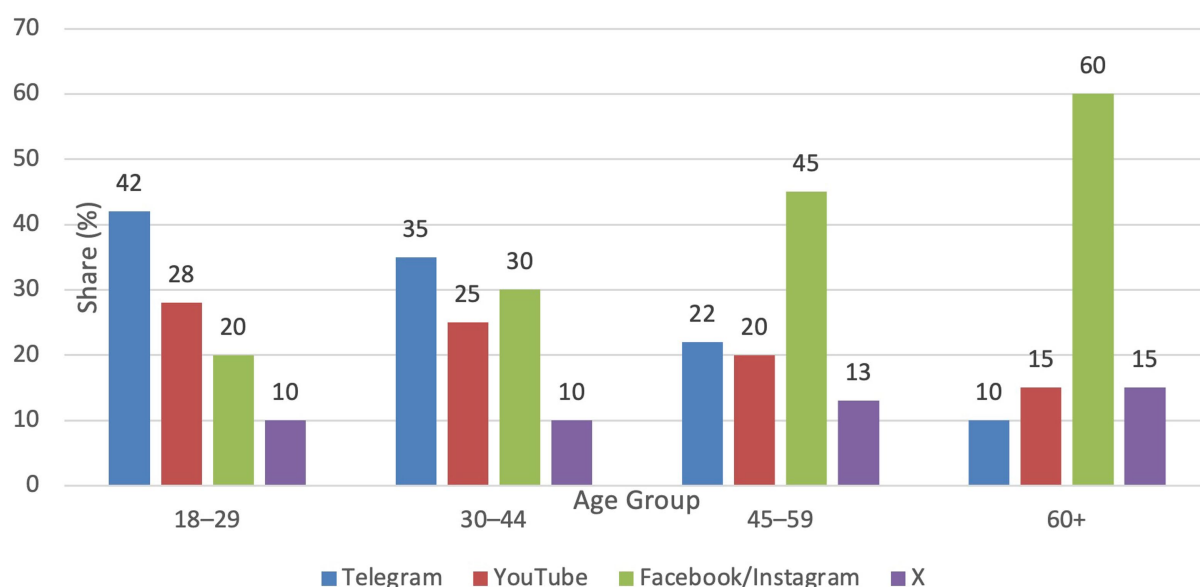


FIGURE 2
Platform distribution by age group.

experience. Table 11 presents the coding framework formed because of the qualitative data, which includes main themes, subthemes, interpretive perceived processes and illustrative (anonymized) quotes from respondents. The presented coding framework indicated that the respondents' interpretations are grouped around several interconnected clusters. First, algorithmic personalization is mostly described in ambivalent terms—as a tool for increasing the relevance of content, but at the same time as a factor in reducing information neutrality and pluralism. Second, the perception of AI as a tool for manipulation is formed as a holistic negative frame that combines the notion of bots, opaque algorithms and deliberate political interference. Besides, the democratic experience of respondents was articulated based on narratives of self-censorship, reduced participation and loss of trust, which points to specific perceived processes of democratic erosion. Importantly, the qualitative coding structure closely correlates with the quantitative results of the study. Themes related to the perception of AI manipulation corresponded to the most pronounced negative coefficients in the regression models.

5 Discussion

5.1 Interpretation of results

The study provided an opportunity to understand the role of artificial intelligence and social media as new arenas of political competition and their impact on democratic processes. The combination of quantitative, computational and qualitative methods made it possible to record dependencies and reconstruct the perceived processes through which AI-mediated political communication is associated with changes in the democratic experience of users. The results confirmed the two-way nature of algorithmic personalization. Quantitative models indicated that the perception of algorithmic influence was moderately negatively associated with trust in political information. However, under certain conditions, it correlated with a sense of control over one's own information choices. This effect was particularly noticeable among respondents with a higher level of digital competence. Qualitative data complemented these results and

TABLE 6 Digital competence.

Independent variables	Trust (M1)	Deliberative quality (M2)	Political autonomy (M3)
Algorithmic influence index	−0.17***	−0.15***	−0.08*
AI manipulation index	−0.31***	−0.34***	−0.27***
Digital competence	0.12**	0.09*	0.18*
Algorithmic influence × digital competence	—	—	0.11
Age	0.06*	0.03	−0.04
Higher education	0.09**	0.08*	0.11**
Urban (vs. rural)	0.07*	0.06*	0.05
Platform controls	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Adjusted R ²	0.28	0.32	0.29

N = 1795; Weighted OLS with interaction terms; ****p* < 0.001; ***p* < 0.01; **p* < 0.05. Bold values indicate the main moderation effects of digital competence on political autonomy: the main effect ($\beta = 0.18, p < 0.05$) and the interaction effect Algorithmic influence × digital competence ($\beta = 0.11$), highlighting the buffering role of digital competence in mitigating algorithmic influence on political autonomy.

indicated that users simultaneously perceived algorithms as tools of convenience and as factors that could narrow the phenomenon of information pluralism. Thus, algorithmic personalization is not uniquely destructive but has created structural tensions between the relevance of content and the democratic neutrality of the information environment. Perceived AI manipulation (e.g., bots, automated messaging) differs conceptually from algorithmic personalization, and these dimensions show distinct relationships with democratic indicators. In contrast to algorithmic personalization, the perception index of AI manipulation demonstrates a persistent and strong negative relationship with all democratic indicators—trust, political autonomy and deliberative quality. This suggests that it is not the fact of algorithmic mediation itself that is associated with democratic outcomes, but rather its perception as, but its interpretation as deliberate, opaque and controlled political influence. Qualitative results show that such perceptions are formed around the topics of bots, automated campaigns. The results highlight those different digital contextual understanding—platform algorithms, AI-generated content, and automated practices—should not be treated as interchangeable. They represent distinct processes that interact within digital environments and are perceived differently by users.

In addition, the article reveals heterogeneity of effects depending on the platform and socio-demographic characteristics of users. The most pronounced negative effects of the perception of AI manipulation are observed among Telegram and YouTube users, that is, in platforms where algorithmic content distribution is synthesized with a high speed of information circulation, emotional polarization and limited transparency of recommendation mechanisms. For Facebook/Instagram and X, these effects are more moderate. The marginal effects presented in the visualizations clearly indicated that the same increase in perceptions of AI manipulation has different democratic consequences depending on the digital environment.

At the same time, the results were consistent with other studies that described artificial intelligence as a structural factor in the transformation of political power, institutions and social relations. Works devoted to the evolution of AI and digital transformation (Sarkar, 2025) indicated that the current stage of development of artificial intelligence has been determined by the growth of socio-political risks associated with the concentration of control over algorithmic systems. The results of this study concretized these thoughts and indicated that the perception of AI as an opaque and manipulative tool is a key

mechanism of democratic erosion at the level of everyday political experience of users. In this sense, the obtained data complemented the arguments of Schippers (2020), who identified AI as an ambivalent factor in democratic politics—potentially capable of enhancing participation and undermining the autonomy of citizens. Our results empirically confirmed this ambivalence. In particular, the article shows that algorithmic personalization can be perceived as a tool for convenience and efficiency, while AI manipulation is consistently associated with a loss of trust and a decrease in the quality of deliberation.

At the same time, the results of the study expanded the political and economic approaches to the analysis of digital transformation, presented. For example, Rodionova (2020) determined that digital technologies are described as tools for optimizing and modernizing management processes. In contrast to such functionalist interpretations, our data shows that in the political sphere, digital optimization is accompanied by symbolic and normative shifts that directly affect the legitimacy of political communication.

It is also important to compare with studies of the security dimensions of AI. Roumate (2024) and Steff and Abbasi (2020) identified artificial intelligence as a factor in changing the global balance of power and military-political competition. The results of this study have shown that a similar logic of competition is also transferred to the level of domestic politics, in which social media becomes arenas of micro-level struggle for influence, attention and interpretation of reality. Thus, AI has shaped internal asymmetries of power that are manifested in the digital practices of everyday political communication.

The regional context is of particular importance. Combined with studies of political transformations in Central Asia (Calice et al., 2021; Somfalvy, 2021; Topuz, 2023) and analyses of authoritarian governance practices in the region (Gur et al., 2024; Spoor and Thiemann, 2025), the results of this article have shown that AI-mediated political communication can reinforce already existing structural asymmetries between the state, platforms and citizens. In this space, the perception of AI as a tool of manipulation has acquired sensitivity, as it overlaps with historically formed deficits of institutional trust and limited possibilities for democratic control.

The normative and legal debates on AI regulation, presented in Tilt (2023) and Verbovaya et al. (2024), find empirical confirmation in the results obtained. The data show that it is the opacity of algorithmic mechanisms and the lack of clear rules of responsibility that shape

TABLE 7 Platform-specific interaction effects between AI perception and democratic outcomes.

Independent variables	Telegram	YouTube	Facebook/Instagram	X
Algorithmic influence index	−0.18**	−0.16**	−0.10*	−0.08
AI manipulation index	−0.41***	−0.36***	−0.22**	−0.19*
Algorithmic influence × platform	Ref.	Ref.	+0.06*	+0.07*
AI manipulation × platform	Ref.	Ref.	+0.12**	+0.14**
Controls (age, education, settlement)	Yes	Yes	Yes	Yes
Adjusted R ²	0.38	0.35	0.29	0.27
N	512	438	603	242

Weighted OLS regressions; Robust standard errors; *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; Reference category for interactions: Telegram.

TABLE 8 Age-group interaction effects of AI perception indices.

Independent variables	18–29	30–44	45–59	60+
Algorithmic influence index	−0.06	−0.12*	−0.17**	−0.19**
AI manipulation index	−0.38***	−0.32***	−0.25**	−0.21*
Algorithmic influence × age group	+0.11**	+0.06*	Ref.	Ref.
Digital competence	+0.19***	+0.14**	+0.08*	+0.05
Controls	Yes	Yes	Yes	Yes
Adjusted R ²	0.34	0.31	0.28	0.25
N	498	522	461	314

Separate weighted OLS models by age group; *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

negative democratic effects. This determined the need for technical and political-normative regulation of AI and social media. In addition, the obtained data resonated with contemporary debates about disinformation and the emotional dimension of AI-mediated communication (Wong, 2025; Stukes et al., 2025). The qualitative data recorded a decline in the quality of discussion, self-censorship, and emotional polarization. Thus, there are democratic challenges to AI, which consist in the gradual transformation of the emotional and cognitive conditions of political participation. The results confirmed the need to distinguish between different forms of algorithmic activity. Algorithmic personalization was ambivalent. The perception of automated manipulative practices (bots, generative content) was associated with more pronounced negative assessments of democratic processes. This indicated that different technological mechanisms had different social interpretations and consequences.

5.2 Theoretical contribution

Thus, the results of the study indicated that the key role in the transformation of democratic experience was played by the objective characteristics of algorithmic systems, together with the interpretations of users. This meant that the democratic consequences of artificial intelligence were of a socio-perceptual nature and depended on how users understood and evaluated algorithmic processes. It is important to emphasize that the qualitative component of the study did not establish causal mechanisms. Rather, it allowed for the interpretation of the identified quantitative relationships through the prism of the participants' experiences, perceptions, and assessments. Thus, the qualitative data complemented the quantitative results, providing them with contextual and meaningful content.

This study contributed to the scientific debate, shifting the analytical focus from studying objective technological effects to analyzing the

perception of algorithmic processes by users. While previous studies mainly considered the impact of algorithms and artificial intelligence as technologically determined, the results showed that the interpretations of these processes played a key role. Thus, the democratic consequences of artificial intelligence were technological and socio-perceptual in nature, which opened new opportunities for further research in this direction.

The results obtained had several practical consequences.

For social media platforms, it is important to increase the transparency of algorithmic processes and clearly label content that has been generated using artificial intelligence.

For regulatory bodies, it has become relevant to develop regulatory mechanisms to control automated political communication and prevent manipulative practices.

For educational institutions and media literacy programs, it is important to form a critical understanding of algorithmic systems and their impact on the information environment.

For journalists and public communicators, it has become important to inform the audience about the risks associated with the use of AI in the political sphere.

5.3 Limitations

Although the study provided an analysis of the role of AI and social networks as new arenas of political competition, it has several limitations. First, the quantitative part of the study is based on cross-sectional data. This situation limited the ability to conclude cause-and-effect relationships. An important limitation of the study was the use of cross-sectional data, which did not allow us to establish causal relationships between variables. Although regression models found statistically significant associations between perceptions of AI and indicators of democracy, the direction of these

TABLE 9 Cross-tabulation of age group by primary political content platform (%).

Age group	Telegram	YouTube	Facebook/Instagram	X	Total
18–29	42.3	28.1	19.4	10.2	100
30–44	34.7	25.6	29.1	10.6	100
45–59	21.8	19.9	45.6	12.7	100
60+	10.5	14.8	59.2	15.5	100

Percentages by row; N = 1795; Weighted estimates.

TABLE 10 Qualitative mechanisms underlying AI-mediated political communication.

Theme	Sub-theme	Interpretative mechanism	Illustrative quote (anonymized)	(N = 20)	Share (%)	Connection to quantitative results
Algorithmic personalization	Perceived usefulness	Algorithms increase relevance but narrow visibility	"It helps me find content faster, but I rarely see alternative views." (Journalist, 34)	13	65	Provides interpretation of ambivalent quantitative patterns
	Loss of neutrality	Personalization reduces pluralism of viewpoints	"Different users are shown completely different political realities." (Media editor, 41)	11	55	Negative association with trust
AI manipulation	Bots and coordination	Automation perceived as intentional political interference	"You can see patterns that no human would repeat manually." (Digital analyst, 29)	16	80	Strong negative coefficients across outcomes
	Opacity of control	Unclear actors behind AI undermine legitimacy	"The danger is not AI itself but who controls it." (Civil society expert, 47)	17	85	Reflects participants' perceptions of reduced autonomy
Platform-specific effects	Telegram dynamics	Speed and opacity amplify polarization	"Telegram spreads emotions faster than facts." (Political consultant, 38)	14	70	Platform-specific heterogeneity
	YouTube recommendation loops	Algorithmic amplification reinforces extremes	"After one video, the system pushes more radical content." (Policy expert, 45)	13	65	Steep marginal effects
Generational differences	Youth adaptability	Digital literacy increases awareness of manipulation	"We understand algorithms, so we are more critical." (Student activist, 21)	15	75	Age interaction effects
	Older skepticism	General distrust of digital politics	"I do not believe online politics can be fair." (Retired teacher, 63)	12	60	Lower sensitivity to AI manipulation
Democratic experience	Self-censorship	Users withdraw from discussions due to distrust	"I prefer silence to manipulated debates." (NGO worker, 36)	12	60	Decline in deliberative quality
	Reduced participation	AI discourages engagement	"Why argue if algorithms decide visibility anyway?" (Campaign strategist, 40)	11	55	Suggests a perceived association with disengagement

associations may be more complex. A possible reverse causality relationship could exist lower levels of trust in political information or higher levels of political skepticism could increase perceptions of AI manipulation. Future studies could apply panel designs to analyze the dynamics of changes in trust or political autonomy. In addition, some of the empirical data were based on respondent assessments. This may create a risk of socially desirable responses and cognitive biases. Therefore, further research should be combined with survey data and algorithm audits. However, unfortunately, at this stage the author is unable to obtain precise dates from such algorithms. This is the task of further research, which will

allow us to more accurately measure the real impact of artificial intelligence. The study did not take into account the political ideology of the respondents, which could have influenced their perception of algorithmic processes.

6 Conclusion

Thus, political communication based on AI-related perceptions was significantly associated with democratic indicators, although

TABLE 11 Coding framework and definitions.

Main theme	Code	Definition	Inclusion criteria	Exclusion criteria
Algorithmic personalization	AP1: perceived usefulness	References to algorithms as tools that improve relevance, efficiency, or convenience of political content	Statements describing benefits of personalization, filtering, relevance	General comments about technology not linked to political content
	AP2: loss of neutrality	Perceptions that personalization reduces pluralism or neutrality of information	Claims about echo chambers, selective exposure, hidden filtering	Complaints about bias without reference to algorithms
AI manipulation	AIM1: bots and automation	References to bots, automated accounts, coordinated campaigns	Mentions of non-human actors shaping political discourse	Human propaganda without AI reference
	AIM2: opacity of control	Perceptions that AI systems lack transparency or accountability	Statements about unclear ownership, control, or responsibility	Abstract ethical concerns not tied to AI
Platform-specific effects	PS1: Telegram dynamics	Platform-specific interpretations of Telegram's political role	References to speed, virality, opacity on Telegram	Generic social media comments
	PS2: YouTube amplification	Algorithmic recommendation effects on YouTube	Mentions of radicalization loops, video recommendations	Content moderation debates unrelated to algorithms
Generational differences	GD1: youth adaptability	Younger users' familiarity with algorithms	Statements indicating digital literacy or adaptation	Age references without digital context
	GD2: older skepticism	Older users' distrust or disengagement	Statements linking age to skepticism	General distrust without age reference
Democratic experience	DE1: self-censorship	Withdrawal from discussions due to distrust or fear	Statements about silence, avoidance of debate	Offline disengagement unrelated to AI
	DE2: reduced participation	Decreased engagement or political efficacy	Statements about disengagement, futility	General political apathy

these relationships were ambivalent in nature: trust in political information, a sense of political autonomy and the quality of political discussions. Algorithmic personalization was associated with both increased perceived relevance of content and decreased trust. On the one hand, it is defined as such that it can increase the relevance of content and the subjective feeling of control over the choice of information. However, on the other hand, it is associated with a decrease in trust and a narrowing of the phenomenon of information pluralism.

The study also showed significant heterogeneity in the impact of political communication based on AI, depending on the platform architecture and socio-demographic characteristics of users. The most pronounced negative consequences of the perception of AI manipulation were recorded among users of Telegram and YouTube, in which algorithmic dissemination of information is combined with a high speed of information flows and emotional polarization.

Qualitative analysis allowed us to identify important interpretive mechanisms through which users make sense of the role of AI and social networks in political communication. The coding structure showed that the democratic consequences of AI were shaped primarily by social perceptions of opacity and intentional influence. Thus, the study showed that artificial intelligence and social networks are not neutral tools of political communication. The findings suggest that users' perceptions of AI-mediated processes are closely associated with how they evaluate democratic interaction. The main contribution of this work is to empirically prove that the democratic challenges of AI are socially interpretive in nature and require systemic responses that should combine technological, normative, and

political approaches. Thus, the study proposed a reorientation of analysis—from assessing the objective impact of technologies to studying their perception as a key mechanism of democratic transformations.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Ethics Committee (L. N. Gumilyov Eurasian National University, Astana, Kazakhstan). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

IK: Conceptualization, Supervision, Writing – original draft, Writing – review & editing. KZ: Conceptualization, Data curation,

Formal analysis, Methodology, Project administration, Writing – original draft. DK: Data curation, Formal analysis, Visualization, Writing – review & editing. MM: Investigation, Validation, Writing – review & editing. AT: Methodology, Supervision, Writing – review & editing.

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Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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