The Impact of Artificial Intelligence on Social Networks: A Case Study of Political Participation in the 2024 Presidential Election

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Abstract

The primary issue of this research was to investigate the relationship between artificial intelligence (AI) and user behavior patterns on social networks, the impact of AI on voting behavior, and the connection between the use of online data analysis and students' decision-making in presidential elections. This question arises while considering the influence of AI on user behavior patterns and decision-making in presidential elections. The objective of this study was to evaluate the impact of AI variables and online data on user behavior and decision-making in various contexts. This research examined the study hypothesis to better understand how behavior and decision-making are shaped in the digital age and the role of modern technologies in these processes. To conduct this research, a survey method and available library resources were utilized. The study used existing sources and collected necessary data from the target population, namely students at universities in Tehran, and employed descriptive and inferential statistics for data analysis. The findings of this research indicate that demographic variables and AI play a significant role in user behavior and decision-making, and the use of online data analysis can influence students' decision-making in presidential elections. Additionally, AI can be effective in detecting user behavior patterns on social networks and influencing voting behavior. These results can be useful for policymakers, election officials, and social activists in designing effective strategies to monitor user behavior and decision-making in the digital age, contributing to a better understanding of AI's role in shaping behavior and decision-making in society.

Keywords: Artificial Intelligence, Social Networks, Political Participation, Presidential Elections

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Introduction

Artificial intelligence, by analyzing vast amounts of data on social networks, has played an unprecedented role in shaping the processes of the 2024 presidential elections. This technology, by identifying user behavior patterns, predicting election results, and targeting political advertisements, enables more precise influence on public opinion. On the other hand, AI can help maintain election integrity by detecting fake content and increasing transparency. However, challenges such as privacy violations and unethical manipulation of user opinions remain serious concerns in this field.

Social networks, as the primary platform for political interactions, facilitate the direction of public discourse through sentiment analysis and personalized content recommendations. AI, by accelerating big data processing, allows candidates to tailor their strategies more accurately to voters' needs. However, excessive reliance on algorithms may lead to the creation of "echo chambers" and societal polarization.

Accordingly, the following research questions are central to this study:

1. How can AI assist in detecting and analyzing user behavior patterns on social networks?

2. How can AI-based predictive models forecast and analyze voter behavior?

3. How can the use of AI methods assist voters and influence their voting behavior?

Based on research, AI, by analyzing user behavior on social networks, can identify hidden political tendencies and enable campaigns to target specific groups for support (Sajadpour, 2023). Platforms such as Instagram and Twitter, using deep learning technologies, play a pivotal role not only in news dissemination but also in shaping electoral attitudes (Hosseini, 2023). Additionally, the increasing role of these platforms in political marketing and creating direct connections between candidates and voters signifies a fundamental transformation in digital democracy (Khalili, 2022).

On the other hand, research indicates that AI, by providing accurate predictions of election results based on historical data and polls, enhances voter awareness and participation (Nour Mohamadian, 2024). However, misuse of this technology for spreading misinformation or psychologically manipulating users can undermine trust in democratic processes. Therefore, establishing ethical and technical regulations for the responsible use of AI in elections has become a necessity in the current era.

Theoretical Framework of the Research

The impact of AI on social networks and political participation in elections is an interdisciplinary topic requiring a combination of communication theories, political science, and information technology. This theoretical framework is based on three main pillars:

1. The role of AI in reconstructing the structure of social communication.

2. The influence of algorithms on shaping political perception.

3. The dynamics of political participation in the digital age.

AI and the Transformation of Social Communication Structure: AI, with its ability to analyze big data and personalize content, has transformed the traditional structure of communication on social networks. According to the theory of technological structuration (Bennett & Foot, 2018), technology is not a neutral tool but shapes human interactions and creates new social norms. AI in social networks, through mechanisms such as filter bubbles (Pariser, 2011) and algorithmic recommenders (Napoli, 2014), tailors content accessible to users. This process leads to the creation of "parallel realities," where users receive information aligned with their prior preferences based on their interaction history. In elections, this phenomenon can intensify political polarization, as users are exposed to one-dimensional viewpoints (Bozdag, van den Hoven, 2015).

Algorithms and Political Perception:

AI algorithms influence the "media agenda," determining which topics gain public attention. The theory of algorithmic agenda-setting suggests that algorithms not only set news priorities but also generate content that reinforces existing emotions and beliefs through user behavior analysis. In the 2024 Iranian presidential elections, this mechanism can operate in two ways:

- Enhancing participation: By identifying and motivating neutral users through engaging content.

- Suppressing participation: By fostering distrust through the dissemination of false or distorted information.

Additionally, AI, by generating social bots, can create artificial conversations and reinforce a false perception of public consensus. In Iran, given restrictions on open data access, this phenomenon may have amplified effects on participation (Rajabi & Nasrullahi, 2023).

Dynamics of Political Participation in the Digital Age: Political participation in Habermas' (1984) theory of "communicative action" depends on a healthy public sphere and free exchange of information. However, AI complicates this process by creating "algorithmic citizens"—users whose political decisions are directly or indirectly influenced by intelligent systems (Hintz et al., 2019). In Iran, studies such as Pourkazem (2023) have shown that social networks can reduce participation, but these studies have not examined AI as an independent variable. On the other hand, the theory of "digital social capital" (Ellison et al., 2014) suggests that online interactions can strengthen social cohesion and political trust, provided there is algorithmic transparency (Diakopoulos, 2016).

In studying the impact of artificial intelligence on social networks and political participation, there are three key theoretical models that examine this issue.

Theoretical Models

In studying the impact of AI on social networks and political participation, three key theoretical models examine this issue (Jamali Nasab, 2019). These models explore how AI

influences political interactions on social networks.

1. Influence Model:

This model examines the relationship between AI and political interactions on social networks (Mirzaei, 2016). It demonstrates how AI can influence political interactions on social networks. For example, AI can assist in content creation, facilitating interactions, and providing political recommendations to users (Zarei, 2017). This model also investigates the reasons behind the effectiveness of these influences in political interactions.

2. Trust Model:

This model studies trust in technologies and social networks (Rezaei, 2018). Trust in technologies and social networks is a key factor in political participation. AI may affect this trust. For instance, if users trust AI systems, they may be more inclined to rely on the information provided, leading to increased political participation (Narimani, 2015).

3. Content Model:

This model examines AI-generated content on social networks. Content produced by AI can influence public opinion and, ultimately, political participation (Jamali Nasab, 2019). For example, AI can help create interactive and engaging content that encourages users to participate in political activities.

Applications of AI in Elections:

- User Behavior Analysis: AI uses complex algorithms to analyze user behavior on social networks, including online activities, preferred content, and political preferences (Jones, 2024).

- Content and Ad Targeting: By analyzing user data, AI can design content and advertisements to maximize impact on different voter groups (Williams, 2022).

- Election Outcome Prediction: AI can analyze user behavior patterns on social networks and predict election results based on interactions and discussions among political factions (Brown, 2023).

Advantages of Using Artificial Intelligence in Social Networks:

Improving User Experience: The use of artificial intelligence can help improve the quality and user experience on social networks, for example, by providing more relevant and engaging content (Smith, 2023).

Improving Information Security: Artificial intelligence can play an important role in identifying and countering misinformation and fake news, thereby enhancing information security (Jones, 2024).

Personalized Recommendations: Artificial intelligence can be used to provide users with personalized recommendations regarding content and information related to elections (Williams, 2022).

Challenges and Limitations:

Manipulation of Public Opinion: The spread of incorrect and biased information can manipulate public opinion and harm the democratic process (Brown, 2023).

Privacy:
The collection and use of users' personal data by artificial intelligence can harm their privacy and raise serious concerns (Smith, 2023).

Bias:
Artificial intelligence algorithms may be influenced by the biases of their developers, which can lead to discrimination in results and the presentation of incorrect information (Jones, 2024).

Lack of Transparency:
The way artificial intelligence operates in social networks is often not transparent, which can lead to users' distrust and reduced political participation (Williams, 2022).

Electoral Integrity:
Artificial intelligence creates significant challenges in terms of electoral integrity, privacy rights, and the spread of misinformation (Brown, 2023).

Research Background Inside and Outside the Country:

Rajabi and Nasrollahi (2023) addressed the consequences of the development of artificial intelligence in social media in Iran in a study. The results of this study showed that the challenges created by artificial intelligence in the future—especially regarding the relationship between humans and intelligent systems and the powerful functions of AI in social media—have raised a concern that prompts further investigation through cultural attention to technology. This has brought cultural consequence analysis to the forefront. Other findings showed that artificial intelligence in social media causes extensive changes that should be considered by stakeholders in the development and application of technology. In most cultural fields, it has both positive and negative simultaneous consequences; meaning it is both opportunity-creating and threat-inducing, and attention to both mentioned aspects is crucial in artificial intelligence development policymaking. Among the most important cultural consequences of applying and developing artificial intelligence in social media are: affecting human decisions and actions, restructuring the human communication system, transforming cultural consumption patterns, reducing human decision-making power and delegating it to artificial intelligence, disrupting the function of truth representation in media, upsetting the balance between the advantages of personalized content and privacy preservation, and the counter-cultural impacts of the designers and owners of widely-used smart systems.

Biranvand and Norouzi (2023) examined the impact of artificial intelligence on enhancing the capabilities of electronic, telecommunication, and cyber subsystems in the context of electronic warfare. The results of their research indicated that electronic warfare is one of the most important features of modern warfare. This field can significantly influence how military forces use the electromagnetic spectrum for target identification or information provision. Recent developments in artificial intelligence show that this emerging technology will have a decisive and potentially transformative effect on the military power of any country. Artificial intelligence-based algorithms can play a very effective role in various areas of electronic warfare, such as radar signal processing for identifying and classifying types of transmitters, detecting the type of jamming operations and their characteristics,

and also developing effective anti-jamming algorithms. Artificial intelligence techniques can also enable various electronic warfare systems to operate independently and autonomously. Our focus in this article is on describing the fundamental aspects of electronic warfare and its related components, the various elements and technologies related to the current generation of electronic warfare systems, the application of artificial intelligence in electronic warfare systems and equipment, especially in the field of electronic warfare as an auxiliary element for decision-making and effective response against radar systems and equipment on the battlefield, and the evolving scenarios of electronic warfare for military forces (currently or in future plans).

Pourkazem (2023), in a study titled *The Impact of Virtual Social Networks on People's Participation in the 2021 Iranian Presidential Election (with an emphasis on Telegram, Instagram, and Twitter)*, conducted an investigation. The findings of this study indicate that the presidential election holds an important and influential place in the country's political system and also in the social, economic, and political life of the people. Research shows that social networks have been able to influence various areas of human life, among which political participation is one of the most heavily impacted domains. Political participation in its various dimensions is considered an important factor for the political survival of societies and governments. This concept symbolizes the presence of people in the exercise of governance, and in democratic countries, it is considered an important indicator of public satisfaction. Elections are the most prominent symbol of political participation, to the extent that the level of people's participation in elections is always closely monitored by rulers,

because its upward or downward trend contains important insights into the public's perspective and attitude toward the fundamental pillars of government legitimacy. Various factors affect people's participation. Our aim in this research is to examine the impact of virtual social networks on people's participation in the 2021 presidential election, where virtual social networks are the independent variable and people's participation in the election is the dependent variable. The main question of the research is: *What effect did virtual social networks have on political participation in the 2021 presidential election?* The research was conducted by analyzing the content of social networks and using recent polls, as well as datamining tools and determining keywords related to indicators of participation and non-participation in the 2021 presidential election on Telegram, Instagram, and Twitter. The growth rate of posts with such content was examined. The results obtained from the analysis of these indicators showed that the impact of virtual social networks (Telegram, Instagram, and Twitter) led to a decrease in people's participation in Iran's 2021 presidential election.

Nosrat, Rasouli, and Nasrollahi (2022) conducted a study investigating the dynamic model of Iranian social network users' cognitive approach during the crisis of artificial intelligence usage. The findings from the analysis of propositions, in a qualitative research study, led to the identification of 11 main categories which were placed within 6 different dimensions of a comprehensive model. Thus, the various aspects of the cognitive approach of Iranian social media users during this natural crisis led us to a comprehensive model named "SAMEH" (Persian acronym). In general, it can be stated that this model

demonstrates how influencers affect users' mindsets, feelings, and perceptual attitudes and behaviors in virtual space—and, in turn, how users' behaviors in virtual space affect their mindsets, feelings, and attitudes.

Baradaran and Nasiri (2021) investigated artificial intelligence in social networks. The results of this investigation showed that new market conditions, along with the adoption of customer-centric business approaches, have drastically altered companies' strategies and operational programs. In this context, the emergence and influential presence of social networks have provided numerous opportunities for both companies and consumers. The presence of billions of people on these networks has encouraged companies to use their diverse capabilities for various marketing purposes and has created a new front in brand competition. The massive volume of data in various forms—text, image, and audio—on social networks has led companies to face a factor called complex metadata. This metadata and its diversity have made data extraction and usage in marketing decisions extremely difficult, to the extent that ordinary human capabilities sometimes cannot overcome them. Artificial intelligence, as a technology mimicking humans based on machine learning, has been introduced as an effective solution to this issue and has created a competitive advantage for marketers and their decisions. Modern marketing has become smarter through artificial intelligence and can personalize the elements of the marketing mix for each customer and create the best and most appropriate connections at the right moment. In a general summary of the consequences of using artificial intelligence in social networks—beyond data mining, analysis, descriptive, predictive, and prescriptive reporting—we can also refer to the development of marketing research and communication, strengthening brand equity, ensuring the health of virtual communities, validating information and audiences, and detecting anomalies. The importance and necessity of applying artificial intelligence solutions for the optimal management of virtual networks with the aim of sustainable organizational development prompted us to review leading and relevant articles from 2018 to 2021 and to explain, alongside references to areas in which AI can be effective in social networks, the consequences of its application under the titles of intelligent marketing research, intelligent marketing communication, strengthening brand equity, and the health of virtual communities.

Aboli, Haghighi, and Zarei (2020), in a study titled *The Impact of Virtual Social Networks on the Political Attitude and Participation of the Employees of the Ministry of Interior (Case Study: Twelfth Presidential Election)*, conducted an investigation. The results of this study indicate that nowadays, various aspects of human life in general, and political activism in particular, have increasingly been influenced by the profound penetration of mass media—especially social media, virtual social networks, and mobile messaging tools. This significant development has, for the first time, made the realization of the "networked citizen" possible. In the meantime, the phenomenon of elections, as one of the most important methods of political selection and a key symbol of political participation, has come under the influence of media, especially the new media. The tenth presidential election was perhaps the first and most widespread presence of

virtual space and social networks in the political sphere in Iran. Given what was stated, this study seeks to answer the central question of what impact virtual social networks have had on the political participation of the employees of the Ministry of Interior in Fars Province (case study: twelfth presidential election), using a mixed-method (quantitative and qualitative) approach and utilizing library tools and questionnaires conducted among a sample of 278 people from the Ministry of Interior employees in Fars Province (Governorate, County Governorates, District Offices, and Municipalities of Fars Province). The most important findings from the hypothesis tests in this research indicate that virtual social networks have a significant impact on public participation in elections. The analysis of questionnaire data supports the notion that virtual space was well-utilized in the twelfth government election and had a direct influence on political participation.

Kheradmand (2019), in a study titled *Investigating the Impact of Virtual Social Networks (with Emphasis on Telegram) on Participation in the Twelfth Presidential Election of Iran (Case Study: Students of Public Universities in Tehran)*, conducted an investigation. The results of this study indicate that the role of virtual social networks (Telegram) in the amount and type of political participation, with an emphasis on the twelfth presidential election among students of public universities in Tehran (Shahid Beheshti, Tarbiat Modares, Kharazmi), was analyzed using Lipset's participation theory. The question was: what impact did virtual social networks (with an emphasis on Telegram) have on participation in the twelfth presidential election of Iran among students of public universities in Tehran? In order to achieve this goal, the researcher, by

referring to the opinions of students from the mentioned universities, studied the virtual social network (Telegram) and used purposive sampling of the statistical population in a descriptive-analytical survey method using the questionnaire technique. The research incorporated theoretical literature on elections, the history and development process of virtual social networks, audience motivations, features and impacts of social networks (Telegram), political participation, and its theoretical approaches. Through this, the role and impact of the virtual social network (with an emphasis on Telegram) using Lipset's theoretical framework in the twelfth election were described and explained and taken into consideration.

Pour Naghdi (2018), conducted a study on *Opportunities and Security Threats in Virtual Social Networks for Students*. The results of his research showed that while virtual social networks benefit from extensive advantages and facilities, they have also brought about issues and problems in the areas of order and security that affect society and students. The hypothesis test yielded a correlation coefficient of 3.763 with a significance level of (0.001). The results indicate that the security and order threats in virtual social networks for students include identity crisis, moral norm violations, promotion of corruption, unethical relationships, electronic addiction, and decreased motivation for studying. The strengths and opportunities identified include the expansion of virtual education, the development of scientific communication, and electronic commerce.

Yousefi Radmandi (2018), in a study titled *The Model of Voter Behavior in the Elections of the Islamic Republic of Iran Based on a Political Marketing Approach*, conducted an

investigation. The results of this study indicate that one of the most important tasks of marketing managers is identifying needs, analyzing customer purchasing behavior, and prioritizing the components affecting it, the result of which will be the identification of market preferences and the provision of goods or services tailored to those preferences. In the political market as well, parties and political movements, to succeed in election competitions, must understand the individual and public needs and concerns of the people in order to have a correct analysis of voting behavior and the reasons behind their inclination toward a person or political current. Therefore, examining this issue—which forms the foundation of political campaign strategies—is considered the most important mission of political marketing. In this study (an interdisciplinary analysis), efforts were made to examine the reasons for people's inclination toward a candidate in the election campaign process with a political marketing approach. Accordingly, an exploratory combined research method was used with the aim of creating a classification based on qualitative data to identify, categorize, and rank the components affecting voter behavior in Iran. The result was the introduction of three factors: "candidate," "voter," and "competitive environment" as the main components, each having three sub-components. Ultimately, 36 indicators were identified as contributing to the formation of voter behavior based on the political marketing approach.

Previous studies in the field of the impact of new technologies (artificial intelligence and social networks) on political and cultural participation in Iran, despite their thematic richness, are subject to critique and in need of completion from several aspects:

Limited focus on specific elections: Most studies (such as Pourkazem, 2023; Aboli et al., 2020; Kheradmand, 2019) have focused on the impact of social networks on participation in a specific election cycle (such as the 2021 or twelfth election), without analyzing long-term trends or comparisons across different periods. This prevents an understanding of structural transformations in voting behavior. One-dimensional methodology: Some studies (such as Nosrat et al., 2022) have used qualitative or survey methods, but there is a noticeable lack of studies employing mixed methods (qualitative-quantitative) or advanced analytical tools like dynamic simulation or big live data analysis. For example, the impact of artificial intelligence on the "reduction of human choice power" (Rajabi and Nasrollahi, 2023) requires empirical measurement using real behavioral data.

Neglect of complex technological interactions: Studies such as those by Biranvand and Nowruzi (2023) have addressed electronic warfare and artificial intelligence, but the relationship of this field with social media and its indirect impact on public perception has not been examined. Also, the impacts of production-oriented AI on the structure of human communication have been neglected in Iranian research.

Lack of comparative frameworks: Studies are generally limited to the Iranian context and no comparisons with other countries (especially non-Western societies) have been made. This prevents the identification of global patterns and cultural differences in the acceptance of AI.

Ignoring the role of new actors: The impact of "designers and owners of intelligent technologies" as anti-cultural actors (Rajabi and Nasrollahi, 2023) has mostly remained

theoretical, and the role of transnational companies (such as Meta or AI) in shaping the media space in Iran has not been analyzed.

This study, aimed at filling the aforementioned gaps, innovates from several perspectives: Interdisciplinary and multi-level approach: Simultaneous investigation of the impact of artificial intelligence and social networks on political participation, through the integration of frameworks from sociology, political science, and information technology. This approach analyzes the complex interaction between new technologies and collective behaviors beyond previous one-dimensional studies. Dynamic and long-term analysis: Use of dynamic systems modeling to simulate the impact of artificial intelligence on political participation over different time periods, unlike previous cross-sectional studies that only addressed a single election event. Integration of big data and cognitive theories: Combining big data analysis of social networks (using advanced data mining tools) with cognitive psychology theories (such as the "SAMEH" model by Nosrat et al., 2022) to identify micro and macro mechanisms influencing users' decision-making. Emphasis on the role of transnational actors: Examining the impact of AI algorithm design by global companies on Iran's media space, which has been ignored in previous studies. Simultaneous presentation of policy strategies: Simultaneous attention to the "opportunities" and "threats" of artificial intelligence (inspired by Rajabi and Nasrollahi, 2023) and offering practical solutions for enhancing advantages (such as positive personalization) and reducing risks (such as privacy violations).

This research, by moving beyond mere description of outcomes, addresses obtained data and causal-interpretive analysis, which will have strategic applications for technology and media policymakers in Iran.

Research Methodology

In this study, a quantitative method was used through a survey. In this approach, the data collection tool was a researcher-made questionnaire. This questionnaire, in addition to demographic questions, included 22 questions designed to measure various dimensions of the independent variable as well as political participation. Our statistical population was limited to students of universities located in Tehran. Using the questionnaire tool, the opinions of 384 students were gathered. These questionnaires were randomly distributed and collected among the students. To achieve the intended goals of this research, and given that the number of students in Tehran-based universities exceeded one hundred thousand, Morgan's table was used for sampling and determining the sample size, which was determined to be 384 individuals. To ensure the reliability of the questionnaire, which is considered the measurement tool in this research, before distributing the final questionnaire, 38 questionnaires—equivalent to one percent of the total sample population—were prepared and distributed proportionally according to the demographic composition of the entire statistical population. At this stage, in addition to answering the posed questions, respondents were also asked to provide corrective feedback regarding the arrangement of the questions, the type of information and the way the questions were asked, the layout and design of

the questionnaire options. In this way, by summarizing the feedback received in this stage, the questions were changed from descriptive form to multiple-choice format. Also, questions that would cause the respondent to lose trust in the anonymity and confidentiality of their personal information were removed. Eventually, long or repetitive questions were either removed or merged in order to shorten the questionnaire, and it was decided that the questionnaires would be distributed among various universities in Tehran so as to obtain a broader demographic variety and to access students from all levels of education as much as possible.

The final analysis of the modifications showed that the respondents were able to understand the questions properly and respond to them with appropriate accuracy. Also, for the validity (credibility) of the questionnaire, it was reviewed and finalized through several stages based on the input of professors and a number of specialists. Therefore, the questions of the questionnaire thus obtained the required content validity.

To analyze the collected data, both descriptive and inferential statistics were used. Descriptive Statistics: Initially, the data was examined using descriptive statistics. The main variables included the frequency, percentage, and cumulative percentage of participants' responses to the questionnaire questions.
Inferential Statistics: To analyze the relationships between variables and test the research hypotheses, inferential statistics were used. One of the most important tests employed was Pearson's Chi-Square test. This test allows us to examine potential relationships between different variables, such as the influence of

artificial intelligence and changes in voter behavior. Using the results of Pearson's Chi-Square test, significant correlations between variables were identified.

Findings

In every scientific research, understanding the demographic characteristics of the studied sample is the first and essential step toward a comprehensive understanding of the findings and the generalizability of the results. These characteristics—including age, gender, field of study, and level of education—not only provide a clear picture of the statistical population's composition, but also allow for the analysis of possible differences in attitudes, behaviors, or preferences among various groups. For example, age differences may reflect different life experiences when dealing with new technologies, or gender might influence how individuals interact with social media content (Dutton & Blank, 2013). Likewise, field and level of education, as indicators of the level of specialized knowledge and cognitive approaches, play a decisive role in interpreting complex phenomena such as political participation (Verba et al., 1995).

After presenting these descriptive data, the current research, by employing inferential statistics, proceeds to test the hypotheses and uncover relationships between variables. This section, using methods such as correlation analysis, regression, or comparative tests, enables the identification of hidden patterns, causal effects, and the prediction of trends. In other words, if demographic data draw the "context map," inferential statistics reveal the "details of the path." Such an approach not only helps in a deeper understanding of the

studied phenomenon but also establishes a solid foundation for proposing evidence-based policy solutions (Field, 2018).

In the following, first, a general picture of the demographic characteristics of the

respondents is provided, and then, focusing on inferential analyses, the key relationships in the research are examined.
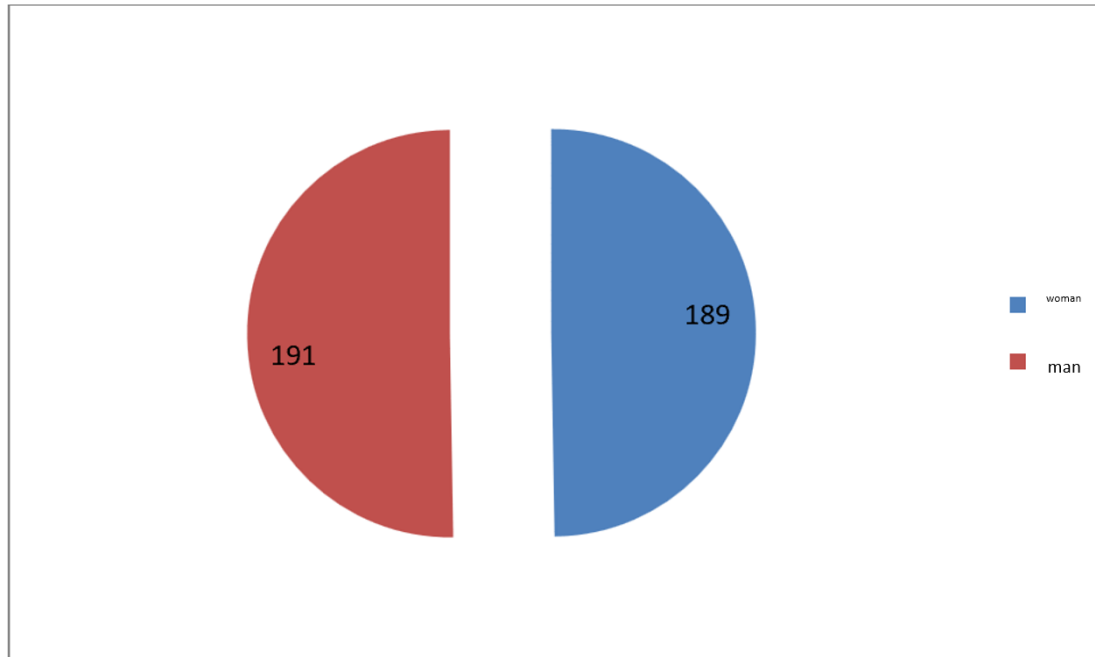
Distribution of respondents by gender:

Table 1: Gender

| Gender	amplitude	Percentage	Valid percentage	Density percentage
Woman	**189**	**49.7**	**49.4**	**49.7**
Man	**191**	**50.3**	**50.3**	**0.100**
Total	**380**	**100**	**0.100**	

Age composition:

In this study, we divided the age composition of the sample population into four age groups: those born in 2000-2004, 1995-1999, 1990-

1994, and 1985-1989. Accordingly, as can be seen in the table below, 40.5% of people are in the first group, 53.4% are in the second group, 3.5% are in the third group, and only

0.9% are in the fourth group, i.e. those born in
1971-1976.

Table 2: Age composition

	amplitude	Percentage	Valid percentage	Density percentage
2000-2004	138	36.3	40.5	5.40
1995-1999	182	47.9	53.4	92.61
1990-1994	18	4.7	3.4	1.99
1985-1989	3	0.8	0.9	0.100
Sum	341	89.7	0.100	
Wrong data	39	10.3		
Total sum	380	0.100		

Age distribution of respondents:
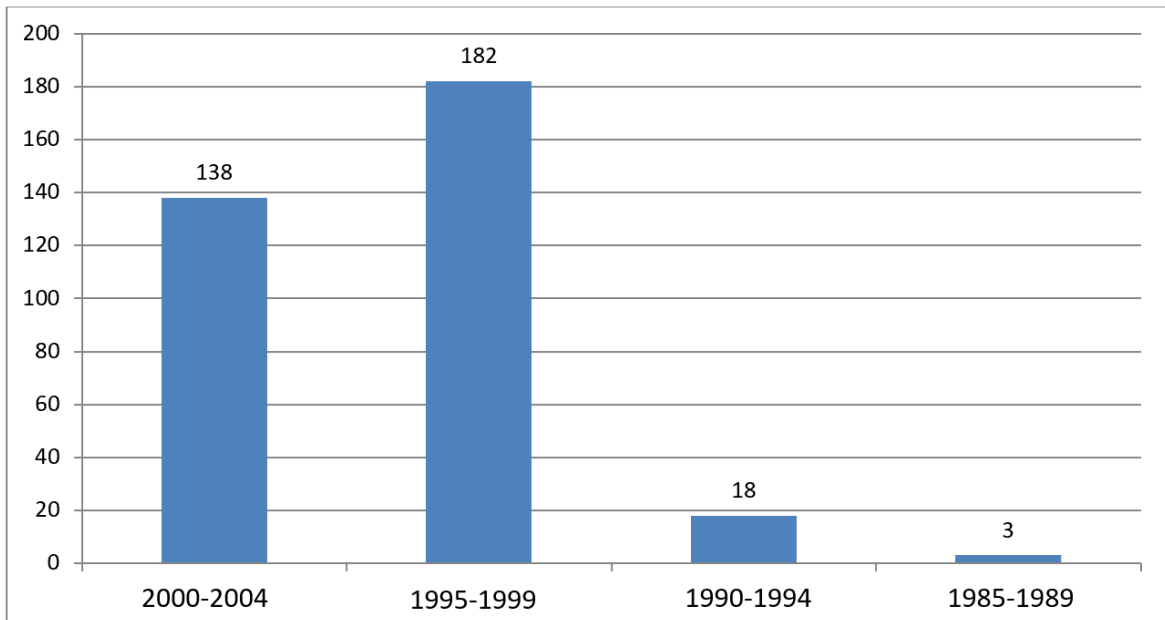

Educational level

Since our statistical population in this study consists of students from universities located in Tehran, we have set three educational levels as criteria: bachelor's, master's, and doctoral. Accordingly, 48.2% of the respondents are undergraduate students, 40.0% are master's students, and 11.8% are doctoral students.

Table 3: Educational background

	Amplitude	Percentage	Valid percentage	Density percentage
Bachelor's	183	48.2	48.2	2.48
Master's	152	40	40	42.48
PhD	45	11.8	11.8	50.59
Total	380	0.100	0.100	0.100

Distribution of respondents by educational level
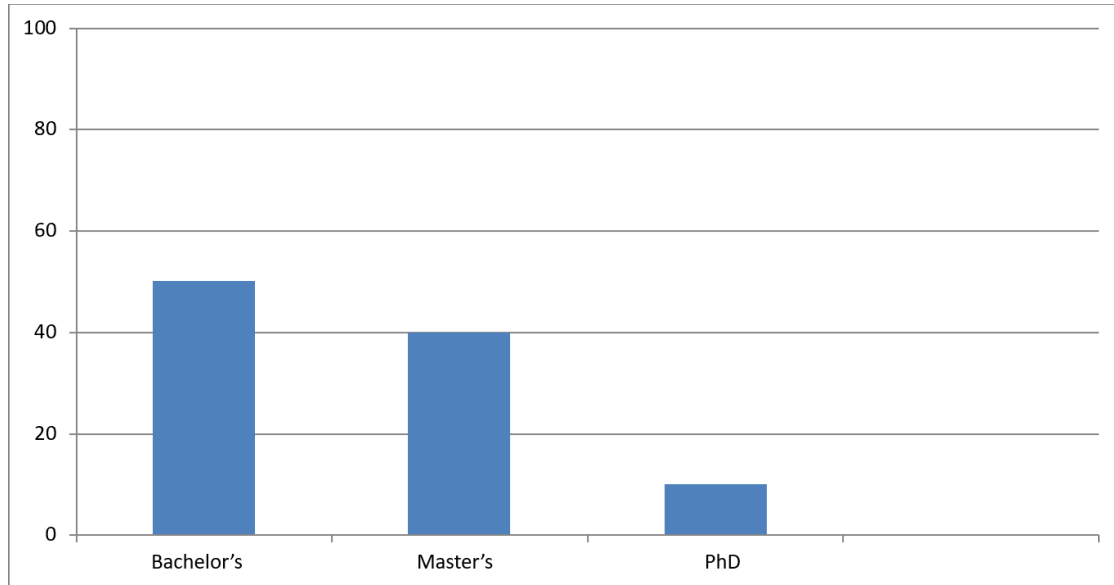
Field of Study:

In this study, we divided the students' field of study into four general groups: technical and basic sciences, humanities, medicine, and arts.

Accordingly, 46.1% of the respondents were technical and basic sciences students, 43.3% were humanities students, 8.2% were medical students, and 2.5% were arts students.

Table 4: Field of study

	Amplitude	Percentage	Valid percentage	Density percentage
technical and basic sciences	130	34.2	34.2	34.2
humanities	122	32.1	43.1	77.4
medicine	23	6.1	7.2	84.6
arts	7	8.1	5.2	89.7
Sum	282	74.2	10.3	0.100
Wrong data	98	25.8	-	-
Total sum	380	0.100	0.100	-

To perform inferential statistics in this study, first the results of data analysis and statistical tests are examined. The relationship between the variables under study was evaluated using the Chi-square and Chi-Pearson tests. These tests examine the significance of the relationships between independent and dependent variables. Based on the results obtained from

these tests, the research hypotheses will be confirmed or rejected. Next, based on the information available in the tables and the results of the statistical tests, each of the research hypotheses will be answered. These answers will be based on the evidence and statistical calculations performed and will help to better and more accurately understand the subject under study. In summary, this part of the study examines the relationships between variables and answers to the research hypotheses using appropriate statistical tests in order to obtain more reliable results from this study.

The relationship between artificial intelligence in detecting and analyzing social media users' behavior patterns through artificial intelligence and being influenced by them

Table 1: Chi-Score test

	Value	Degree of freedom	Significance level
Chi-Pearson test statistics	**26.449**	**12**	**009.0**
Maximum magnification ratio	**25.414**	**12**	**013.0**
Linear relationship	**5.851**	**1**	**016.0**
Number of valid observations	**282**		

Considering the results obtained in the Chi-square table (26.449) with a significance level of 5%, we come to the conclusion that there is a significant relationship between prediction models based on artificial intelligence and the behavior of voters. Prediction models based on artificial intelligence can influence voter behavior in several ways. These models are capable of predicting individuals' likelihood of voting for different candidates, which can assist in the analysis and strategic planning of election campaigns. Also, these models can identify key factors such as age, gender, socio-economic status, and patterns of social media usage that influence individuals' voting behavior. This helps in better understanding voters' motivations and attitudes. Furthermore, by identifying behavioral patterns among different groups of voters, these models can assist in more precise segmentation and targeting of voters. This contributes to the design of effective and targeted messages for each group. In addition, artificial intelligence models will be able to monitor real-time data from voters' behavior on social media and other sources, and identify and analyze important changes and trends in real time. This helps in smarter management of election campaigns. Ultimately, these models can also assist in improving and adjusting electoral

strategies and programs by continuously evaluating the actions taken and their impact on voters' behavior. In general, the use of prediction models based on artificial intelligence can contribute to a deeper and more effective understanding of voters' behavior and tendencies, leading to the design of smarter election strategies. Of course, ethical issues and users' privacy must always be taken into consideration as well.

The relationship between the use of artificial intelligence methods and their impact on voters' voting behavior.

Table 2: Chi-Score test

	Value	Degree of freedom	Significance level
Chi-Pearson test statistics	3.325	4	505.0
Maximum magnification ratio	3.335	4	503.0
Linear relationship	0.040	1	842.0
Number of valid observations	380		

Based on the results obtained from the Chi-square and Chi-Pearson tests presented in the question, the calculated test statistic value is 3.325. This value, considering the significance level of 0.05, is less than the critical value from the Chi-square table. As a result, the null hypothesis, stating the absence of a significant relationship between the use of artificial intelligence methods for voters and their impact on voting behavior, is confirmed. This means that based on the statistical test results, there is not enough evidence to reject the null hypothesis and accept the alternative hypothesis. In other words, the results indicate that, overall, there is no significant relationship between the use of artificial intelligence methods for voters and their impact on their voting behavior. This matter may be due to various reasons. For example, the artificial intelligence methods used may not yet be complete and may not have been able to have a significant impact on voters' behavior. Also, other factors such as electoral policies, economic and social conditions, etc., may have had a stronger influence on individuals' voting behavior. In any case, these results indicate that currently, there is not sufficient evidence to confirm a significant relationship between the use of artificial intelligence methods for voters and their impact on their voting behavior. However, this does not mean that these tools cannot play a more effective role in this field in the future.

The relationship between the use of online data analysis and students' decision-making in the presidential election.

Table 3: Chi-Score test

	Value	Degree of freedom	Significance level
Chi-Pearson test statistics	160.149	20	000.0
Maximum magnification ratio	150.106	20	000.0
Linear relationship	35.568	1	000.0
Number of valid observations	350		

The statistical results obtained from the analysis of the questionnaire data show that the use of online data analysis can have a significant impact on students' decision-making in presidential elections. Based on the results of the Chi-Square and Chi-Pearson tests, the calculated statistic value is 149.160, which, considering the significance level of 0.05, is much higher than the critical value in the Chi-Square table. This means that the null hypothesis, which states that there is no significant relationship between the two variables, is rejected, and instead, the research hypothesis, which states that there is a significant relationship between the use of online data analysis and students' decision-making in the presidential elections, is confirmed. In other words, the results indicate that students are largely influenced by online data analysis, and this affects how they make decisions in presidential elections. This may be due to the fact that students are at a young age and are more influenced by the content published in virtual spaces and social networks. Therefore, the results of this study indicate that artificial intelligence and online data analysis can play an important role in shaping voter behavior in elections. This highlights the need for greater attention to ethical issues and the protection of citizens' information security in the use of such technologies in the election process.

Conclusion

The results showed that artificial intelligence, using natural language processing methods, is capable of analyzing the content posted by users on social networks. This includes texts, images, videos, and other shared content. Through this analysis, user behavioral patterns such as interests, emotions, attitudes, and communication styles are identified. This information can help to better understand user behavior and relationships in social networks. Additionally, artificial intelligence, by analyzing social networks and examining user communications and interactions, can identify patterns related to the manner of communication, participation, and influence. This information leads to a better understanding of social network relationships and structures. Moreover, by using machine learning algorithms, artificial intelligence can model users' behavioral patterns and use them to predict their future behaviors. This helps in providing personalized recommendations and improving the user experience in social networks. Also, artificial intelligence, by examining deviations from users' usual behavioral patterns, can identify suspicious or abnormal behaviors. This capability is used for preventive or security measures. In general, the application of artificial

intelligence in analyzing user behavior in social networks can lead to the provision of personalized content and features, improvement of interaction, and an increase in user participation. This will help to improve the user experience and enhance the effectiveness of these platforms.

Artificial intelligence, with its advanced modeling and prediction capabilities, also plays an important role in analyzing and predicting voter behavior. One of the main applications in this field is the use of machine learning algorithms to predict voter behavior. These algorithms can identify and model voting patterns by analyzing extensive data from past voter behavior. This includes factors such as political inclinations, demographic characteristics, consumed media information, and voting history. By using these models, artificial intelligence is able to predict the probability of individuals voting for a specific option. This information can be used in designing election strategies, targeting voter groups, and improving political communications. Furthermore, artificial intelligence can extract information about attitudes, interests, and behavioral patterns by analyzing users' online content. This data helps to better understand voters' opinions and preferences and enhances the ability to predict their behavior more accurately. Additionally, artificial intelligence, by tracking and analyzing user interactions on social networks, can obtain valuable information about trends, influence, and communication patterns among voters. This information is used to improve communication strategies and influence voters. Overall, the application of predictive models based on artificial intelligence can contribute to a deeper understanding of voter behavior, the design of targeted election strategies, and the improvement of election prediction accuracy.

Artificial intelligence can also assist voters and influence their voting behavior in various ways. One of these ways is helping voters make decisions. Artificial intelligence, by analyzing information about candidates and voting topics, can assist voters in making informed decisions. These systems can identify the strengths and weaknesses of candidates and offer comprehensive and impartial comparisons. Additionally, by providing personalized recommendations based on voters' preferences and values, they facilitate the decision-making process. Moreover, artificial intelligence can help facilitate the voting process. These systems can assist voters in identifying polling locations, registering, and tracking the status of their votes, thereby making the voting experience simpler and more accessible. Increasing voter participation is also another role of artificial intelligence in this field. These systems can encourage and motivate voters to participate in the election process by providing personalized political information. They can also increase voter participation by identifying behavioral patterns and providing targeted content. Furthermore, artificial intelligence can, by accurately predicting voter behavior, assist in designing targeted election strategies and influence election outcomes. These systems can also help maintain the integrity of the voting process by identifying attempts at election information manipulation. Overall, regarding this part of the study, it can be said that the use of artificial intelligence methods can help improve the voter experience, increase participation, and achieve more accurate election results. However, this requires careful management and oversight of

these systems to prevent any misuse or inappropriate influence.

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